Industrial Water Treatment Product Information

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Introduction

ProMoss™ industrial water treatment systems are the first plant based, all natural, renewable water treatment products. These products are the culmination of over 15 years of laboratory and field-testing into the biological, chemical and environmental effects of Sphagnum moss on water. Four issued U.S. patents and several international patents currently cover the products. Additional patents are pending.

ProMoss™ is NSF Non Food Compounds Program Listed (G5), Registration # 153891, and therefore suitable for treatment of cooling and retort water in and around food processing areas. Under the tradename MossNaturally™, it is NSF 61 listed. Under the tradenames PoolMoss® and SpaMoss®, it is NSF 50 listed. If your application / industry requires additional certifications, please contact your account manager.

The addition of ProMoss™ will initially cause changes in TDS, pH, metal ion concentration, water clarity, scale formation and corrosion as the product conditions the water and surfaces. This process will eventually allow reduction in chemical use and for certain applications, reduction in water usage.

Products

ProMoss™ 3

NSF
Nonfood Compounds
Program Listed (G5)
Registration # 153891

ProMoss™ 2

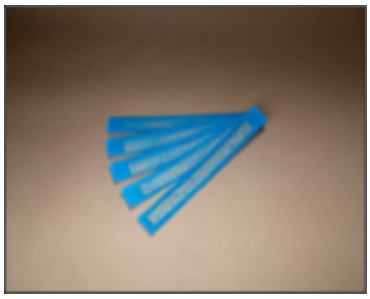
NSF
Nonfood Compounds
Program Listed (G5)
Registration # 153891

← ProMoss™ 1

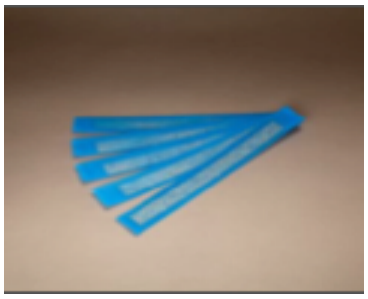
ProMoss™ .5 →
Used in CC-F

CREATIVE WATER SOLUTIONS

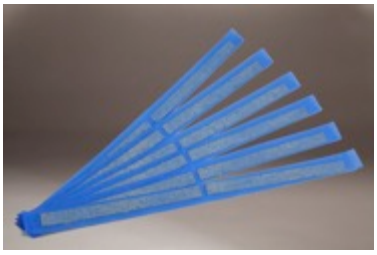
ProMoss™ 6
Used in CC-F, CC-BS, CC-SSHTS



ProMoss™ 4
Used in CC-BL, CC-SSHTM



ProMoss™ 4XL
Used in CC-SSHTL, CC-SSHTXL



Off-line contact chambers for open water systems

Creative Water Solutions sells two types of contact chambers (CC). The open, cage like, chambers provide a system to localize ProMoss™ bags in an open body of moving water. Submersing the contact chamber in the water and securing the chamber with the included rope, holds the bags of ProMoss™ in place and allows the moving water to contact the ProMoss™ leaves.

CC-F

The smallest contact chamber used for a small cooling tower, water loop or fountain treatment. Hinged plastic container with a velcro-closing strap.

Specifications

- Chamber Diameter: 4.25" (10.80 cm)
- Chamber Length: 12.5" (31.75 cm)
- Max Operating Temperature: 110^0F (43^0C)
- ProMoss™ capacity: 1 ProMoss™ .5

CC-ITS

A low profile rectangle contact chamber ideal for larger fountains, small ponds-fountains-cooling towers-water loops-low volume process water treatment. It is ideal for cooling towers or water loops with a shallow reservoir. Also used to house corrosion meters and coupons, organic contamination coupons, and other test probes. Coated metal cage with bunge closures.

Operating Specifications

- Standard Rope (included): 120" (304.8 cm)
- Chamber Height: 3.5" (9 cm)
- Chamber Width: 18.5" (47 cm)
- Chamber Depth: 18.5" (47 cm)
- Max Operating Temperature: 110^0F (43^0C)
- ProMoss™ capacity: 1 ProMoss™ 1, 2 or 3

CC-ITM

Intermediate sized contact chamber used in applications that require a larger ProMoss™ dose. Coated metal cage with bungee closures.

Operating Specifications

- Standard Rope (included): 120” (304.8 cm)
- Chamber Height: 19” (48.26 cm)
- Chamber Width: 13” (33.02 cm)
- Chamber Depth: 19” (48.26 cm)
- Max Operating Temperature: 110^0F (43^0C)
- ProMoss™ capacity: 4 ProMoss™ 3 or 2

CC-ITL

The largest contact chamber used in applications that require large numbers of ProMoss™. Coated wire mesh cage with bungee closure.

Operating Specifications

- Standard Rope (included): 120” (304.8 cm)
- Chamber Height: 37” (94 cm)
- Chamber Width: 13” (33.02 cm)
- Chamber Depth: 19” (48.26 cm)
- Max Operating Temperature: 110^0F(43^0C)
- Nylon Rope Extension (optional): 108” (274.38 cm)
- Cam Cleat (optional) load limit: 500lbs (226.8 kg)
- ProMoss™ capacity: 8 ProMoss™ 3 or 2

Rope Extension

Nylon rope extension with stainless steel connectors for aiding in the removal of heavy contact chambers.

Operating Specifications

- Load limit: 240lbs (108.86 kg)
- Length: 120” (304.8 cm)

Stainless Steel Hardware

Cam Cleat

Heavy duty, self-actuating cam cleat used to hold the contact chamber rope in place when removing the chamber from the water container. When the ProMoss™ is wet, a full CC-ITL can weigh over 100 lbs, mostly water. Removing the contact chamber from the water and securing the rope in the cam cleat, will allow the water to drain decreasing the weight. It can also be used to hold the contact chamber and ProMoss™ out of the water.

Operating Specifications

- Working load: 500lbs (226.8kg)
- Max line diameter: 5/8” (1.59 cm)

1/4” Anchor Screws/nuts recommended (not included)

In-line contact chambers for closed, pressurized water systems

The second series of contact chambers are designed for pressurized water systems with options ranging from 125-250 psi and 165-300^{0}F.

The patent issued design of the CC-I80/I90/I140/I150 provides the necessary contact time between the water and ProMoss™ and/or Catalytic Carbon. They are designed to function with a flow of from 2-15 gal/min and require a flow meter and valves to regulate the flow. This is only applicable.

CC-BS
Operating Specifications

- Chamber Height: 10” (25.4 cm)
- Chamber Width: Max 5.5” (13.94 cm)
- Pipe Size: ¾” (2 cm) NTP
- Flow Rate: 5-10 gpm (19-38 L/mn)
- Operating Pressure: Max 125 psi (8.8 Kg/cm^2)
- Operating Temperature: Max 165^{0}F (64^{0}C)
- Capacity: 5 ProMoss™ 6

CC-BL
Operating Specifications

- Chamber Height: 20” (50.8 cm)
- Chamber Width: Max 5.5” (13.94 cm)
- Pipe Size: ¾” (2 cm) NTP
- Flow Rate: 5-10 gpm (19-38 L/mn)
- Operating Pressure: Max 125 psi (8.8 Kg/cm^2)
- Operating Temperature: Max 165^{0}F (64^{0}C)
- Capacity: 5 ProMoss™ 4

CC-SSHTS
Operating Specifications

- Chamber Height: 13 3/4”
- Chamber Width: 6” (15.24 cm)
- Pipe Size: 1” (2.54 cm) FNTP
- Flow rate: 7 gpm (26.5 L/mn) optimal
- Operating pressure: Max 250 psi (17.58 Kg/cm^2)
- Operating temperature: Max 275^{0}F (135^{0}C)
- Capacity: 5 ProMoss™ 6

CC-SSHTM
Operating Specifications

- Chamber Height: 23 7/8”
- Chamber Width: 4” (10.16 cm)
- Pipe Size: 1” (2.54 cm) FNTP
- Flow rate: 14 gpm (53 L/mn) optimal
- Operating pressure: Max 250 psi (17.58 Kg/cm^2)
- Operating temperature: Max 275^{0}F (135^{0}C)
- Capacity: 5 ProMoss™ 4

CC-SSHTL
Operating Specifications

- Chamber Height: 34 7/8”
- Chamber Width: 6” (15.24 cm)
- Pipe Size: 1” (2.54 cm) FNTP
- Flow rate: 15 gpm (56.78 L/mn) optimal
- Operating pressure: Max 150 psi (10.55 Kg/cm^2)
- Operating temperature: Max 300^{0}F (148.89^{0}C)
- Capacity: 10 ProMoss™ 4XL

CC-SSHTXL
Operating Specifications

- Chamber Height: 49 9/16”
- Chamber Width: 26” (66.04 cm)
- Flange Size: 3” (7.62 cm)
- Flow rate: 15 gpm (56.78 L/mn) optimal
- Operating pressure: Max 150 psi (10.55 Kg/cm^2)
- Operating temperature: Max 250^{0}F (121.11^{0}C)
- Capacity: 20 ProMoss™ 4XL

CC-I80
Operating Specifications

- Chamber Height: 34” (86.36 cm)
- Chamber Width: 20” (50.8 cm)
- Pipe Size: 2” (5.08 cm)
- Flow rate: 10-15 gpm (37.85-56.78 L/mn) optimal
- Operating Pressure: 5-10psi (0.35-0.7Kg/cm^2), max 50psi (3.52Kg/cm^2)
- Pressure drop: 3.7 psi (0.26 7 Kg/cm^2) at 15gpm (56.78L/mn)
- Operating Temperature: Max 120^{0}F (48.89^{0}C)
- Capacity: 3 ProMoss™ 3 bags

CC-I90
Operating Specifications

- Chamber Height: 36” (91.44 cm)
- Chamber Width: 26” (66.04 cm)
- Pipe Size: 2” (5.08 cm)
- Flow rate: 10-15 gpm (37.85-56.78 L/mn) optimal
- Operating Pressure: 5-10 psi, max 50 psi (0.35-0.7 Kg/cm^2 max 3.52 Kg/cm^2)
- Pressure drop: 1.88psi (0.13Kg/cm^2) at 15gpm (56.78L/mn)
- Operating Temperature: Max 120^{0}F (48.89^{0}C)
- Capacity: 6 ProMoss™ 3

CC-I140
Operating Specifications

- Chamber Height: 40” (101.6 cm)
- Chamber Width: 34” (86.36 cm)
- Pipe Size: 2” (5.08 cm)
- Flow rate: 10-15 gpm (37.85-56.78 L/mn)optimal
- Operating Pressure: 5-10 psi, max 50 psi (0.35-0.7 Kg/cm^2 max 3.52 Kg/cm^2)
- Pressure drop: 1.88 psi (0.13Kg/cm^2) at 15 gpm (56.78L/mn)
- Operating Temperature: Max 120^{0}F (48.89^{0}C)
- Capacity: 12 ProMoss™ 3

CC-I150
Operating Specifications

- Chamber Height: 42” (106.68 cm)
- Chamber Width: 38” (96.52 cm)
- Pipe Size: 2” (5.08 cm)
- Flow rate: 10-15 gpm (37.85-56.78 L/mn) optimal
- Operating Pressure: 5-10 psi, max 50 psi (0.35-0.7 Kg/cm^2 max 3.52 Kg/cm^2)
- Pressure Drop: 3.66 psi (0.26Kg/cm^2) at 15 gpm (56.78L/mn)
- Operating Temperature: Max 120^{0}F (48.89^{0}C)
- Capacity: 16 ProMoss™ 3

	Off line Contact Chambers				In-line Contact Chambers				Boilers Contact Chambers					
	CC-ITS	CC-ITM	CC-ITL	CC-ITF	CC-I80	CC-I90	CC-I140	CC-I50	CC-BS	CC-BL	CC-SSHTS	CC-SSHTM	CC-SSHTL	CC-SSHTXL
ProMoss™ 3	✔	✔	✔		✔	✔	✔	✔						
ProMoss™ 2	✔	✔	✔		✔	✔	✔	✔						
ProMoss™ 1	✔	✔	✔		✔	✔	✔	✔						
ProMoss™ .5				✔										
ProMoss™ 6				✔					✔		✔			
ProMoss™ 4										✔		✔	✔	✔

Breakaway® Flush

Breakaway® Flush is a liquid that combines three chemistries to remove organic contamination from filter media and/or any water surface. Laboratory and field tests confirm that 90% of existing organic contamination is removed in one hour of treatment with constant water flow during treatment. Organic contamination along with scale and other surface contamination will be removed and flushed from the treated system. Any physical restrictions such as spray nozzles, screen filters, or shower heads, may become clogged during treatment.

Operating Specifications

1.06 gallon (4 L), cases of 4

Breakaway® Air Scour System

The air scour system is designed to disrupt particulate filter media such as sand, glass, and/or garnet, allowing Breakaway Flush to more efficiently interact with media particles and remove organic contamination.

Operating Specifications

The Air Scour System includes a high flow blower and hardware to transfer Breakaway® to the filter plumbing (connects with 3⁄4" (7.62 cm) MPT). Access to the outflow of the media filter is required. The air scour system is connected to the outflow of the filter and the air valve on the filter is opened. The blower then delivers high flow air to the filter to disrupt the media bed. Breakaway is delivered through the connection and forced into the filter media with continued high flow from the blower. After cleaning, the removed contamination and Breakaway® are removed by backwashing the filter media.

Off-line CC-ITL, CC-ITM and CC-ITS Maintenance and Operation

Startup of the CC-ITL, CC-ITM and CC-ITS System

1. Open the contact chamber by moving the two individual bungees to the side of the lid at the corners. Caution: bungees are taut; take care not to pinch your fingers or hands.
2. Break up the ProMoss™ into 2" squares
3. Place 2 bulk bags of ProMoss™ on each shelf within the chamber.
4. Close the lid to the contact chamber by placing the bungees back over the corners of the lid.
5. Unscrew the U clamps on the nylon support rope and attach to the top edge of the contact chamber as shown in the image, or the weight of the wet ProMoss™ will bend the contact chamber.

6. Using the support rope slowly lower the contact chamber into the surge tank or gutter to a level such that it will always be submerged.
7. Position the contact chamber so it does not interfere with any equipment in the tank.
8. Secure the carabineer outside the tank (e.g. the top railing of the stairs or a pipe)

Changing or checking ProMoss™ on the CC-ITL, CC-ITM and CC-ITS without the cam cleat

1. Using the rope pull the contact chamber up enough to clear all sides from water submersion.
2. Let contact chamber 'rest' at the edge of the surge tank or gutter allowing the ProMoss™ to drain.
3. After sufficient 'rest' time pull the entire contact chamber from the surge tank or gutter.
4. If checking the ProMoss™:
    a. Open the contact chamber (as described above)
    b. Remove each bag and fluff the moss by hand to mix the ProMoss™
    c. Inspect integrity of each bag – if moss is leaking out, replace the bag in the chamber with a new one and contact your CWS representative
    d. Replace bags in the chamber, rotating them from top shelf to bottom shelf (bottom shelf then goes to the top)
5. If changing ProMoss™, discard the spent ProMoss™ in the trash and replace with new ProMoss™.
6. Lower the contact chamber back into the tank, positioning it so it does not interfere with any equipment.

Changing or checking ProMoss™ on the CC-ITL, CC-ITM and CC-ITS in conjonction with the Cam Cleat (optional rope extension)

1. Insert the standard rope between the arms of the camcleat on the surge tank opening. Pull the contact chamber up enough to clear all sides from water submersion. Repeat this for each contact chamber.
2. Leave each rope locked into the cam cleat(s). This will allow the ProMoss™ to drain.
3. After sufficient water has drained and IF you are using the rope extension, exchange the main rope line in the cam cleat to the rope extension. This will pull the contact chamber into a vertical position.
4. After contact chamber is in a complete vertical position continue to pull the entire contact chamber from the tank.
5. If checking the ProMoss™, proceed as described above.
6. If changing ProMoss™, discard the spent ProMoss™ in the trash and replace with new ProMoss™.
7. Lower the contact chamber back into the tank, positioning it so it does not interfere with any equipment.

Cleaning and Maintenance

The chamber may be cleaned when needed with mild soap and water. If necessary use a brush with soft bristles

Winterization of CC-ITL, CC-ITM and CC-ITS

If the circulation system is shut down during the winter the following procedures are recommended:

a) Remove the contact chamber from the tank
b) Remove any ProMoss™ and discard.
c) Follow the cleaning and maintenance instructions
d) Store out of the sun in a clean dry place.

Troubleshooting and tips

Be sure the contact chamber is lowered to a depth that ensures it is submerged at all times so the ProMoss™ can continuously interact with the water.

Be sure that the contact chamber is placed such that the chamber and the rope do not interfere with any moving parts and that the chamber does not get pulled up against a pipe. Strong suction may cause the ProMoss™ bags to break and release moss directly into the water (it would collect in the strainers or filter).

In-line CC-I80, I90, I140 and I150 contact chambers maintenance and operation

WARNING: THIS CONTACT CHAMBER OPERATES UNDER PRESSURE. WHEN ANY PART OF THE CIRCULATING SYSTEM (e.g. LOCK RING, ProMoss™, VALVES, ETC.) IS SERVICED, AIR CAN ENTER THE SYSTEM AND BECOME PRESSURIZED. PRESSURIZED AIR CAN CAUSE THE LID TO BE BLOWN OFF WHICH CAN RESULT IN SEVERE INJURY, DEATH OR PROPERTY DAMAGE. TO AVOID THIS POTENTIAL HAZARD, FOLLOW THESE INSTRUCTIONS.

VESSEL	PRESSURE DROP AT 15 GPM	CLEARANCE – HORIZONTAL	CLEARANCE - VERTICAL
CC-I80	3.7 PSI	6 in	18 in
CC-I90	1.88 PSI	6 in	24 in
CC-I140	1.88 PSI	6 in	36 in
CC-I150	3.66 PSI	6 in	36 in

Contact chamber installation guidelines:

1. Contact chamber should be mounted on a level concrete slab. Position the contact chamber so that the instructions, warnings, and pressure gauge are visible to the operator. Also, position the contact chamber so that the piping connections, control valve and drain port are convenient and accessible for servicing and winterizing.
2. Provide sufficient space above and around the contact chamber to remove the lid for cleaning and servicing (see table above).
3. Position the contact chamber to safely direct water drainage. Rotate the valve to safely direct purged air or water. Water discharge from an improperly positioned contact chamber or valve can create an electrical hazard, as well as damage property.
4. Make all plumbing connections in accordance with local plumbing and building codes. Contact chamber plumbing connections are provided with an O-ring seal. Use only a silicone based lubricant on the O-rings. DO NOT USE pipe joint compound, glue or solvent on the bulkhead connections.
5. The maximum working pressure of this contact chamber is 50 psi. Never subject this contact chamber to pressure in excess of this amount, even when conducting hydrostatic pressure tests. Pressures above 50 psi can cause the lid to be blown off, which can result in severe injury, death or property damage.
6. One valve controls inflow and one valve controls outflow from contact chamber, as pictured in the diagram on p.6. A flow meter is required to monitor product performance. If desired, an automatic air relief valve can be installed in place of the manual air relief valve. If maintaining flow in the chamber is challenging, a boost pump may be added to the system.

Contact Chambers Installation Notes

NOTE 1: In Install prior to filtration (especially in critical systems) to ensure that any stray ProMoss™ is caught in the filter.

NOTE 2: Multiple contact chambers should be plumbed in parallel if possible, to allow ProMoss™ changes or contact chamber repairs on one unit at a time.

Recommended Parts List for CC-I80/I90/I140/I150 Contact Chamber Installation

2 – true union ball valves for inflow and outflow control / isolation
1 – in line vertical flow meter* (0-25 gpm)

*Diameter will depend on your installation

Startup and Adjustment of the CC-I80, I90, I140, and I150

1. Prior to adding ProMoss™, with the lid off, open the valve on the inlet side of chamber making sure the outlet side valve is closed.
2. Fill chamber with water until it is about ¾ full, close the inlet valve.
3. Add ProMoss™.
4. Close lid making sure to lubricate both sides of gasket with a Teflon based lubricant.
5. Fully open outlet valve, open inlet valve until the desired pressure reading is achieved.
6. Open manual air release, close when water start to come out.

Changing or checking ProMoss™ on the CC-I80, I90, I140 and I150

1. Close the inlet valve.
2. Open manual air bleed and let water drain for approximately 60 seconds.
3. Close outlet valve.
4. Remove lid and check/remove ProMoss™. Discard spent ProMoss™ in the trash.
5. Replace with new ProMoss™ if necessary and close lid (the gasket on the lid must be lubricated every time the lid is removed and put back on).
6. Fully open outlet valve, open inlet valve until the desired pressure reading is achieved.
7. Open manual air release, close when water starts to come out.

Cleaning and Maintenance

The contact chamber may be cleaned when needed with mild soap and water if necessary. Use a brush with soft bristles. Take care not to damage the threads on the lid or on the chamber when cleaning. Check contact chamber to ensure it is working properly after cleaning.

Winterization of the CC-I80, I90, I140 and I150

If the circulation system is shut down during the winter the following procedures are recommended:

a. Flush chamber out with source water and clean to remove any residue in the chamber
b. Drain chamber completely of water
c. Disconnect chamber from water supply
d. Store chamber out of the sun in a clean dry location

Troubleshooting and tips

Due to the wide variety of installations possible, proper flow rate may not be achieved. If this is the case it may be necessary to install a booster pump. Please contact your CWS representative for proper booster pump installation procedures.

If any leaks may occur check fittings for tightness and make sure all gaskets are in proper working order.

To ensure a tight seal of the lid to the chamber be sure to lubricate gasket with a Teflon based lubricant.

If proper flow is achieved then lost, check to make sure the system is free of obstructions, air leaks and that there is no debris in the flow meter causing a false reading.

Breakaway® Flushing Instructions

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1. If there is ProMoss™ in the system, remove it from the contact chamber or remove the submersible contact chamber with the ProMoss™ and open all valves in the equipment to be flushed.

2. Pour Breakaway® into the water to be treated (16.9 oz. /500 gallons), reserving a small amount for wiping down surfaces after initial flush.

3. Circulate Breakaway® for a minimum of 1 hour (longer is better, up to 4 hours).

4. Run the flow as high as possible, If excessive foaming occurs, turn off the flow until foaming subsides and then restart the flow. Alternatively, let the foaming occur and clean up after flushing.

5. Drain the water and Breakaway® flush. Remove any scale, corrosion or debris loosened by the procedure. Rinse the equipment with fresh water to remove any residual debris or Breakaway® flush.

6. Wipe all surfaces down to remove grime (use Breakaway® on a rag or sponge). Do not allow the grime to dry! It is more difficult to remove when dry.

7. Refill the equipment.

8. Replace the ProMoss™ into the contact chamber or place the submersible contact chamber with the ProMoss™ back into the water basin.

9. Repeat flush every three months or more often, if needed.

Procedure for Commercial Media Filter Air Scour

Preparing the Filter to Air Scour

Insert an air scour adapter into the outflow pipe of the filter body. We use a ¾" tap and insert a quick release connector.

Attach the air delivery hose to the air scour adapter. We use an air scour delivery apparatus that connects to a Cyclone 3 HP blower. This blower delivers enough air at a high enough pressure to air scour most spherical and horizontal sand filters. The blower creates a lot of heat, so we use a polypropylene 1 ½" hose from the blower to a "T" connector fitted with ball valves on the blower side and the hand pump tube. We use a ¾" nylon hose from the "T" connector to the quick release connector.

Air scour procedure with filter access hatch removed

1) Check and record the differential pressure, prior to starting the process.
2) Backwash the filter.
3) Isolate the filter(s) to be air scoured from the inflow.
4) Remove the filter body access hatch.
5) Inspect the media and remove all matted debris.
6) Attach the air hose to the quick connect on discharge pipe of the filter.
7) Turn on the blower and open the valve to deliver air to the filter.
8) You achieve a "rolling boil" that does not eject media out of the filter. Turn off the blower and close the valve from the blower to the "T" connector and open the valve to the hand pump.
9) Using the hand pump that is attached to the air scour adapter, pump Breakaway® into the filter media. Dose 1 gallon / 10 square feet of filter surface area.
10) Close the valve to the hand pump and continue to deliver air to the filter for fifteen minutes.
11) Turn off the air and allow the Breakaway® to sit for at least half and hour, longer if possible.
12) Restart the blower and air scour the media for another 15 minutes.
13) Close the access port to the filter body.
14) Backwash the filter until the water becomes clear and does not foam.
15) Restart filtration.

Air scour procedure without filter access hatch removed

1) Check and record the differential pressure, prior to starting the process.
2) Backwash the filter.
3) Isolate the filter(s) to be air scoured from the inflow.
4) Attach the air hose to the quick connect on discharge pipe of the filter and **open the air release/escape valve on the top of the filter body.**
5) Turn on the blower and open the valve to deliver air to the filter. Observe the media bed to be sure there is a rolling boil. If the media bed does not boil, try running the filter in backwash mode with the valve opened to the lowest flow and add the air to the backwash water. The combination may provide enough disturbance to break up the media and allow it to boil. When it does, turn off the backwash and continue the air scour.
6) Turn off the blower and close the valve from the blower to the "T" connector and open the valve to the hand pump.
7) Using the hand pump that is attached to the air scour adapter, pump Breakaway® into the filter media. Dose 1 gallon / 10 square feet of filter surface area.
8) Close the valve to the hand pump and continue to deliver air to the filter for fifteen minutes.
9) Turn off the air and allow the Breakaway® to sit for at least half and hour, longer if possible.
10) Restart the blower and air scour the media for another 15 minutes.
11) Close the air escape valve on the top of the filter body.
12) Backwash the filter until the water becomes clear and does not foam.
13) Restart filtration.

Creative Water Solutions

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