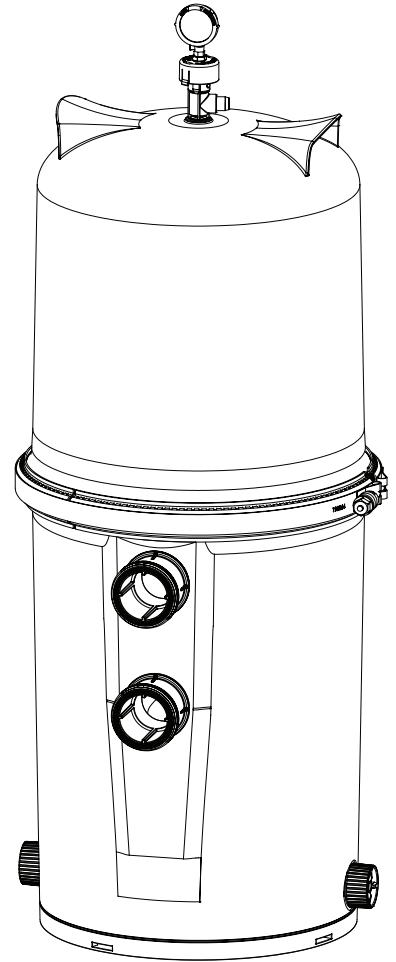




FULLFLOXF[®] C-SERIES

CARTRIDGE FILTER

INSTALLATION AND USER'S GUIDE



IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

⚠ WARNING



Pressurized air can cause the lid to separate from the tank with great force. To reduce the risk of severe injury or death, relieve pressure by opening air relief valve before opening filter. Before starting the pump after servicing, ensure that clamp band is correctly fastened. Read and understand all of the following safety, installation and operation instructions before installing, operating or servicing the filter.

IMPORTANT SAFETY INSTRUCTIONS



Important Notice:

This guide provides installation and operation instructions for this product. Consult Pentair with any questions regarding this equipment.

Attention Installer: This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment after installation or left on or near the filter.

Attention User: This manual contains important information that will help you in operating and maintaining this filter. Please retain it for future reference.

READ AND FOLLOW ALL INSTRUCTIONS SAVE THESE INSTRUCTIONS



This is the safety alert symbol. When you see this symbol on your system or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER

Warns about hazards that can cause death, serious personal injury, or major property damage if ignored.

⚠ WARNING

Warns about hazards that may cause death, serious personal injury, or major property damage if ignored.

⚠ CAUTION

Warns about hazards that may or can cause minor personal injury or property damage if ignored.

NOTE Indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

⚠ WARNING

Before installing this product, read and follow all warning notices and instructions which are included.

Failure to follow safety warnings and instructions can result in severe injury, death, or property damage. Call (800) 831-7133 for additional free copies of these instructions.

Consumer Information and Safety

This filter is designed and manufactured to provide many years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation codes referred to in later sections. Throughout the manual, safety warnings and cautions are identified by the “⚠” symbol. Be sure to read and comply with all of the warnings and cautions.

⚠ WARNING

Do not operate the filter until you have read and understand clearly all the operating instructions and warning messages for all equipment that is a part of the pool circulating system. The following instructions are intended as a guide for initially operating the filter in a general pool installation, however each installation may have unique conditions where the starting procedure could be different. Failure to follow all operating instructions and warning messages can result in severe injury, death, or property damage.

⚠ WARNING

Do not permit children to use or operate this filter.

⚠ CAUTION

Use only a PTFE or silicone based lubricant when lubricating the O-rings on the union and bulkhead couplings. Use of petroleum based products will damage the equipment.

⚠ WARNING

FILTER OPERATES UNDER HIGH PRESSURE.



When any part of the circulating system, (e.g., clamp, pump, filter, valve(s), etc.), is serviced, air can enter the system and become pressurized. Pressurized air can cause the lid to separate which can result in severe injury, death, or property damage.

To avoid this potential hazard, follow these instructions:

1. Before repositioning valve(s) and before beginning the assembly, disassembly, or adjustment of the clamp or any other service of the circulating system: (A) Turn the pump **OFF** and **shut OFF** any automatic controls to ensure the system is NOT inadvertently started during the servicing; (B) open the manual air relief valve; (C) stand clear of the filter; (D) wait until all pressure is relieved.
2. Whenever installing the filter clamp **FOLLOW THE FILTER CLAMP INSTALLATION INSTRUCTIONS EXACTLY.**
3. Once service on the circulating system is complete **FOLLOW SYSTEM RESTART INSTRUCTIONS EXACTLY.**
4. Maintain circulation system properly. Replace worn or damaged parts immediately, (e.g., clamp, pressure gauge, valve(s), o-rings, etc).
5. Be sure that the filter is properly mounted and positioned according to instructions provided.

⚠ WARNING



Due to the potential risk that can be involved it is recommended that the pressure test be kept to the minimum time required by the local code. Do not allow people to work around the system when the circulation system is under pressure test. Post appropriate warning signs and establish a barrier around the pressurized equipment. If the equipment is located in an equipment room, lock the door and post a warning sign.

Never attempt to adjust any closures or lids or attempt to remove or tighten bolts when the system is pressurized. These actions can result in a separation or failure of system components. This instantaneous release of energy can cause components to be accelerated to high velocities and to travel far distances. These components could cause severe personal injury or death if they were to strike a person.

⚠ WARNING



Never exceed the maximum operating pressure of the system components. Exceeding these limits could result in a component failing under pressure. This instantaneous release of energy can cause the closure to separate and could cause severe personal injury or death if they were to strike a person.

⚠ WARNING



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. This filter must be installed by a qualified service professional in accordance with the National Electrical Code and all applicable local codes and ordinances.

Always disconnect power to the equipment at the circuit breaker before servicing any of the equipment. Ensure that the disconnected circuit is locked out or properly tagged so that it cannot be switched on while you are working on the pool equipment. Failure to do so could result in serious injury or death to serviceman, pool users or others due to electric shock.

Position the filter and the air relief valve to safely direct water drainage and purged air or water. Water discharged from an improperly positioned filter or valve can create an electrical hazard that can cause severe personal injury as well as damage property.

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING This filter is intended for use in swimming pool applications. Most states and local codes regulate the construction, installation, and operation of public pools and spas, and the construction of residential pools and spas. It is important to comply with these codes, many of which directly regulate the installation and use of this product. Consult your local building and health codes for more information.

⚠ DANGER **SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS FILTER IS NOT INSTALLED AND USED CORRECTLY.**

⚠ DANGER **INSTALLERS, POOL OPERATORS AND POOL OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE USING THIS FILTER.**

⚠ DANGER **HAZARDOUS PRESSURE: STAND CLEAR OF PUMP AND FILTER DURING START UP**



Circulation systems operate under high pressure. When any part of the circulating system (i.e. locking ring, pump, filter, valves, etc.) is serviced, air can enter the system and become pressurized.

Pressurized air can cause the pump housing cover filter lid and valves to violently separate which can result in severe personal injury or death. Filter tank lid and strainer cover must be properly secured to prevent violent separation. Stand clear of all circulation system equipment when turning on or starting up pump.

Before servicing equipment, make note of the filter pressure. Be sure that all controls are set to ensure the system cannot inadvertently start during service. Turn off all power to the pump. **IMPORTANT: Place filter manual air relief valve in the open position and wait for all pressure in the system to be relieved.**

Before starting the system, fully open the manual air relief valve and place all system valves in the "open" position to allow water to flow freely from the tank and back to the tank. Stand clear of all equipment and start the pump.

IMPORTANT: Do not close filter manual air relief valve until all pressure has been discharged from the valve and a steady stream of water appears. Observe filter pressure gauge and be sure it is not higher than the pre-service condition.

⚠ CAUTION **For Installation of Electrical Controls at Equipment Pad (ON/OFF Switches, Timers and Automation Load Center)**



Install all electrical controls at equipment pad, such as on/off switches, timers, and control systems, etc. to allow the operation (startup, shut-down, or servicing) of

any pump or filter so the user does not place any portion of his/her body over or near the pump strainer lid, filter lid or valve closures.

This installation should allow the user enough space to stand clear of the filter and pump during system start-up, shut down or servicing of the system filter.

⚠ CAUTION The following information should be read carefully since it outlines the proper manner of care and operation for your filter system. As a result of following these instructions and taking the necessary preventative care, you can expect maximum efficiency and life from your filtration system.

General Installation Information

The following information should be read carefully since it outlines the proper manner of care and operation for your filter system.

You can expect maximum efficiency and life from your filtration system by following these instructions and taking the necessary preventative care.

- Have a trained pool professional perform all pressure tests.
- Do not connect the system to a high pressure or city water system.
- Trapped air in the system can create a hazardous condition. **BE SURE** to purge all air from the system before operating or testing equipment.
- **DO NOT** pressure test with compressed air!
- Piping must conform to local/state plumbing and sanitary codes.
- Support piping independently to prevent strains on filter or valve.
- Fittings restrict flow; for best efficiency, use the fewest possible fittings.
- A check valve installed ahead of the filter inlet will prevent contaminants from draining back into the pool.
- A check valve installed between the filter and heater will prevent hot water from backing up into the filter and deforming the internal components.
- All wiring, grounding and bonding of associated equipment must meet local and/or National Electrical Code standards.
- Only a qualified plumbing professional should install this filter.

IMPORTANT: Keep all warning labels in good condition. If any warnings labels are damaged, missing, or become illegible call Pentair Customer Service at 1-800-831-7133 and request replacement labeling.

CUSTOMER SERVICE / TECHNICAL SUPPORT

Hours: 9:00AM to 7:00PM EST (6:00AM - 4:00PM PST)

Call: (800) 831-7133

Visit: www.pentair.com

Fax: (800) 284-4151

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GENERAL INFORMATION

⚠ WARNING



THIS SYSTEM OPERATES UNDER HIGH PRESSURE.

When any part of the circulating system (e.g., Clamp Ring, Pump, Filter, Valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the lid to separate which can result in serious injury, death, or property damage. To avoid this potential hazard, follow the instructions below.

Filter Overview

- Four easily removable, large-capacity cartridges provide maximum filter surface area for greater dirt-trapping capacity and longer periods between cleanings.
- Full 2-1/2-inch x 3-inch bulkhead unions for improved hydraulic efficiency and easy piping installation.
- HiFlow™ Manual Air Relief Valve for rapid air release.
- Conveniently located 2-inch drain for easy and complete draining.

General Operation Information

Read and follow all instructions and warnings before installing or servicing your filter. Proper installation and operation can prevent unnecessary repairs and maintenance.

⚠ WARNING



Your filter is a piece of machinery, do not tamper with it, attempt to disassemble it or otherwise adjust it unless you fully understand its operation. Serious injury or death can occur if the equipment is improperly handled. Consult a pool service professional for maintenance and service assistance.

1. The FullFloXF® C-Series Cartridge Filter operates under pressure and operates in a safe manner if clamped properly and without air in the circulating system.
2. The maximum working pressure of this filter is 50 psi. Never subject this filter to pressure in excess of this amount, even when conducting hydrostatic pressure tests.
3. Be sure the maximum pressure of the filter system does not exceed the maximum pressure of any components within the system during hydrostatic or external leak tests. Consult the maximum pressure stated on each component of the system.
4. The pressure gauge is the primary indicator of how the filter is operating. Maintain your pressure gauge in good working order (refer to *Maintaining the Pressure Gauge*).

Maintaining the Pressure Gauge

The pressure gauge is the primary indicator of how the system operates. It is critical to keep the pressure gauge in good condition.

Replace pressure gauge (P/N 190058) if any of the requirements below are not met:

1. Pressure gauge at zero (0) when pressure is relieved and system is turned off.
2. Pressure gauge reads correctly while system is in operation.
3. The pressure gauge is readable and not damaged in any way.

Pressure Tests

When performing hydrostatic pressure tests or when testing for external leaks of the completed filtration and plumbing system, ensure that the Maximum Pressure that the filtration system will be subjected to **DOES NOT EXCEED THE MAXIMUM WORKING PRESSURE OF ANY OF THE COMPONENTS CONTAINED WITHIN THE SYSTEM**. In most cases, the maximum pressure will be stated on each component of the system.

If you do not know the pool or spa system operating pressure, install an ASME approved automatic Pressure Relief or Pressure Regulator in the circulation system set to the lowest working pressure of any of the components in the system.

INSTALLATION

⚠ WARNING

This filter must be installed by a qualified pool technician in accordance with all applicable local codes and ordinances. Improper installation could result in death or serious injury to pool users, installers, services, or others and may also cause damage to property.

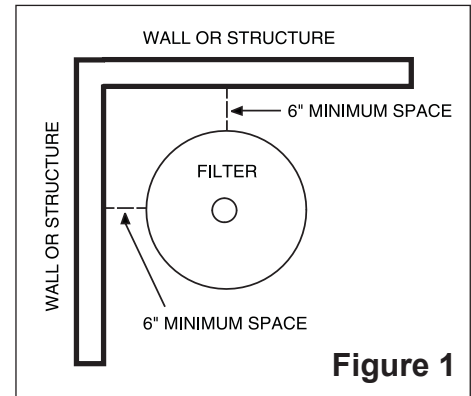
⚠ WARNING



For Installation of Electrical Controls at Equipment Pad (ON/OFF Switches, Timers, Control Systems and Automation) Install all electrical controls at the equipment pad, such as ON/OFF switches, timers, control systems, etc. to allow the operation (startup, shutdown or servicing) of any pump or filter so the user does not place any portion of his/her body over or near the pump strainer lid, filter lid or valve closures. This installation should allow the user enough space to stand clear of the filter and pump strainer lid during system startup, shutdown or servicing of the system filter.

Filter Location

1. The FullFloXF® C-Series Cartridge Filter should be mounted on a level concrete slab. **Position the filter so that instructions, warnings and the pressure gauge are visible to the operator and readable.** It also should be positioned so that the piping connections, control valve, and waste drain plug are convenient and accessible for servicing and winterizing.
2. Be certain to install electrical controls (e.g., on/off switches, timers, control systems, etc.) so that the user is allowed enough space to stand clear of the filter and pump during startup, shutdown or servicing.
3. Allow sufficient clearance around the filter to permit visual verification that the clamp is properly installed around the tank flanges, see **Figure 1**.



Note: See "Installing the Filter Lid and Clamp Ring" on page 6.

4. Provide 6.7 feet (2.1 m) of vertical clearance above the filter to remove the filter lid for cleaning and servicing.
5. Position the filter to safely direct water drainage away from electrical equipment or anything that might be damaged.
6. Position the Manual Air Relief Valve to safely direct purged air or water. Refer to "Installing the Manual Air Relief Valve" on page 3.

⚠ WARNING



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. Position the filter and manual air relief valve to safely direct water drainage and purged air or water. Water discharged from an improperly positioned filter or valve can create an electrical hazard that can cause severe personal injury as well as damage property.

Filter Plumbing

Make all plumbing connections in accordance with local plumbing and building codes. Check local codes for restrictions on backwash to waste piping, separation tank requirements and spent D.E. disposal requirements.

Filter plumbing connections are provided with an O-ring seal. To avoid damage to the O-rings, use only a silicone base lubricant on the O-rings. Do not use pipe joint compound, glue or solvent on the bulkhead connections.

⚠ CAUTION


Use PTFE or silicone based lubricants when lubricating the O-rings on the union and bulkhead couplings. Use of petroleum based products will damage the equipment.

Installing the Manual Air Relief Valve

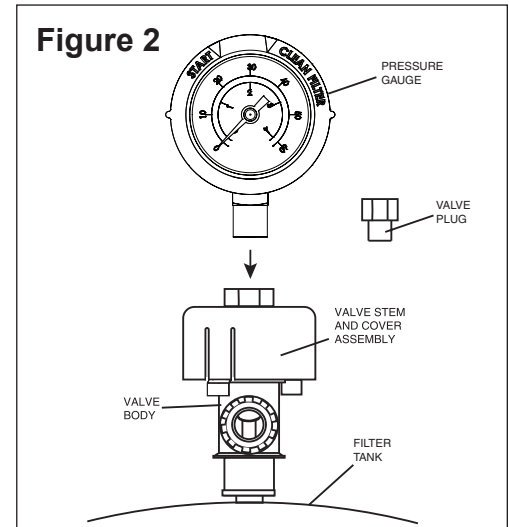
WARNING The manual air relief valve and pressure gauge are included with this filter to help ensure safe operation of the equipment. Always maintain these components in good working condition.

1. Remove the Manual Air Relief Valve and the pressure gauge from the accessories package included with your FullFloXF® C-Series Cartridge Filter.
2. Thread the manual air relief valve into the threaded hole at the top of the filter tank.
Note: Hand tighten only! Over tightening the valve can cause damage to the tank or valve connection threads.
3. Verify that the valve is positioned to safely direct purged air or water away from electrical equipment or anything that might be damaged.

WARNING **RISK OF ELECTRICAL SHOCK OR ELECTROCUTION.** Position the filter and manual air relief valve to safely direct water drainage and purged air or water. Water discharged from an improperly positioned filter or valve can create an electrical hazard that can cause severe personal injury as well as damage property.



4. Remove the plug from the top of the manual air relief valve with a 9/16 inch wrench.
5. Wrap the pressure gauge connection threads with thread seal tape (two full wraps of tape will be enough).
6. Thread the pressure gauge into the top of the manual air relief valve. **Hand tighten only!**
7. Follow *Start-Up Instructions*, page 7.



Anchor Clamp Installation

Installation of anchor clamps is recommended in high wind and seismically active areas. A Pentair Anchor Clamp Kit (P/N 178840) is not included with this filter, but can be purchased separately.

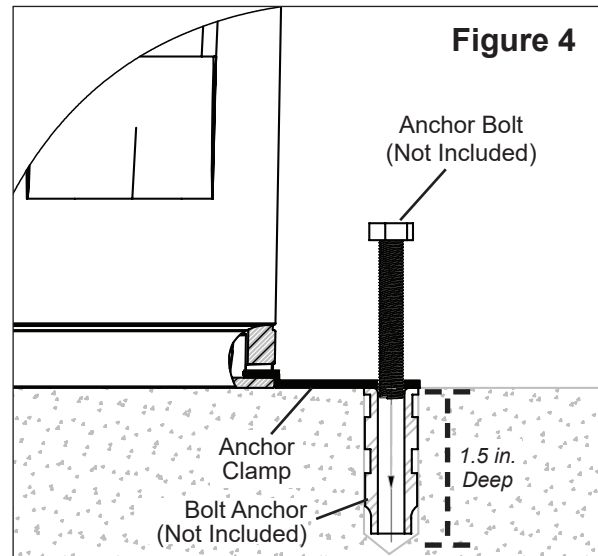
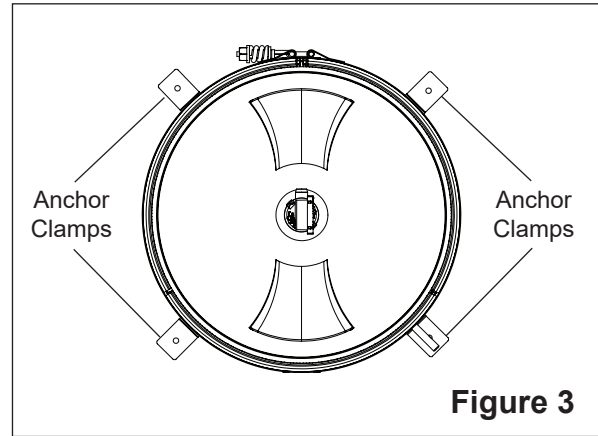
Anchor clamps hold the FullFloXF® C-Series Cartridge Filter to the equipment pad in order to withstand high winds caused during extreme weather, such as hurricanes.

To install the anchor clamps:

1. Ensure the filter is in its permanent location on the equipment pad.
2. Place the clamps into the base of the filter in the 4 anchor slots shown in **Figure 3**.

Note: Bolts and bolt anchors are not included with the filter. The installer must provide 1/4-inch x 1-3/8-inch stainless steel anchor bolts and the appropriate size concrete anchor to mount the clamp to the equipment pad. Be sure to check local codes.
3. Fit the hook of each clamp into the anchor slots on the base panel of the filter. See **Figure 3**.
4. Mark the position of the hole in each clamp on the equipment pad.
5. Use a masonry drill bit and drill a hole in the cement with a diameter as determined by the concrete anchor, at each of the marks on the equipment pad. The hole should be approximately 1.5 inches deep. See **Figure 4**.
6. Insert a bolt anchor into each of the holes. Be sure the anchors are set completely into the holes.
7. Position the anchor clamps so that the holes in the clamps are over the bolt anchors.

Ensure the clamp hooks are over the lip of the filter base.
8. Insert an anchor bolt through each clamp into the bolt anchor and tighten to secure the clamp and filter to the equipment pad.



SYSTEM START-UP AND OPERATION

CAUTION The following information outlines the proper manner of care and operation for your filter system. Follow these instructions to ensure the maximum efficiency and lifespan of your filtration system.

Opening the Filter

Follow these instructions exactly to prevent the lid from separating during system start-up, operation or servicing.

WARNING This filter operates under high pressure. Air can also enter the system and become pressurized. If there is air in the system, there will be positive pressure that could cause the lid to separate from the filter when you release the clamp or during system start-up or operation (see Important Warnings and Safety Instructions, page i-ii). If there is no air in the system, there may be negative pressure, which would make the system hard to open. Follow these instructions exactly - opening the relief valve equalizes the pressure and releases any trapped air within the system, making it safe and easy to open.

REQUIRED TOOLS:

- Ratchet Wrench
- 7/8-inch Socket
- Socket Extender (if needed)

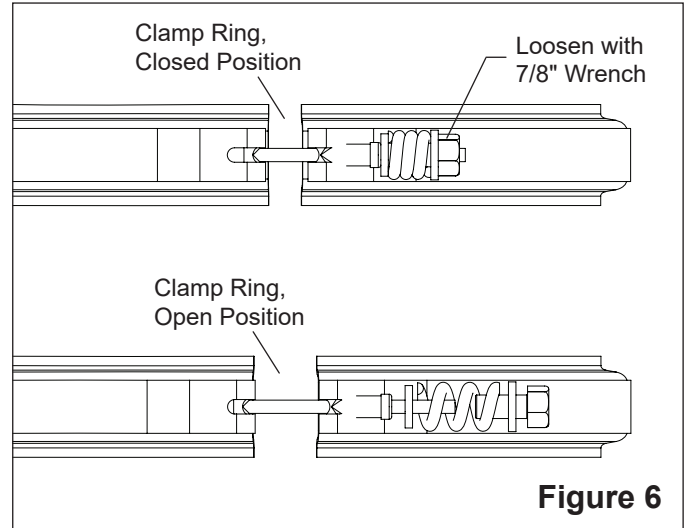
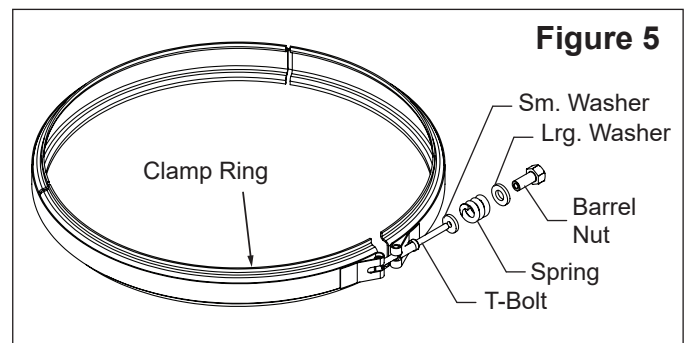
PROCEDURE:

1. Shut off pump and relieve pressure.
 - a. Turn the pump OFF, shut OFF any automatic controls (e.g., timers), and disconnect power to ensure that the system is not inadvertently started during maintenance.
 - b. Open the Manual Air Relief Valve by turning the valve cover assembly counter-clockwise until it snaps into the full open position.
 - c. Stand clear of the filter and wait until all pressure is relieved. Pressure gauge must read zero (0 psi).
2. Open the waste drain plug on the bottom of the FullFloXF® C-Series Cartridge Filter. Allow all water to drain from the bottom of the filter tank.
3. Loosen the clamp's barrel nut with a 7/8-inch wrench, allowing the spring coils to decompress. See **Figure 6**. Remove the barrel nut, spring and two washers from the T-bolt and place them in a safe place where they will not be lost.
4. Once the spring has fully decompressed the clamp assembly will rest in the open position. Carefully lift the filter lid straight up from the lower body of the filter. If the lid is tightly sealed to the filter body you may have to gently push the filter lid from side to side in order to separate the lid from the tank bottom.

CAUTION DO NOT use the relief valve as a handle or lever since this may damage the valve.

5. Place the tank lid in a safe place where it will not be damaged while performing any maintenance.

Note: Attempt to minimize the amount of debris that comes in contact with the tank O-ring while it is exposed. This will help prolong the life of the O-ring.



Installing the Filter Lid and Clamp Ring

⚠ WARNING



Follow these instructions exactly to prevent the lid from separating from the filter during system start-up or operation. See Important Safety Instructions, page i-ii.

REQUIRED TOOLS:

- Ratchet Wrench
- 7/8-inch Socket
- Socket Extender (if needed)
- Rubber Mallet

PROCEDURE:

1. Be sure the O-ring is clean and in position in the lower tank half. Press the FullFloXF® C-Series Cartridge Filter lid onto the lower half so the O-ring fits in between the tank halves.
 2. Hold the ends of the clamp ring apart and place over both upper and lower tank flanges. Bring the ends of the filter clamp together.
 3. Insert the T-bolt through the other side of the clamp and hold together.
 4. Place the small washer onto the T-bolt.
 5. Place the spring, large washer and barrel nut onto the T-bolt and tighten the nut by hand. Be sure the clamp ring fits easily on the tank flanges.
 6. After tightening by hand:
 - a. Use a 7/8-inch wrench (ratchet wrench recommended) to tighten further.
 - b. Tap around the outside of the clamp ring with a rubber mallet (or similar tool) multiple times around the entire clamp to fit the clamp properly.
 - c. Continue to tighten until the spring coils touch.
 - d. Tap around the entire clamp again and verify the spring coils remain touching. If not, continue to tighten the nut.
- Note:** The clamp is installed correctly only when the spring coils remain touching after tapping the clamp. See **Figure 7**.
7. Close the waste drain plug at the bottom of the filter.
 8. Follow *Start-Up Instructions*, page 7.

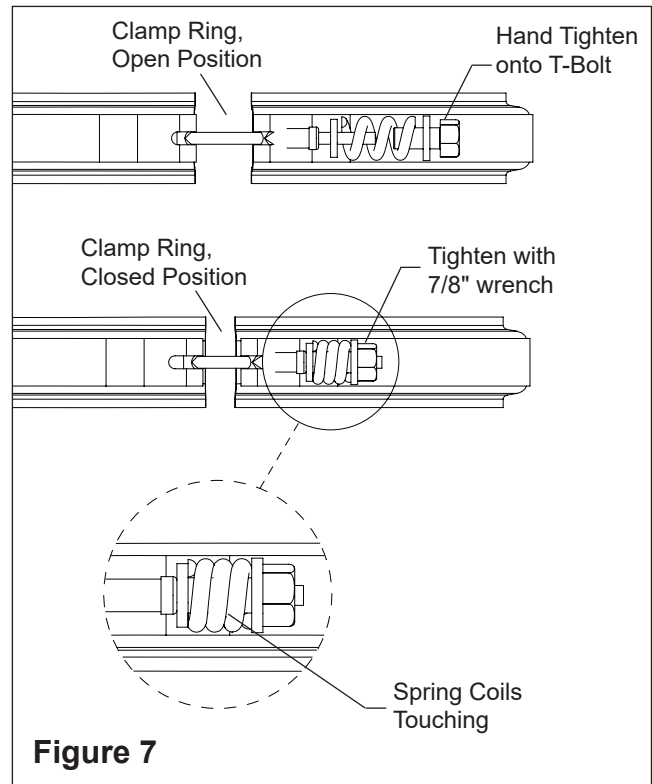


Figure 7

Note: Check the spring coils at least once a month to ensure proper tension. If spring coils do not touch then **shut off pump and relieve pressure** and tighten the nut and tap filter clamp until the coils touch.

⚠ WARNING



DO NOT tighten the clamp nut or attempt to adjust the clamp ring or lid while the filtration system operating or under pressure. This could cause the lid to separate from the filter.

Start-Up Instructions

WARNING



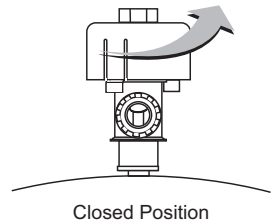
THIS FILTER OPERATES UNDER HIGH PRESSURE.

When any part of the circulating system, (e.g., clamp, pump, filter, valve(s), etc.), is serviced, air can enter the system and become pressurized. Pressurized air can cause the lid to separate which can result in severe injury, death, or property damage. To avoid this potential hazard, follow these instructions:

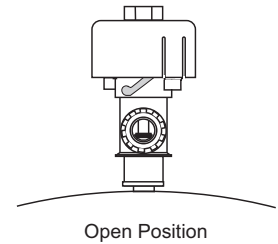
1. Ensure the **spring on the clamp ring is fully compressed, with coils touching.**
2. Open the Manual Air Relief Valve by turning the valve cover assembly a quarter turn counter-clockwise, until it snaps into the full open position. See **Figure 8.**
3. Stand clear of the filter tank, then start the pump.
4. Watch for proper operation. The system is not working properly if:
 - a. The pressure gauge indicates pressure before water out-flow appears.
 - b. A solid stream of water does not appear within 30 seconds after the pump's inlet basket fills with water.
 - c. Water leaks from where the two halves of the filter come together.

If any of these conditions exist, **shut off the pump immediately.** Open the manual air relief valve to relieve pressure and clean the valve (see *Cleaning the Manual Air Relief Valve, page 8*). If the problem persists, call Pentair Technical Service at (800) 831-7133 for assistance.
5. After a steady stream of water appears, close the manual air relief valve by turning the valve cover assembly a quarter turn clockwise.
6. The first time the system is started up, fill out **Table 1:**
 - a. Record the "Original Starting Pressure."
 - b. Fill in the pressure at which to clean the filter (8-10 psi higher than the "Original Starting Pressure").
 - c. If the system includes a variable speed pump, record "Original Pump RPM." "Original Starting Pressure" will be dependent on the pump speed (RPM).

Quarter turn counter-clockwise to open



Closed Position



Open Position

Figure 8

Table 1

ORIGINAL STARTING PRESSURE IS: _____ psi.
(pounds per square inch)

SERVICE THE CARTRIDGES AT: _____ psi.

ORIGINAL PUMP RPM: _____ rpm.
(for Variable Speed Pumps Only)

MAINTENANCE

⚠ WARNING

FILTER OPERATES UNDER HIGH PRESSURE.

When any part of the circulating system, (e.g., clamp, pump, filter, valve(s), etc.), is serviced, air can enter the system and become pressurized. Pressurized air can cause the lid to separate which can result in severe injury, death, or property damage.



To avoid this potential hazard, follow these instructions:

1. Before repositioning valve(s) and before beginning the assembly, disassembly, or adjustment of the clamp or any other service of the circulating system: (A) Turn the pump OFF and shut OFF any automatic controls to ensure the system is NOT inadvertently started during the servicing; (B) open the manual air relief valve; (C) stand clear of the filter; (D) wait until all pressure is relieved.
2. Whenever installing the filter clamp FOLLOW THE FILTER CLAMP INSTALLATION INSTRUCTIONS EXACTLY.
3. Once service on the circulating system is complete FOLLOW SYSTEM RESTART INSTRUCTIONS EXACTLY.
4. Maintain circulation system properly. Replace worn or damaged parts immediately, (e.g., clamp, pressure gauge, valve(s), O-rings, etc).
5. Be sure that the filter is properly mounted and positioned according to instructions provided.

⚠ WARNING

Operating the filter system without filter internal components installed can allow air to accumulate within the filter. Pressurized air can cause the lid to separate which can result in severe injury, death or property damage. Always operate filter system with filter internal components installed. To prevent equipment damage and possible bodily injury and/or property damage, always turn the pump off before changing the valve positions.

⚠ WARNING

Please follow all manufacturers' posted instructions, warnings and cautions when using pool or spa sanitizers, and/or other chlorine replacement treatments.

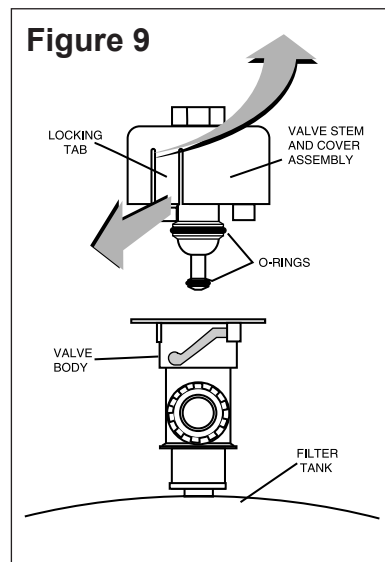
Cleaning the Manual Air Relief Valve

REQUIRED TOOLS:

- 5/16-inch Drill Bit (to check air passage)
- Silicone-based Lubricant (if needed)

PROCEDURE:

1. Shut off pump and relieve pressure.
 - a. Turn the pump OFF and shut OFF any automatic controls (e.g., timers) and disconnect power to ensure that the system is not inadvertently started during maintenance.
 - b. Open the manual air relief valve by turning the valve cover assembly a quarter turn counter-clockwise until it snaps into the full open position.
 - c. Stand clear of the filter and wait until all pressure is relieved. **Pressure gauge must read zero (0 psi).**
2. With the relief valve attached to the FullFloXF® C-Series Cartridge Filter tank, pull out the locking tabs and unlock the valve stem and cover assembly from the valve body with a counter-clockwise turn. See **Figure 9**.
3. Remove valve stem and cover assembly from the valve body. See **Figure 9**.
4. Clean and check the valve stem and body:
 - a. Clean off any debris.
 - b. Verify that the filter tank's air passage is open by inserting a 5/16-inch drill bit through the valve body.
 - c. Verify that the valve stem O-rings are in good condition, properly positioned, and lubricated with a silicone-base lubricant.



⚠ CAUTION

If needed, use only a PTFE or silicone-base lubricant on the O-rings. Use of petroleum based products on O-rings will damage the equipment.

5. Reinstall the valve stem and cover assembly with a downward and clockwise motion until it snaps into position.

When to Clean the Filter

Properly monitoring and cleaning the filter will prevent avoidable repairs and maintenance.

Clean your filter when pressure reads between 8-10 psi higher than the "Original Starting Pressure" recorded in "Table 1" on page 7, or when significant reduction in flow is noticed. The pressure reading increases as it filters dirt from your pool. This build up of pressure will vary due to different bathing loads, temperature, environmental conditions, etc.

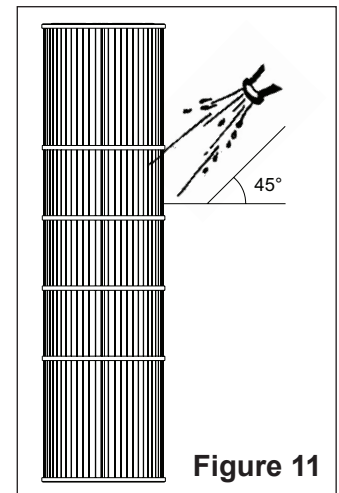
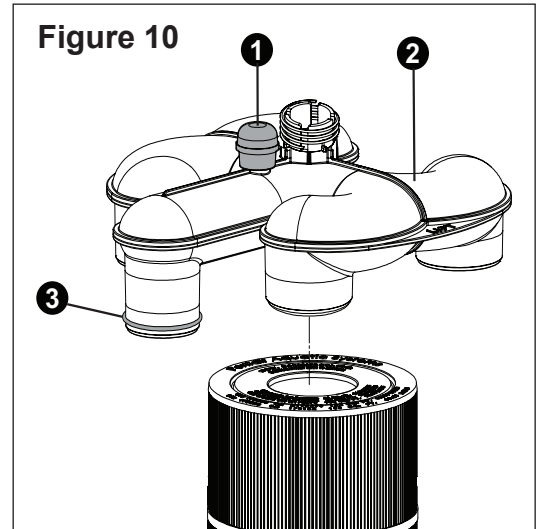
Cleaning the Filter Cartridges

1. Follow "Opening the Filter" on page 5 exactly.
2. Remove hair and lint strainer pot lid from the pump and clean basket. Replace strainer basket and secure strainer pot lid.
3. Remove the Air Bleed Screen Cap (1) from the Top Manifold (2). See **Figure 10**.
4. Clean all debris from the Air Bleed Screen Cap and reinstall onto the Top Manifold.
5. Separate the Top Manifold (2) from the filter cartridges and lay the manifold aside. See **Figure 10**.
6. Carefully remove each cartridge separately.
7. Using a garden hose with a straight flow nozzle, wash down the entire filter cartridge. Wash from the top down, holding the nozzle at a 45-degree angle to the cartridge (see **Figure 11**). Pay special attention to the area between pleats.
8. For cartridges used in pools or spas where high levels of perspiration, suntan lotions and other oils are present:
 - a. Soak the cartridge for at least one hour (overnight is most effective) in one of the following:
 - A commercial filter cleaner

WARNING Heed all manufacturers' instructions and warnings when using polyhexamethylene biguanide sanitizers or other cartridge filter cleaner solutions.

 - One cup trisodium phosphate (TSP) to five gallons of water
 - One cup dishwasher detergent to five gallons of water
 - b. Rinse the cartridge to remove oils and cleaning solution.

CAUTION Failure to remove all oils and cleaning solutions before acid soaking will result in permanent restriction of water flow through the filter and will cause premature cartridge failure.
9. If algae, calcium, iron or other mineral build-ups are present on the filter cartridges, acid soaking may be necessary. Refer to "Acid Soaking the Filter Cartridges" on page 10, for specific instructions.
10. Direct the water spray to wash out the inside of the tank body. Water and debris will drain out through the open drain plug.
11. Place the 4 cartridges back onto the support pipes in the bottom of the tank.
12. Reinstall the Top Manifold onto the cartridges and verify the Air Bleed Screen Cap (1) and O-ring (3) are secured to the manifold. See **Figure 10**.
13. Follow "Installing the Filter Lid and Clamp Ring" on page 6.



Acid Soaking the Filter Cartridges

After an extended period of operation, it may be necessary to soak the filter cartridges in an acid solution. Acid soaking will remove algae, calcium carbonate, iron and other mineral build-ups from the cartridges. If not removed, these mineral deposits can lead to the restriction of water flow through the FullFloXF® C-Series Cartridge Filter and can impede efficient operation of the equipment.

⚠ WARNING



Muriatic acid is corrosive and can lead to inflammation or burns to body tissue.

ALWAYS wear rubber gloves, safety glasses and an N-95 dust mask when handling acid to prevent serious bodily injury.

⚠ CAUTION

To prevent degradation of the acid by UV light, store muriatic acid in an opaque container and away from direct sunlight.

REQUIRED TOOLS:

- Large Plastic Container
- Garden Hose with a Straight Flow Nozzle
- Muriatic Acid (stored in opaque container)
- Rubber Gloves
- Safety Glasses
- N-95 Dust Mask

PROCEDURE:

1. Remove all oils and cleaning solutions from the cartridges.

⚠ CAUTION

Acid soaking without performing this step will result in permanent restriction of water flow through the filter and premature cartridge failure.

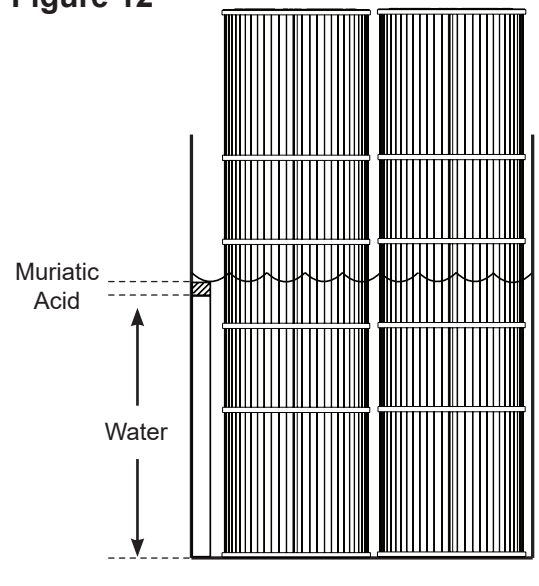
2. Put on protective equipment - rubber gloves, safety glasses and N-95 dust mask.
3. In a large plastic container, create a solution of one part muriatic acid to twenty parts water. See **Figure 12**.

⚠ WARNING

Introduce the muriatic acid as close to the water's surface as possible. This will minimize splash and reduce the risk of user contact with the acid.

4. Gently place the bottom of the cartridges into the acid solution. Allow the cartridges to soak in the solution for 10 minutes, or until bubbling stops.
5. Turn the cartridges over, placing the top halves into the solution. Allow the top halves of the cartridges to soak for 10 minutes, or until bubbling stops.
6. Remove the cartridges from the acid solution.
7. Using a garden hose with a straight flow nozzle, thoroughly wash down the entire filter cartridge. Wash from the top down, holding the nozzle at a 45-degree angle to the cartridge. See **Figure 11, page 9**.
8. Reinstall the cartridges and dispose of the acid solution in accordance with local regulations.

Figure 12

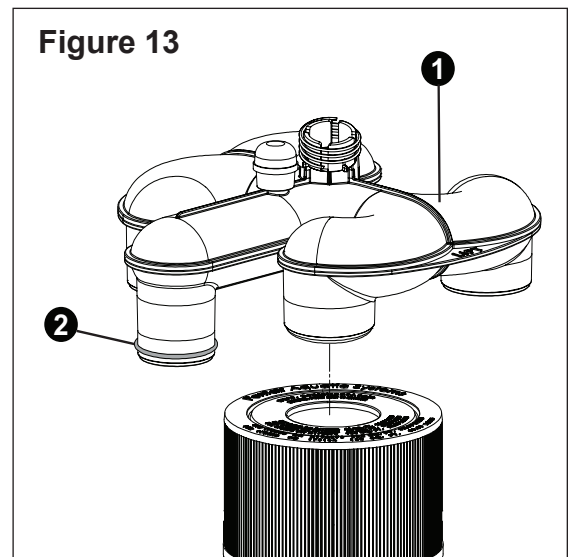


Replacing Filter Cartridges

Filter cartridge life will vary with pool conditions such as bather load, wind, dust, etc. You can expect an average cartridge life of 3 years under normal conditions.

To replace filter cartridges:

1. Follow *Opening the Filter*, page 5.
2. Separate the Top Manifold (1) from the filter cartridges and lay the manifold to the side. See **Figure 13**.
3. Carefully remove each cartridge separately.
4. Place the four replacement cartridges onto the support pipes in the bottom of the tank.
5. Reinstall the Top Manifold onto the cartridges and verify the O-ring (2) is secured to the manifold. See **Figure 13**.
6. Follow *Installing the Filter Lid and Clamp Ring*, page 6.



TROUBLESHOOTING

⚠ WARNING

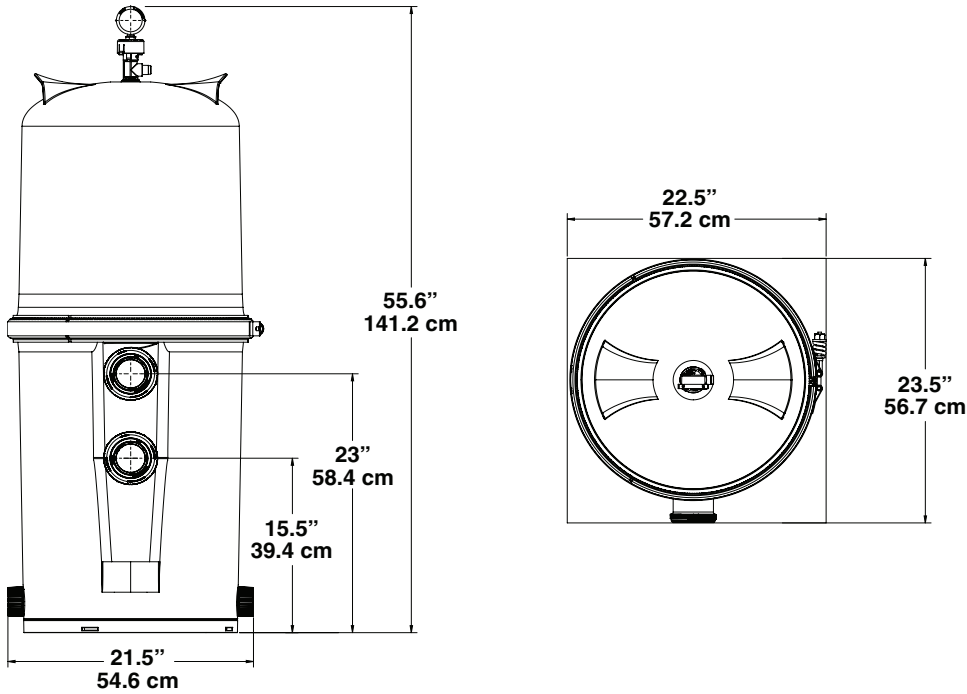


Air entering the system can cause the lid to separate from the filter. If the below symptoms are observed, do not attempt to remove or tighten the clamping system or perform any other servicing until you have shut off pump and relieved all air and pressure in accordance with the *Opening the Filter*, page 5.

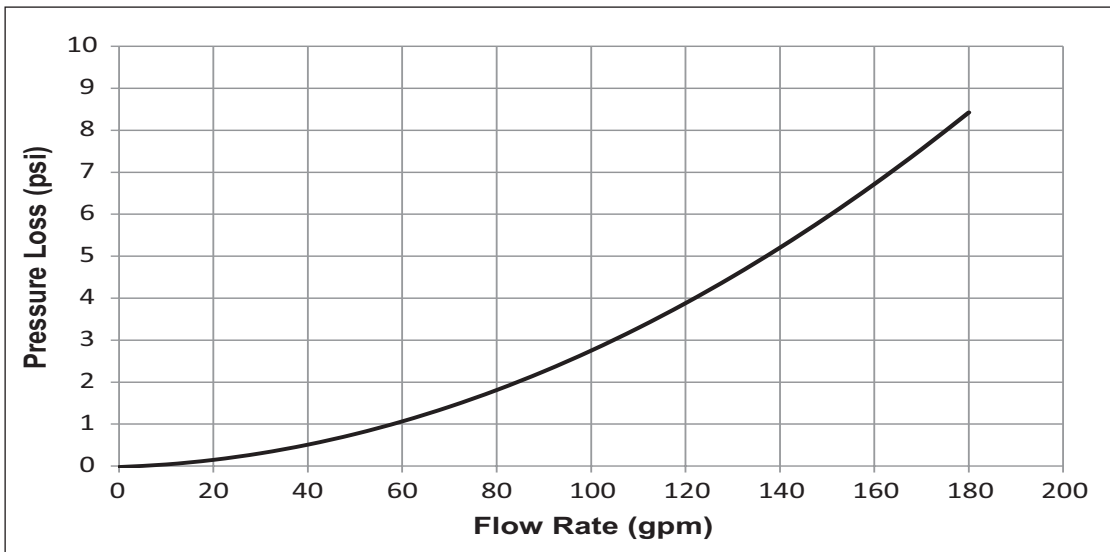
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Air Entering Filter System	Low water level in pool or spa.	Add water to the pool or spa.
	Pump skimmer basket is clogged.	Remove all debris from the skimmer basket.
	Suction cleaner hose is pulling in air.	Check the cleaner hose for damage. Replace hose as needed.
	Pump lid is not sealing.	Inspect the pump lid O-ring for damage. Replace the O-ring as needed.
	Pump suction line is pulling in air.	Inspect the suction line for damage. Repair as needed.
Short Filter Cycles	Algae in water.	Correct and maintain proper water chemistry.
	Plaster dust from pool is building up in filter.	New pools can frequently release high amounts of plaster dust into the filter. This usually lessens over time and no action is needed.
	Oils, minerals or debris building up on filter cartridges.	Clean the filter cartridges according to <i>Cleaning the Filter Cartridges</i> , page 9 and/or <i>Acid Soaking the Filter Cartridges</i> , page 10.
Leak in Filter Tank	Damaged O-ring.	Replace O-ring.
	Dirty O-ring.	Clean O-ring and all tank surfaces it comes in contact with.
	Clamp ring is loose.	Tighten clamp ring according to <i>Installing the Filter Lid and Clamp Ring</i> , page 6.
	Crack in lid or tank body.	Replace cracked component.
High Pressure Reading after Cleaning	Restriction on discharge side.	Locate and correct restriction of filter.
	Mineral deposits on filter cartridges.	Acid soak the filter cartridges. Refer to <i>Acid Soaking the Filter Cartridges</i> , page 10.
	Excessive water flow through filter (pump horsepower may exceed filter flow rate).	Establish pump flow rate and compare with maximum filter flow rate requirement.
	If heater is included in system, flow valve on heater may be stuck open.	Adjust or replace flow valve as needed.
	Pressure gauge not working properly.	Inspect and repair or replace gauge as needed.

TECHNICAL DATA

Dimensional Drawings



Head Loss Comparison Curve



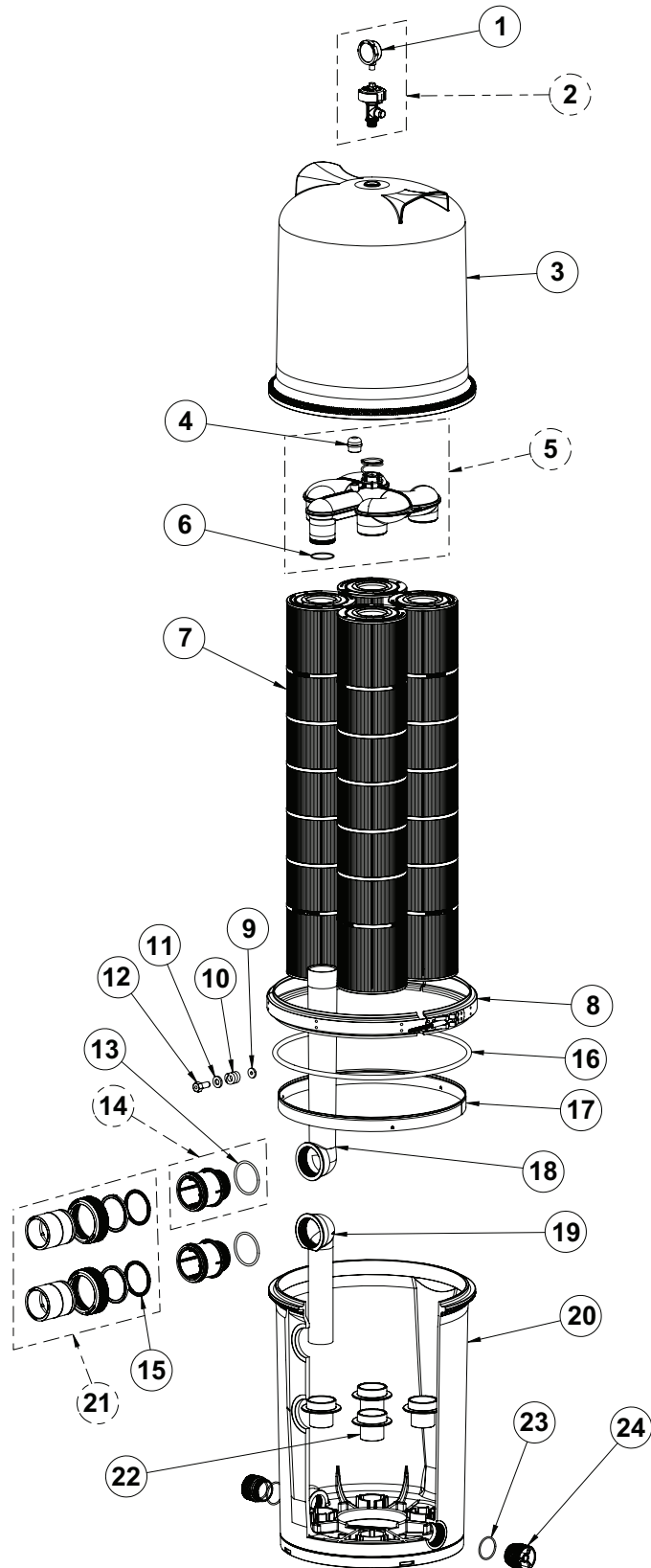
Recommended Flow Rates

Filter Area Sq. Ft.	Vertical* Clearance	Flow Rate (GPM)	Res. Turnover Capacity (Gallons)		
			8 hours	10 hours	12 hours
620	80"	180	86,400	108,000	129,600

Actual system flow will depend on plumbing size and other system components.

* Required clearance to remove filter cartridges.

REPLACEMENT PARTS



Item	Description	P/N	Qty.
1	Pressure Gauge	190058z	1
2	Manual Air Relief Valve	98209800	1
3	Tank Lid	178810	1
4	Air Bleed Screen Cap	190106z	1
5	Top Manifold Kit	178838	1
6	O-ring, Manifold	192323	1
7	Filter Cartridge	170102	4
8	Clamp Ring Assembly	190003	1
9	Clamp Washer, Small	195610	1
10	Clamp Spring	195612	1
11	Clamp Washer, Large	195611	1
12	Clamp Barrel Nut	194997	1
13	O-ring, Bulkhead	R170055	2
14	Bulkhead Kit	178829	2
15	Diamond Seal Kit	410016z	1
16	O-ring, Tank	39010200z	1
17	Backup Ring	195339	1
18	Pipe Outlet	178691z	1
19	Pipe Inlet	198249z	1
20*	Tank Bottom	178830	1
21	Union Kit	410020z	1
22	Support Pipe	178697z	4
23	O-ring, Drain	273062	2
24	Drain Plug	178816	2
--	Anchor Clamp Kit	178840	1

(*) - Tank Bottom (item #20) includes items 14, 17, 18, 19 and 24.

NOTES



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