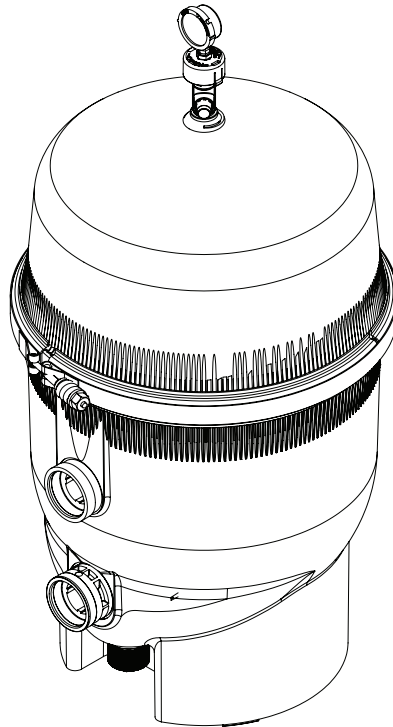




QUAD D.E.[®]

CARTRIDGE STYLE D.E. FILTER



INSTALLATION AND USER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

CUSTOMER SERVICE / TECHNICAL SUPPORT

If you have questions about ordering Pentair replacement parts, and pool products, please contact:

Customer Service and Technical Support, USA

(8 A.M. to 4:30 P.M. — Eastern/Pacific Times)

Phone: (800) 831-7133

Fax: (800) 284-4151

Web site

Visit www.pentair.com for information about Pentair products.

Sanford, North Carolina (8 A.M. to 4:30 P.M. ET)

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IMPORTANT WARNING AND 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 WARNING AND 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. Refer to the "Important Warning and Safety Instructions on pages ii-iii for additional installation and safety information.

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.

SAVE THESE INSTRUCTIONS

INTRODUCTION

Filter Overview

Diatomaceous earth (D.E.) filters have always been recognized for providing the cleanest pool water. And cartridge filters are popular for their convenience and easy-cleaning features. Now, Pentair has found a way to bring you the best of both.

The new Quad D.E.[®] Cartridge Style Filter features four easily accessible and removable cartridges. When water passes through these cartridges, microscopic impurities like dirt, algae, and some forms of bacteria are filtered out, giving you water that really sparkles.

The four-cartridge design greatly increases the filter's internal surface area, meaning much greater cleaning capacity per cycle without an increase in canister size. And cleaning couldn't be easier. In fact, you have three options...backwash and recharge like a traditional D.E. filter, remove and rinse off the cartridges, or simply remove the lid, leave the cartridges in place, open the drain plug, and rinse.

You'll even save money – water flows through the Quad D.E. so efficiently that with the correct pump you use less energy.

The Quad D.E. combination of diatomaceous earth (D.E.) in a convenient cartridge design means better performance and longer periods between cleanings. Because D.E. removes the tiniest of contaminants – particles as small as five microns – you can count on clean, crystal-clear water for years to come.

General Features

- Four (4) easily removable, large-capacity cartridges provide maximum filter surface area for greater dirt-trapping capacity and longer periods between cleanings.
- Unique internal flow path ensures optimum filtration and backwashing efficiency.
- Chemical resistant, fiberglass reinforced polypropylene tank for exceptional strength and long life.
- 2" plumbing connections for simple and secure maximum flow.
- Conveniently located 2" drain for easy and efficient clean-out and 100% draining.
- High Flow™ Manual Air Relief Valve and continuous internal air relief work together to maintain efficient filtration and prevent over-pressurization.
- Durable 8 oz. polypropylene cartridge media has superslick surfaces, making them easier to clean than conventional cartridge filters.

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 190059) 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

WARNING



THIS FILTER OPERATES UNDER HIGH PRESSURE. Never subject this filter to pressure in excess of the maximum pressure - even when conducting hydrostatic pressure tests. Pressures above the maximum psi pressure can cause the lid to separate, which can result in severe injury, death or property damage.

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 doubt exists as to the pressure to which the system will be subjected, install an ASME approved automatic Pressure Relief or Pressure Regulator in the circulation system set to the lowest working pressure of all of the components in the system.

INSTALLATION

The following information describes how to install the Quad D.E.[®] Cartridge Style Filter. Only a qualified service person should install this filter.

Note: Before installing this product, read and follow all warning notices and instructions on pages ii-iii.

Location

1. The 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.
2. Position the filter so that the piping connections, control valve and drain port are convenient and accessible for servicing and winterizing.
3. Install electrical controls (e.g., on/off switches, timers, control systems, etc.) at least five (5) feet from the filter. This will allow you enough room to stand clear of the filter during system start up.
4. Allow sufficient clearance around the filter to permit visual verification that the clamp is properly installed around the tank flanges, see **Figure 1**.
Note: Tap the clamp with a mallet or similar tool to ensure uniform loading during clamp tightening.
5. Allow sufficient space above the filter to remove the filter lid for cleaning and servicing. This distance will vary with the model of filter you are using. See **Table 1** for the required vertical clearance.

WARNING



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION.

Position the filter and High Flow 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.

6. Position the filter to safely direct water drainage. Rotate the High Flow™ Manual Air Relief Valve to safely direct purged air or water. Water discharged from an improperly positioned filter or valve can create an electrical hazard as well as damage property.
7. Remove the plug from the top opening in the filter lid and install the manual air relief valve and pressure gauge before use.

Plumbing

1. 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.
2. 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

The Quad D.E. filter has a different water flow pattern than all other Pentair D.E. filters. When plumbing the filter with a backwash valve, one of the following valves, listed below, must be used. Failure to use the correct backwash valve could damage the filter elements and void the warranty.

3. The filter requires one of the following Pentair accessories which must be purchased separately.
 - a. P/N 261055 - 2" Multiport Valve Kit
 - b. P/N 261173 - 1½" Multiport Valve Kit
 - c. P/N 261050 - 2" HiFlow Valve Kit
 - d. P/N 263064 - 2" PVC Slide Valve Kit

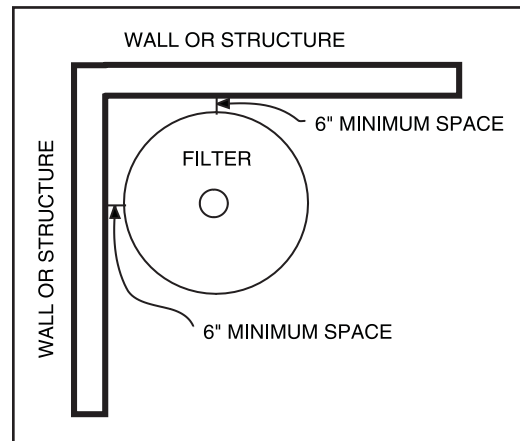


Figure 1: Filter Installation Clearances

Table 1

Model	Size	Vertical Clearance Required
QUAD 60	60 sq. ft.	62 in.
QUAD 80	80 sq. ft.	68 in.
QUAD 100	100 sq. ft.	74 in.

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 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.

General Filter Operation

1. This filter operates under pressure. When clamped properly and operated without air in the water system, this filter will operate in a safe manner.
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.

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 working pressure will be stated on each component of the system.

If doubt exists as to the pressure to which the system will be subjected, install an ASME approved automatic Pressure Relief or Pressure Regulator in the circulation system for the lowest working pressure of any of the components in the system.

3. 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* on page 1)
4. Never operate filter in excess of three (3) minutes without use of diatomaceous earth. Diatomaceous earth is the substance that filters the water, the filter cloth merely supports the diatomaceous earth. Operating without diatomaceous earth will damage filter elements and shorten filtering cycles.

Clamp Installation

Follow these instructions exactly to prevent the lid from separating during system startup or operation.

1. Turn off the pump and any automatic controls.
2. Open the manual air relief valve and turn counterclockwise until it snaps into the full open position. Wait until all pressure is relieved before assembly, disassembly, or servicing.
3. Be sure the O-ring is clean and in position on the lower tank half. Place the filter lid onto the lower tank half so the O-ring fits in between the tank halves.
4. Hold the ends of the filter clamp apart and place over both upper and lower tank flanges. Bring the ends of the filter clamp together.
5. Insert the T-bolt through the other side of the clamp and hold together.
6. Place the small washer onto the T-bolt.
7. Place the larger washer and spring onto the barrel nut then place onto T-bolt and tighten the nut by hand. Be sure filter clamp is fully engaging both tank flanges.
8. First tighten the nut using a 7/8 in. wrench and then tap around the outside of filter clamp with a rubber mallet (or similar tool) multiple times around the entire clamp to fit the clamp properly. Continue to tighten only until the spring coils touch.
9. Continue on to *System Restart Instructions* on page 5.

Note: Check the spring coils at least once a month to ensure proper tension. If spring coils do not touch, turn the system off to tighten the nut and tap filter clamp until the coils touch, and restart.

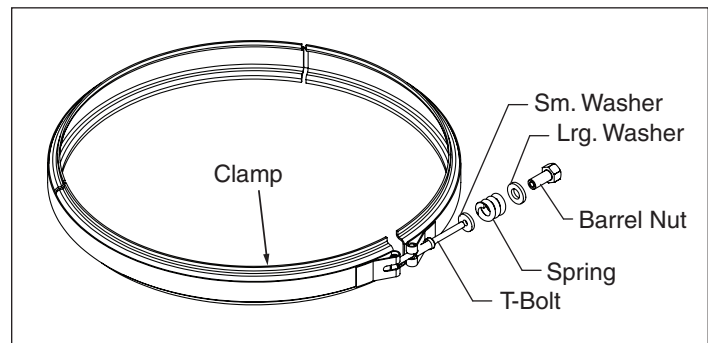


Figure 2: Clamp Assembly

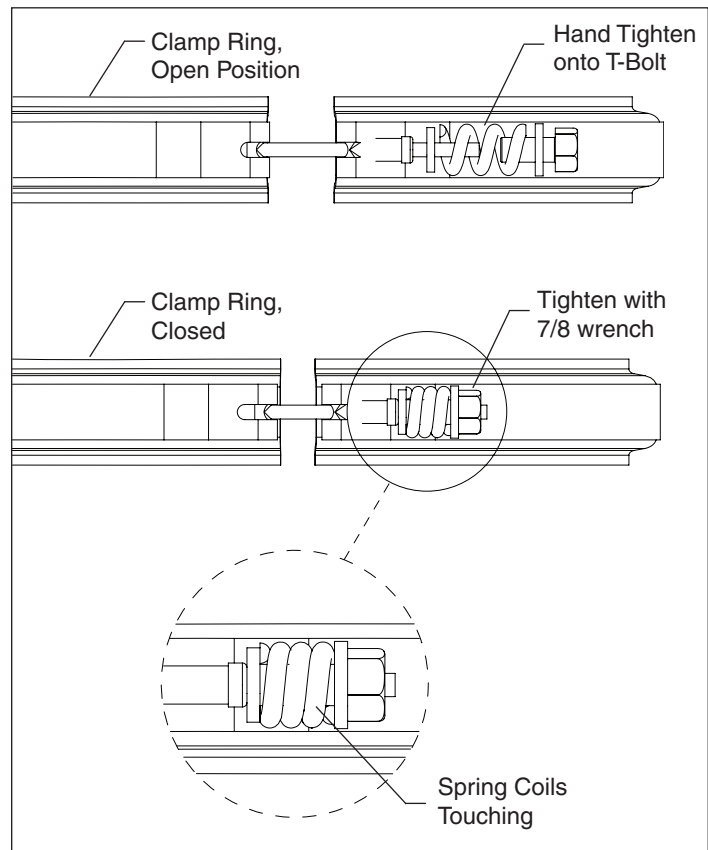


Figure 3: Installing the Clamp Assembly

⚠ 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 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.

SYSTEM RESTART

System Restart 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 be blown off which can result in severe injury, death, or property damage. To avoid this potential hazard, follow these instructions:

1. **Open the High Flow™ Manual Air Relief Valve until it snaps into the full open position (this only requires a quarter turn counterclockwise).** Wait until valve releases ALL air trapped in the filter before assembly, disassembly or servicing.
2. Stand clear of the filter tank, then start the pump.
3. Close the manual air relief valve after a steady stream of water appears.
4. Filter system is not working properly if:
 - a. A solid stream of water does not appear within thirty (30) seconds after the pump's inlet basket fills with water.
 - b. The pressure gauge indicates pressure before water out-flow appears.

If either condition exists, **shut off the pump immediately**, open valves in the water return line to relieve pressure, and clean the air relief valve (see page 10). If the problem persists, call Pentair at (800) 831-7133.

Preparing Diatomite

Your filter requires diatomaceous earth (D.E. or diatomite) for proper filtration and operation. Your filter elements must be precoated with this material in order to protect their surfaces and provide the most efficient filtering action. Refer to **Table 2** for the proper quantity to use with your filter. We recommend the use of D.E. which is sold and labeled for use with swimming pools and spas. These grades of D.E. typically have a median particle size of 34 microns, which is ideal for most applications.

1. The Quad D.E. filters are listed with the appropriate amounts of diatomite to be used to precoat the filter elements. A one (1) pound coffee can filled (level) with diatomite is equal to one half pound weight of diatomaceous earth. Do not "pack" or compress diatomite into the coffee can.
2. Mix the required amount of diatomite with sufficient water in a bucket to make a thin, milky mixture.
3. Refer to page 6, *Coating the Filter Elements with Diatomaceous Earth* for instruction on introducing the diatomite slurry into the filter.

Filter Area (sq. ft.)	Weight of D.E.	No. of 1 lb. Coffee Cans
60	6 lbs.	12
80	8 lbs.	16
100	10 lbs.	20

Table 2

Coating the Filter Elements with Diatomaceous Earth (D.E.)



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.

When Using Slide Valve:

1. Twist to unlock plunger, then raise the handle as far as it will go. Turn handle clockwise to lock lower pin in underside of cap.

When Using Multi-port Valve:

1. Position valve to FILTER OR VACUUM TO POOL setting. This is your normal flow from the pump through the filter to the pool. Open the High Flow™ Manual Air Relief Valve on the filter.
2. Prepare recommended amount of diatomaceous earth by mixing it with water in a bucket until it is the consistency of milk; see page 5, *Preparing Diatomite*.
3. On initial start-up the pump must be primed by filling the hair and lint strainer pot with water. You may have to do this several times.
4. Follow the steps outlined on page 5, *System Restart Instructions* for system start-up.
5. Introduce the slurry of diatomite from the bucket directly into the top of the skimmer. With the pump running and the pool skimmer valve open, pour the mixture directly into the skimmer. The slurry will be drawn into the filter.
6. Your filter is now operational. Note the original starting pressure on the gauge and record it in **Table 3**.

Note: When using a variable speed pump the “Original Starting Pressure” will be dependent on the pump speed (RPM). When recording the original operating pressure, also record the “Original Pump RPM” in **Table 3**.

7. Clean your filter when pressure reads between 10 to 12 psi higher than the original starting pressure. Your filter pressure reading will increase as it removes dirt from your pool. However, this build-up of pressure will vary due to different bathing loads, temperature, weather conditions, etc.

Note: Pressure build-up varies due to different bathing loads, temperature, environmental conditions, etc.

Note: If the starting pressure after backwashing the filter or cleaning the elements indicates 4 to 5 psi higher than the normal starting pressure, the filter elements must be cleaned. Refer to page 7, *Manually Cleaning the Filter* for instructions.

<p>ORIGINAL STARTING PRESSURE IS: _____ psi. (pounds per square inch)</p> <p>SERVICE THE MEDIA AT: _____ psi.</p> <p>ORIGINAL PUMP RPM: _____ rpm. (for Variable Speed Pumps Only)</p>
--

Table 3

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 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.

Manually Cleaning the Filter

Manual cleaning of the cartridge style filter elements may be required when pressure remains high after backwashing, and when winterizing your Quad D.E.[®] Cartridge Style Filter to prevent damage during freezing conditions.

1. Turn the pump off at the circuit breaker and shut off any automatic controls to ensure that the system is not inadvertently started during servicing.
2. Automatic skimmer should have a trimmer valve set to 100% skimmer. This will close off the main drain line. If there is a separate skimmer line and main drain line plumbed to the pump, close the main drain valve.
3. Open the filter High Flow™ Manual Air Relief Valve, and the waste drain valve or plug if your system has one. Disconnect air relief valve drain hose if installed.
4. Remove the pump's hair and lint strainer pot lid and clean the basket. Replace basket and secure lid. Follow the instructions provided with your pump.
5. Never attempt to assemble, disassemble or adjust the filter clamp while there is pressure in the filter. Release the tank clamp assembly and remove tank lid.
6. Ensure the internal air bleed assembly is in place and free of diatomite or debris, see page 10, *Cleaning the Internal Air Bleed Tube*.
7. Remove top manifold and cartridge style elements separately.
8. Using a garden hose without a nozzle, direct water spray at cartridge style elements to dislodge and wash away accumulated foreign matter. Flush each cartridge inside and out.
9. Lift bottom manifold out of the tank and flush off any debris.
10. Direct water spray to wash out the inside of the tank body. Water and debris will drain out through the open drain port.
11. Check gasket around outer lip of bottom plate. Gasket must be firmly and evenly set in place. Do not use petroleum base lubricants to avoid damage to the gasket.
12. Place bottom manifold, 4 cartridge style elements, top manifold and air relief tube in place. Make sure the spring and standpipe assembly are retained on the top manifold. Ensure the air relief tube stays in an upright position. This is essential for the maximum air removal from inside the tank.
13. Be certain the o-ring is in position in the lower tank half. Press the filter lid over the lower tank half and sandwich the o-ring in between.
14. Replace tank top and carefully follow instructions on page 4, *Clamp Installation*.
15. Replace drain plug and reinstall air relief valve drain hose if used.

CAUTION

Please heed all manufacturers' posted instructions, warnings and cautions when using polyhexamethylene biguanide sanitizers or other filter cartridge/element cleaner solutions.

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 element failure.

Replacing Filter Elements

Filter cartridge style element 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.

1. To replace cartridge style elements refer to instructions on page 7, *Manually Cleaning the Filter*, eliminating step 8.

Cleaning the Filter using a Separation Tank System

1. Before working on any part of the circulating system, clamp, pump, filter, valve(s), etc., perform the following steps.
 - a. Turn the entire pool/spa system off to ensure that the system is not inadvertently started during servicing.
 - b. Open the High Flow™ Manual Air Relief Valve.
 - c. Wait until all pressure is relieved. **Never attempt to assemble, disassemble or adjust the filter clamp while there is pressure in the filter.**
2. Turn skimmer to full skim position and close main drain line.
3. Remove pump lid and clean basket. Replace basket and secure lid.
4. Valve Procedures.
 - a. **Slide Valve**
 - (1) Push the handle on the valve down with slight twisting motion as far as it will go. Lock upper pin in cap. Open manual air relief valve on filter. Proceed with steps b(1) to b(9) on page 9.
 - (2) **Open the manual air relief valve until it snaps into the full open position (this only requires a quarter turn counter-clockwise).** Opening this valve rapidly releases air trapped in the filter.
 - (3) Stand clear of the filter tank, then start the pump.
 - (4) Close the manual air relief valve after a steady stream of water appears.
 - (5) When water flows clear in sight glass or discharge line, shut off pump.
 - (6) Position the Slide valve to the normal FILTER setting by raising the handle and twisting it to the locked position.
 - (7) Open manual air relief valve on top of Separation Tank, wait for water to stop draining from air relief.
 - (8) Loosen Separation Tank clamp and lift off Separation Tank lid.
 - (9) Remove bag and dispose of diatomite in trash can. Replace clean bag and set bag in seat (curved portion of Separation Tank). Make sure the top of the bag is below the inlet to prevent earth from going back into pool, one double bag is furnished with Separation Tank.
NOTE: Filter waste and diatomite are trapped by the heavy-duty double lined Separation Tank bag. Contents are to be placed in a waste or trash container, clean the bag and re-insert in the Separation Tank. **DO NOT LEAVE THE SEPARATION TANK BAG EXPOSED IN THE SUN.** The manufacturer cannot assume any responsibility for torn, or damaged bags, if left in the sun to dry.
 - (10) Replace Separation Tank lid and secure Separation Tank lid clamp. Follow instructions on page 4, *Clamp Installation*.
 - (11) Leave valve in normal FILTER position.
 - (12) Follow instructions on page 5, *System Restart Instructions* to start up filter.
 - (13) Introduce the recommended amount of diatomite per *Coating the Filter Elements with Diatomaceous Earth*, on page 6. Your filter is now in operation.

Cleaning the Filter using a Separation Tank System (cont.)

b. Multiport Rotary Valve

After completing Steps 1 to 3 of this section; on page 8, perform the following steps:

- (1) Position the valve to the BACKWASH setting.
- (2) **Open the High Flow™ Manual Air Relief Valve until it snaps into the full open position (this only requires a quarter turn counter-clockwise).** Opening this valve rapidly releases air trapped in the filter.
- (3) Stand clear of the filter tank, then start the pump.
- (4) Close the manual air relief valve after a steady stream of water appears and run in the BACKWASH mode for 1 minute.
- (5) Stop the pump, set the filter valve to FILTER and run for 20 seconds, then stop the pump.
- (6) Repeat the BACKWASH/FILTER cycle 3 times.
- (7) When the sight glass shows a clear flow of water, shut off the pump.
- (8) Position Multiport Rotary valve to the CLOSED setting.
- (9) Follow section 4.a – Slide Valve on page 8.

Acid Soaking the Filter Elements

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



Failure to remove all oils and cleaning solutions from the filter elements before acid soaking will result in permanent restriction of water flow through the filter and will cause premature element failure.

How to Acid Soak the Filter Elements



Working with muriatic acid can be dangerous. When cleaning elements always wear rubber gloves and eye protection. **Add acid to water, do not add water to acid.** Splashing or spilling acid can cause severe personal injury and/or property damage.

1. In a large plastic container, create a solution of one part muriatic acid to twenty parts water. See **Figure 4**.
Note: 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.
2. Gently place the bottom of the filter elements into the acid solution. Allow the elements to soak in the solution for 10 minutes, or until bubbling stops.
3. Turn the filter elements over, placing the top halves into the solution. Allow the top halves of the elements to soak for 10 minutes, or until bubbling stops.
4. Remove the elements from the acid solution.
5. Using a garden hose with a straight flow nozzle, thoroughly wash down the entire filter element. Wash from the top down, holding the nozzle at a 45-degree angle to the element.
6. Reinstall the elements and dispose of the acid solution in accordance with local regulations.

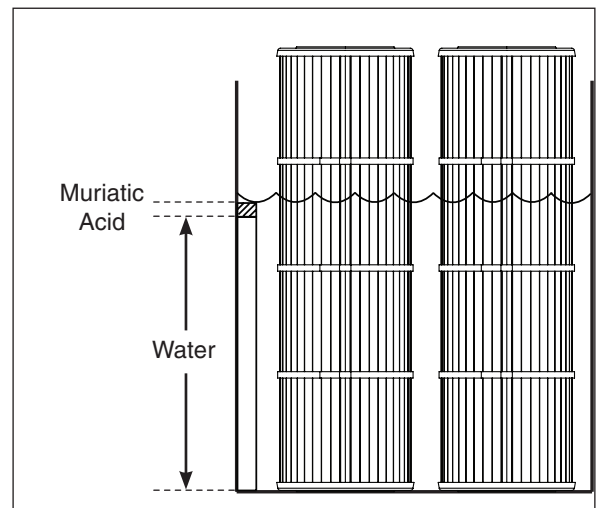


Figure 4: Acid Washing the Filter Elements

Cleaning the Manual Air Relief Valve

1. Turn the pump and any automatic controls off to ensure that the system is not inadvertently started during servicing.
2. Open the High Flow™ Manual Air Relief Valve until it snaps into the full open position and wait until all pressure is released from the system.
3. With the manual air relief valve attached to the Quad D.E.® Cartridge Style Filter tank, pull out the locking tabs and remove the valve stem and cover assembly with a counter-clockwise and lifting motion (see **Figure 5**).
4. Clean debris from the valve stem and body. Insert a 5/16" drill bit through the valve body to ensure the filter tank's air passage is open.
5. Be sure the O-rings are in good condition, properly positioned, and lubricated with a silicone base lubricant.
6. Reinstall the valve stem and cover assembly with a downward and clockwise motion until it snaps into position.

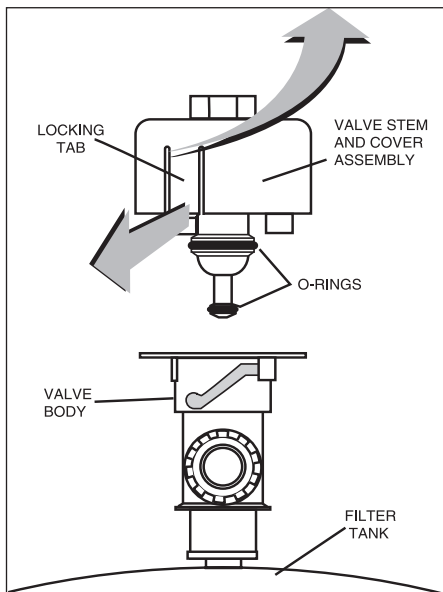


Figure 5: Manual Air Relief Valve

Cleaning the Internal Air Bleed Tube

It is recommended that the air bleed tube and screen cap be routinely inspected and cleaned. This can easily be done while the filter lid has been removed for routine maintenance or cleaning.

Remove the screen cap from the air bleed tube and rinse both components with water to clean away built-up debris. Typically, this is all that is needed to properly clean the air bleed assembly.

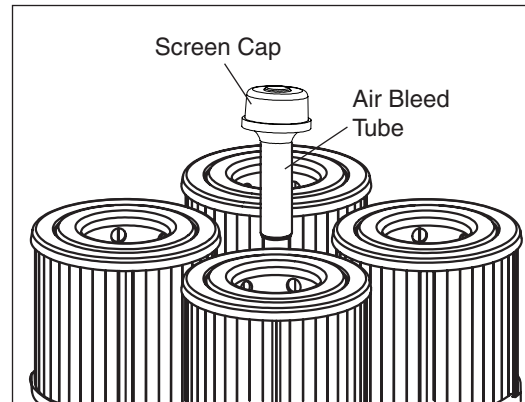



Figure 6: Internal Air Bleed Assembly

TROUBLESHOOTING

Use the following troubleshooting information to resolve possible problems with your filter.

	<p>FILTER OPERATES UNDER HIGH PRESSURE.</p> <p>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.</p> <p>To avoid this potential hazard, follow these instructions:</p> <ol style="list-style-type: none"> 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 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.
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Note: Turn off power to unit prior to attempting service or repair.

Problems and Corrective Actions

Problem	Corrective Action	
AIR ENTERING THE FILTER	Correct any conditions in your filtration system that allow air to enter the system.	<ol style="list-style-type: none"> a. Low water level in pool or spa - skimmer is starving for water with pump running. Add water to pool or spa. b. Air bubbles or low water level in pump hair and lint pot are caused by the following factors: <ol style="list-style-type: none"> (1) Low water level. (2) Clogged skimmer basket. (3) Split suction cleaner hose. (4) Leak in pump hair and lint pot lid. (5) Leak in pump suction line. c. Air bubbles coming out of water return lines into pool or spa with pump running, see steps a-b, above. d. Air is discharged from the High Flow manual air relief valve on top of the filter when the valve is opened with the pump running, see steps a-b above.
LIMING-UP	A stiffening of the fabric caused by mineral deposits. It usually is due to deposits of either magnesium or calcium or both.	<ol style="list-style-type: none"> a. Removal of these may be accomplished by soaking the grids in six (6) parts water to one (1) part hydrochloric acid (muriatic acid). b. Refer to page 9, <i>Acid Soaking the Filter Elements</i>.
CLOUD OF DIRT	A brief "cloud" of dirt may appear immediately when the filter starts.	<ol style="list-style-type: none"> a. This is a characteristic of diatomite filters.
SHORT FILTER RUNS	Until the water initially put into the pool has been completely filtered, short filter runs are normal.	<ol style="list-style-type: none"> a. Plaster dust can be responsible for short filter runs, requiring frequent cleaning. b. Elements may be loaded with oils, debris, etc. Clean elements, refer to <i>Manually Cleaning the Filter</i> on page 7. c. Overcharging with D.E., refer to page 6.

Troubleshooting, cont'd.

Problems and Corrective Actions

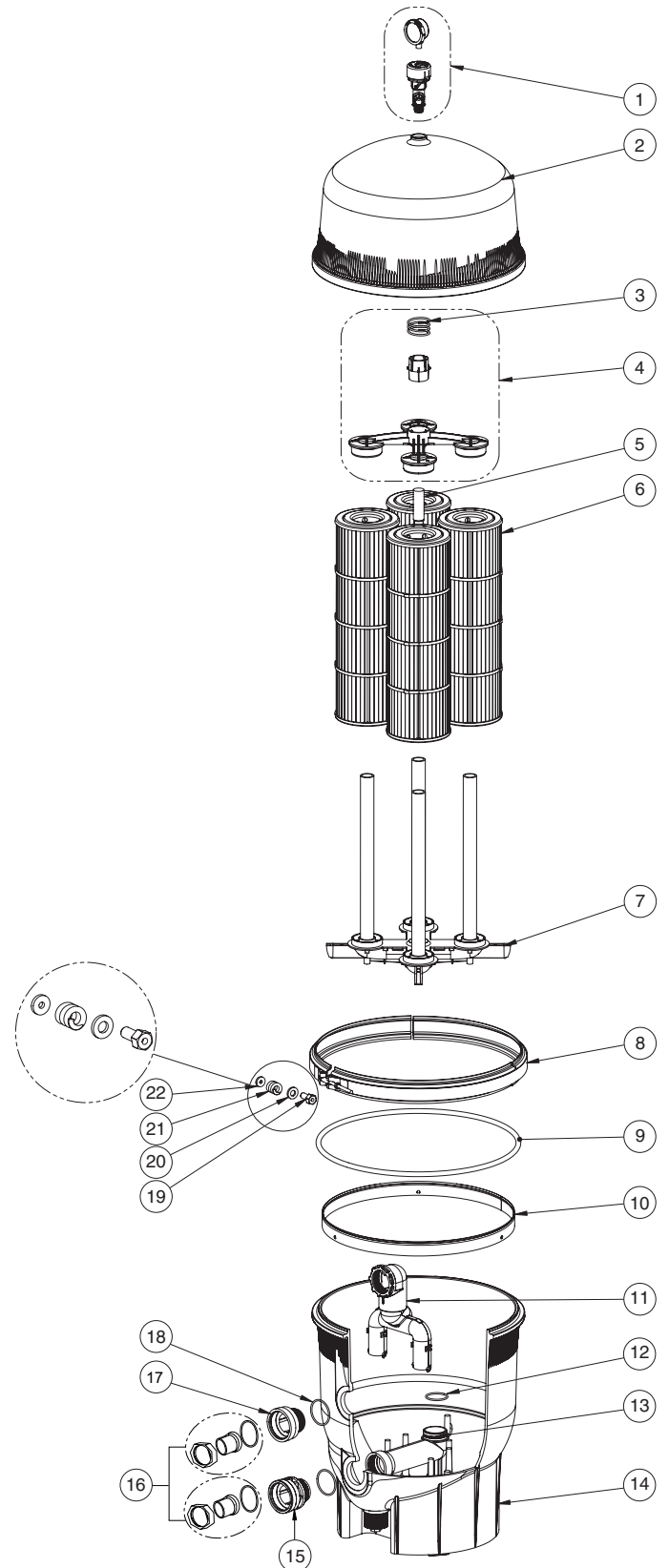
Problem	Corrective Action	
PRESSURE DROPS ON GAUGE		a. If pressure drops on gauge, shut off power to pump and turn motor shaft with your fingers. If it turns freely then the pump must be disassembled and the impeller checked to see if it is clogged. If it is not frozen or clogged then there is an obstruction in the line between the pool and the pump.
PRESSURE REMAINS HIGH AFTER BACKWASH		a. If pressure remains high after backwash - backwash filter again. If still high, treat for conditions covered by LIMING-UP above.
MAINTAIN YOUR PRESSURE GAUGE IN GOOD WORKING ORDER	The pressure gauge is an important part of the filter system. It is your primary indicator of how the system is operating.	a. Check the operation of your pressure gauge in the following manner: (1) The pressure gauge should go to zero (0) when the system is turned off and pressure is relieved. (2) The pressure gauge should indicate pressure when the system is operating. (3) The pressure gauge should be readable and not damaged in any way. (4) Replace the pressure gauge if it is not meeting the requirements of items (1) through (3) of this section.
DIATOMITE IS CONTINUOUSLY ENTERING THE POOL		a. Inspect the elements for any tears or holes. b. Inspect the internal air bleed sock for tears and proper installation. c. Inspect the elements and make sure the elements are positioned vertically and properly seated between the upper manifold and lower manifold.

REPLACEMENT PARTS

ITEM	P/N	DESCRIPTION
1	98220100	ASSY. MANUAL AIR RELIEF VALVE
2	170024	LID, QUAD 60
2	178581	LID, QUAD 80
2	178582	LID, QUAD 100
3	178616	SPRING COMPRESSION - CNC PLS
4	170026	TOP MANIFOLD ASSY.
5	170029	AIR BLEEDER ASSY., QUAD 60
5	170028	AIR BLEEDER ASSY., QUAD 80
5	178583	AIR BLEEDER ASSY., QUAD 100
6	178656	CARTRIDGE, QUAD 100
6	178655	CARTRIDGE, QUAD 80
6	178654	CARTRIDGE, QUAD 60
7	170059	MANIFOLD ASSY. BOTTOM - QUAD DE
8	190003	CLAMP RPM FLT
9	39010200	O-RING RPM TANK CLAMP
10	195339	RING BACKUP- FNS PLS CNC PLS
11	196024S	DIVERTER ASSY., RETRO KIT
12	354571	O-RING 200-830 QUICK CONN.
13	170036	PIPE OUTLET - RPM FLTR
14	195999	TANK, BOTTOM ASSY.
15	178575	BULKHEAD BOTTOM - FNS PLS
16	271096	BULKHEAD ADAPTER KIT, 2" O.D., WHITE
16	270004	BULKHEAD ADAPTER KIT, 2" O.D., BLACK
16	270100	BULKHEAD UNION KIT, 2" I.D., BLACK
16	274426	BULKHEAD ADAPTER KIT, 2 1/2" x 2" I.D., WHITE
17	194801	BULKHEAD - FNS 2 3/8-8 BUTT
18	86006900	O-RING 2-329 BULKHEAD RPM
19	194997	NUT - FNS/INS SPL
20	195611	WASHER - FNS/INS LG ID
21	195612	SPRING- FNS/INS
22	195610	WASHER - FNS/INS SM ID

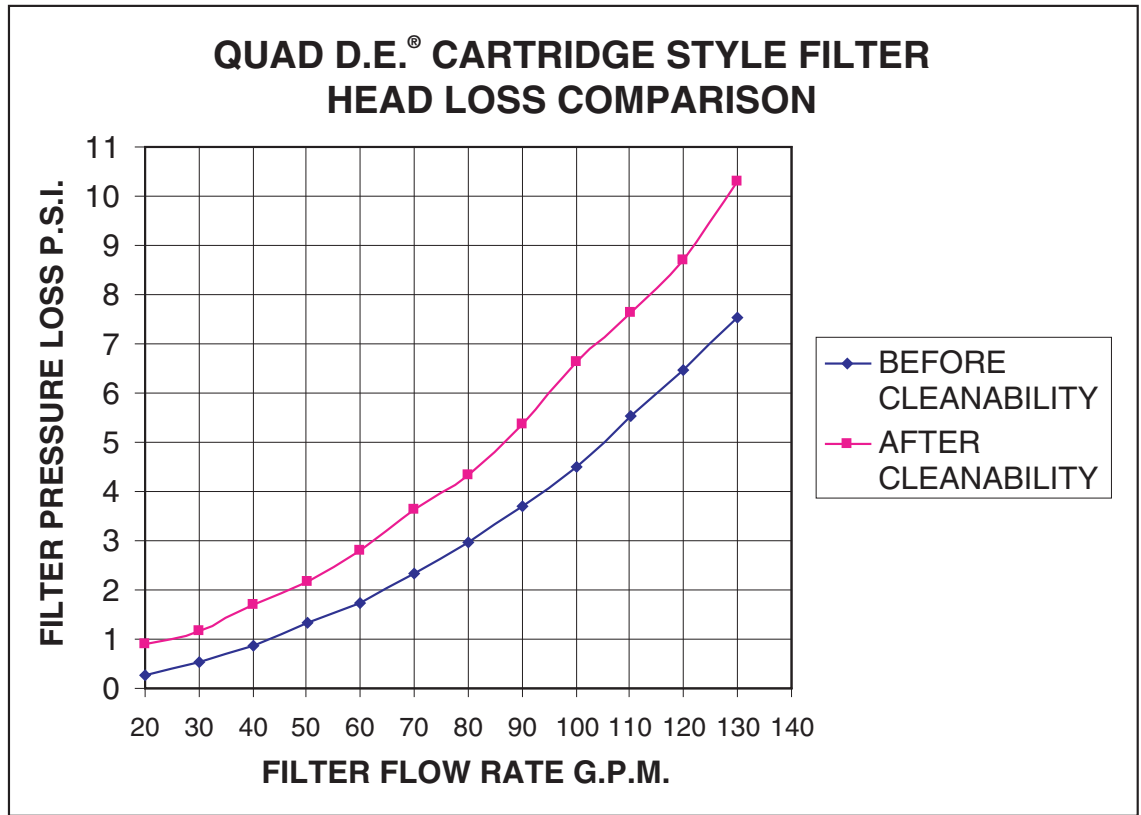
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190030 DRAIN PLUG ASSY.



TECHNICAL DATA

Head Loss Curves



Flow Rates

Recommended Flow Rate							
Model #	Filter Area Sq. Ft.	Vertical* Clearance	Flow Rate GPM		Res. Turnover Capacity (Gallons)		
			Res.**	Comm.	6 hours	8 hours	12 hours
Quad 60	60	62"	120	150	43,200	57,600	86,400
Quad 80	80	68"	160	150	57,600	76,800	115,200
Quad 100	100	74"	160	150	57,600	76,800	115,200

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

* Required clearance to remove filter elements.

** Maximum flow rate.

NOTES



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P/N 178658 REV. F 8/5/20