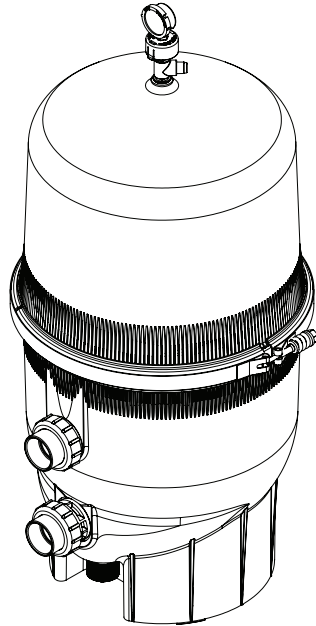




CLEAN AND CLEAR[®] PLUS CARTRIDGE FILTER



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. See Important Warnings and Safety Instructions (page iii) and follow all instructions exactly; including the *Opening the Filter* (page 4), *Installing the Filter Lid and Clamp Ring* (page 5), and *Start-Up Instructions* (page 6).

CUSTOMER SERVICE / TECHNICAL SUPPORT

If you have questions about ordering Pentair Aquatic Systems 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.pentairpool.com or www.staritepool.com for information about Pentair products.

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

Phone: (919) 566-8000

Fax: (919) 566-8920

Moorpark, California (8 A.M. to 4:30 P.M. PT)

Phone: (805) 553-5000 (Ext. 5591)

Fax: (805) 553-5515

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IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS



IMPORTANT NOTICE:

This guide provides installation and operation instructions for the Clean and Clear® Plus Cartridge Filter. Consult Pentair Water Pool and Spa, Inc. with any questions regarding this equipment.

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

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



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.

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

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 or replacement safety labels.



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. Failure to follow all operating instructions and warning messages can result in property damage or severe personal injury or death.



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 cause the filter to separate and could cause severe personal injury or death if they were to strike a person.



WARNING

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



WARNING

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



WARNING

DO NOT permit children to use this product.

IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS

WARNING

THIS SYSTEM OPERATES UNDER HIGH PRESSURE



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

1. Let air and pressure out of system before and after servicing.
 - a. **Shut off pump and RELIEVE PRESSURE by opening the manual air/pressure relief valve before servicing, including before tightening the clamp bolt.** Follow the *Opening the Filter* instructions exactly (page 4).
 - b. Follow *Start-Up Instructions* exactly after completing service (page 6). **The air/pressure relief valve must remain open until water comes out**, allowing all air out of the system.
2. Install lid and clamp ring properly.
 - a. Follow the *Installing the Filter Lid and Clamp Ring* instructions exactly (page 5). **The nut must be tightened until the spring is compressed when clamp is installed.** Tap the clamp with a rubber mallet or similar tool after clamp installation to ensure proper seating.
3. Maintain circulation system properly to help prevent air entering the system.
 - a. Replace worn or damaged parts immediately, (e.g., closure, pressure gauge, valve(s), O-rings, etc.).
 - b. Maintain proper water level in the pool or spa.
4. Verify that the return line to the pool is unobstructed. Ensure return valves are open and any winterizing plugs are removed.

WARNING

AVOID DAMAGING SYSTEM

Never Exceed Maximum Pressure of Components. The maximum working pressure of this filter is 50 psi. Never subject this filter to higher pressure, even when conducting hydrostatic pressure tests. Pressures above 50 psi can damage your filter.

Be sure the maximum pressure of the filter system does not exceed the maximum pressure of any components within the system (typically stated on each component), including during hydrostatic or external leak tests. Exceeding the maximum pressure of a component can result in that component failing. 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.

WARNING



Certain codes may require pressure testing the system. Performing pressure tests increases the risk of component failure. Due to the potential risk that can be involved, keep the pressure test to the minimum time required by the local code and take precautions. If pressure testing is necessary, follow these precautions:

1. Keep people away.
 - a. 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.
2. Never exceed maximum operating pressure.
 - a. 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.

GENERAL INFORMATION

⚠ WARNING



THIS SYSTEM OPERATES UNDER HIGH PRESSURE.

When any part of the circulating system (e.g., Lock 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

- Large filter area designed for increased debris capacity
- NSF Listed
- High Flow™ Manual Air Relief Valve provided
- 1.5" x 2" Bulkhead Unions allows for easy piping installation

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 it's 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 Clean and Clear® Plus 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.
5. **Clean your filter when pressure reads between 8-10 psi higher than the “Original Starting Pressure”, 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.

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. Record the “Original Pump RPM” in **Table 1**.

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.

Table 1

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

SERVICE THE MEDIA AT: _____ psi.

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

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, servicers, 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 Clean and Clear® Plus 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 page 5, *Installing the Filter Lid and Clamp Ring*.

4. 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 2** for the required vertical clearance.
5. Position the filter to safely direct water drainage away from electrical equipment or anything that might be damaged.
6. Position the High Flow™ Manual Air Relief Valve to safely direct purged air or water (See page 3, *Installing the Manual Air Relief Valve*).

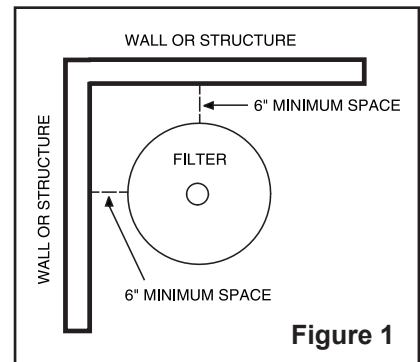


Figure 1

Table 2

Model No.	Size	Vert. Clearance Req. (From Ground Level)
CCP240	240 sq. ft.	56in.
CCP320	320 sq. ft.	62in.
CCP420	420 sq. ft.	68in.
CCP520	520 sq. ft.	74in.

⚠ WARNING



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. 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. Do not use pipe joint compound, glue or solvent on the bulkhead connections. The provided filter plumbing connections include an O-ring seal.

⚠ 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



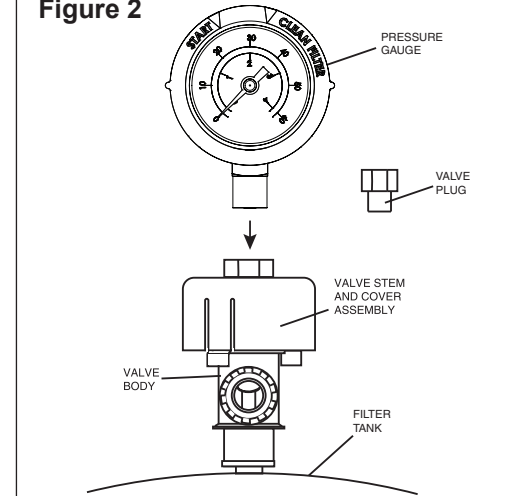
WARNING The High Flow manual air relief valve and pressure gauge are included with this filter to help ensure safe operation of the equipment. Always maintain these components in good working condition.

1. Remove the High Flow™ Manual Air Relief Valve and the pressure gauge from the accessories package included with your Clean and Clear® Plus 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.

Figure 2



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. 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" 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* exactly (page 6).

OPENING, CLOSING, AND START-UP

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.

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 ii-iii).

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.

RECOMMENDED EQUIPMENT:

- Ratchet Wrench
- 7/8" 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 High Flow™ 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 Clean and Clear® Plus 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" wrench, allowing the spring coils to decompress. See **Figure 4**. 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 bottom tank manifold.

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.

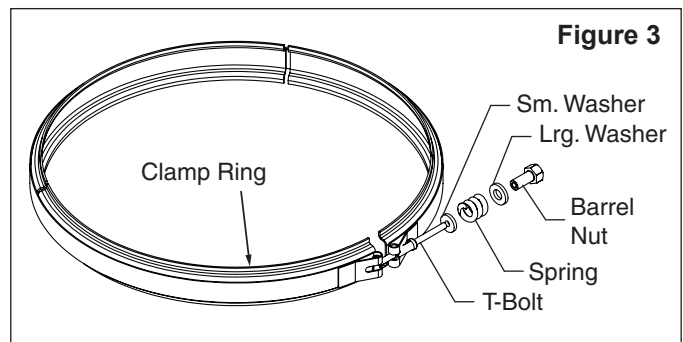


Figure 3

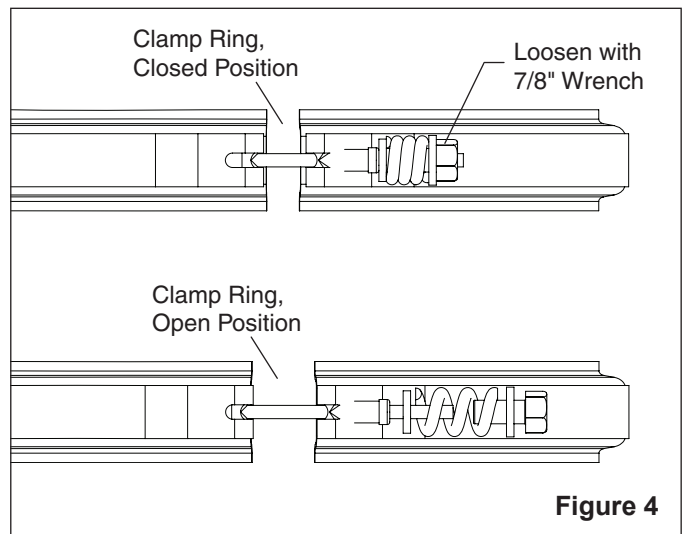


Figure 4

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 Warnings and Safety Instructions*, page ii-iii).

RECOMMENDED EQUIPMENT:

- Ratchet Wrench
- 7/8" 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 Clean and Clear® Plus 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 in. 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 5**).

7. Close the waste drain plug at the bottom of the filter.
8. Follow **Start-Up Instructions** exactly (see page 6).

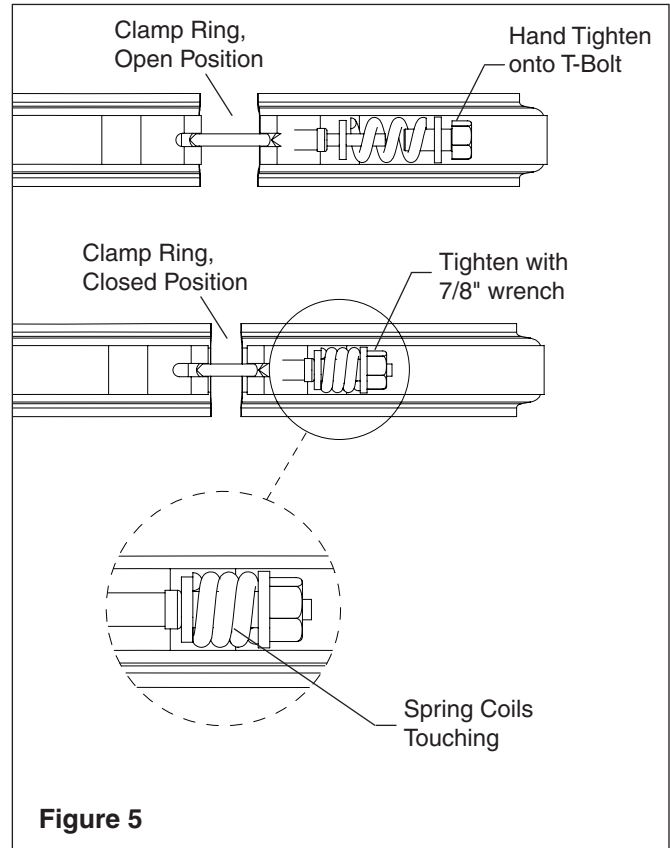


Figure 5

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 nut or attempt to adjust the clamp ring or lid while the system is turned on or under pressure. This could cause the lid to separate from the filter

Start-Up Instructions

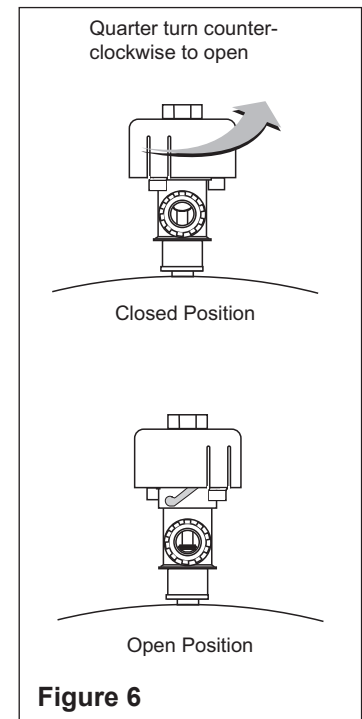
⚠ WARNING



Follow these instructions **exactly** to prevent the lid from separating from the filter during system start-up or operation. (See *Important Warnings and Safety Instructions*, page ii-iii).

1. Be sure the **spring on the clamp ring is fully compressed, with coils touching.**
2. Open the High Flow™ 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 6**.
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 7). 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 on page 1 and the corresponding label on the equipment:
 - 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".



MAINTENANCE

Maintaining the Pressure Gauge

The pressure gauge is the primary indicator of how the system is operating, so correct functioning is critical. Replace the pressure gauge (Pentair P/N 190058) if it does not meet the requirements below:

1. Pressure gauge should go to zero (0) when the system is turned off and pressure is relieved.
2. Pressure gauge should indicate pressure when the system is operating.
3. The pressure gauge should be readable and not damaged in anyway

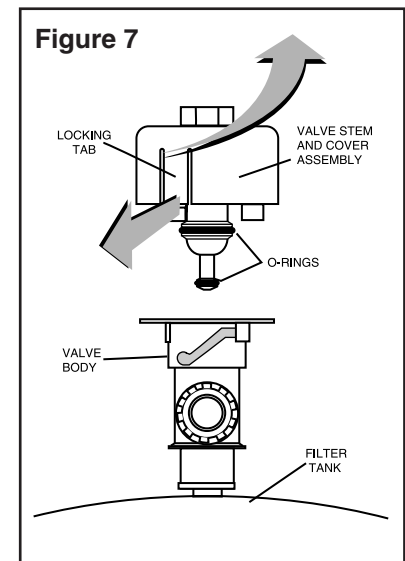
Cleaning the Manual Air Relief Valve

RECOMMENDED EQUIPMENT:

- 5/16" 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 Clean and Clear® Plus 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 7**.
 3. Pull the valve stem and cover assembly straight up and away from the valve body.
 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" 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 Your Filter

Proper operation can prevent avoidable repairs and maintenance.

Use the pressure gauge to determine when to clean your Clean and Clear® Plus Cartridge Filter for proper operation. The pressure reading increases as dirt is filtered from your pool. This buildup of pressure will vary due to different bathing loads, temperature, environmental conditions, etc.

⚠ WARNING



Clean your filter when pressure reads between **8-10 psi higher** than the “Original Starting Pressure” recorded in Table 1 (page 1), or when significant reduction in flow is noticed.

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.

Cleaning the Filter Cartridges

1. Follow *Opening the Filter* (page 4) 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 compression spring and spring adapter by pulling them straight up.
4. Separate the top manifold from the filter's cartridges and lay the manifold to the side. See **Figure 8**.
5. Carefully remove each cartridge element separately.
6. Using a garden hose with a straight flow nozzle, wash down the entire filter element. Wash from the top down, holding the nozzle at a 45-degree angle to the cartridge (See **Figure 9**). Pay special attention to the area between pleats.
7. 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.

8. Direct the water spray to wash out the inside of the tank body and bottom manifold. Water and debris will drain out through the open drain plug.
9. Check gasket around outer lip of bottom plate. Gasket must be firmly and evenly set around the entirety of the outer lip.
10. Place bottom manifold, four (4) cartridges and top manifold in place. Make sure the spring and standpipe assembly are retained on the top manifold.
11. Be certain the O-ring is in position in the lower tank half and free of debris.
12. Follow *Installing the Filter Lid and Clamp Ring* exactly (page 5).

Figure 8

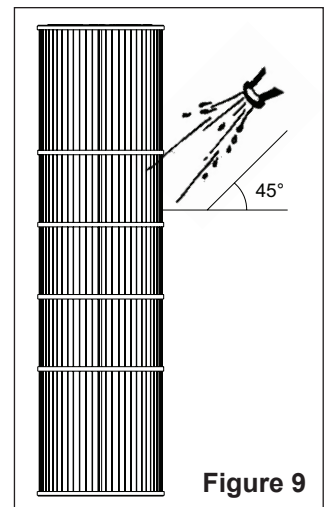
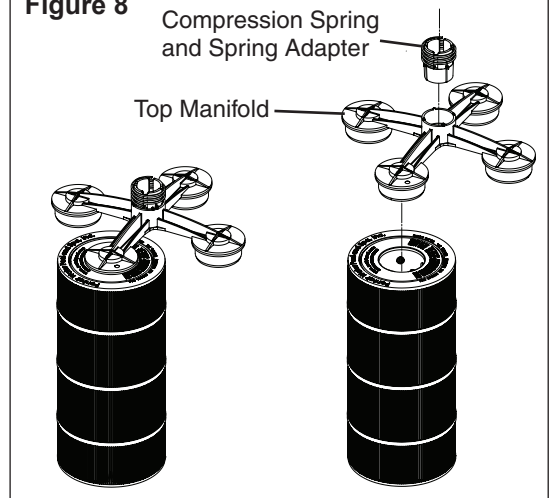


Figure 9

Acid Soaking the Filter Cartridges

After an extended period of operation, it may be necessary to soak the 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 Clean and Clear® Plus 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.

RECOMMENDED EQUIPMENT:

- 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.

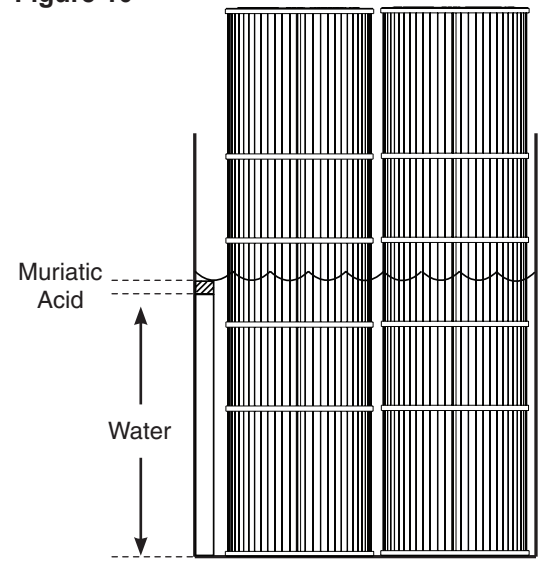
2. Put on protective equipment - rubber gloves, safety glasses and N-95 dust mask.
3. In a large plastic container, create a solution of one part muriatic acid to twenty parts water. See **Figure 10**.

⚠️ 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.
4. Remove the cartridges 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 cartridge. See **Figure 9**, on page 8.
6. Reinstall the cartridges and dispose of the acid solution in accordance with local regulations.

Figure 10



Replacing Filter Cartridges

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

To replace filter cartridges:

1. Follow *Opening the Filter* exactly (page 4).
2. Remove the compression spring and spring adapter by pulling them straight up. Once the spring and spring adapter have been removed, separate the top manifold from the filter cartridges and lay the manifold to the side. See **Figure 6**).
2. Carefully remove each cartridge element separately.
3. Check gasket around outer lip of bottom plate. Gasket must be firmly and evenly set around the entirety of the outer lip.
4. Install the replacement cartridges onto the bottom manifold. Reinstall the top manifold on to the new cartridges.
Note: Be sure the spring and standpipe assembly are retained on the top manifold.
5. Follow *Installing the Filter Lid and Clamp Ring* exactly (page 5).

TROUBLESHOOTING

1. AIR ENTERING THE SYSTEM.

Air entering your Clean and Clear® Plus Cartridge Filter can cause lid separation. Correct any conditions in your filtration system that allow air to enter the system.

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 instructions (page 4). (See Important Warnings and Safety Instructions, page ii-iii)

Symptoms:

- Low water level in pool or spa - skimmer starving for water with pump running.
- Air bubbles or low water level in pump hair and lint pot
- Air bubbles coming out of water return lines into pool or spa with pump running
- Air is discharged from the air/pressure relief valve on top of the filter when the valve is opened with the pump running.

Potential Causes and Solutions:

- Low water level: *Add water to pool or spa.*
- Clogged skimmer basket: *Unclog.*
- Damaged or leaking components (e.g., split suction cleaner hose, leak in pump hair and lint pot lid, or leak in pump suction line): *Repair or replace component.*

2. SHORT FILTER CYCLES BETWEEN CLEANING.

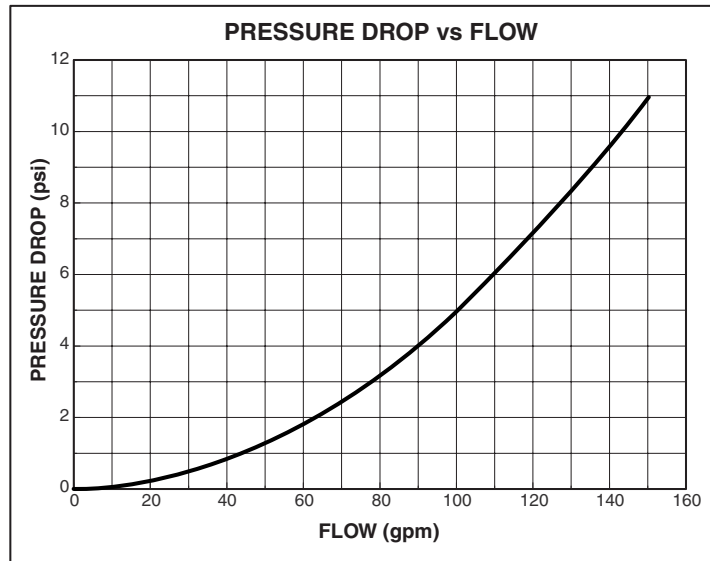
Until the water initially put into the pool has been completely filtered, short filter cycles in between cleanings are normal. In most cases pool owners are dismayed by the undesirable color and appearance of water in a newly filled pool. Plaster dust can be responsible for short filter cycles, requiring frequent cleaning.

3. PRESSURE DROP ON GAUGE.

If pressure drops on gauge, check skimmer basket and pump basket first for debris. If the baskets are clean, there is likely a problem with the pump. Refer to pump manual for pump troubleshooting.

TECHNICAL DATA

Flow Rates

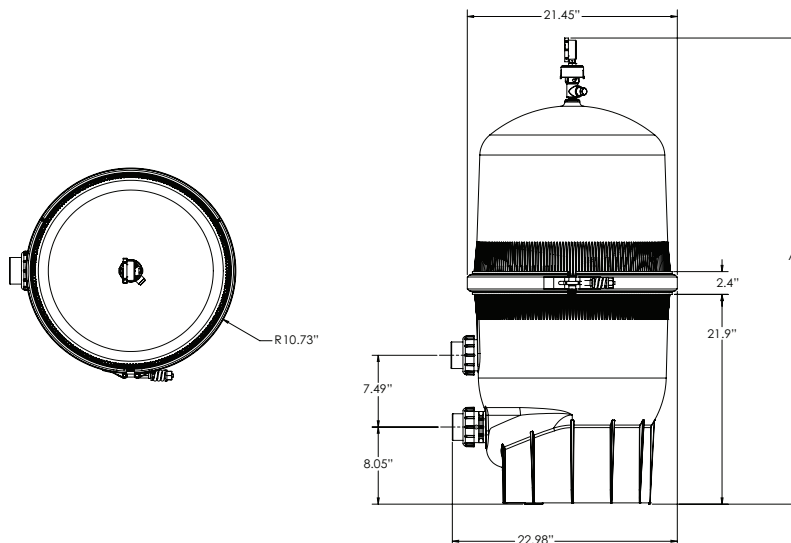


Clean and Clear® Plus Cartridge Filters						
Recommended Flow Rate						
Model #	Filter Area (Sq. Ft.)	Vertical Clearance*	Flow Rate (GPM)	Turnover Capacity (Gallons)		
				6 Hours	8 Hours	12 Hours
CCP240	240	56 in.	90	32,400	43,200	64,800
CCP320	320	62 in.	120	43,200	57,600	86,400
CCP420	420	68 in.	150	54,000	72,000	108,000
CCP520	520	74 in.	150	54,000	72,000	108,000

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

* Required Clearance to remove filter elements and lid.

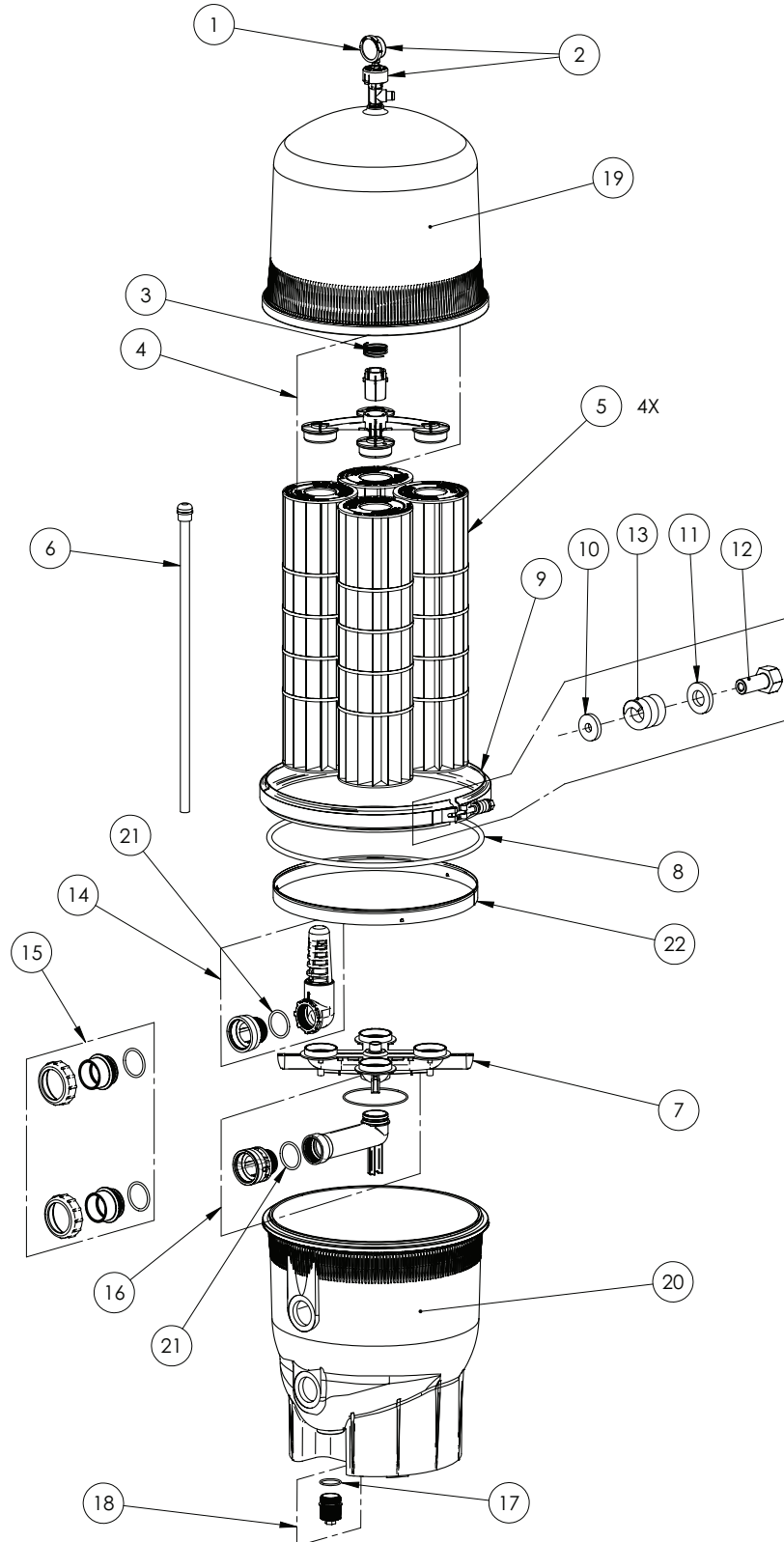
Dimensional Drawings



MODEL	DIM "A"
CCP 240	37"
CCP 320	43"
CCP 420	49"
CCP 520	56"

REPLACEMENT PARTS

Illustrated Parts View



Clean and Clear® Plus Cartridge Filter Parts List

Replacement Parts

Item No.	Part No.	Description
1	190058	Pressure Gauge, with Indicator
2	98209800	High Flow Manual Air Relief Valve (HFMARV)
3	178616	Compression Spring
4	170026	Top Manifold, 240 C&C Plus
4	170027	Top Manifold, 320/420/520 C&C Plus
5	R173572	Cartridge Element, 240 C&C Plus, 4 req.
5	R174573	Cartridge Element, 320 C&C Plus, 4 req.
5	R173576	Cartridge Element, 420 C&C Plus, 4 req.
5	R173578	Cartridge element, 520 C&C Plus, 4 req.
6	170030	Air Bleed Tube Assy., 240 C&C Plus
6	170029	Air Bleed Tube Assy., 320 C&C Plus
6	170028	Air Bleed Tube Assy., 420 C&C Plus
6	178583	Air Bleed Tube Assy., 520 C&C Plus
7	170040	Bottom Manifold
8	39010200	O-ring, Tank Clamp (.470 O.D.)
9	190003	Clamp Band Replacement Kit
10	195610	Clamp Washer, Small I.D.
11	195611	Clamp Washer, Large I.D.
12	194997	Clamp Nut
13	195612	Clamp Spring, 4-Coil
14	190039	Baffle Assy., C&C Plus
15	98960311	Union Kit, Black
15	271096	2" Valve Adapter Kit, 1 ½ in. x 2 in. (set), White
15	270004	2" Valve Adapter Kit, 1 ½ in. x 2 in. (set), Black
15	274426Z	2 x 2.5" Valve Adapter Kit,

Item No.	Part No.	Description
16	170036	Pipe Assy. Outlet, C&C Plus
17	190143	O-ring, Drain
18	190030	Drain Plug, without O-Ring
19	170023	Tank, Lid Assy., 240 C&C Plus
19	170024	Tank, Lid Assy., 320 C&C Plus
19	178581	Tank, Lid Assy., 420 C&C Plus
19	178582	Tank, Lid Assy., 520 C&C Plus
20	178578	Tank, Bottom Assy. (Includes Items 7, 14, 16 and 18)
21	86006900	O-ring
22	195339	Ring, Steel Back-up
-	192019	Drain Plug Wrench
-	171013	Label Kit w/ Air Relief, 240 C&C Plus
-	171014	Label Kit w/ Air Relief, 320/420/520 C&C Plus
-	190106Z	Air Bleed Screen Cap

(-) Not Shown



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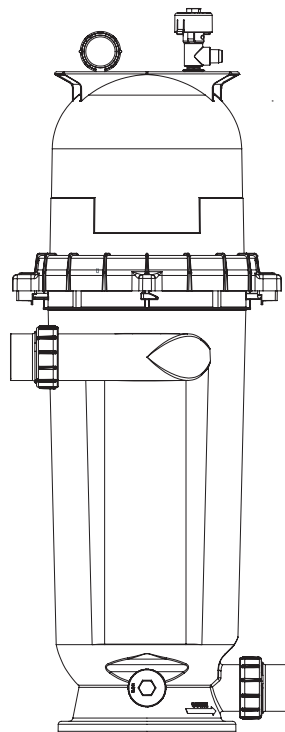
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P/N 178558 Rev. P 7/6/17



CLEAN AND CLEAR[®] RP CARTRIDGE 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)

Phone: (919) 566-8000

Fax: (919) 566-8920

Moorpark, California (8 A.M. to 4:30 P.M. PT)

Phone: (805) 553-5000 (Ext. 5591)

Fax: (805) 553-5515

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IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS



IMPORTANT NOTICE:

This guide provides installation and operation instructions for the this filter. Consult Pentair Water Pool and Spa, Inc. with any questions regarding this equipment.

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

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



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.

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

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 or replacement safety labels.



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. Failure to follow all operating instructions and warning messages can result in property damage or severe personal injury or death.



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 cause the filter to separate and could cause severe personal injury or death if they were to strike a person.



WARNING

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



WARNING

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



WARNING

DO NOT permit children to use this product.

IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS

WARNING

THIS SYSTEM OPERATES UNDER HIGH PRESSURE



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

1. Let air and pressure out of system before and after servicing.
 - a. **Shut off pump and RELIEVE PRESSURE by opening the manual air/pressure relief valve before servicing.**
 - b. Follow *Startup Instructions* exactly after completing service (page 3). **The air/pressure relief valve must remain open until water comes out**, allowing all air out of the system.
2. Install lock ring properly.
 - a. Follow *Lock Ring Installation Instructions* exactly (page 3).
3. Maintain circulation system properly to help prevent air entering the system.
 - a. Replace worn or damaged parts immediately, (e.g., closure, pressure gauge, valve(s), O-rings, etc.).
 - b. Maintain proper water level in the pool or spa.
4. Verify that the return line to the pool is unobstructed. Ensure return valves are open and any winterizing plugs are removed.

WARNING

AVOID DAMAGING SYSTEM

Never Exceed Maximum Pressure of Components. The maximum working pressure of this filter is 50 psi. Never subject this filter to higher pressure, even when conducting hydrostatic pressure tests. Pressures above 50 psi can damage your filter.

Be sure the maximum pressure of the filter system does not exceed the maximum pressure of any components within the system (typically stated on each component), including during hydrostatic or external leak tests. Exceeding the maximum pressure of a component can result in that component failing. 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.

WARNING



Certain codes may require pressure testing the system. Performing pressure tests increases the risk of component failure. Due to the potential risk that can be involved, keep the pressure test to the minimum time required by the local code and take precautions. If pressure testing is necessary, follow these precautions:

1. Keep people away.
 - a. 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.
2. Never exceed maximum operating pressure.
 - a. 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.

GENERAL INFORMATION

WARNING



THIS SYSTEM OPERATES UNDER HIGH PRESSURE.

When any part of the circulating system (e.g., Lock 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.

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 it's 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 Clean and Clear® RP Cartridge Filter operates under pressure. When the lock ring is installed 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.
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.
5. **Clean your filter when pressure reads between 8-10 psi higher than the “Original Starting Pressure”, 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.

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. Record the “Original Pump RPM” in **Table 1**.

Note: When the cartridge element filter is used on new pools and after cleaning the elements, introduce into the system 0.5 pounds of diatomaceous earth per every 100 square feet of filter area, (a one-pound coffee can equals 0.5 pounds of diatomaceous earth). Mix the diatomite with water and pour it into the skimmer after the pump is primed and the system is operating. This will enhance the filtration of your water.

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.

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)

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, service persons, 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 Clean and Clear® RP 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 lock ring is properly installed around the tank flanges, see **Figure 1**.
4. 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 2** for the required vertical clearance.
5. Position the filter to safely direct water drainage away from electrical equipment or anything that might be damaged.
6. Position the High Flow™ Manual Air Relief Valve to safely direct purged air or water.

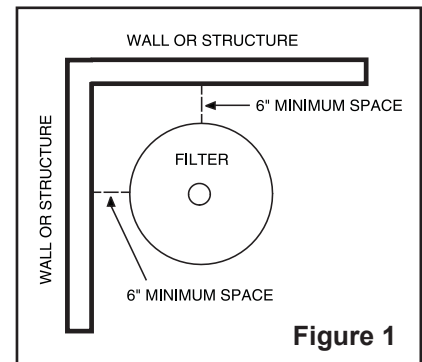


Figure 1

TABLE 2

<u>Model</u>	<u>Size</u>	<u>Vertical Clearance Req.</u>
160354	100 sq. ft.	61 in.
160355	150 sq. ft.	76 in.
160353	200 sq. ft.	76 in.

⚠ WARNING



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. 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. Do not use pipe joint compound, glue or solvent on the bulkhead connections. The provided filter plumbing connections include an O-ring seal.

⚠ 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.

OPERATION

Lock Ring Installation Instructions

⚠ WARNING

THIS SYSTEM OPERATES UNDER HIGH PRESSURE.



When any part of the circulating system (e.g., Lock 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.

These instructions **MUST BE FOLLOWED EXACTLY** to prevent the lid from separating during system restart or later operation.

1. Perform the following steps before working on any part of the circulating system (e.g., lock ring, pump, filter, valves, etc.).
 - a. Turn the pump off and shut off any automatic controls 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 lock ring while there is any pressure in the filter.**
2. Be certain the O-ring is in position in the lower tank half. Place the filter lid over the lower tank half, making sure it is fully and firmly seated on the tank half, see **Figure 2**.
3. Place lock ring over the tank lid, and centering the lock ring on the threads of the tank body. Turn the lock ring clockwise until the safety latches click and the lock ring hits the stops on the body. **DO NOT ATTEMPT TO OVER-TIGHTEN THE LOCK RING AFTER LOCK RING HAS HIT THE STOPS ON THE BODY.**
4. Follow the *Startup Instructions* below.

Startup Instructions

⚠ WARNING

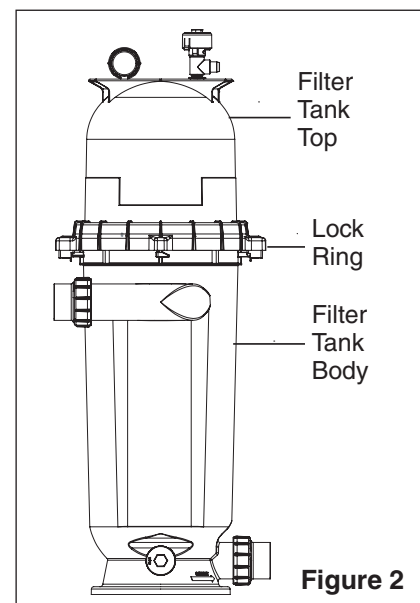
THIS SYSTEM OPERATES UNDER HIGH PRESSURE.



When any part of the circulating system (e.g., Lock 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.

1. **Open the High Flow™ manual air relief valve until it snaps into the full open position (this only requires a quarter turn counterclockwise).** Opening this valve rapidly releases air trapped in the filter.
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. The system is not working properly if either of the following conditions occur.
 - a. A solid stream of water does not appear within 30 seconds, after the pump's inlet basket fills with water.
 - b. The pressure gauge indicates pressure before water outflow 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 *Cleaning the Manual Air Relief Valve* on page 4. If the problem persists, call (800) 831-7133 for assistance.



MAINTENANCE

Maintaining the Pressure Gauge

The pressure gauge is the primary indicator of how the system is operating, so correct functioning is critical. Replace the pressure gauge (Pentair P/N 190058) if it does not meet the requirements below:

1. Pressure gauge should go to zero (0) when the system is turned off and pressure is relieved.
2. Pressure gauge should indicate pressure when the system is operating.
3. The pressure gauge should be readable and not damaged in anyway

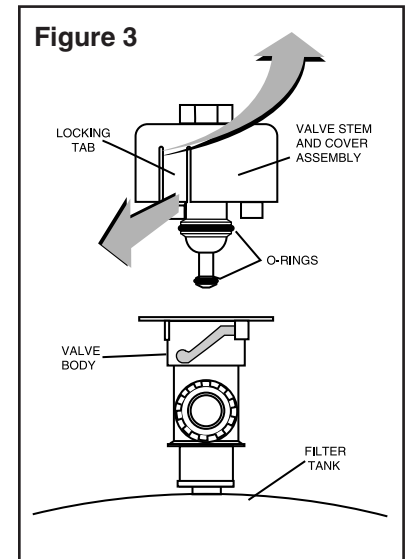
Cleaning the Manual Air Relief Valve

RECOMMENDED EQUIPMENT:

- 5/16" 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 Clean and Clear® RP 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 3**.
3. Pull the valve stem and cover assembly straight up and away from the valve body.
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" 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.



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.

Cleaning the Filter



WARNING 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 filter system.

1. Turn the pump off, shut off any automatic controls to ensure that the system is not inadvertently started during servicing.
2. Open the filter High Flow™ manual air relief valve (and the waste drain valve, or cap, if your system has one).
3. Remove hair and lint strainer pot lid and clean basket. Replace basket and secure lid.
4. Disconnect air relief drain hose if installed.
5. Remove lock ring by depressing safety latches on both sides of ring and rotate counterclockwise, then remove tank lid.
6. Remove the element assembly by placing hands in lifting handles and pulling straight up on the element assembly.
7. Remove the cartridge element from the center support tube.
8. Using a garden hose with a nozzle, direct water spray at the cartridge element to dislodge and wash away accumulated foreign matter. Water may be sprayed at the outside as well as the inside of the cartridge element for thorough cleaning.
7. 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.

8. Direct the water spray to wash out the inside of the tank body and bottom manifold. Water and debris will drain out through the open drain plug.
 9. Check gasket around outer lip of bottom plate. Gasket must be firmly and evenly set around the entirety of the outer lip.
 9. Turn the cartridge element over several times during the washing operation to clean the media thoroughly.
 10. Clean and remove debris from inside the filter tank and from the O-ring and O-ring groove on the tank body.
 11. Replace clean cartridge element on support tube and install assembly into the filter tank body, aligning the arrow on the support tube with the inlet port of the filter, making sure it is fully seated. Make sure the internal air relief screen is attached to the top of the element support tube.
 12. Replace the tank lid onto the tank body making sure it is fully and firmly seated on the tank body.
 13. Place lock ring over tank lid, and centering the lock ring on the threads of the tank body, turn the lock ring clockwise until the safety latches click and the lock ring hits the stops on the body. **DO NOT ATTEMPT TO OVER-TIGHTEN THE LOCK RING AFTER LOCK RING HAS HIT THE STOPS ON THE BODY.**
- Note:** Any time the filter tank is opened, and/or element assembly is removed, be sure to generously coat the O-ring with silicone lubricant before reassembling the unit. **DO NOT USE PETROLEUM BASED LUBRICANTS BECAUSE THEY HAVE A DETERIORATING EFFECT ON RUBBER.**
14. Replace drain cap and reinstall manual air relief valve drain hose if used.

Replacing the Cartridge Element

Cartridge element life will vary with pool conditions such as bather load, wind, dust, etc. You can expect an average media life of three (3) years under normal conditions.

To replace cartridge element follow steps in *Cleaning the Filter* above.

TROUBLESHOOTING

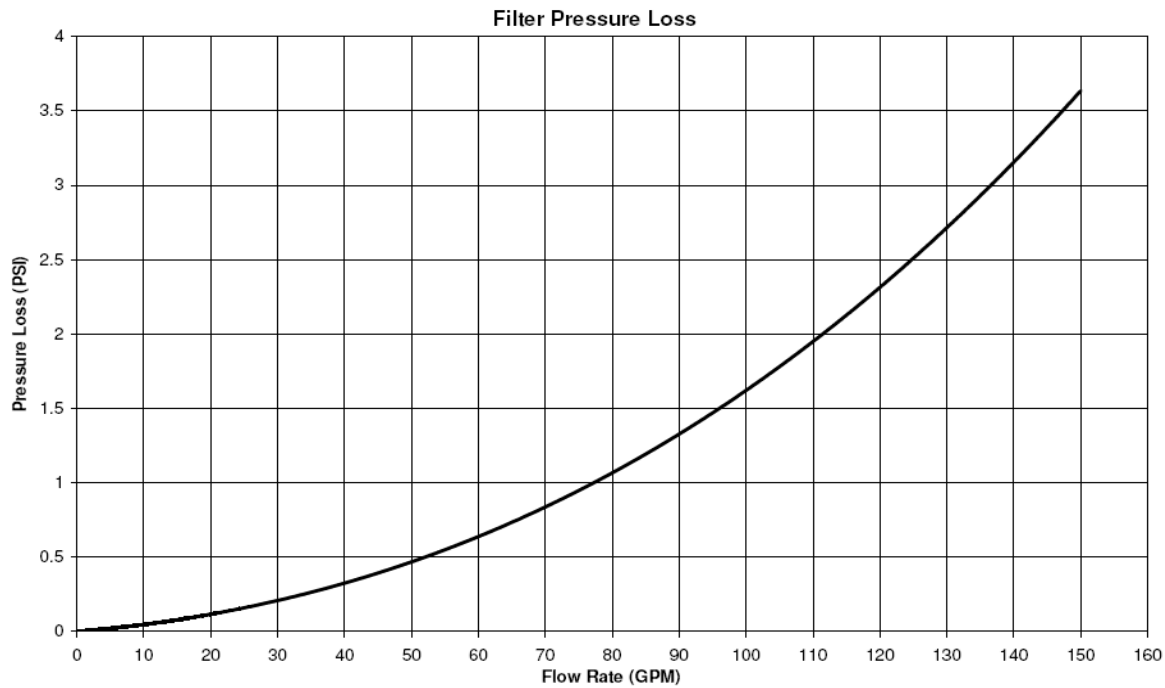
1. Air entering your filter is dangerous and can cause the lid to separate. Correct any conditions in your filtration system that allow air to enter the system.

Some common ways to identify air entering the system:

- 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; low water level, clogged skimmer basket, split suction cleaner hose, leak in pump hair and lint pot lid, or leak in pump suction line.
 - c. Air bubbles coming out of water return lines into pool or spa with pump running.
 - d. Air is discharged from the air relief valve on top of the filter when the valve is opened with the pump running.
2. Until the water initially put into the pool has been completely filtered, short filter cycles in between cleanings are normal. In most cases pool owners are dismayed by the undesirable color and appearance of water in a newly filled pool. Plaster dust can be responsible for short filter cycles, requiring frequent cleaning.
 3. If pressure drops on gauge, check skimmer basket and pump basket first for debris. If the baskets are clean, shut off power to pump and turn off any automatic controls. Then 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.
 4. The pressure gauge is an important part of the filter system. It is your primary indicator of how the system is operating. Maintain your pressure gauge in good working order. Check the operation of your pressure gauge in the following manner:
 - a. The pressure gauge should go to zero (0) when the system is turned off and pressure is relieved.
 - b. The pressure gauge should indicate pressure when the system is operating.
 - c. The pressure gauge should be readable and not damaged in any way.
 - d. Replace the pressure gauge if it does not meet the requirements above.

TECHNICAL DATA

Pressure Loss Chart



Flow Rates

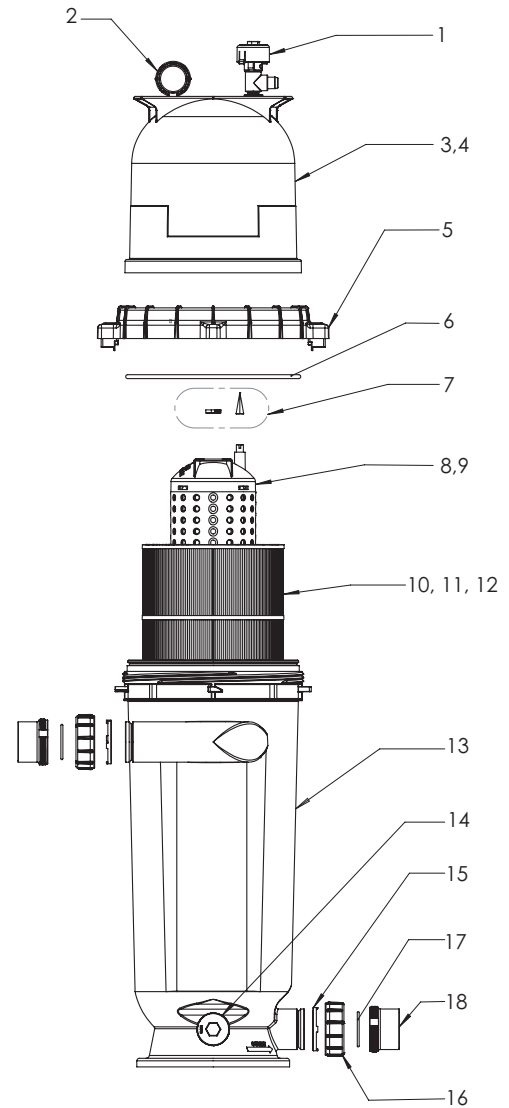
Model #	Product #	sq. ft.	Residential Maximum Cartridge Flow Rates				Commercial Maximum Cartridge Flow Rates			
			GPM	GPH	6 hour	8 hour	GPM	GPH	6 hour	8 hour
CNCRP 100	160354	100	100	6,000	36,000	48,000	38	2,280	13,680	18,240
CNCRP 150	160355	150	150	9,000	54,000	72,000	56	3,360	20,160	26,880
CNCRP 200	160353	200	150	9,000	54,000	72,000	75	4,500	27,000	36,000

- (1) Recommended flow rate for residential is 0.5 GPM per sq. ft.
 (2) Commercial flow rate is a maximum of 0.375 GPM per sq. ft. of filter area.

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

REPLACEMENT PARTS

Item	Part #	Description
1	98209800	High Flow Manual Air Relief Calve
2	190058	Pressure Gauge
3	178548	Lid, 100 sq. ft. Filter
4	178546	Lid, 150, 200 sq. ft. Filter
5	59052900	Lock Ring Assembly
6	87300400	Body O-Ring
7	59016200	Air Bleed Sock Kit
8	59053700	Center Core, 100 sq. ft. Filter
9	59053800	Center Core, 150, 200 sq. ft. Filter
10	R173215	Cartridge Element, 100 sq. ft. Filter
11	R173216	Cartridge Element, 150 sq. ft. Filter
12	R173217	Cartridge Element, 200 sq. ft. Filter
13	178731	Tank Bottom
14	154712Z	Drain Cap Assembly (before 10/17)
14	190030Z	Drain Cap Assembly (after 10/17)
15	178732	Union Nut "C" Clip
16	U11-200PS	Union Nut
17	178746	Union Diamond Seal
18	178733	Union, Threaded Half



NOTES



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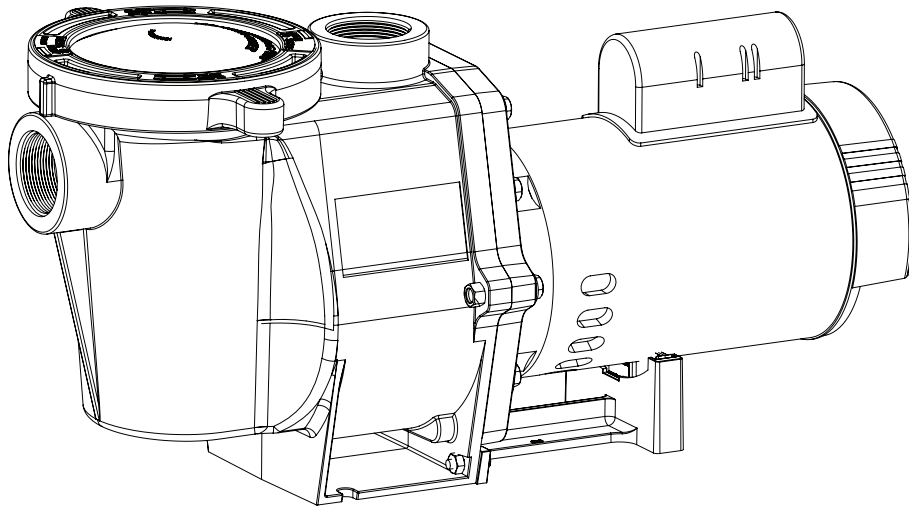
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P/N 178742 Rev. B 11/12/18



WHISPERFLO® HIGH PERFORMANCE PUMP



INSTALLATION AND USER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

ENGLISH 1

ESPAÑOL 10

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P/N 071109 Rev. J 8/29/14

IMPORTANT PUMP 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 pump.

Attention User: This manual contains important information that will help you in operating and maintaining this product. 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.

When installing and using this electrical equipment, basic safety precautions should always be followed, include the following:

WARNING Do not permit children to use this product.

WARNING RISK OF ELECTRICAL SHOCK. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI.

WARNING This unit must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the pump without the test button being pushed, a ground current is flowing, indicating the possibility of an electric shock. Do not use this pump. Disconnect the pump and have the problem corrected by a qualified service representative before using.

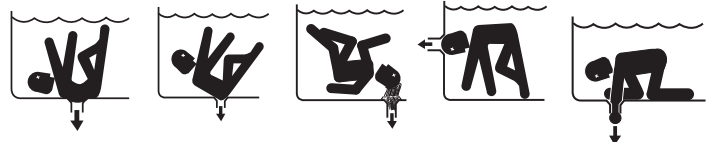
CAUTION This pump is for use with permanent swimming pools and may also be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently-installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it is capable of being readily disassembled for storage and reassembled to its original integrity.

General Warnings

- Never open the inside of the drive motor enclosure. There is a capacitor bank that holds a 230 VAC charge even when there is no power to the unit.
- The pump is not submersible.
- The pump is capable of high flow rates; use caution when installing and programming to limit pumps performance potential with old or questionable equipment.
- Code requirements for the electrical connection differ from state to state. Install equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.
- Before servicing the pump; switch OFF power to the pump by disconnecting the main circuit to the pump.
- This appliance is not intended for use by persons (including children) of reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

DANGER FAILURE TO FOLLOW ALL INSTRUCTIONS AND WARNINGS CAN RESULT IN SERIOUS BODILY INJURY OR DEATH. **THIS PUMP SHOULD BE INSTALLED AND SERVICED ONLY BY A QUALIFIED POOL SERVICE PROFESSIONAL. INSTALLERS, POOL OPERATORS AND OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS IN THE OWNER'S MANUAL BEFORE USING THIS PUMP. THESE WARNINGS AND THE OWNER'S MANUAL MUST BE LEFT WITH THE POOL OWNER.**

DANGER SUCTION ENTRAPMENT HAZARD: STAY OFF THE MAIN DRAIN AND AWAY FROM ALL SUCTION OUTLETS!



THIS PUMP PRODUCES HIGH LEVELS OF SUCTION AND CREATES A STRONG VACUUM AT THE MAIN DRAIN AT THE BOTTOM OF THE BODY OF WATER. THIS SUCTION IS SO STRONG THAT IT CAN TRAP ADULTS OR CHILDREN UNDER WATER IF THEY COME IN CLOSE PROXIMITY TO A DRAIN OR A LOOSE OR BROKEN DRAIN COVER OR GRATE.

THE USE OF UNAPPROVED COVERS OR ALLOWING USE OF THE POOL OR SPA WHEN COVERS ARE MISSING, CRACKED OR BROKEN CAN RESULT IN BODY OR LIMB ENTRAPMENT, HAIR ENTANGLEMENT, BODY ENTRAPMENT, EVISCERATION AND/OR DEATH. The suction at a drain or outlet can cause:

Limb Entrapment: When a limb is sucked or inserted into an opening resulting in a mechanical bind or swelling. This hazard is present when a drain cover is missing, broken, loose, cracked or not properly secured.

Hair Entanglement: When the hair tangles or knots in the drain cover, trapping the swimmer underwater. This hazard is present when the flow rating of the cover is too small for the pump or pumps.

Body Entrapment: When a portion of the body is held against the drain cover trapping the swimmer underwater. This hazard is present when the drain cover is missing, broken or the cover flow rating is not high enough for the pump or pumps.

Evisceration/Disembowelment: When a person sits on an open pool (particularly a child wading pool) or spa outlet and suction is applied directly to the intestines, causing severe intestinal damage. This hazard is present when the drain cover is missing, loose, cracked, or not properly secured.

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

Mechanical Entrapment: When jewelry, swimsuit, hair decorations, finger, toe or knuckle is caught in an opening of an outlet or drain cover. This hazard is present when the drain cover is missing, broken, loose, cracked, or not properly secured.

NOTE: ALL SUCTION PLUMBING MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL AND LOCAL CODES, STANDARDS AND GUIDELINES.

WARNING TO MINIMIZE THE RISK OF INJURY DUE TO SUCTION ENTRAPMENT HAZARD:

- A properly installed and secured ANSI/ASME A112.19.8 approved anti-entrapment suction cover must be used for each drain.
- Each suction cover must be installed at least three (3') feet apart, as measured from the nearest point to nearest point.
- Regularly inspect all covers for cracks, damage and advanced weathering.
- If a cover becomes loose, cracked, damaged, broken or is missing, replace with an appropriate certified cover.
- Replace drain covers as necessary. Drain covers deteriorate over time due to exposure to sunlight and weather.
- Avoid getting hair, limbs or body in close proximity to any suction cover, pool drain or outlet.
- Disable suction outlets or reconfigure into return inlets.

WARNING A clearly labeled emergency shut-off switch for the pump must be in an easily accessible, obvious place. Make sure users know where it is and how to use it in case of emergency.

The Virginia Graeme Baker (VGB) Pool and Spa Safety Act creates new requirements for owners and operators of commercial swimming pools and spas.

Commercial pools or spas constructed on or after December 19, 2008, shall utilize:

(A) A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8a Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs and either:

- (i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming pools, Spas and Hot Tubs or
- (ii) A properly designed and tested suction-limiting vent system or
- (iii) An automatic pump shut-off system.

Commercial pools and spas constructed prior to December 19, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets ASME/ANSI A112.19.8a and either:

- (A) A SVRS meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or
- (B) A properly designed and tested suction-limiting vent system, or
- (C) An automatic pump shut-off system, or
- (D) Disabled submerged outlets, or
- (E) Suction outlets shall be re-configured into return inlets.

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

CAUTION 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.



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.

General Installation Information

- All work must be performed by a qualified service professional, and must conform to all national, state, and local codes.
- Install to provide drainage of compartment for electrical components.
- These instructions contain information for a variety of pump models and therefore some instructions may not apply to a specific model. All models are intended for use in swimming pool applications. The pump will function correctly only if it is properly sized to the specific application and properly installed.

WARNING Pumps improperly sized or installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may include but not be limited to electric shock, fire, flooding, suction entrapment or severe injury or property damage caused by a structural failure of the pump or other system component.

WARNING The pump can produce high levels of suction within the suction side of the plumbing system. These high levels of suction can pose a risk if a person comes within the close proximity of the suction openings. A person can be seriously injured by this high level of vacuum or may become trapped and drown. It is absolutely critical that the suction plumbing be installed in accordance with the latest national and local codes for swimming pools.

Warnings and safety instructions for Pentair Aquatic Systems pumps and other related products are available at:

<http://www.pentairpool.com/pool-owner/safety-warnings/> or call (800) 831-7133 for additional free copies of these instructions.

Please refer to <http://www.pentairpool.com/pool-owner/safetywarnings/> for warning and safety instructions related to this product.

SAVE THESE INSTRUCTIONS

INSTALLATION

Only a qualified plumbing professional should install the WhisperFlo® High Performance Pump. Refer to “*Pump Warning And Safety Instructions*” on pages ii - iii for additional installation and safety information.

Location

Be sure the pump location meets the following requirements:

Note: Do not install this pump within an outer enclosure or beneath the skirt of a hot tub or spa unless marked accordingly.

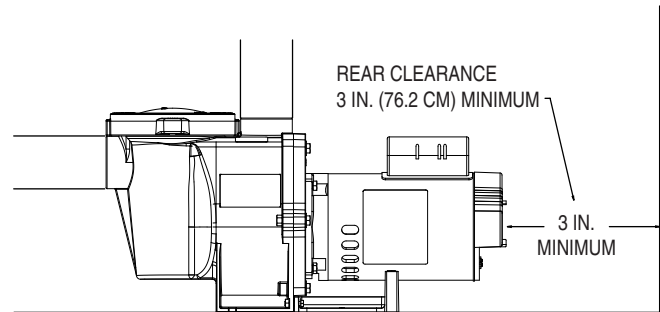
1. Install the pump as close to the pool or spa as possible. To reduce friction loss and improve efficiency, use short, direct suction piping returns.
2. Install a minimum of 5 feet (1.52 meters) from the inside wall of the pool and spa. Canadian installations require a minimum of 9.8 feet (3 meters) from pool water level.
3. Install the pump a minimum of 3 feet (.9 meters) from the heater outlet.
4. Do not install the pump more than 10 feet (3 meters) above the water level.
5. Install the pump in a well ventilated location protected from excessive moisture (i.e., rain gutter downspouts, sprinklers, etc.)
6. Install the pump with a rear clearance of at least 3 inches (76.2 mm) so that the motor can be removed easily for maintenance and repair.

Piping

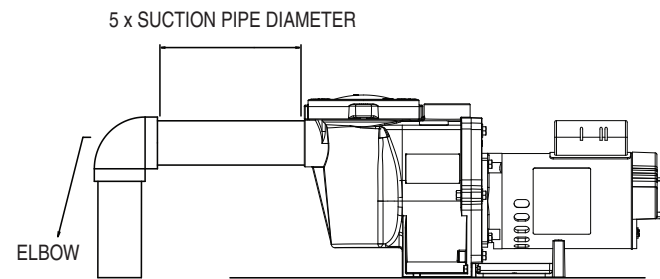
1. For improved pool plumbing, it is recommended to use a larger pipe size. When installing the inlet and outlet fittings (male adaptors), use thread sealant.
2. Piping on the suction side of the pump should be the same or larger than the return line diameter.
3. Plumbing on the suction side of the pump should be as short as possible.
4. It is recommended that a valve, elbow or tee installed in the suction line should be no closer to the front of the pump than five (5) times the suction line pipe diameter

Example:

A 2 inch (50.8 mm) pipe requires a 10 inch (254 mm) straight run in front of the suction inlet of the pump. This will help the pump prime faster and last longer.



Pump Rear Clearance



Recommended Piping

Fittings and Valves

1. Do not install 90° elbows directly into pump inlet.
2. Flooded suction systems should have gate valves installed on suction and discharge pipes for maintenance, however, the suction gate valve should be no closer than five times the suction pipe diameter as described in this section.
3. Use a check valve in the discharge line when using this pump for any application where there is significant height to the plumbing after the pump.
4. Be sure to install check valves when plumbing in parallel with another pump. This helps prevent reverse rotation of the impeller and motor.

WARNING

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. This pump must be installed by a licensed or certified electrician or a qualified service professional in accordance with the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to users, installers, or others due to electrical shock, and may also cause damage to property.

Always disconnect power to the pump at the circuit breaker before servicing the pump. Failure to do so could result in death or serious injury to service people, pool users or others due to electric shock and/or property damage.

Read all servicing instructions before working on the pump.

Electrical Wiring Installation

1. Be sure all electrical breakers and switches are turned off before wiring motor.
2. Be sure the supply line voltage matches the motor voltage listed on the motor plate (example 230 VAC or 115 VAC). If they do not match, permanent motor damage may occur.
3. Use strain relief and be sure all electrical connections are clean and tight.
4. Cut wires to the appropriate length so they don't overlap or touch when connected to the terminal board.
5. Permanently ground the motor using the green ground terminal located on the inside of the motor canopy or access plate, see Figure 1. Use the correct wire size and type specified by National Electrical Code. Make sure the ground wire is connected to an electrical service ground.
6. Bond the motor to the pool structure in accordance with the National Electrical Code. Use a solid No. 8 AWG or larger copper conductor. Run a wire from the external bonding to the pool bonding structure.
7. Connect the wire from the accessible bonding lug on the motor to all metal parts of the swimming pool, spa, or hot tub structure and to all electrical equipment, metal conduit, and metal piping within 5 feet (1.52 meters) of the inside walls of the swimming pool, spa, or hot tub. For Canada, a 6 AWG or larger solid copper bonding conductor is required.
8. The pump should be permanently connected to either a circuit breaker, 2-pole timer or 2-pole relay. If AC power is supplied by a GFCI circuit breaker, use a dedicated circuit breaker that has no other electrical loads.

Pentair offers 2-Pole 20 Amp GFCI breakers (P/N PA220GF) which offer 6 milliamp personnel protection while meeting 2008 to current NEC Standards for Pool Pumps.

Note: When the pump is started and stopped by removing power with a relay or timer, a two-pole device should be used to apply and remove power to both POWER LINE TERMINALS.

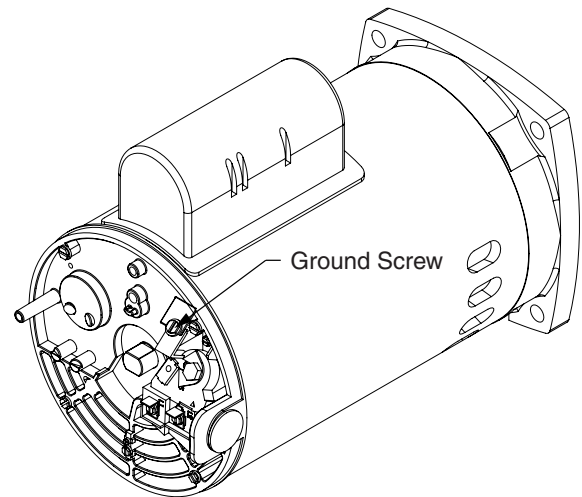


Figure 1. Field Wiring Compartment

MAINTENANCE



WARNING

DO NOT open the strainer pot if pump fails to prime or if pump has been operating without water in the strainer pot. Pumps operated in these circumstances may experience a build up of vapor pressure and may contain scalding hot water. Opening the pump may cause serious personal injury. In order to avoid the possibility of personal injury, make sure the suction and discharge valves are open and strainer pot temperature is cool to touch, then open with extreme caution.



CAUTION

To prevent damage to the pump and for proper operation of the system, clean pump strainer and skimmer baskets regularly.

Pump Strainer Basket

The pump strainer basket (or 'strainer pot', 'hair and lint pot'), is located in front of the volute. Inside the chamber is the basket which must be kept clean of leaves and debris at all times. View basket through the 'See Through Lid' to inspect for leaves and debris.

Regardless of the length of time between filter cleaning, it is most important to visually inspect the basket at least once a week. A dirty basket will reduce the efficiency of the filter and heater and also put an abnormal stress on the pump motor which would result in a costly repair bill.

Cleaning the Pump Strainer Basket

1. Turn off the pump at the circuit breaker.
2. Relieve pressure in the system by allowing the water to cool.
3. Gently tap the clamp in a counter-clockwise direction to remove the clamp and lid.
4. Remove debris and rinse out the basket. Replace the basket if it is cracked.
5. Put the basket back into the housing. Be sure to align the notch in the bottom of the basket with the rib in the bottom of the volute.
6. Fill the pump pot and volute up to the inlet port with water.
7. Clean the cover, O-ring, and sealing surface of the pump pot. **Note:** It is important to keep the lid O-ring clean and well lubricated.
8. Reinstall the lid by placing the lid on the pot. Be sure the lid O-ring is properly placed. Seat the clamp and lid on the pump then turn clockwise until the handles are horizontal.
9. Turn the power "ON" at the house circuit breaker. Reset the pool time clock to the correct time.
10. Open the High Flow manual air relief valve on top of the filter.
11. Stand clear of the filter. Start the pump.
12. Bleed air from the filter until a steady stream of water comes out. Close the High Flow™ Manual Air Relief Valve.



WARNING

THIS SYSTEM OPERATES UNDER HIGH PRESSURE. When any part of the circulating system (e.g., Lock 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 above instructions.



Winterizing

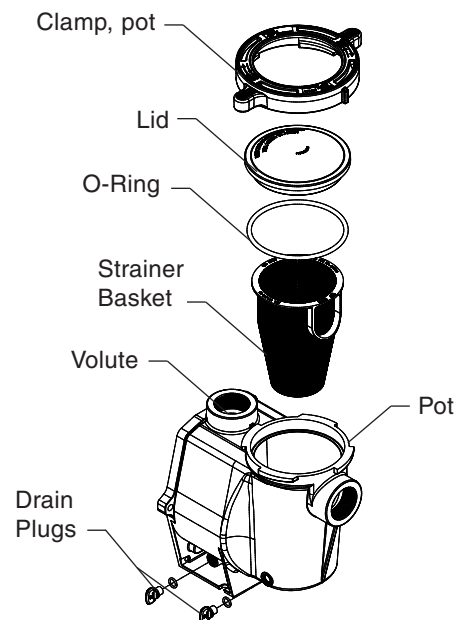
You are responsible for determining when freezing conditions may occur. If freezing conditions are expected, take the following steps to reduce the risk of freeze damage. **Freeze damage is not covered under warranty.**

To prevent freeze damage, follow the procedures below:

1. Shut off electrical power for the pump at the circuit breaker.
2. Drain the water out of the pump housing by removing the two thumb-twist drain plugs from the housing. Store the plugs in the pump basket.
3. Cover the motor to protect it from severe rain, snow and ice.

Note: Do not wrap motor with plastic or other air tight materials during winter storage. The motor may be covered during a storm, winter storage, etc., but never when operating or expecting operation.

In mild climate areas, when temporary freezing conditions may occur, run your filtering equipment all night to prevent freezing.



Strainer Pot Assembly

SERVICING



WARNING

Always disconnect power to the pump at the circuit breaker and disconnect the communication cable before servicing the pump. Failure to do so could result in death or serious injury to service people, users or others due to electric shock. Read all servicing instructions before working on the pump.



WARNING

DO NOT open the strainer pot if pump fails to prime or if pump has been operating without water in the strainer pot. Pumps operated in these circumstances may experience a build up of vapor pressure and may contain scalding hot water. Opening the pump may cause serious personal injury. In order to avoid the possibility of personal injury, make sure the suction and discharge valves are open and strainer pot temperature is cool to touch, then open with extreme caution.



CAUTION

Be sure not to scratch or mar the polished shaft seal faces; seal will leak if faces are damaged. The polished and lapped faces of the seal could be damaged if not handled with care.

Care of Electric Motor

Protect from heat

1. Shade the motor from the sun.
2. Any enclosure must be well ventilated to prevent overheating.
3. Provide ample cross ventilation.

Protect against dirt

1. Protect from any foreign matter or splashing water.
2. Do not store (or spill) chemicals on or near the motor.
3. Protect from any foreign matter or splashing water.
4. Avoid sweeping or stirring up dust near the motor while it is operating.
5. If a motor has been damaged by dirt it voids the motor warranty.
6. Clean the lid and clamp, O-ring, and sealing surface of the pump pot.

Protect against moisture

1. Protect from splashing or sprayed water.
2. Protect from extreme weather.
3. Protect from any foreign matter or splashing water.
4. If a motor has become wet - let it dry before operating. Do not allow the pump to operate if it has been flooded.
5. If a motor has been damaged by water it voids the motor warranty.

Note: When replacing the motor, be certain that the motor support is correctly positioned to support the size of motor being installed.

Shaft Seal Replacement

The Shaft Seal consists primarily of two parts, a rotating member and a ceramic seal.

The pump requires little or no service other than reasonable care, however, a Shaft Seal may occasionally become damaged and must be replaced.

Note: The polished and lapped faces of the seal could be damaged if not handled with care.

Pump Disassembly

All moving parts are located in the rear sub-assembly of this pump.

Tools required:

- 3/32 inch Allen head wrench
- 1/2 inch open end wrench
- 9/16 inch open end wrench
- Flat blade screwdriver
- #2 Phillips screwdriver

To remove and repair the motor subassembly, follow the steps below:

1. Turn off the pump circuit breaker at the main panel.
2. Drain the pump by removing the drain plugs.
3. Remove the 6 bolts that hold the main pump body (strainer pot/volute) to the rear sub-assembly.
4. GENTLY pull the two pump halves apart, removing the rear sub-assembly.
5. Use a 3/32 inch Allen head wrench to loosen the two holding screws located on the diffuser.
6. Hold the impeller securely in place and remove the impeller lock screw by using a #2 Phillips screwdriver. The screw is a left-handed thread and loosens in a clockwise direction.
7. Remove the shaft cap located at the back of the motor and hold the shaft secure with a 1/2 inch open-end wrench.
8. To unscrew the impeller from the shaft, twist the impeller counterclockwise.
9. Remove the four bolts from the seal plate to the motor, using a 9/16 inch wrench.



DO NOT run the pump dry. If the pump is run dry, the mechanical seal will be damaged and the pump will start leaking. If this occurs, the damaged seal must be replaced. ALWAYS maintain proper water level. If the water level falls below the suction port, the pump will draw air through the suction port, losing the prime and causing the pump to run dry, resulting in a damaged seal. Continued operation in this manner could cause a loss of pressure, resulting in damage to the pump case, impeller and seal and may cause property damage and personal injury.

Pump Reassembly

1. When installing the replacement shaft seal, use silicone sealant on the metal portion before pressing into the seal plate, being careful to keep off of the seal face. Ensure the seal is fully seated and allow 24 hours for sealant to cure. (Complete seal plate w/seal replacement kit available, P/N 350201/350101.)
2. Before installing the ceramic section of the seal into the impeller, be sure the impeller is clean. Use a light density soap and water to seal the seal. Press the seal into the impeller with your thumbs and wipe off the ceramic and carbon faces with a clean cloth.
3. Remount the seal plate to the motor by installing bolts in an X pattern and tightening to 70 in-lbs.
4. Clean the motor shaft thread and the impeller insert, then screw the impeller onto the motor shaft.
5. Screw in the impeller lock screw (counter-clockwise and tighten to 25 in-lbs. while holding the motor shaft with wrench).
6. Remount the diffuser onto the seal plate. Make sure the plastic pins and holding screw inserts are aligned.
7. Grease the diffuser O-ring and seal plate gasket.
8. Grease the bolt threads, assemble the motor sub-assembly to the strainer pot-pump body by using the two through bolts for proper alignment. Do not tighten the through bolts until all 6 bolts are in place and finger tightened. Torque in a cross pattern to 110 in-lbs.
9. Fill the pump with water.
10. Reinstall the pump lid and plastic clamp; see the next section, 'Restart Instructions'.
11. Reprime the system.

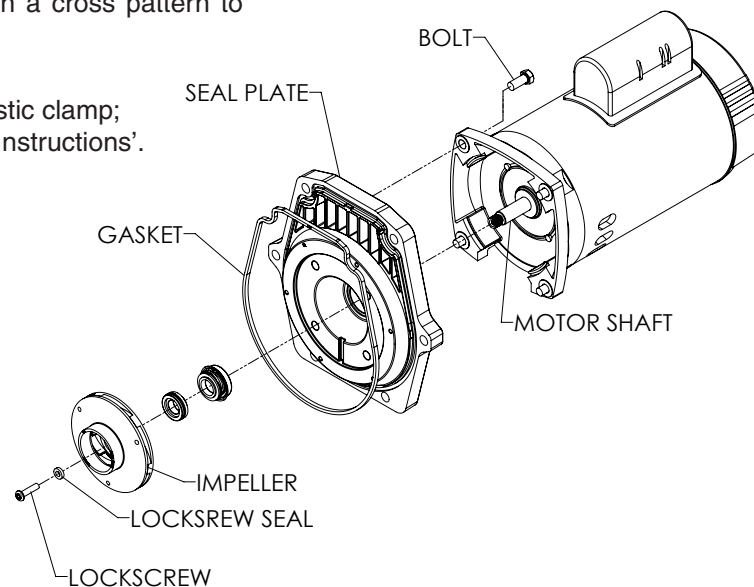
Restart Instructions

If pump is installed below the water level of the pool, close return and suction lines prior to opening hair and lint pot on pump. Make sure to re-open valves prior to operating.

Priming the Pump

The pump strainer pot must be filled with water before the pump is initially started. Follow these steps to prime the pump:

1. Remove the pump lid plastic clamp. Remove the pump lid.
2. Fill the pump strainer pot with water.
3. Reassemble the pump cover and plastic clamp onto the strainer pot. The pump is now ready to prime.
4. Open the air release valve on the filter, and stand clear of the filter.
5. Turn on the switch or time clock.
6. When water comes out of the air release valve, close the valve. The system should now be free of air and recirculating water to and from the pool.
7. For 2-speed pumps:
 - Pump should run on high-speed for priming.
 - The pump should not run longer than 8 minutes before priming is achieved.



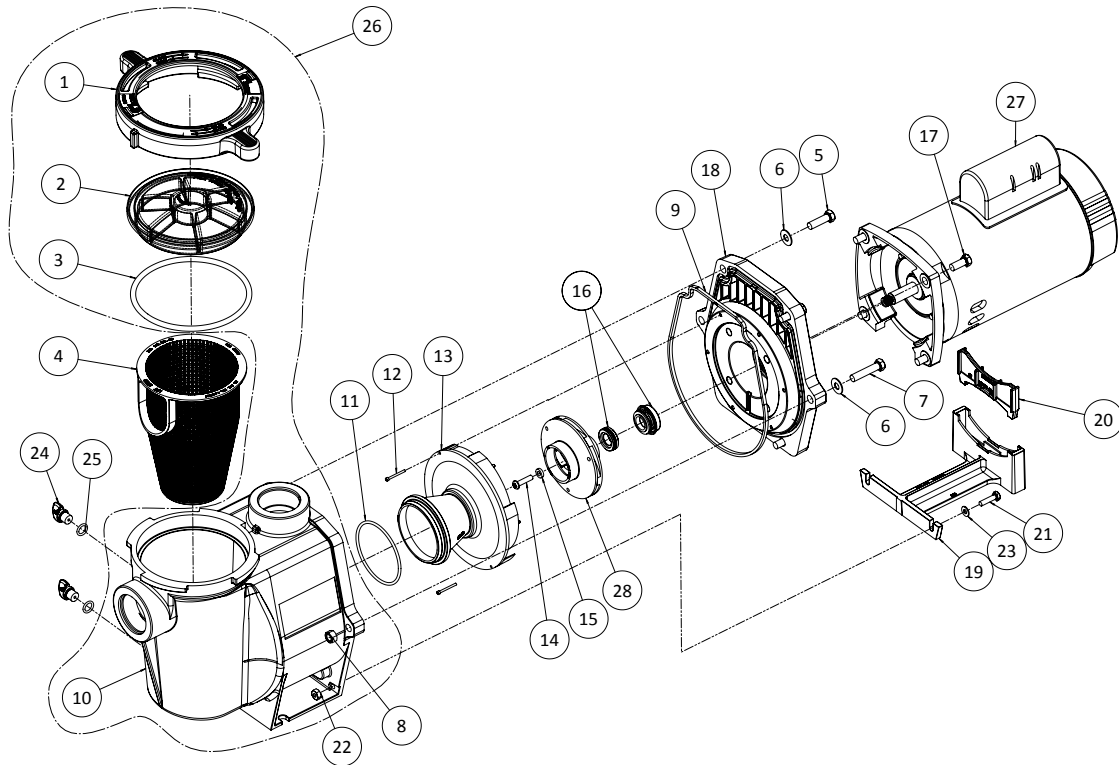
Motor Assembly

TROUBLESHOOTING

Problem	Possible Cause	Corrective Action
Pump failure.	<p>Pump will not prime - Air leak, too much air.</p> <p>Pump will not prime - Not enough water.</p> <p>Pump stainer gasket is clogged.</p> <p>Pump strainer gasket is defective.</p>	<p>Check suction piping and valve glands on any suction gate valves. Secure lid on pump strainer pot and be sure lid gasket is in place. Check water level to be sure skimmer is not drawing air.</p> <p>Be sure the suction lines, pump, strainer, and pump volute are full of water. Be sure valve on suction line is working and open (some systems do not have valves). Check water level to make sure water is available through skimmer.</p> <p>Clean pump strainer pot.</p> <p>Replace gasket.</p>
Reduced capacity and/or head.	<p>Air pockets or leaks in suction line.</p> <p>Clogged impeller.</p> <p>Pump strainer clogged.</p>	<p>Check suction piping and valve glands on any suction gate valves. Secure lid on pump strainer pot and be sure lid gasket is in place. Check water level to be sure skimmer is not drawing air.</p> <p>Turn off electrical power to the pump. Disassemble (see page 4, 'Pump Disassembly')</p> <p>Clean debris from impeller. If debris cannot be removed, complete the following steps:</p> <ol style="list-style-type: none"> 1. Remove left hand thread anti-spin bolt and o-ring. 2. Remove, clean, and reinstall impeller. <p>Reassemble (see page 5, 'Pump Reassembly')</p> <p>Clean suction trap.</p>

REPLACEMENT PARTS

WhisperFlo® High Performance Pump Parts List



ENGLISH

Item No.	P/N	Description
1	357199	Clamp, Cam & Ramp, Almond
1	357150	Clamp, Cam & Ramp, Black
2	357151	Cover, Clear, WFE Pump
2	357156	Cover, chemical resistant Cam & Ramp
3	350013	O-Ring, WFE Cover
4	070387	Strainer Basket, WFE
5	070430	Bolt, 3/8 - 16 x 1.25 Hex Head. SS, 4 Req.
6	072184	Washer, 3/8 x 13/16 O.D. SS, 6 Req.
7	070431	Bolt, 3/8 - 16 x 1.75 Hex Head. SS, 2 Req.
8	071403	Nut, 3/8, 16 Hex Head, 2 Req.
9	357100	Black Gasket for Seal Plate
10	357149	Volute & Seal Plate, Almond Replacement Kit
10	350015	Volute, WFE Pump & Pot, Almond
10	357157	Volute, WFE Pump & Pot, Black ①
11	355227	O-Ring Parker No. 2-238, WFE Pump
12	071660	Set Screw, 4-40 x 1-1/8 WFE, 2 Req.
13	072928	Diffuser assembly, WFE-12, 3 HP Only
13	072927	Diffuser assembly, WFE 2-8, 1/2 HP-2.5 HP
14	071652	Set Screw, 1/4 - 20 x 1 in. Phillips

Item No.	P/N	Description
15	075713	Rubber Washer, WFE Pump
16	071734S	Seal PA-7 w/ ceramic seat, PS1000
16	071728	Seal A7 w/ ceramic seat, PS201 ①
17	070429	Bolt 3/8 - 16 x 7/8 SS Hex Head, 4 Req.
18	350201	Seal Plate Kit WFE Almond (Includes Mechanical Seal installed) Items 9, 16 & 18
18	350101	Seal Plate Kit WFE Black (Includes Mechanical Seal installed) Items 16 & 18
19	070927	Foot, WFE Pump, Almond
19	357159	Foot, Black ①
20	070929	Foot Insert, WFE Pump, Almond
20	357160	Foot Insert, WFE Pump, Black ①
21	071657	Screw 1/4 - 20 x 1 In. Hex Head, SS, 2 Req.
22	071406	Nut, 1/4 - 20 Hex Head, SS, 2 Req.
23	072183	Washer, 1/4 x 5/8 OD, SS, 2 Req.
24	071131	Knob, Drain Plug, Almond, 2 Req.
24	357161	Knob, Drain Plug, Black, 2 Req. ①
25	192115	O-Ring, Drain Plug, 2 Req.
26	357149	Volute/Seal Plate Replacement Kit, Almond (Incl. Items: 1-4, 9, 10, 16, 18, 24, and 25)
27		See Motor Table on next page

Item No.	P/N	Description Motors
27	355008S	3/4 HP, 60 Hz, WFE-2, 3 & 24, 1 spd., almond, 31 lbs. ②
27	355010S	1 HP, 60 Hz, WFE-4 & 26, 1 spd., almond, 33 lbs. ②
27	355012S	1-1/2 HP, 60 Hz, WFE-6 & 28, 1 spd., almond, 39 lbs. ②
27	355014S	2 HP, 60 Hz, WFE-8 & 30, 1 spd., almond, 40 lbs. ②
27	355016S	3 HP, 60 Hz, WFE-12, 1 spd., almond, 40 lbs. ②
27	356630S	1 HP, WFDS-4 & 26, 2 spd., 34 lbs. ④
27	071320S	1-1/2 HP, WFDS-6 & 28, 2 spd., 36 lbs. ④
27	071321S	2 HP, WFDS-8 & 30, 2 spd., 45 lbs. ④
27	355018S	1/2 HP, WF-2 & 23, 1 spd., almond, 39 lbs. ③
27	355020S	3/4 HP, WF-3 & 24, 1 spd., almond, 26 lbs. ③
27	355022S	1 HP, WF-4 & 26, 1 spd., almond, 28 lbs. ③
27	355024S	1-1/2 HP, WF-6 & 28, 1 spd., 39 lbs. ③
27	355026S	2 HP, WF-8 & 30, 1 spd., 32 lbs. ③
27	355033S	3 HP, WF-12, 1 spd., almond, 40 lbs. ③
27	355203S	1 HP, WFK-4, 3 ph, 1 spd., black, 28 lbs.
27	355204S	1-1/2 HP, WFK-6, 3 ph, 1 spd., black, 30 lbs.
27	355205S	2 HP, WFK-8, 3 ph, 1 spd., black, 37 lbs.
27	355398S	3 HP, WFK-12, 3 ph, 1 spd., black, 35 lbs.
27	356626S	1 HP, WFK-4, 3 ph, 1 spd., almond, 28lbs.
27	356627S	1-1/2 HP, WFK-6, 3 ph, 1 spd., almond, 30lbs.
27	356628S	2 HP, WFK-8, 3 ph, 1 spd., almond, 37 lbs.
27	356629S	3 HP, WFK-12, 3 ph, 1 spd., almond, 35 lbs.
27	354805S	1 HP, WFK-4, TEFC, 3 ph, 1 spd., almond, 28lbs.
27	354807S	1-1/2 HP, WFK-6, TEFC, 3 ph., 1 spd., almond, 30lbs.
27	354809S	2 HP, WFK-8, TEFC, 3 ph., 1 spd., almond, 37 lbs.
27	354811S	3 HP, WFK-12, TEFC, 3 ph., 1 spd., almond, 35 lbs.

Not Shown

79129900	2-Speed Toggle Switch
350202	Seal Plate Kit: Seal plate (almond), Gasket (black), with installed Seal (Includes items: 9, 16, & 18)
350203	Seal Plate Kit: Seal plate (black), Gasket (black), with installed Seal (Includes items: 9, 16, & 18)
357244	Pot Assembly, Black NPT. (Includes items: 1-4, 10, 24 [qty. 2], 25 [qty. 2]).
357243	Pot Assembly, Almond NPT. (Includes items: 1-4, 10, 24 [qty. 2], 25 [qty. 2]).

Power End Sub-assembly

Includes Items: 12-18, 27-28

075136	WFE-2
075137	WFE-3, WFE-24
075138	WFE-4, WFE-26 ②
075139	WFE-6, WFE-28 ②
075140	WFE-8, WFE-30 ②
075141	WFE-12 ②
075145	WFDS-3, WFDS-24 ④
075142	WFDS-4, WFDS-26 ④
075143	WFDS-6, WFDS-28 ④
075144	WFDS-8, WFDS-30
075251	WF-2, WF-23 ③
075252	WF-3, WF-24 ③
075253	WF-4, WF-26 ③
075254	WF-6, WF-28 ③
075255	WF-8, WF-30 ③
075256	WF-12 ③

Fluid Ends-All Parts, w/o Motor

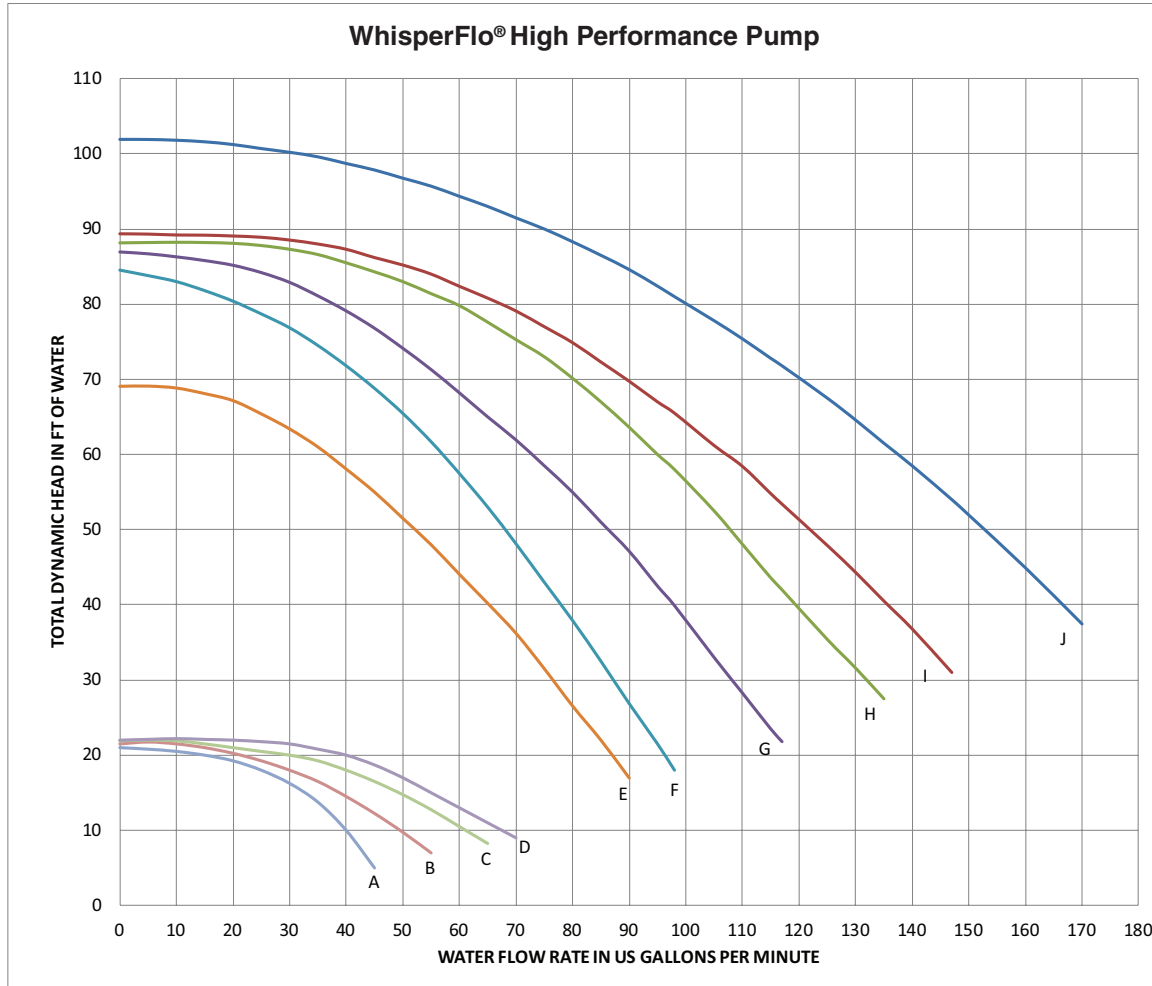
075451	WFE-2 fluid end, 1/2 HP
075452	WFE-3 fluid end, 3/4 HP
075453	WFE-4 fluid end, 1 HP
075454	WFE-6 fluid end, 1-1/2 HP
075455	WFE-8 fluid end, 2 HP
075456	WFE-12 fluid end, 3 HP

①	CSA/CUL (only) for Canada
②	Energy efficient, single phase
③	Standard efficiency, single phase
④	Two speed, single phase

Impeller Chart

HP	PUMP MODEL	STD PART NO.
1/2	WFE-2, WF-2, WF-23, WFK-2	073126
3/4	WFE-3, WFE-24, WF-3, WF-24, WFK-3, WFDS-24	073127
1	WFE-4, WFE-26, WF-4, WF-26, WFK-4, WFDS-4, WFDS-26	073128
1½	WFE-6, WFE-28, WF-6, WF-28, WFK-6, WFDS-6, WFDS-28	073129
2	WFE-8, WFE-30, WF-8, WF-30, WFK-8, WFDS-8, WFDS-30	073130
3	WFE-12, WF-12, WFK-12	073131

Pump Performance Curves



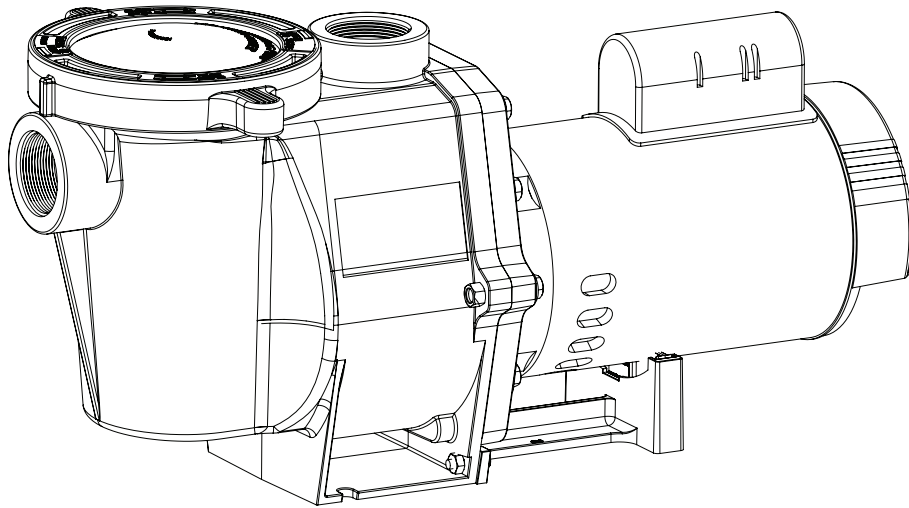
Curve	Model
A	WFDS-3, WFDS-24
B	WFDS-4, WFDS-26
C	WFDS-6, WFDS-28
D	WFDS-8, WFDS-30
E	WFE-2, WF-2, WF-23, WFK-2
F	WFE-3, WFE-24, WF-3, WF-24, WFK-3, WFDS-3, WFDS-24
G	WFE-4, WFE-26, WF-4, WF-26, WFK-4, WFDS-4, WFDS-26
H	WFE-6, WFE-28, WF-6, WF-28, WFK-6, WFDS-6, WFDS-28
I	WFE-8, WFE-30, WF-8, WF-30, WFK-8, WFDS-8, WFDS-30
J	WFE-12, WF-12, WFK-12

ENGLISH



WHISPERFLO®

BOMBA DE ALTO RENDIMIENTO



GUÍA DE INSTALACIÓN Y DEL USUARIO

INSTRUCCIONES IMPORTANTES DE SEGURIDAD
LEA Y SIGA TODAS LAS INSTRUCCIONES
GUARDE ESTAS INSTRUCCIONES

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P/N 071109 Rev. J 8/29/14

INSTRUCCIONES Y ADVERTENCIAS DE SEGURIDAD IMPORTANTES DE LA BOMBA



Nota Importante:

Atención Instalador: Esta guía contiene información importante sobre la instalación, el funcionamiento y el uso seguro de este producto. Esta información debe ser entregada al propietario y/o al operador de este equipo después de la instalación del limpiador de piscina. **Atención Usuario:** Este manual contiene información importante que le ayudará a utilizar y mantener este limpiador.

LEA Y SIGA TODAS LAS INSTRUCCIONES GUARDE ESTAS INSTRUCCIONES



Éste es el símbolo de alerta de seguridad.

Cuando vea este símbolo en su sistema o en este manual, busque alguna de las siguientes palabras y esté alerta ante la posibilidad de lesiones.

PELIGRO

Advierte sobre peligros que pueden causar la muerte, lesiones personales graves o daño a la propiedad si son ignorados.

ADVERTENCIA

Advierte sobre peligros que podrían causar la muerte, lesiones personales graves o daño a la propiedad si son ignorados.

PRECAUCIÓN

Advierte sobre los peligros que podrían o pueden causar lesiones personales menores o daños a la propiedad si son ignorados.

NOTA indica instrucciones especiales no relacionadas a peligros.

Lea cuidadosamente y siga las instrucciones de seguridad del equipo que aparecen en este manual. Mantenga las etiquetas de seguridad en buen estado; reemplácelas si faltan o están dañadas.

Cuando instale y utilice este equipo eléctrico, siempre debe respetar precauciones de seguridad básicas, incluyendo las siguientes:

ADVERTENCIA

No permita que los niños utilicen este producto.

ADVERTENCIA

Riesgo de choque eléctrico. Conecte sólo a un circuito eléctrico protegido por un interruptor de circuito con descarga a tierra (GFCI). Comuníquese con un electricista calificado si no puede verificar que el circuito esté protegido por un interruptor GFCI.

ADVERTENCIA

Conecte sólo a un circuito eléctrico protegido por un interruptor de circuito con descarga a tierra (GFCI). Este GFCI debe ser provisto por el instalador y debe ser probado de manera rutinaria. Para probar el GFCI presione el botón de prueba. El GFCI debería interrumpir la energía eléctrica. Presione el botón de reinicio. Debería restaurar la energía. Si el GFCI no funciona de esta manera, el GFCI tiene una falla. Si el GFCI interrumpe la energía a la bomba sin que se presione el botón de prueba, hay presencia de corriente de tierra, indicando la posibilidad de un choque eléctrico. No utilice esta bomba. Desconecte la bomba y haga que un representante de servicio técnico calificado corrija el problema antes de utilizar el equipo.

PRECAUCIÓN

Esta bomba se utiliza para piscinas permanentes y también puede ser utilizada en jacuzzis o spa si está indicado. No la utilice con piscinas desmontables. Una piscina con instalación permanente es una piscina construida en el suelo o en una base de manera que no puede ser desmontada. Una piscina desmontable está construida de manera que puede ser fácilmente desmontable para su almacenamiento y rearmada de acuerdo a su formato original.

Advertencias generales

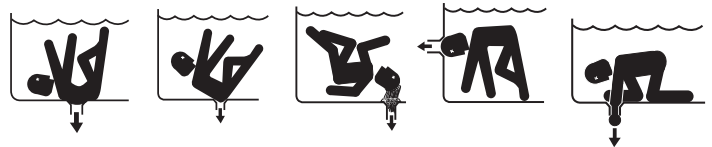
- Nunca abra el interior de la caja del motor. Hay un banco capacitor que admite una carga de hasta 230 VCA incluso cuando la unidad no tenga energía eléctrica.
- La bomba del spa no es sumergible.
- La bomba puede trabajar con flujos máximos altos; tenga cuidado cuando realice la instalación y programación para limitar el potencial de rendimiento de las bombas con equipos antiguos o de origen desconocido.
- Los requisitos de códigos para la conexión eléctrica difieren de un estado a otro. Instale los equipos de acuerdo con el Código Eléctrico Nacional y todos los códigos y ordenanzas locales aplicables.

PELIGRO

SI NO SE RESPETAN TODAS LAS INSTRUCCIONES Y ADVERTENCIAS LAS CONSECUENCIAS PUEDEN SER HERIDAS GRAVES O LA MUERTE. **LA BOMBA DEBE SER INSTALADA Y REVISADA ÚNICAMENTE POR UN PROFESIONAL DE SERVICIO DE PISCINAS CALIFICADO. LOS INSTALADORES, OPERADORES Y PROPIETARIOS DE LAS PISCINAS DEBEN LEER ESTAS ADVERTENCIAS Y TODAS LAS INSTRUCCIONES QUE APARECEN EN EL MANUAL DEL PROPIETARIO ANTES DE UTILIZAR ESTA BOMBA. ESTAS ADVERTENCIAS Y EL MANUAL DEL PROPIETARIO DEBEN PERMANECER CON EL PROPIETARIO DE LA PISCINA.**

PELIGRO

PELIGRO DE TRAMPA DE SUCCIÓN: ¡MANTÉNGASE ALEJADO DEL DRENAJE PRINCIPAL Y DE TODAS LAS SALIDAS DE SUCCIÓN!



LA BOMBA PRODUCE ALTOS NIVELES DE SUCCIÓN Y CREA UN FUERTE VACÍO EN EL DRENAJE PRINCIPAL EN LA BASE DEL CUERPO DE AGUA. ESTA SUCCIÓN ES TAN FUERTE QUE PUEDE ATRAPAR A ADULTOS O NIÑOS DEBAJO DEL AGUA SI SE ACERCAN DEMASIADO AL DRENAJE O SI HAY ALGUNA PARTE DE LA CUBIERTA O PARRILLA DEL DRENAJE SUELTA O AVERIADA.

EL USO DE CUBIERTAS NO APROBADAS O PERMITIR EL USO DE UN SISTEMA DE ACUICULTURA CUANDO FALTAN CUBIERTAS, SE ENCUENTRAN FRACTURADAS O AVERIADAS PUEDE TENER COMO RESULTADO EL ATRAPAMIENTO DEL CUERPO O DE UN MIEMBRO, ENREDO DEL CABELLO, ATRAPAMIENTO DEL CUERPO, DESTRIPIAMIENTO Y/O LA MUERTE.

La sección en el drenaje o salida puede causar:

Atrapamiento de miembros: Cuando se succiona un miembro o éste es insertado en una apertura que tiene como resultado una obstrucción mecánica o hinchazón. Este riesgo está presente cuando falta una cubierta del drenaje, o está rota, suelta, quebrada o no está bien asegurada.

Enredo del cabello: Cuando el cabello se enreda o se anuda en la cubierta del drenaje, atrapando al nadador debajo del agua. Este riesgo está presente cuando la velocidad del flujo de la cubierta es demasiado baja para la o las bombas.

Atrapamiento corporal: Cuando una porción del cuerpo queda contra la cubierta del drenaje y atrapa al nadador debajo del agua. Este riesgo existe cuando falta la cubierta del drenaje, cuando ésta está quebrada o cuando la velocidad de flujo de la cubierta no es lo suficientemente alta para la o las bombas.

Destripamiento: Cuando una persona está sentada en una piscina abierta (especialmente una piscina poco profunda para niños) o salida de un spa y se aplica la succión directamente a los intestinos, causando un daño intestinal severo. Este riesgo está presente cuando falta una cubierta del drenaje, o está suelta, quebrada o no está bien asegurada.

Atrapamiento mecánico: Cuando quedan atrapados en una entrada o en la cubierta del drenaje objetos tales como: joyas, trajes de baño, accesorios para el cabello, dedos de la mano o del pie o nudillos. Este riesgo está presente cuando falta la cubierta del drenaje, o está rota, suelta, quebrada o no está bien asegurada.

NOTA: LA INSTALACIÓN DE PLOMERÍA DE SUCCIÓN DEBE SER INSTALADA DE ACUERDO CON LOS CÓDIGOS, ESTÁNDARES Y PAUTAS NACIONALES Y LOCALES MÁS ACTUALIZADOS.

INSTRUCCIONES Y ADVERTENCIAS DE SEGURIDAD IMPORTANTES DE LA BOMBA

⚠️ ADVERTENCIA

PARA MINIMIZAR EL RIESGO DE LESIONES DEBIDO AL PELIGRO DE ATRAPAMIENTO POR SUCCIÓN:

- Para cada drenaje debe utilizarse una cubierta de succión anti-atrapamiento aprobada de acuerdo a ANSI/ASME A112.19.8 que debe estar correctamente instalada y asegurada.
- Cada cubierta de succión debe estar instalada al menos a tres pies (0,9 m) de distancia, medidos entre los 2 puntos más cercanos.
- Inspecciones regularmente todas las cubiertas para controlar que no existan quebraduras, daños o erosión por exposición a la intemperie.
- Si falta una cubierta o si ésta se afloja, quiebra, daña o rompe, reemplácela con una cubierta certificada adecuada.
- Reemplace las cubiertas de drenaje cuando sea necesario. Las cubiertas de drenaje se deterioran con el tiempo debido a la exposición al sol y a la intemperie.
- Evite que el cabello, los miembros o el cuerpo estén próximos a cualquier cubierta de succión, drenaje de la piscina o salida.
- Desactive las salidas de succión reconfigure las entradas de retorno.

⚠️ ADVERTENCIA

Debe existir un interruptor de emergencia para la bomba en un lugar fácilmente accesible y visible. Asegúrese que de los usuarios conozcan dónde está y sepan cómo usarla en caso de emergencia.

La ley de seguridad para piscinas y spa Virginia Graeme Baker (VGB) crea nuevos requisitos para los dueños y operadores de piscinas y spa comerciales.

Las piscinas y spa comerciales construidos después del 19 de diciembre de 2008 deben utilizar:

(A) Un sistema de drenaje principal múltiple sin aislación con cubiertas de salida de succión que cumplan con las características ASME/ANSI A112.19.8a para accesorios de succión en piscinas, piscinas poco profundas para niños, spas y jacuzzis ya sea:

- (i) Un sistema de seguridad de alivio de vacío (SVRS) que cumpla con la normativa ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) para sistemas de succión en piscinas residenciales y comerciales, spa, jacuzzis y piscinas poco profundas para niños, y/o especificaciones estándar ASTM F2387 para Manufactured Safety Vacuum Release Systems (SVRS) en piscinas, spa y jacuzzis o
- (ii) un sistema de ventilación bien diseñado y con un sistema probado de limitación de succión
- (iii) un sistema de apagado automático de bomba

Las piscinas o spa comerciales construidos con anterioridad al 19 de diciembre de 2008 con una salida de succión sumergida deben utilizar una salida de succión que cumpla con ASME/ANSI A112.19.8a y:

- (A) un SVRS que cumpla con los requisitos ASME/ANSI A112.19.17 y/o ASTM F2387, o bien
- (ii) un sistema de ventilación bien diseñado y con un sistema probado de limitación de succión o bien
- (iii) un sistema de apagado automático de bomba, o
- (D) salidas sumergidas desactivadas, o
- (E) Salidas de succión que deben ser reconfiguradas como entradas de retorno.

Para la instalación de controles eléctricos en la superficie de apoyo del equipo (interruptores ENCENDIDO/APAGADO, relojes o centro de carga automática)

⚠️ PRECAUCIÓN

Instale todos los controles eléctricos en la superficie de apoyo del equipo, como interruptores de encendido/apagado y sistemas de control, etc. para permitir el funcionamiento (arranque, apagado o servicio) de cualquier bomba o filtro de manera que el usuario no coloque ninguna porción de su cuerpo por encima o cerca de la tapa del filtro de la bomba, la tapa del filtro o el cierre de la válvula. Esta instalación debería permitirle al usuario utilizar espacio suficiente para permanecer alejado del filtro y la bomba durante el arranque, apagado o servicio del filtro del sistema.



⚠️ PELIGRO

PRESIÓN PELIGROSA: MANTÉNGASE ALEJADO DE LA BOMBA Y FILTRO DURANTE EL ARRANQUE



Los sistemas de circulación operan bajo alta presión. Cuando cualquier parte del sistema de circulación (es decir anillo de seguridad, bomba, filtro y válvulas, etc) está siendo controlado por el servicio técnico, es posible que ingrese aire al sistema y que éste se presurice.

El aire presurizado puede provocar que las válvulas y la tapa del filtro de la cubierta de la caja de la bomba se separen violentamente lo cual puede tener como resultado lesiones graves o la muerte. La tapa del tanque del filtro y la cubierta del filtro deben estar correctamente aseguradas para evitar una separación violenta. Manténgase alejado del equipo del sistema de circulación cuando encienda o arranque la bomba.

Antes de realizar el servicio al equipo, tome nota de la presión del filtro. Asegúrese de que se realicen todos los controles para asegurar que el sistema no arranque sin aviso durante el servicio técnico. Desconecte la energía a la bomba. **IMPORTANTE: Coloque la válvula de alivio de aire manual del filtro en posición abierta y espere que se libere la presión del sistema.**

Antes de iniciar el sistema, abra totalmente la válvula de liberación de aire manual y ubique todas las válvulas del sistema en posición "abierto" para permitir que el agua fluya libremente desde y hacia el tanque. Alejese de los equipos y arranque la bomba.

IMPORTANTE: No cierre la válvula de alivio de aire manual del filtro hasta que se haya descargado la totalidad de la presión de la válvula y aparezca un chorro de agua constante. Observe el indicador de presión del filtro y asegúrese de que no es más alto que el estado anterior al servicio.

Información general para la instalación

- La instalación y el servicio deben ser efectuados por un profesional de servicio calificado, y deben cumplir con todos los códigos nacionales, estatales y locales.
- En la instalación se debe colocar un drenaje en el compartimento para los componentes eléctricos.
- Estas instrucciones contienen información para una variedad de modelos de bombas y por lo tanto algunas instrucciones pueden no aplicarse a un modelo específico. Todos los modelos deben ser utilizados en aplicaciones de piscinas. La bomba funcionará correctamente sólo si tiene el tamaño adecuado para la aplicación específica y si está correctamente instalada.

⚠️ ADVERTENCIA

Las bombas de tamaño incorrecto o instaladas de manera incorrecta o utilizadas en aplicaciones diferentes a aquellas para las cuales la bomba fue diseñada pueden tener como resultado daños personales severos o la muerte. Estos riesgos incluyen pero no se limitan a choque eléctrico, incendio, inundación, succión, atrapamiento, lesiones graves o daño a la propiedad causados por una falla estructural de la bomba u otro componente del sistema.

⚠️ ADVERTENCIA

La bomba puede producir niveles altos de succión dentro del lado de succión del sistema de plomería.

Estos altos niveles de succión pueden implicar un riesgo si una persona se acerca demasiado a los orificios de succión. Este alto nivel de vacío puede causar daños severos en personas, quienes también podrían quedar atrapadas y ahogarse. Es de primordial importancia que el sistema de plomería sea instalado de acuerdo a los más recientes códigos nacionales y locales para las aplicaciones de piscinas.

Antes de instalar este producto, lea y siga todas las advertencias e instrucciones incluidas. Llame al (800) 831-7133 para obtener copias adicionales de estas instrucciones sin costo.

Instrucciones y advertencias de seguridad y la versión en español de este manual del producto, se puede encontrar en línea a:

<http://www.pentairpool.com/es/pool-owner/manuals/> o llame al (800) 831-7133 para obtener copias adicionales de estas instrucciones sin costo.

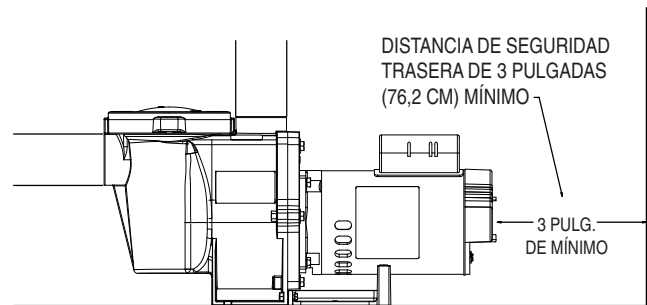
GUARDE ESTAS INSTRUCCIONES

INSTALACIÓN

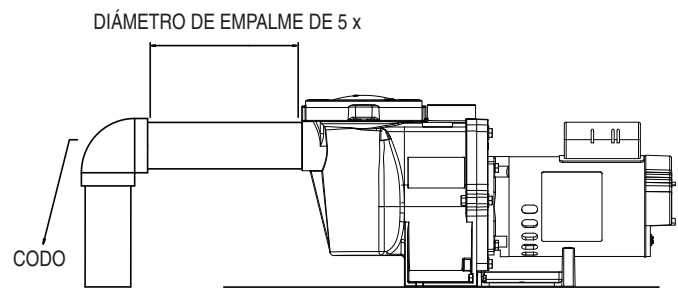
Sólo personal de servicio calificado debe instalar la bomba WhisperFlo®. Consulte la sección "Instrucciones de seguridad y advertencias de la bomba" en las páginas 11 a 12 para obtener información adicional sobre pautas para la instalación y la seguridad.

Ubicación

1. Instale la bomba lo más cerca posible a la piscina o spa. Para reducir la pérdida de fricción y mejorar la eficacia, use un mecanismo de succión corta y directa y retornos de tuberías.
2. Realice la instalación a un mínimo de 5 pies (1,52 m.) de la pared interior de la piscina y el spa. En Canadá, las instalaciones deben estar como mínimo a una distancia de 9,8 pies (3 metros) del agua de la piscina.
3. Instale la bomba a un mínimo de 3 pies (0,9 metros) de la salida del calefactor.
4. No instale la bomba a más de 10 pies (2,44 m) por encima del nivel del agua.
5. Instale la bomba en un área cubierta y bien ventilada para protegerla de la humedad excesiva (es decir, lluvia, sistemas de aspersión, etc.)
6. Para jacuzzis y spas, no instale dentro de una caja exterior o debajo de la base de un jacuzzi o spa.
7. Instale la bomba con una distancia de separación trasera de al menos 3 pulgadas (76,2 mm) de manera que el motor pueda ser extraído fácilmente cuando debe ser reparado y cuando se realice el mantenimiento.



Distancia de seguridad de la parte trasera de la bomba



Recomendado mínimo Diámetro de empalme

Tuberías

1. Para una mejor plomería en la piscina, se recomienda utilizar un tamaño de tubería más grande. Cuando instale los accesorios para entradas y salidas (adaptadores macho), use un sellador de roscas.
2. Utilice tamaños de caños más grandes para una mejor tubería. El diámetro de empalme debe ser el mismo o mayor que el diámetro de la línea de retorno.
3. Las tuberías en el lado de succión de la bomba deben ser lo más cortas posibles.
4. Se recomienda una válvula, codo o pieza en forma de T en la línea de succión no debería estar más cerca al frente de la bomba que cinco veces el diámetro de la tubería de la línea de succión (es decir, una tubería de 2 pulgadas (5,1 cm) necesita un espacio recto enfrente de la entrada de succión de la bomba de 10 pulgadas (254 mm)). Esto ayudará a que el cebado de la bomba sea más rápido y dure por más tiempo.

Conexiones y Válvulas

1. No instale codos de 90° directamente en la entrada de la bomba.
2. Los sistemas de succión deberían tener válvulas de compuertas instaladas en las tuberías de succión y descarga para mantenimiento; sin embargo, la válvula de compuerta de succión no debe estar más cerca que cinco veces el diámetro de la tubería de succión como se describe en el párrafo anterior.
3. Utilice una válvula de retención en la línea de descarga al utilizar esta bomba para cualquier aplicación donde hay altura significativa de la tubería después de la bomba.
4. Asegúrese de instalar las válvulas de comprobación cuando nivela en paralelo con otra bomba. Esto ayuda a evitar la rotación inversa del propulsor y el motor.

ADVERTENCIA

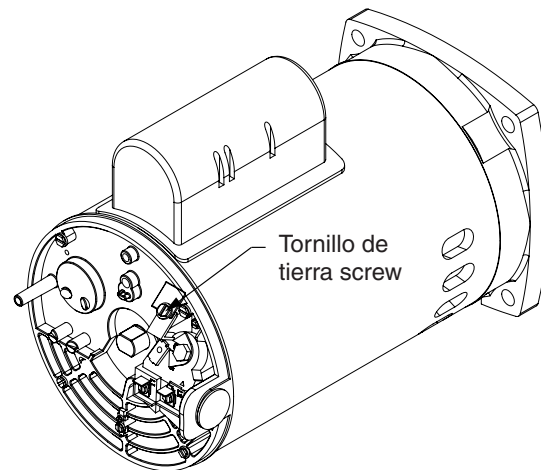
RIESGO DE CHOQUE ELÉCTRICO O ELECTROCUCIÓN. Esta bomba debe ser instalada por un electricista autorizado o matriculado o un profesional de servicio calificado de acuerdo con el Código Eléctrico Nacional y todos los códigos y ordenanzas locales aplicables. Una instalación inadecuada generará un riesgo eléctrico que puede ocasionar la muerte o lesiones graves a los usuarios, los instaladores u otras personas debido a un choque eléctrico, y también puede provocar daños a la propiedad.

Siempre desconecte la energía eléctrica a la bomba en el interruptor de circuito antes de realizar el servicio de la bomba. Si no se hace esto, las personas que realizan el servicio, los usuarios u otras personas pueden resultar muertas o con heridas de gravedad debido al electrochoque.

Lea todas las instrucciones de servicio antes de comenzar a trabajar en la bomba.

Instalación de cableado eléctrico

1. Asegúrese de que todos los interruptores y conmutadores eléctricos estén apagados antes de cablear el motor.
2. Asegúrese de que el voltaje de la línea de suministro coincida con el voltaje del motor descrito en la placa del motor (por ejemplo, 230 VCA o 115 VCA). Si no coinciden, puede ocurrir un daño permanente al motor.
3. Utilice el alivio de tensión y asegúrese de que todas las conexiones eléctricas estén limpias y ajustadas.
4. Corte los cables en la longitud adecuada, de modo de que no se superpongan o toquen cuando estén conectados.
5. Conecte el motor a tierra de manera permanente utilizando el cable a tierra verde, como se muestra a continuación. Utilice el tamaño y tipo de cable correcto especificado por el Código Eléctrico Nacional. Asegúrese de que el cable a tierra esté conectado a una conexión a tierra de servicio eléctrico.
6. Una el motor a la estructura conforme lo estable el Código Eléctrico Nacional. UL requiere el uso de un conductor de interconexión de cobre sólido de un diámetro mínimo de 8 AWG. Pase un cable desde el tornillo o terminal de interconexión externa hasta la estructura de interconexión.
7. Conecte el cable desde el conector de cable accesible en el motor hasta todas las partes metálicas de la estructura y todo el equipo eléctrico, conducto metálico y tubería metálica a 5 pies (1,5 m) de las paredes internas de la estructura. Para Canadá, se requiere un conductor de interconexión de cobre sólido de 6 AWG o más largo.
8. La bomba debe conectarse de manera permanente ya sea a un interruptor de circuito, reloj o relé de 2 polos. Si se suministra energía CA a través de un interruptor de circuito GFCI, utilice un interruptor de circuito especial que no posea otras cargas eléctricas.



Nota: Cuando la bomba se monta permanentemente dentro de 5 pies (1.524 m) de las paredes interiores de una piscina, tiene que usar un No. 8 AWG o conductor más grande para conectar al tirón de conductor que pega.

Nota: Cuando la bomba se arranca y detiene al desconectar la energía mediante un relé o reloj, se debe utilizar un dispositivo de dos polos para aplicar y desconectar la energía de las dos TERMINALES DE LÍNEA DE ENERGÍA.

MANTENIMIENTO



ADVERTENCIA

NO abra el depósito del filtro si el cebado de la bomba falla o si la bomba ha estado funcionando sin agua en el depósito del filtro. Las bombas que funcionan en estas circunstancias pueden experimentar una acumulación de presión de vapor y pueden contener agua caliente escaldada. Si abre la bomba puede resultar herido de gravedad. Para evitar la posibilidad de lesiones personales, asegúrese de que las válvulas de succión y descarga estén abiertas y la temperatura del depósito del filtro esté fría para el tacto, luego ábrala con extrema precaución.



PRECAUCIÓN

Para evitar el daño de la bomba y para un adecuado funcionamiento del sistema, limpie el filtro de la bomba y las canastillas de los desnatadores con regularidad.

Canastilla del filtro de la bomba

La canastilla del filtro (o "depósito del filtro") se encuentra enfrente del alojamiento de la bomba. La canastilla del filtro debe mantenerse limpia y sin suciedad. Inspeccione la canastilla a través de la tapa en la parte superior del alojamiento.

Asegúrese de inspeccionar visualmente la canastilla del filtro cada 1 a 4 semanas. Las canastillas del filtro sucias reducen la eficiencia del filtro y del calefactor y ejercen una presión anormal sobre el motor de la bomba. La acumulación de bacterias puede ensuciar la tapa.

Limpieza de la canastilla del filtro de la bomba

1. Apague la bomba en el interruptor de circuito.
2. Libere presión en el sistema.
3. Gire la tapa y abrazadera en el sentido contrario a las agujas del reloj y retírelas de la bomba.
4. Retire los residuos y limpie la canastilla. Reemplace la canastilla si está rajada.
5. Vuelva a colocar la canastilla en la caja. Asegúrese de alinear la perforación en la parte inferior de la canastilla con el acanalado en la parte inferior del alojamiento.
6. Llene el depósito y el alojamiento de la bomba hasta el puerto de entrada con agua.
7. Limpie la tapa y la abrazadera, el anillo tórico y la superficie de sellado del depósito de la bomba.

Nota: Es importante que mantenga el anillo tórico de la tapa limpio y bien lubricado.

8. Vuelva a instalar la tapa colocando la abrazadera y la tapa en el depósito. Asegúrese de que el anillo tórico de la tapa esté bien colocado.

Coloque la abrazadera y la tapa sobre la bomba, luego gire en sentido de las agujas del reloj hasta que las manijas del anillo de seguridad estén horizontales.

9. Encienda la bomba en el interruptor de circuito.
10. Abra la válvula de alivio de aire manual en la parte superior del filtro. Aléjese del filtro.
11. Espere hasta que se libere toda la presión. Ponga en marcha la bomba.
12. Purgue el aire del filtro hasta que un flujo constante de agua salga de la válvula de alivio de aire del filtro. Cierre la válvula de alivio de aire manual.



ESTE SISTEMA OPERA BAJO ALTA PRESIÓN.

Cuando cualquier parte del sistema de circulación (es decir anillo de seguridad, bomba, filtro, válvulas, etc.) está siendo controlado por el servicio técnico, es posible que ingrese aire al sistema y que éste se presurice. El aire presurizado puede causar que la tapa se separe, lo que puede provocar heridas graves, la muerte o daño a la propiedad. A fin de evitar este riesgo potencial, siga las instrucciones que se mencionan arriba.



Acondicionamiento para el invierno

- En áreas de clima templado, en caso de condiciones temporales de congelamiento, haga funcionar su equipo de filtración toda la noche para evitar el congelamiento.
- Usted es responsable de determinar cuándo pueden ocurrir condiciones de congelamiento. Si se esperan condiciones de congelamiento, siga los siguientes pasos para reducir el riesgo de daño por congelamiento. El daño por congelamiento no se encuentra cubierto por la garantía.

Para evitar el daño por congelamiento, siga las instrucciones a continuación:

1. Apague el suministro eléctrico de la bomba en el interruptor de circuito.
2. Drene el agua de la caja de la bomba retirando los dos tapones de drenaje de la tapa. Guarde los tapones en la canastilla de la bomba.
3. Cubra el motor para protegerlo de la lluvia fuerte, la nieve o el hielo.

Nota: No envuelva el motor con plástico u otros materiales hermetizados durante el almacenamiento de invierno. El motor puede estar cubierto durante una tormenta, el almacenamiento de invierno, etc., pero nunca cuando esté funcionando o se espere que comience a funcionar.



**ADVERTENCIA**

Siempre desconecte la energía hacia la bomba en el interruptor de circuito antes de realizar el servicio a la bomba. Si no se hace esto, las personas que realizan el servicio, los usuarios u otras personas pueden resultar muertas o con heridas de gravedad debido al electrochoque. Lea todas las instrucciones de servicio antes de comenzar a trabajar en la bomba.

**ADVERTENCIA**

NO abra el depósito del filtro si el cebado de la bomba falla o si la bomba ha estado funcionando sin agua en el depósito del filtro. Las bombas que funcionan en estas circunstancias pueden experimentar una acumulación de presión de vapor y pueden contener agua caliente escaldada. Si abre la bomba puede resultar herido de gravedad. Para evitar la posibilidad de lesiones personales, asegúrese de que las válvulas de succión y descarga estén abiertas y la temperatura del depósito del filtro esté fría para el tacto, luego ábrala con extrema precaución.

**PRECAUCIÓN**

Asegúrese de no rayar o marcar las caras pulidas del sello del eje; el sello perderá si las caras se encuentran dañadas. Las caras pulidas y recubiertas del sello se podrían dañar si no son tratadas con cuidado.

Cuidado del motor

Protéjalo del calor

1. Cubra el motor del sol.
2. Cualquier caja del motor debe estar bien ventilada para evitar el sobrecalentamiento.
3. Proporcione amplia ventilación cruzada.

Protéjalo contra la suciedad.

1. Protéjalo contra cualquier materia extraña o salpicadura de agua.
2. No almacene (o derrame) químicos sobre o cerca del motor.
3. Protéjalo contra cualquier materia extraña o salpicadura de agua.
4. Evite barrer o levantar polvo cerca del motor mientras está en funcionamiento.
5. Si un motor se daña por suciedad, la garantía del motor se anula.
6. Limpie la tapa y la abrazadera, el anillo tórico y la superficie de sellado del depósito de la bomba.

Protéjalo contra la humedad

1. Protéjalo contra las salpicaduras o pulverizaciones de agua.
2. Protéjalo de las temperaturas extremas.
3. Protéjalo contra cualquier materia extraña o salpicadura de agua.
4. Si un motor se moja, déjelo secar antes de ponerlo en funcionamiento. No permita que la bomba funcione si se ha inundado.
5. Si un motor se daña por agua, la garantía del motor se anula.

Nota: Cuando está reemplazando el motor, asegúrese que el soporte de motor está colocado correctamente para soportar el tamaño del motor que se está instalando.

El sello de eje

El sello de eje consiste principalmente en dos piezas, un miembro rotativo y un sello cerámico. La bomba requiere de poco o de ningún mantenimiento además de atención razonable, sin embargo, podría ser que de vez en cuando se dañe el sello de eje y tenga que reemplazarse.

Nota: Las caras pulidas y labradas del sello se pueden dañar si no se usa con cuidado.

Desmontaje de bomba

Todas piezas móviles se encuentran en el montaje de abajo por atrás de esta bomba.

Herramientas requeridas:

- 3/ Llave de boca de 3/32 pulgada (.2381 cm)
- 1/Llave de boca de 1/2 pulgada (15.24 cm).
- 9/Llave de boca de 9/16 pulgada (1.429 cm).
- F Destornillador con cabeza plana.

Para quitar y reparar el montaje de abajo del motor ejecute los siguientes procedimientos.

1. Apague el cortacircuito de bomba en el panel principal.
2. Vacíe la bomba al quitar los tapones de drenaje.
3. Quite los 6 pernos que sujetan el cuerpo de bomba principal (olla de colador/voluta) al montaje de abajo por atrás.
4. **SUAVEMENTE** separe las dos mitades de bomba, quitando el montaje de abajo por atrás.
5. Use una llave de boca de 3/32 pulgada (.2381 cm) para desapretar los dos tornillos que soportan y que se encuentran en el difusor.
6. Mantenga el impulsor seguramente en lugar y quite el tornillo de llave del impulsor al usar un desarmador (desatornillador) de cruz. Este tornillo tiene rosca a mano izquierda y se desaprieta en el sentido de las agujas del reloj.
7. Quite la tapa del eje que se encuentra en la parte de atrás del motor y mantenga el eje seguro con una llave de boca de 1/2 pulgada (15.24 cm).
8. Para destornillar el impulsor del eje, déle vuelta al impulsor en el sentido opuesto de las agujas del reloj.
9. Quite los cuatro pernos de la placa de sello al motor, usando una llave de 9/16 pulgada (1.429 cm).



NO haga funcionar la bomba en seco. Si hace funcionar la bomba en seco, el sello mecánico se dañará y la bomba comenzará a perder. Si esto ocurre, deberá cambiar el sello dañado. SIEMPRE mantenga el nivel de agua adecuado. Si el nivel de agua cae por debajo del puerto de succión, la bomba extraerá aire del puerto de succión, perderá cebado y funcionará en seco, lo que dañará el sello. El funcionamiento continuo en este estado puede causar una pérdida de presión, lo que dañará la caja de la bomba, el propulsor y sello y puede provocar la pérdida de propiedad y lesiones personales.

Armar la bomba de nuevo

1. Cuando este instalando el sello mecánico de la flecha, use un sellador de silicón en la parte metálica de la flecha antes de presionar contra la placa de sello, y teniendo mucho cuidado de mantener el sellador de silicón alejado del la cara de sellado de la bomba. Asegúrese que el sello se encuentre completamente asentado y deje pasar 24 horas para permitir que el sellador seque. (Kid de remplazo completo con la placa de sello y el sello mecánico esta disponible, P/N 350201/350101.)
2. Antes de instalar la sección cerámica del sello en el impulsor, asegúrese que el impulsor está limpio. Use un jabón de poca densidad y agua para sellar el sello. Empuje el sello en el impulsor con los dedos gordos y pase un paño para limpiar las caras cerámicas y de carbón.
3. Reinstalar de nuevo la placa de sello al motor. Ajustando los Pernos, 3/8-16 x 7/8 (2,22 cm) de cabeza hexagonal, a un torque de 7,91 Nm de manera cruzada (apretar uno de los pernos y después apretar el perno opuesto y repita la misma secuencia hasta que todos los pernos estén ajustados al torque requerido).
4. Limpie la rosca de la flecha y la rosca del impulsor, después enrosque el impulsor a la flecha del motor.
5. Atornille el tornillo de cierre del impulsor (en el sentido opuesto de las agujas del reloj para apretar).
6. Monte de nuevo el difusor en la placa de sello. Asegúrese que las clavijas plásticas y las inserciones de tornillos de mantener están alineado.
7. Engrase el anillo en O del difusor y empaque de placa de sello o el anillo en O antes de armar de nuevo.
8. Engrase las roscas de perno, arme el montaje de abajo del motor al cuerpo de olla de colar y bomba al usar los dos pernos que corren a través para tener alineamiento adecuado. Colocar los Pernos, 3/8 -16 x 2 de cabeza hexagonal 18-8 acero inoxidable (se requieren 2) a través de la placa de sellado y la voluta y no los ajuste hasta que los Pernos de 3/8, 16 x 1-1/4 (3,18 cm) cabeza hexagonal 18-8 acero inoxidable (se requieren 4) estén ajustados a mano. Ajustar todos los pernos a un torque de 12,43 Nm, de manera cruzada.
9. Llène la bomba con agua.
10. Instale de nuevo la tapa de bomba y abrazadera plástica; vea INSTRUCCIONES PARA ENCENDER DE NUEVO.
11. Prepare de nuevo el sistema.

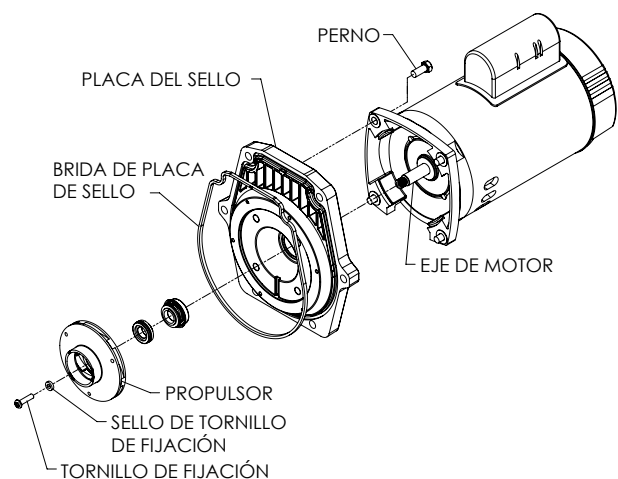
Instrucciones para encender de nuevo

Si se instala la bomba debajo del nivel de agua en la piscina, cierre las líneas de regreso y de aspiración antes de abrir la olla de pelo y pelusa en la bomba. Asegúrese de abrir de nuevo las válvulas antes de usar.

Imprimir la bomba

La olla de colador de bomba tiene que llenarse con agua antes de que se empiece la bomba inicialmente. Siga estos pasos para imprimir la bomba.

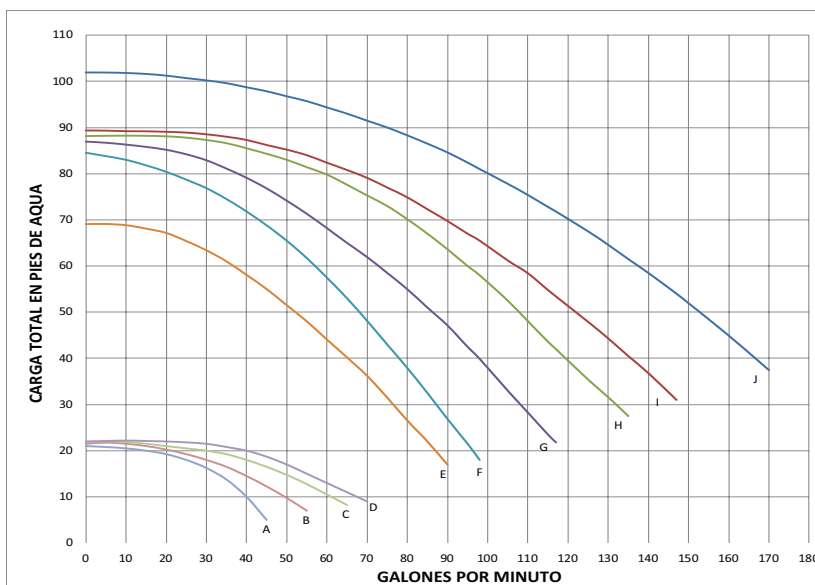
1. Quite la abrazadera plástica de la tapa de la bomba. Quite la tapa de la bomba.
2. Llène la olla de colador de bomba con agua.
3. Arme de nuevo el cubierto de bomba y abrazadera plástica en la olla de colador. Ahora la bomba está lista para imprimir.
4. Abra válvula de escape de aire en el filtro y manténgase a distancia del filtro.
5. Encienda el interruptor o reloj.
6. Cuando agua sale de la válvula de escape de aire, cierre la válvula. Este sistema ahora debe estar libre de aire y circulando agua de nuevo a la piscina y de vuelta.
7. Para bomba de 2 velocidades:
8. La bomba debe funcionar en alta velocidad para imprimir.
9. La bomba no debe funcionar por más de 8 minutos antes de que se logre imprimir.



LOCALIZADOR DE AVERÍAS

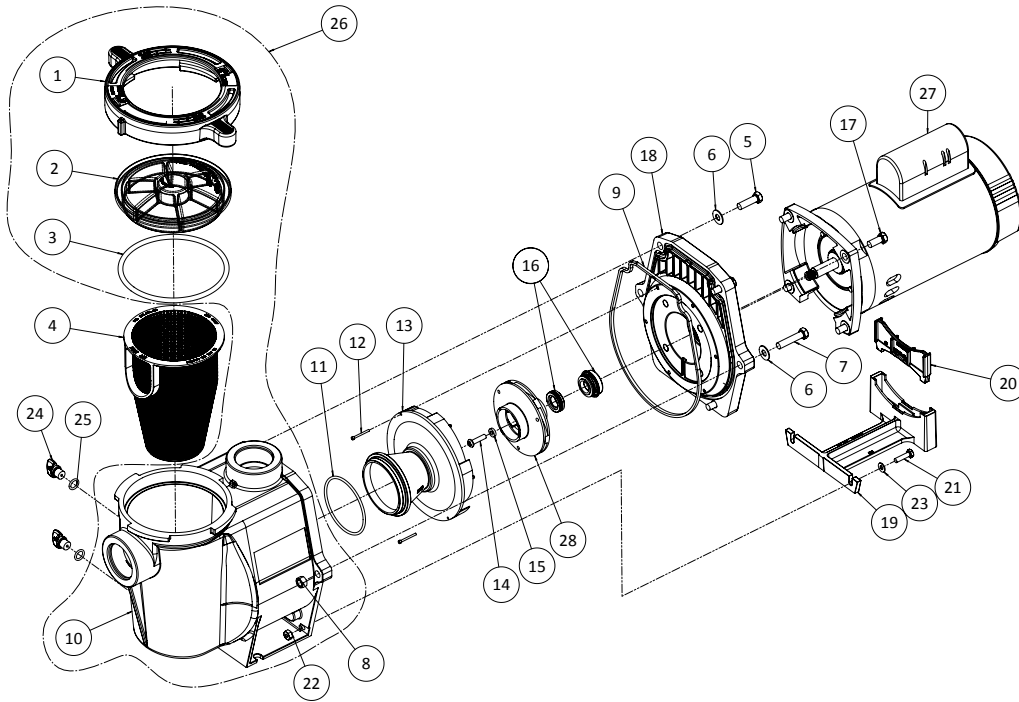
Problema	Posible causa	Medida correctiva
Si la bomba falla.	<p>La bomba no imprima – demasiado aire.</p> <p>La bomba no imprima—no hay agua suficiente</p> <p>El colador de bomba está atascado Empaque de colador de bomba defectuoso.</p>	<p>Revise la tubería de succión y las prensastopas en cualquier válvulas de puerta de aspiración. Cierre la tapa en la olla de coladora de bomba y asegúrese que el empaque de tapa está en lugar. Revise el nivel de agua para asegurarse que la desnatadora no está jalando aire.</p> <p>Asegúrese que las líneas de aspiración, el colador de bomba, y la voluta de bomba están llenas con agua.</p> <p>Asegúrese que la válvula en la línea de aspiración está funcionando y abierta, (algunos sistemas no tienen válvulas). Revise el nivel de agua para asegurarse que hay agua disponible a través de la desnatadora.</p> <p>Limpie la olla de coladora de bomba. Reemplazar empaque.</p>
Capacidad reducida y/o presión baja de agua.	<p>Bolsas de aire o fugas en la línea de aspiración.</p> <p>Impulsor atascado.</p> <p>Colador de bomba atascado.</p>	<p>Revise la tubería de succión y las prensastopas en cualquier válvulas de puerta de aspiración. Cierre la tapa en la olla de coladora de bomba y asegúrese que el empaque de tapa está en lugar. Revise el nivel de agua para asegurarse que la desnatadora no está jalando aire.</p> <p>Apague la energía eléctrica en los interruptores de circuito de la bomba.</p> <p>Desensamblar (Referir a Desensamblaje de la bomba, página 16).</p> <p>Remover la basura del impulsor, si la basura no pueden ser removida por complete, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> 1. Remueva el Tornillo de 1/4, 20x1, LH, Phillips MS 18-8 de acero inoxidable y la arandela de goma del impulsor. 2. Remueva el impulsor, termine de limpiarlo y vuelva a instalar. <p>Reensamblar (Referir a Armar la bomba de nuevo, página 17).</p> <p>Limpie el depósito de aspiración.</p>

Curvas de rendimiento de la bomba



Curva	Modelo
A	WFDS-3, WFDS-24
B	WFDS-4, WFDS-26
C	WFDS-6, WFDS-28
D	WFDS-8, WFDS-30
E	WFE-2, WF-2, WF-23, WFK-2
F	WFE-3, WFE-24, WF-3, WF-24, WFK-3, WFDS-3, WFDS-24
G	WFE-4, WFE-26, WF-4, WF-26, WFK-4, WFDS-4, WFDS-26
H	WFE-6, WFE-28, WF-6, WF-28, WFK-6, WFDS-6, WFDS-28
I	WFE-8, WFE-30, WF-8, WF-30, WFK-8, WFDS-8, WFDS-30
J	WFE-12, WF-12, WFK-12

PIEZAS DE REEMPLAZO



Número de artículo	P/N	Descripción	Número de artículo	P/N	Descripción
1	357199	Abrazadera, Cam & Ramp, Almendra	15	075713	Arandela de Hule de Bomba WFE
1	357150	Abrazadera, Cam & Ramp, Negro	16	071734S	Sello PA-7 con Asiento Ceramico, PS1000 ❶
2	357151	Tapa, transparente, bomba WFE	16	071728	Sello A7 con Asiento Ceramico, PS201
2	357156	Tapa, resistente química, Cam & Ramp	17	070429	Perno, 3/8, 16 x 7/8 s/s hex hd., 4 req.
3	350013	Tapa WFE Anillo en O	18	350201	Placa de Sello Juego WFE, Almendra (Incluye sello mecánico instalado) # 9, 16 & 18
4	070387	Canastilla del filtro, WFE	18	350101	Placa de Sello Juego WFE, Negro (Incluye sello mecánico instalado) # 16 & 18
5	070430	Perno, 3/8 - 16 x 1,25, cabeza hexagonal acero inox, 4 Req.	19	070927	Pie WFE - Bomba 4, Almendra
6	072184	Arandelas, 3/8 x 13/16 O.D. acero inox, 6 Req.	19	357159	Pie, Negro ❶
7	070431	Perno, 3/8 - 16 x 1,75, cabeza hexagonal acero inox, 2 Req.	20	070929	Inserción de Pie de Bomba WFE, Almendra ❶
8	071403	Tuerca, 3/8, 16 hex hd., 2 req.	20	357160	Inserción de Pie de Bomba WFE, Negro
9	357100	Placa de sello de Empaque, Negro	21	071657	Tornillo, 1/4, 20 x 1 pulg. hex hd. s/s, 2 req.
10	357149	Voluta & placa de sello, Almendra Kit de reemplazo	22	071406	Tuerca, 1/4, 20 hex. hd. s/s, 2 req.
10	350015	Voluta & Olla de Bomba WFE, Almendra	23	072183	Tuerca, 1/4, 20 hex. hd. s/s, 2 req.
10	357157	Voluta & Olla de Bomba WFE, Negro ❶	24	071131	Tapón con Perilla para Desagüe, Almendra 2 req.
11	355227	Anillo en O Parker de Bomba WFE, #2-238	24	357161	Tapón con Perilla para Desagüe, Negro 2 req. ❶
12	071660	Tornillo de Tope, #4-40 X 1-1/8 SFE, 2 req.	25	192115	Tapón de Desagüe de O-anillo, 2 req.
13	072928	Montaje de Difusor, WFE- 12, Sólo 3 HP	26	357149	Juego para Reemplazar Voluta/Placa de Sello, Almendra (Incluye #1-4, 9, 10, 16, 18, 24, and 25)
13	072927	Montaje de Difusor, WFE- 2-8, .5 HP-2.5 HP	27		Página siguiente
14	071652	Tornillo de Tope, 1/4, 20 x 1 lh. Phillips			

Número de artículo	Núm. de pieza	Descripción Motores
27	355008S	3/4 HP, 60 Hz, WFE-2, 3 & 24, 1 spd., Almendra, 31 lbs. ②
27	355010S	1 HP, 60 Hz, WFE-4 & 26, 1 spd., Almendra,, 33 lbs. ②
27	355012S	1-1/2 HP, 60 Hz, WFE-6 & 28, 1 spd., Almendra,, 39 lbs. ②
27	355014S	2 HP, 60 Hz, WFE-8 & 30, 1 spd., Almendra,, 40 lbs. ②
27	355016S	3 HP, 60 Hz, WFE-12, 1 spd., Almendra, 40 lbs. ②
27	356630S	1 HP, WFDS-4 & 26, 2 spd., 34 lbs. ④
27	071320S	1-1/2 HP, WFDS-6 & 28, 2 spd., 36 lbs. ④
27	071321S	2 HP, WFDS-8 & 30, 2 spd., 45 lbs. ④
27	355018S	1/2 HP, WF-2 & 23, 1 spd., Almendra, 39 lbs. ③
27	355020S	3/4 HP, WF-3 & 24, 1 spd., Almendra, 26 lbs. ③
27	355022S	1 HP, WF-4 & 26, 1 spd., Almendra, 28 lbs. ③
27	355024S	1-1/2 HP, WF-6 & 28, 1 spd., 39 lbs. ③
27	355026S	2 HP, WF-8 & 30, 1 spd., 32 lbs. ③
27	355033S	3 HP, WF-12, 1 spd., Almendra, 40 lbs. ③
27	355203S	1 HP, WFK-4, 3 ph, 1 spd., Negro, 28 lbs.
27	355204S	1-1/2 HP, WFK-6, 3 ph, 1 spd., Negro, 30 lbs.
27	355205S	2 HP, WFK-8, 3 ph, 1 spd., Negro, 37 lbs.
27	355398S	3 HP, WFK-12, 3 ph, 1 spd., Negro, 35 lbs.
27	356626S	1 HP, WFK-4, 3 ph, 1 spd., Almendra, 28lbs.
27	356627S	1-1/2 HP, WFK-6, 3 ph, 1 spd., Almendra, 30lbs.
27	356628S	2 HP, WFK-8, 3 ph, 1 spd., Almendra, 37 lbs.
27	356629S	3 HP, WFK-12, 3 ph, 1 spd., Almendra, 35 lbs.
27	354805S	1 HP, WFK-4, TEFC, 3 ph, 1 spd., Almendra, 28lbs.
27	354807S	1-1/2 HP, WFK-6, TEFC, 3 ph., 1 spd., Almendra, 30lbs.
27	354809S	2 HP, WFK-8, TEFC, 3 ph., 1 spd., Almendra, 37 lbs.
27	354811S	3 HP, WFK-12, TEFC, 3 ph., 1 spd., Almendra, 35 lbs.

No Mostrado

79129900	2-Velocidad Toggle Interruptor
350202	Placa de Sello Juego: Placa de Sello (Almendra), Empaque (Negro), con instalado Sello (Incluye Artículos: 9, 16, & 18)
350203	Placa de Sello Juego: Placa de Sello (Negro), Empaque (Negro), con instalado Sello (Incluye Artículos: 9, 16, & 18)
357243	Olla la Asamblea, Almendra NPT. (Incluye Artículos: 1-4, 10, 24 [qty. 2], 25 [qty. 2])
357244	Olla la Asamblea, Negro NPT. (Incluye Artículos: 1-4, 10, 24 [qty. 2], 25 [qty. 2])

Fondo Potencia Submontaje. Incluye Artículos: 12-18, 27-28

075136	WFE-2
075137	WFE-3, WFE-24
075138	WFE-4, WFE-26 ②
075139	WFE-6, WFE-28 ②
075140	WFE-8, WFE-30 ②
075141	WFE-12 ②
075145	WFDS-3, WFDS-24 ④
075142	WFDS-4, WFDS-26 ④
075143	WFDS-6, WFDS-28 ④
075144	WFDS-8, WFDS-30
075251	WF-2, WF-23 ③
075252	WF-3, WF-24 ③
075253	WF-4, WF-26 ③
075254	WF-6, WF-28 ③
075255	WF-8, WF-30 ③
075256	WF-12 ③

Fondo Líquido - Todas las Partes sin el Motor

075451	WFE-2 fluid end, 1/2 HP
075452	WFE-3 fluid end, 3/4 HP
075453	WFE-4 fluid end, 1 HP
075454	WFE-6 fluid end, 1-1/2 HP
075455	WFE-8 fluid end, 2 HP
075456	WFE-12 fluid end, 3 HP

- | | |
|---|---------------------------------|
| ① | CSA/CUL (sólo para Canadá. |
| ② | Energía eficiente, sola fase. |
| ③ | Eficiencia Estándar, sola fase. |
| ④ | Dos velocidad, sola fase. |

Tabla de impulsor

HP	TAMAÑO	NO. DE PIEZA STD.
1/2	WFE-2, WF-2, WF-23, WFK-2	073126
3/4	WFE-3, WFE-24, WF-3, WF-24, WFK-3, WFDS-24	073127
1	WFE-4, WFE-26, WF-4, WF-26, WFK-4, WFDS-4, WFDS-26	073128
1½	WFE-6, WFE-28, WF-6, WF-28, WFK-6, WFDS-6, WFDS-28	073129
2	WFE-8, WFE-30, WF-8, WF-30, WFK-8, WFDS-8, WFDS-30	073130
3	WFE-12, WF-12, WFK-12	073131

NOTES#BCH5G

NOTES#BCH5G



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P/N 071109 REV. J 8/29/14