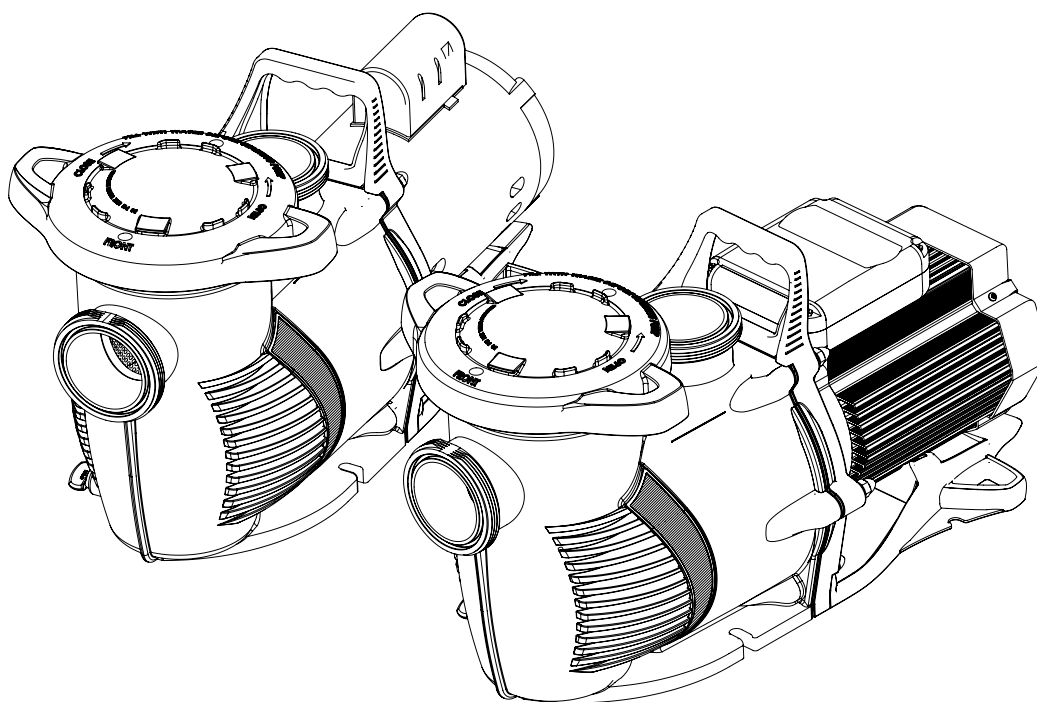




AQUATIC ECO-SYSTEMS™

# H3-PLUS SERIES™ AND L3-PLUS SERIES™ ENERGY EFFICIENT AQUACULTURE DUTY PUMPS



## INSTALLATION AND USER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS  
READ AND FOLLOW ALL INSTRUCTIONS  
SAVE THESE INSTRUCTIONS

## CUSTOMER SERVICE / TECHNICAL SUPPORT

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If you have questions about ordering Pentair Aquatic Eco-Systems replacement parts and products, please use the following contact information:

### Customer Service

8 AM to 7 PM — Eastern and Pacific Times

### US

Phone: (877) 347-4788

Fax: (407) 886-6787

### International

Phone: (407) 886-3939

Fax: (407) 886-4884

### Web site

Visit [www.pentairaes.com](http://www.pentairaes.com)

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# 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. This pump is for use for aquaculture installations ONLY. Do not use with any type of swimming pool, hot tub, or spa.

**Attention User:** This manual contains important information that will help you in operating and maintaining this product. Please retain it for future reference. This pump is for use for aquaculture installations ONLY. Do not use with any type of swimming pool, hot tub, or spa. Warnings and safety instructions for Pentair Aquatic Eco-Systems pumps and other related products are available at:

<http://www.pentairaes.com> or call U.S. (877) 347-4788 • International (407) 886-3939 for additional free copies of these instructions.

## 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**

**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.

## General Warnings

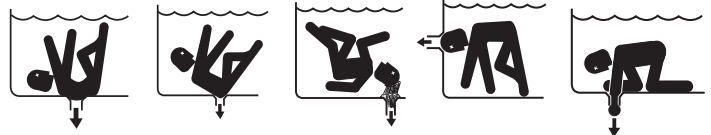
- Never open the inside of the drive motor enclosure. There is a capacitor bank that holds a 230 VAC charge even when there is no power to the unit.
- The pump is not submersible.
- The pump is capable of high flow rates; use caution when installing and programming to limit pumps performance potential with old or questionable equipment.
- Code requirements for the electrical connection differ from state to state. Install equipment in accordance with the current 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 SERVICE PROFESSIONAL. INSTALLERS, 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 PRODUCT 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.

### **⚠ DANGER**



**RISK OF ELECTRICAL SHOCK OR ELECTROCUTION: PUMPS REQUIRE HIGH VOLTAGE WHICH CAN SHOCK, BURN, OR CAUSE DEATH. BEFORE WORKING ON PUMP!** Always disconnect power to the pump at the circuit breaker from the pump before servicing the pump. Failure to do so could result in death or serious injury to service person, system users or others due to electric shock.

# IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

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

## **⚠ 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.

### **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.

## **⚠ CAUTION**

This pump has been evaluated for use with water only.

## **⚠ CAUTION**

Before operation, be sure to completely rinse the pump volute with water.

### **Cord Connected Models Only**

## **⚠ WARNING**

**RISK OF ELECTRICAL SHOCK.** This pump is supplied with a grounding conductor and grounding type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.

## **⚠ 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 aquaculture systems.

## **⚠ 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**

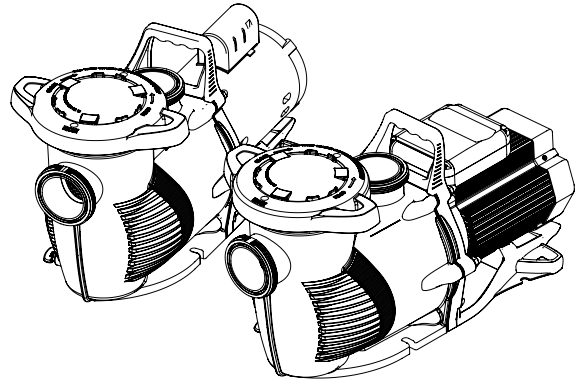
- All work must be performed by a qualified service professional, and must conform to all national, state, and local codes.
- Install to provide drainage of compartment for electrical components.
- These instructions contain information for a variety of pump models and therefore some instructions may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

## **SAVE THESE INSTRUCTIONS**

# PUMP OVERVIEW

The H3-Plus Series™ and L3-Plus Series™ Aquaculture Duty Pumps feature a heavy duty 56 square flange motor and highly engineered hydraulics. With capabilities in excess of 200 gpm, the H3-Plus Series and L3-Plus Series pumps are an ideal choice for many aquacultural and commercial applications.

- New hydraulic isolator separates priming water from pumping water for faster priming, more turbulence-free flow and increased efficiency.
- Upgraded dual-compartment motor for simplified field wiring.
- Self-priming for quick, easy start-up.
- New union connectors included for connecting directly to 2.5" or 3" plumbing.
- Diamond seals for increase durability and performance.
- Integral volute and pot reduce hydraulic noise.
- External port threading and tool-free union nuts need only hand-tightening.
- UL listed



H3-Plus Series Pump (Black)  
L3-Plus Series Pump (Black)

## Union Adapter Installation

Installing the locking union onto the pump:

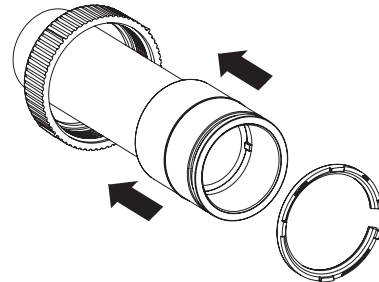
1. Glue the PVC union adapter fitting to the PVC pipe. The adapter accepts 2.5" PVC pipe internally or a 3" PVC coupling externally.

**Note:** Be sure that the groove for the retainer ring is on the end opposite your glue joint.

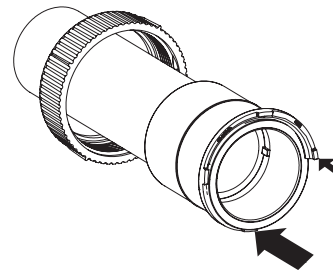
2. Slip the nut onto the fitting.
3. Place the flat side of the retainer ring against the adapter on the grooved end.
4. Gently flex the locking clip union nut retainer ring into its place in the groove on the adapter.
5. Start snapping it in at one end of the ring and work your way around.

The tab features should point out away from the nut and the glue joint towards the sealing surface.

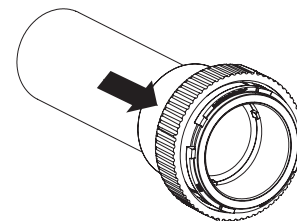
6. Slide the nut over the ring and attach it to the pump.



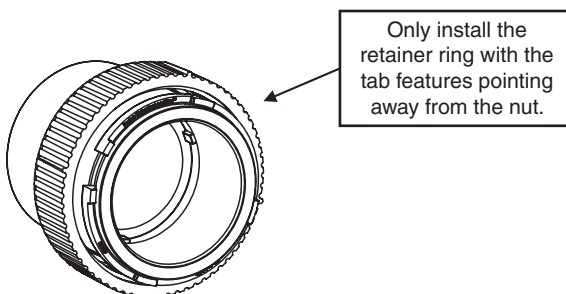
Slip the nut onto the fitting.



Snap retainer ring around the adapter.



Slide the nut over the adapter



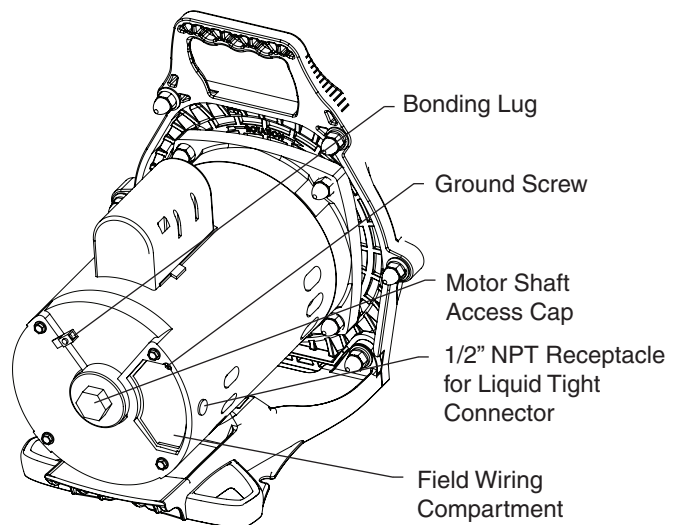
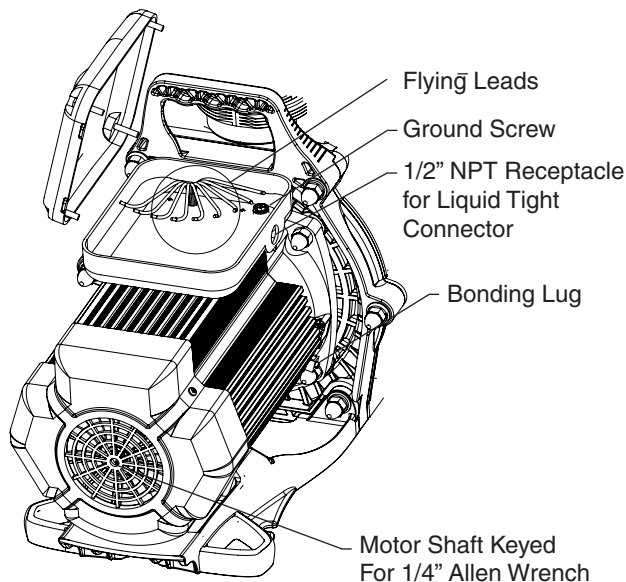
Union Nut and Adapter

# ELECTRICAL WIRING INSTALLATION



To prevent possible voltage reduction that may cause flicker sensations in lighting equipment, this product should be powered by a dedicated power line capable of providing at least 32 A per phase. Other equipment connected to the same power line may experience operations problems caused by the inrush current during start-up of this product.

1. Be sure the electrical service is disconnected, properly tagged and locked out before working on the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty Pump.
2. Carefully review the motor label. Take note of the important nameplate information such as volts, amps, phase, HP and code. Most pump models may be field connected so that they can operate on two different voltage circuits. Use extreme care in reviewing the motor wiring diagrams and always verify the voltage of the electrical supply circuit.
3. Carefully review the electrical supply circuit to ensure that it is adequate to meet the pump requirements identified on the motor nameplate. An electrical code letter is identified on the motor nameplate that identifies the load characteristics of the motor.
4. It is important that all portions of the electrical circuit including the conductors that connect the electrical panel to the pump motor are properly sized based on the nameplate information on the pump.
5. Following the current National Electrical Code and any local electrical codes, connect the grounding conductor and electrical supply conductors to the motor. Ensure that the pump is properly grounded per the above codes utilizing the grounding screw identified in the terminal box of the pump motor.
6. It will be necessary to confirm that the rotation of the motor is in the correct direction on all three-phase pump units and on certain single-phase pump units. Check wiring diagram to determine if motor can be field wired to rotate in both directions. Checking rotation by energizing the pump for one second and then watching the rotation through the back of the motor as it coasts to a stop.
7. Be sure that the rotation matches the direction arrow on the pump. Operating a pump with the incorrect rotation can cause many problems including poor priming, diminished water flow, excessive noise, overloading of the motor and premature failure of the pump.
8. Bond the motor to the structure in accordance with the current National Electrical Code. Use a solid copper bonding conductor not smaller than 8 AWG. Run a wire from the external bonding screw or lug to the bonding structure.



Pump Field Wiring Compartments



**⚠ WARNING**

**RISK OF ELECTRICAL SHOCK OR ELECTROCUTION.** The H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty 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, users or others due to electric shock.**

Read all servicing instructions before working on the pump.

**⚠ CAUTION**

Always fill the pump with water before energizing the pump motor. Operating the pump without water can damage the pump seal within a few seconds.

## Electrical Wiring Installation, Continued

**NOTICE:** Due to wide variation in electrical equipment, power equipment, power supply, and installation requirements, **this manual does not make specific recommendations concerning auxiliary equipment or fusing/wiring.**

Wire sizing, wire type, branch circuit fuse protection, motor starter, control equipment, and related items must meet National Electrical Code and local code requirements.

Motors are supplied by several manufacturers and nameplate data (service factor, maximum amperage, etc.) will vary. Consult control manufacturer and motor nameplate on your pump to correctly choose and size motor starter and control equipment for your particular installation. Specific electrical questions or problems should be addressed to the manufacturer of the electrical component in question.

### Voltage/Phase

Voltage at motor must be not more than 10% above or below motor nameplate rated voltage or motor may overheat, causing overload tripping and reduced component life. If voltage is less than 90% or more than 110% of rated voltage when motor is running at full load, consult power company.

***Do not try to connect 3-phase motors to single phase power supply or single phase motors to 3-phase power supply.***

### Emergency Shutoff

Install an Emergency Shutoff Switch near body of water. Clearly mark this switch and mount it in a location that is accessible to operating personnel (e.g. lifeguards). Make sure that all understand the switch's use in case of emergency (entrapment, electrical malfunction, etc.).

## OPERATING THE PUMP

### ⚠ CAUTION

**DO NOT run the pump dry.** If the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty 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.

Before turning the pump ON, be sure the following conditions are met:

1. Open filter air relief valve.
2. Open valves.
3. Return is completely open and clear of any blockages.
4. Water in the pump basket.
5. Stand clear of the filter or other pressurized vessels.

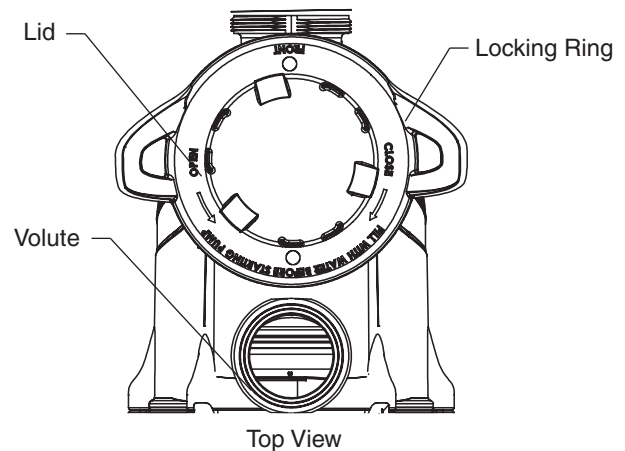
### Priming the Pump

If the pump is installed below water level, close return and suction lines prior to opening hair and lint pot on pump. Be sure to reopen valves prior to operating.

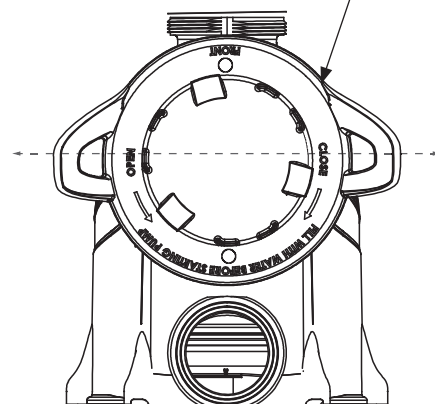
**Note:** Running the pump dry could cause a loss of pressure, resulting in damage to the pump case, impeller and seal.

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

1. Remove the pump lid and locking ring.
2. Fill the pump strainer pot with water.
3. Reassemble the pump lid and locking ring onto the strainer pot. The pump is now ready to prime.
4. Open the air relief valve on the filter, and stand clear of the filter.
5. Turn on the pump.
6. When water comes out of the filter air relief valve, close the valve. The system should now be free of air and recirculating water to and from the body of water.
7. This pump will prime within 20 minutes. Do not allow your pump to run longer than this time without developing full flow. If the pump does not prime, see the “Troubleshooting” section on page 8.
8. Two speed pumps should run on high speed for priming.



Close Lid/Locking Ring handles in horizontal position





# MAINTENANCE

## ⚠ WARNING

**DO NOT** open the strainer pot if the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty 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 basket regularly.

## Pump Strainer Basket

The strainer basket (or 'strainer pot'), is located in front of the pump housing. The strainer basket must be kept clean and free of debris. Inspect basket through the lid on the top of the housing.

Be sure to visually inspect the strainer basket at least once a week. Dirty strainer baskets reduce filter and heater efficiency and put abnormal stress on the pump motor.

## Cleaning the Pump Strainer Basket

1. Turn off the pump at the circuit breaker.
  2. Relieve pressure in the system.
  3. Turn the lid and locking ring counter-clockwise and remove from the pump.
  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 lid and locking ring, 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 and locking ring on the pot. Be sure the lid O-ring is properly placed. Seat the lid and locking ring on the pump then turn clockwise until the locking ring handles are horizontal.
  9. Open the manual air relief valve on top of the filter, and stand clear of the filter.
  10. Turn on the pump at the circuit breaker.
  11. When water comes out of the air release valve, close the 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.

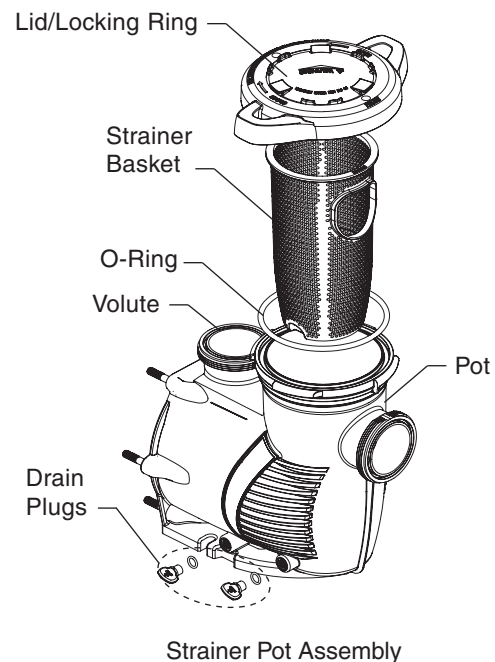
## Winterizing

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

1. Shut off electrical power for the pump at the house 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.



# SERVICING

## WARNING

Always disconnect power to the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty 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.

## Motor Care

### 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.
2. Do not store (or spill) chemicals on or near the motor.
3. Avoid sweeping or stirring up dust near the motor while it is operating.
4. If a motor has been damaged by dirt may void the motor warranty.
5. Clean the lid and locking ring O-ring, and sealing surface of the pump pot.

### Protect against moisture

1. Protect from continuously splashed or sprayed water.
2. Protect from extreme weather.
3. If a motor internals have become wet - let it dry before operating. Do not allow the pump to operate if it has been flooded.
4. If a motor has been damaged by water it may void the motor warranty.

## Pump Disassembly

### Tools required:

- Adjustable wrench
- Flat-blade screwdriver
- 3/4 inch socket wrench
- 9/16 inch open end wrench
- 9/64 inch Allen key wrench
- 1/4 inch Allen wrench

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. Using a 9/16" open end wrench, remove the six (6) nuts that secure the main pump body (strainer pot/volute) to the rear subassembly.
4. Gently pull the two pump halves apart, removing the rear subassembly.
5. Remove the three hex head screws holding the diffuser in position with a 9/64 inch hex key wrench.
6. Using a 3/4" socket wrench, hold the impeller securely in place and remove the impeller lock screw.  
**Note:** The impeller screw is a left-handed thread and loosens in a clockwise direction.
7. Remove the (4) screws on the motor rear plastic cover and remove the rear plastic cover.
8. Using the 1/4" Allen wrench to hold the motor shaft, twist the impeller counter-clockwise to remove it from the shaft.
9. Remove the four (4) nuts from the seal plate to the motor using a 9/16 inch wrench.
10. Place the seal plate face down on a flat surface and press out the ceramic part of the mechanical seal.
11. Clean the seal plate, seal housing, and the motor shaft.

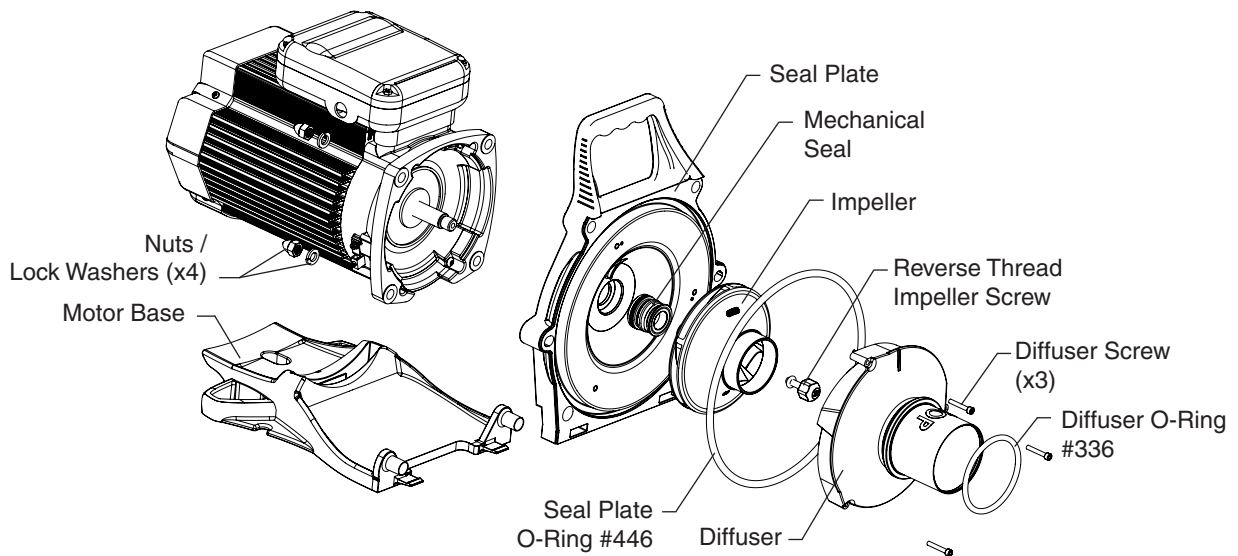
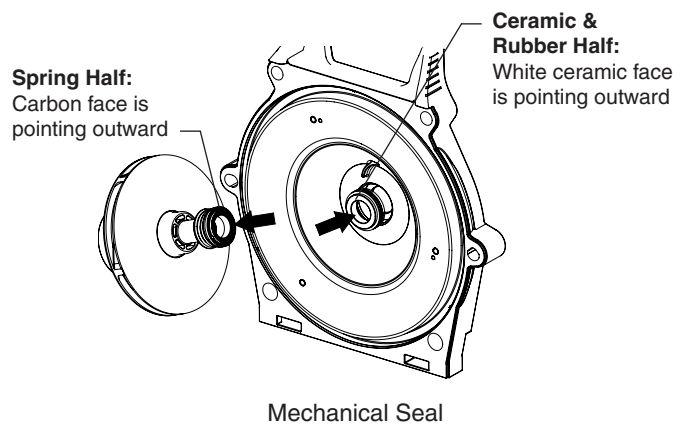
*Pump illustrated parts view on the next page*

## Pump Reassembly

1. Install the **spring end** of the mechanical seal onto the impeller shaft. Be sure **black/carbon** face is facing outward.
2. Remount the seal plate to the motor using the four (4) lock washers and four (4) nuts.
3. With the white ceramic face facing outward, press the seal into the seal plate with your thumbs and wipe off the ceramic with a clean cloth. Do not lubricate seal faces.
4. Hand tighten impeller onto the motor shaft.
5. Screw in the impeller reverse lock screw (counter-clockwise to tighten).
6. Install the rear plastic cover on the back of the motor.
7. Remount the diffuser onto the seal plate. Make sure the plastic pins and holding screw inserts are aligned (see "TOP" indicator).
8. Assemble the motor subassembly to the housing. Do not tighten the nuts and washers until all four (4) motor bolts are in place. Using a torque wrench, install and tighten the four nuts to a torque value of 100 in-lbs (maximum). Do not overtighten the nuts.
9. Fill the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty Pump with water.
10. Reinstall the pump lid and locking ring; see Maintenance on page 5.
11. Reprime the system. Refer to page 4 for priming instructions.

### The Mechanical Seal

The mechanical 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 mechanical seal may occasionally become damaged and must be replaced.



Pump Illustrated Parts View

# TROUBLESHOOTING

## **⚠ WARNING**



### **RISK OF ELECTRICAL SHOCK OR ELECTROCUTION.**

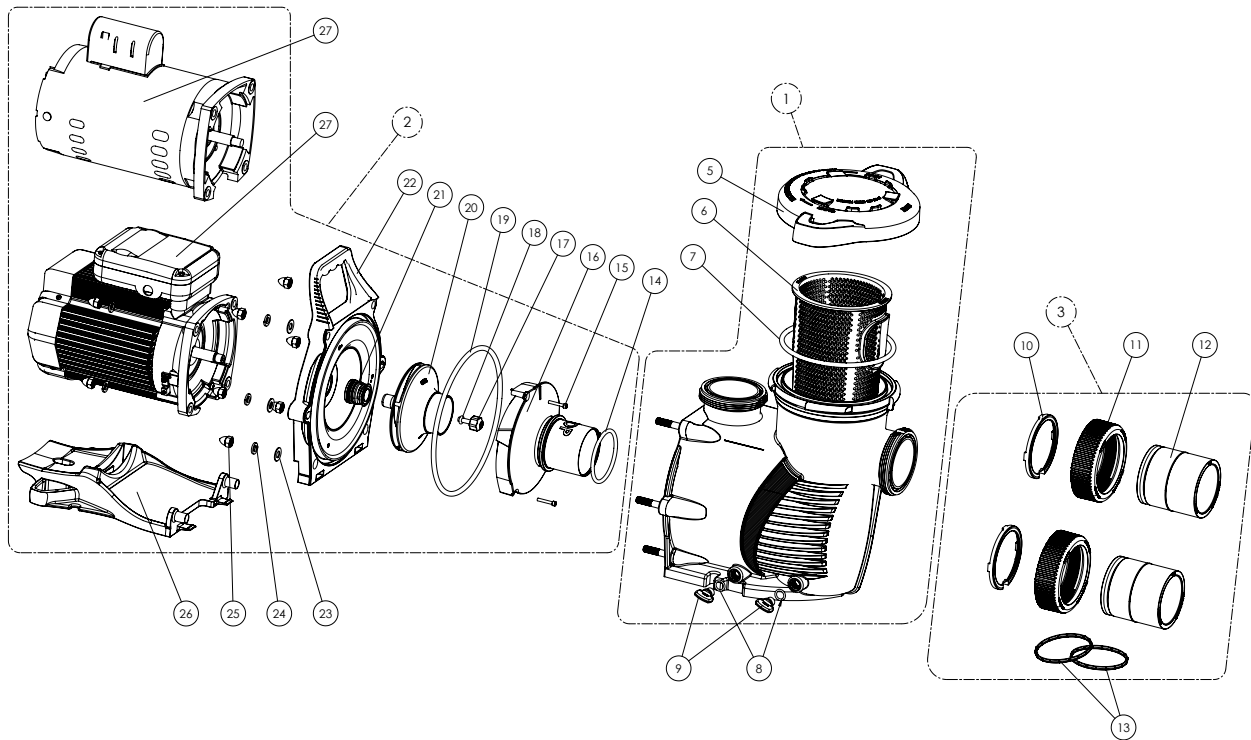
Improper installation will create an electrical hazard which could result in death or serious injury to pump users, installers, or others due to electrical shock, and may also cause damage to property.

1. If you are not familiar with your filtering system and/or heater:
  - a. **Do NOT** attempt to adjust or service without consulting your dealer, or a qualified technician.
  - b. Read the entire Installation & User's Guide before attempting to use, service or adjust the filtering system or heater.
2. **Switch OFF power to the H3-Plus Series™ or L3-Plus Series™ Aquaculture Duty Pump before attempting to service or repair.**

Problem	Corrective Action
<b>Pump will not prime</b>	<p>Check suction piping and valve on any suction gate valves.</p> <p>Secure lid on pump strainer pot and be sure lid gasket is in place.</p> <p>Check water level to make sure suction port is not drawing air.</p> <p>Be sure suction lines, pump strainer, and pump volute are full of water.</p> <p>Be sure valve on suction line is working and open, (some systems do not have valves).</p> <p>Check water level to be sure water is available through suction port.</p>
<b>Pump gasket defective</b>	<p>Replace gasket.</p>
<b>Reduced capacity and/or head</b> Air pockets or leaks in suction line Pump will not prime — too much air	<p>Check suction piping and valve on any valve suction gate valves.</p> <p>Secure lid on pump strainer pot and make sure lid gasket is in place.</p> <p>Check water level to make sure suction port is not drawing air.</p> <p>Clean pump strainer pot.</p> <p>Check to see if impeller or diffuser are clogged.</p>
<b>Clogged Impeller</b>	<p>Switch OFF electrical power at the house circuit breakers to the pump.</p> <p>Remove the nuts that secure the volute to the seal plate.</p> <p>Slide the motor and seal plate away from the volute.</p> <p>Clean debris from impeller.</p> <p>If debris cannot be removed, complete the following steps.</p> <ol style="list-style-type: none"> <li>(1) Remove impeller reverse screw and O-ring.</li> <li>(2) Remove, clean and reinstall impeller.</li> <li>(3) Reinstall anti-spin bolt.</li> </ol> <p>Reinstall diffuser and O-Ring.</p> <p>Reinstall motor and seal plate into volute.</p> <p>Reinstall hardware around seal plate and volute and tighten securely.</p> <p>Clean suction trap.</p>

# REPLACEMENT PARTS

## H3-Plus Series™ and L3-Plus Series™ Aquaculture Duty Pump



Item No.	Description	H3/L3-PLUS
1	Wet End Assembly	407000
2	Power End Assembly	See Motor Table
3	Union Kit Without Tap	410020
5	Lid/Locking Ring Assembly	401006
6	XF Series Replacement Basket	400007Z
7	Lid/Locking Ring O-Ring	35505-1440
8	Drain Plug O-Ring	192115
9	Drain Plug	357161
10	2.5\" C-Clip Locking Ring	410001
11	2.5\" Union Adapter without Tap	410002
12	2.5\" Union Nut	411000
13	2.5\" Union Seal Kit - (Includes two)	410016Z
14	Diffuser O-Ring	350336
15	Diffuser Screw	353323
16	Diffuser	See Hydraulic Parts Table
17	Impeller Reverse Screw	37337-6080
18	Impeller Reverse Screw O-Ring	33455-1047
19	Seal Plate O-Ring	351446
20	Impeller Assembly	See Hydraulic Parts Table
21	Mechanical Seal Assembly	354445Z
22	Seal Plate	401002SS
23	Flat Washer	72184
24	Split Lock Washer	U43-12SS
25	Acorn Nut	71413
26	Motor Base	401004Z
27	Motor	See Motor Table
Not Shown	Hardware and O-Rings Kit	400030Z
Not Shown	Seal Plate Kit With Mech Seal	400033Z

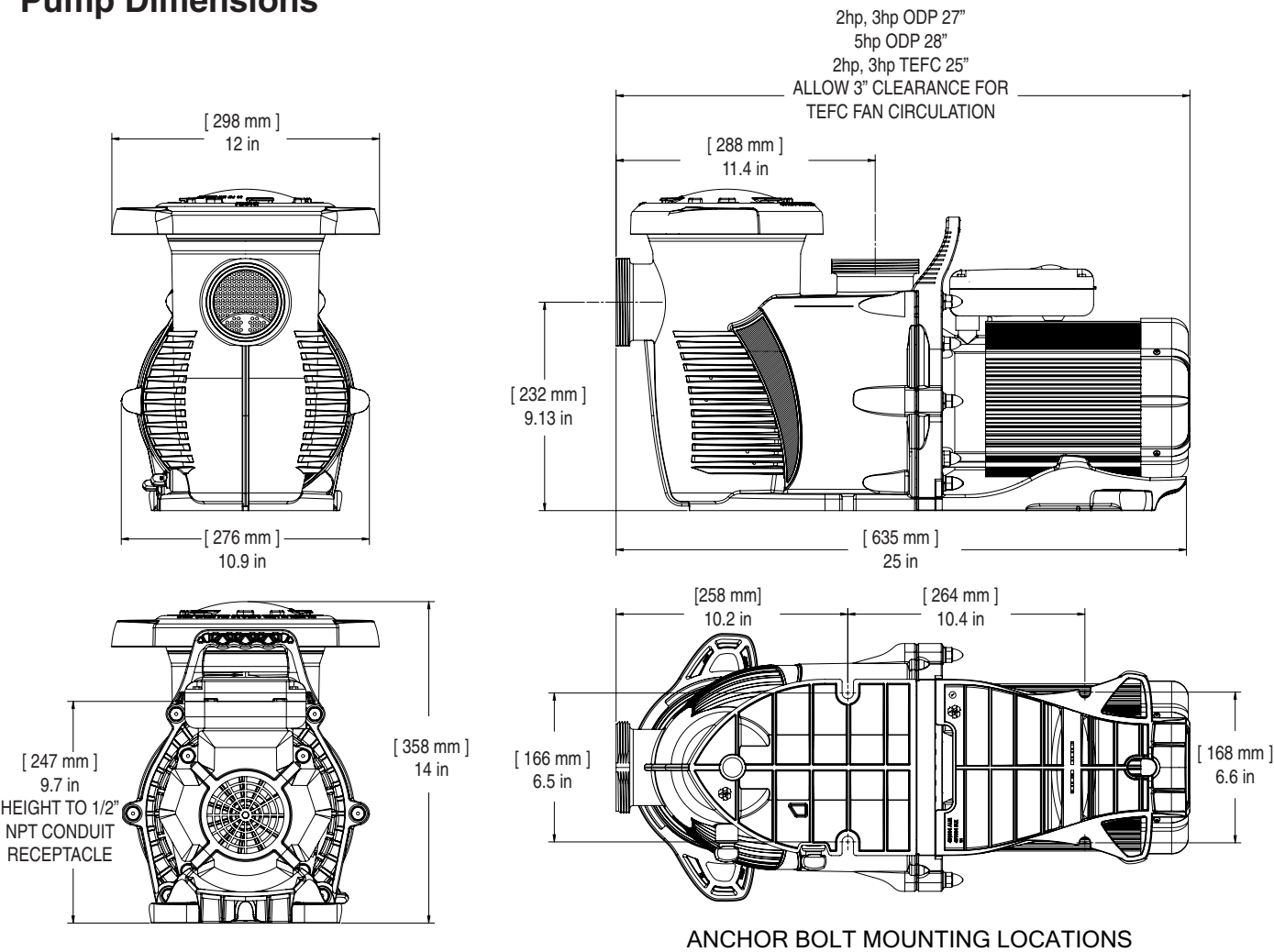
Motor Table

Model Name	Description	Motor Part Number	Power End Part Number
H3-PLUS-20	5HP TEFC 208~230/460V 3PH	354814	407619
H3-PLUS-12	3HP TEFC 208~230/460V 3PH	354812	407618
H3-PLUS-8	2HP TEFC 208~230/460V 3PH	354810	407617
L3-PLUS-160	L3-PLUS-160 115/230V 1PH	355218	407616
L3-PLUS-120	L3-PLUS-120 115/230V 1PH	355218	407615
L3-PLUS-100	L3-PLUS-100 115/230V 1PH	355218	407614

Hydraulic Parts Table

Model Name	Description	Hydraulic Parts	
		Diffuser	Impeller
H3-PLUS-20	5HP TEFC 208~230/460V 3PH	400011SS	400023
H3-PLUS-12	3HP TEFC 208~230/460V 3PH	400010SS	400015
H3-PLUS-8	2HP TEFC 208~230/460V 3PH	400010SS	400020
L3-PLUS-160	L3-PLUS-160 115/230V 1PH	400011SS	400023
L3-PLUS-120	L3-PLUS-120 115/230V 1PH	400010SS	400015
L3-PLUS-100	L3-PLUS-100 115/230V 1PH	400010SS	400020

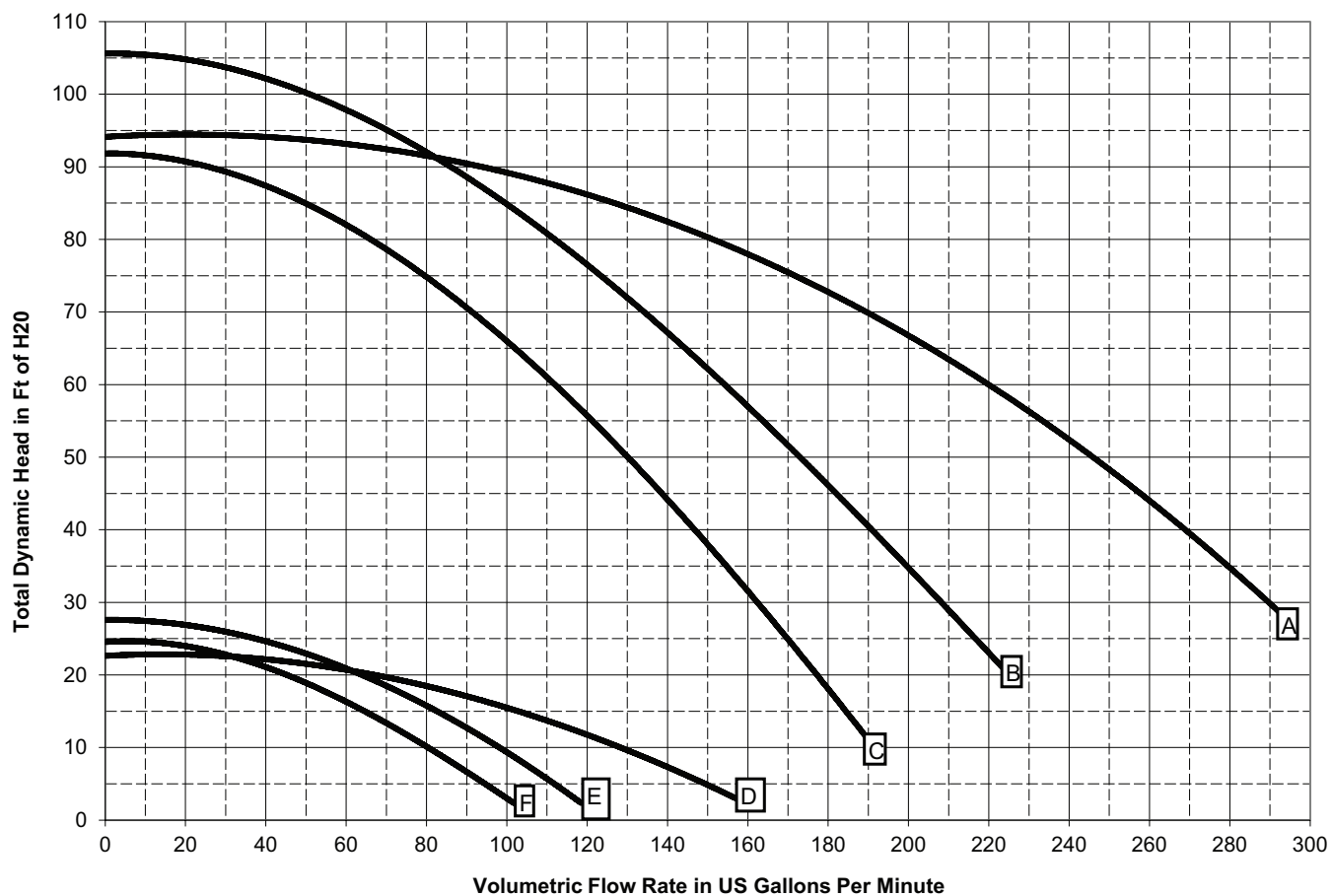
Pump Dimensions





## Pump Performance Curves

H3-PLUS SERIES/L3-PLUS SERIES Performance Curves



Pump Model	Performance Curve
H3-PLUS-20	A
H3-PLUS-12	B
H3-PLUS-8	C
L3-PLUS-160	D
L3-PLUS-120	E
L3-PLUS-100	F



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P/N 353092 REV. A 3/31/14