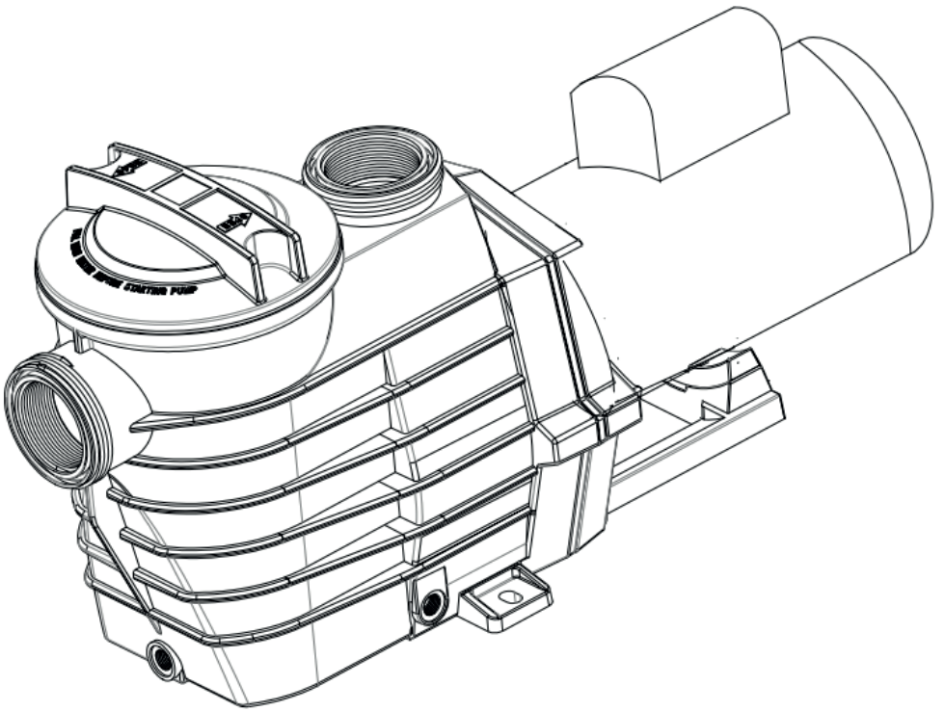
Prime Plus Pump



Installation And User Guide
Models: PL1700 Series

READ AND FOLLOW ALL INSTRUCTIONS

ATTENTION INSTALLER: This manual contains essential information about the installation, operation, and safe use of this pool pump. Please remember to furnish this manual and all other instructional documents to the end user of this product.

Failure to read and follow instructions can result in serious injury.

To prevent potential injury to self or product and to avoid unnecessary service calls, please read the manual carefully. Look for the following symbols and signal words and be alert to potential injury.

 This is a safety-alert symbol. Whenever you see this symbol in this manual or on the pump itself, look for the following signal words to alert potential dangers.

 **DANGER**- A licensed electrician MUST complete, in full, all electrical installation.

IMPORTANT SAFETY INSTRUCTIONS

General Warnings

- Never open the inside of the drive motor enclosure.
- The pump is not submersible.
- Code requirements for the electrical connection differ from state to state. Install equipment according to the National Electrical Code.
- Switch pump to OFF by disconnecting the main circuit to pump BEFORE servicing pump.

 **WARNING**- Do not permit children to use this product.

 **WARNING**- Risk of electrical Shock. Only connect to a circuit branch protected by a ground-fault circuit interrupter (GFCI). Contact a qualified technician if you cannot verify if the circuit is protected by a GFCI. Pump must be permanently connected to a GFCI.

 **WARNING**- The pump is intended for use on permanently installed swimming pools and may also be used with hot tubs and spas if so marked. Failure to bond pump to a pool structure increases the risk for electrocution and could result in injury or death. To reduce the risk of electric shock, the electrician must comply with installation instructions and must bond pump accordingly. Electrician must also conform to electrical codes for bonding requirements.

 **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 close proximity of the suction openings. A person can also be seriously injured by the high level of vacuum or may become trapped and drown. It is critical that the suction plumbing is installed in accordance with the latest national and local codes for swimming.

 **DANGER**- Suction Entrapment Hazard. The pump produces high levels of suction, thus creating a strong vacuum at the main drain at the bottom of your swimming pool/spa. This suction is so strong that it can trap adults and children under water if they come in close proximity to the drain.

The use of unapproved drain covers, or allowing the use of your pool or spa when drain covers are either missing or broken, can result in body or limb entrapment, hair entanglement, body entrapment, evisceration, and/or death.

Hair Entrapment: When the hair tangles or knots in the drain cover, trapping the swimmer underwater. This is typically associated with the flow rating when the flow rating of the cover is too small for the pump(s).

Limb Entrapment: A limb can be sucked or inserted into an opening in the drain, causing a mechanical bind or swelling of the limbs. This is typically caused when the drain cover is missing, broken, cracked, or properly secured.

Body Suction Entrapment: A portion of the body is held against the drain cover, trapping the swimmer underwater. This typically presents itself when the drain cover is missing, broken, or the cover flow rating is not high enough for the pump(s).

Evisceration/Disembowelment: Negative pressure that is applied directly to the intestines through an unprotected suction outlet or suction outlet cover that is damaged, cracked, missing, or unsecured.

Mechanical Entrapment: Jewelry, clothes, hair decorations, fingers, toes, or knuckles can get caught in an opening of a suction outlet cover.

 **WARNING**- Hazardous Pressure- During startup, normal operation, and after pump shuts off, the pool and spa water circulation system operates under hazardous pressure. Please stand clear of circulation system during pump start-up. Before servicing your pool equipment, make sure all systems and pump controls are in the off position and the filter manual air relief valve is open. Also make sure all system valves are set in a position that allows water to return to the pool. Do not change the filter valve position while system pump is running. All suction and discharge valves must be open when starting the circulation system. Failure to follow safety and operational instructions could result in damage, severe personal injury, or death.

 **WARNING**- Separation Hazard- Please ensure the strainer cover is properly secured to the pump housing. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. All suction and discharge valves must be open when starting the circulation system. Failure to follow safety and operational instructions could result in damage, severe personal injury, or death.

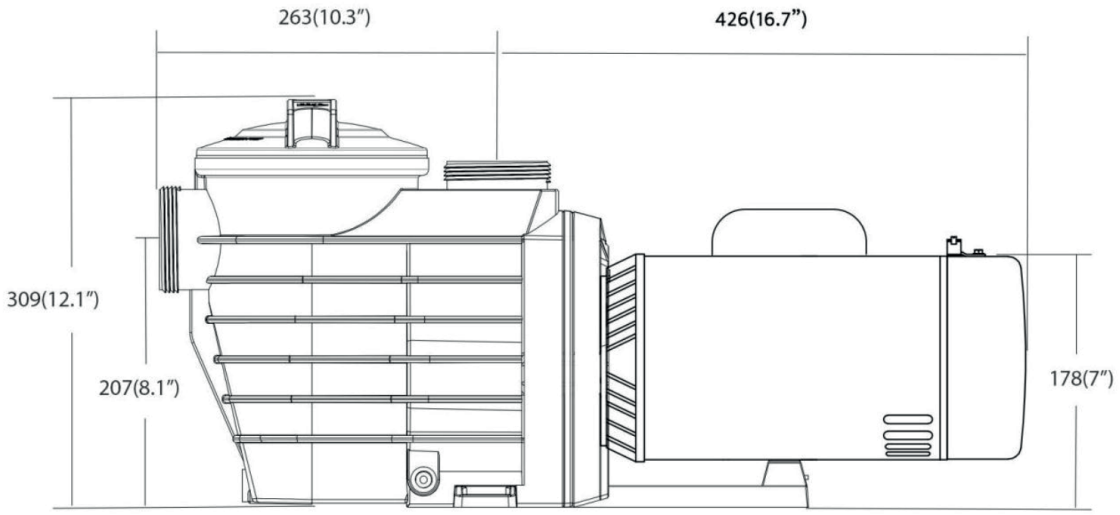
Pump Overview

This manual contains essential information about the installation, operation, and safe use of this pool pump. Failure to install according to the defined instructions will void your warranty.

General Features

- Large 2” plumbing ports
- Voltage switch for easy 115V or 230V wiring
- Strainer basket cover removes easily for cleaning
- Transparent strainer basket cover lets you know when the basket needs cleaning
- All components molded of corrosion-proof reinforced thermoplastic for extra durability and long life
- Drain plug for easy pump winterization
- Mechanical seals are made from carborundum and graphite for long life and low noise
- Motor shaft is stainless steel grade 304
- One-year warranty

Pump Dimensions



Pump Installation

Before servicing, all water circulation systems and pump controls must be in the off position, releasing all the pressure from the system.

WARNING- This pump should be serviced and installed by licensed professionals.

Location

Place pump as close to the pool as it allows and run suction lines as direct as possible to reduce friction loss. All suction lines should have a continuous slope upward from the lowest point in line. Joints must be tight (but not over-tightened). Suction line diameter must equal or be larger than the discharge line diameter. The suggested installation of the pump is 12" above the pool water level. The pump should not be installed more than 30" above the pool water level.

Though the pump is designed for outdoor use, we strongly advise you to protect the electrical components from the weather. Select a well-drained area that does not flood. Do NOT install pump in a damp or non-ventilated area. Pump motors require free circulation and air for cooling.

Pump Mounting

Install the pump on a firm, level base or pad to meet all local and national codes. Fasten pump to base or pad with screws or bolts to reduce vibration and stress on the pope or hose joints. The base MUST be solid, level, rigid, and vibration free.

Pump Plumbing

There are many different ways a pool pump can be plumbed due to space requirements, existing plumbing, water features, etc... Due to these scenarios, we have listed some general best practices to adhere to when plumbing a pool pump.

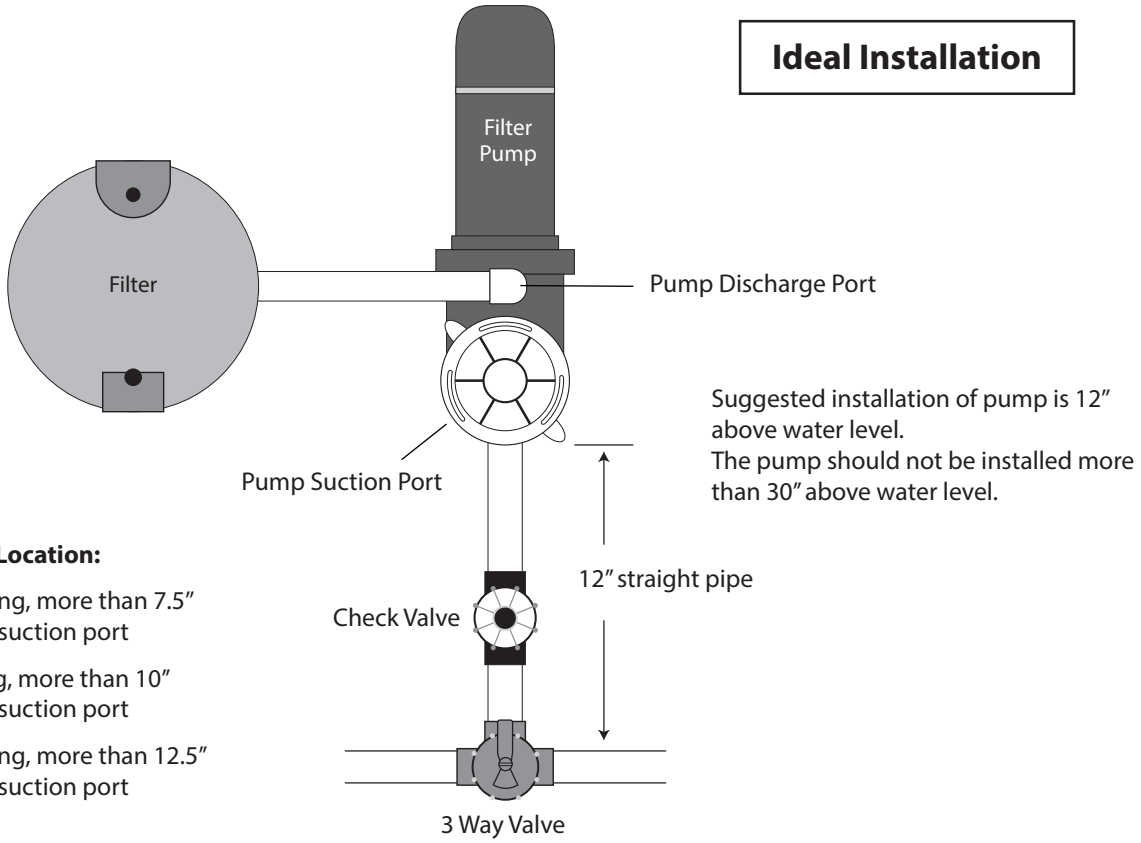
Pool Plumbing Best Practices

- It is best to use larger plumbing on the suction side of the pump, as this will allow the pump to prime easier and put less stress on the pump resulting in longer pump life. 2" or 2.5" plumbing going into the suction port of the pump is recommended.
  - **Example 1** - Use 2.5" plumbing on the suction side of the pump and then use a 2" x 2.5" reducer bushing to reduce down to the 2" pump suction port. If you can only install larger plumbing on the 12" of pipe going into the pump, then this is fine, as you will still see benefits.
  - **Example 2** - Use 2" plumbing on the suction side of the pump. If you can only install larger plumbing on the 12" pipe going into the pump, then this is fine, as you will still see benefits.
- Use a minimum of 12" of straight pipe going into the suction port of the pump.

- Avoid the use of 90-degree elbows within 12” of the suction port or discharge port of the pump. The fewer 90-degree elbows, the better.
- The use of two 45-degree fittings is better than one 90-degree elbow.
- If you are having problems with your pump keeping prime after the pump shuts off, then the use of a check valve on the suction side of the pump will help with keeping the pump primed. Make sure the check valve is not too close to the suction port of the pump. See check valve placement recommendations listed below.

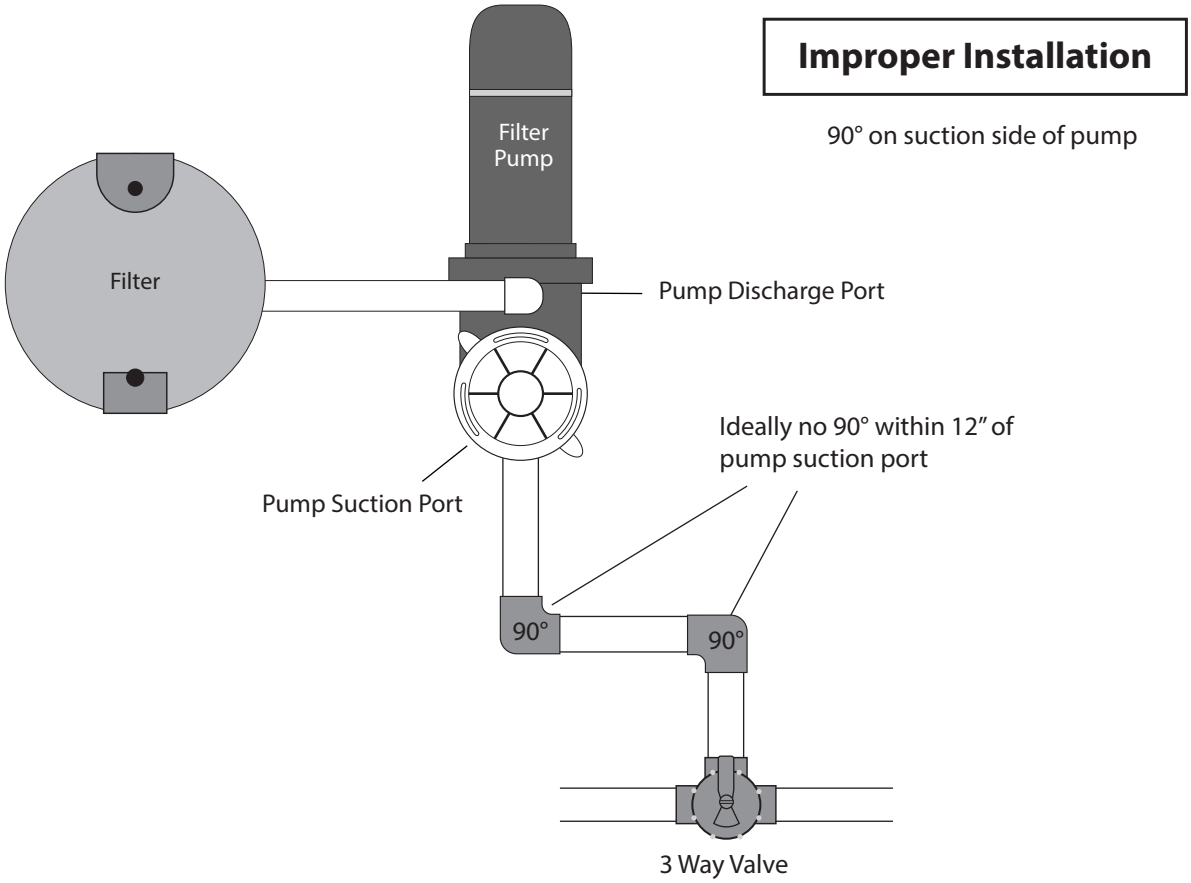
Check Valve Placement

1.5” Plumbing - Check valve not to be placed within 7.5” of pump suction port
2” Plumbing - Check valve not to be placed within 10” of pump suction port
2.5” Plumbing - Check valve not to be placed within 12.5” pump of the suction port



Check Valve Location:

- 1.5″ plumbing, more than 7.5″ from pump suction port
- 2″ plumbing, more than 10″ from pump suction port
- 2.5″ plumbing, more than 12.5″ from pump suction port



Piping

1. Larger piping sizes improve pool plumbing.
2. Piping on the suction side of the pump should be the same or larger than the return port.
3. Plumbing on the suction side of the pump should be as short as possible.
4. For most installations, we recommend installing a valve on both the pump suction and return lines. This allows you to isolate the pump during routine maintenance. However, the valve, elbow, or tee installed in the suction line should be no closer to the front of the pump than 5 times the suction line diameter.

Example: A 2.5” pipe requires a 12.5” straight run in front of the suction inlet of the pump. This will help the pump prime faster and last longer.

Note: Do NOT install 90-degree elbows directly into the pump inlet or outlet.

Fittings and Valves

1. Do not install 90-degree elbows directly into the pump outlet.
2. Flooded suction systems should have gate valves installed or suction and discharge pipes for maintenance. However, the suction gate valve should be no closer than 5 times the suction pipe diameter.
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.

Electrical Requirements

1. Install all equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.
2. A means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

Voltage

The voltage at the motor must NOT be more than 10% above or below motor nameplate rated voltage or the motor may overheat, causing the overload tripping.

Grounding and Bonding

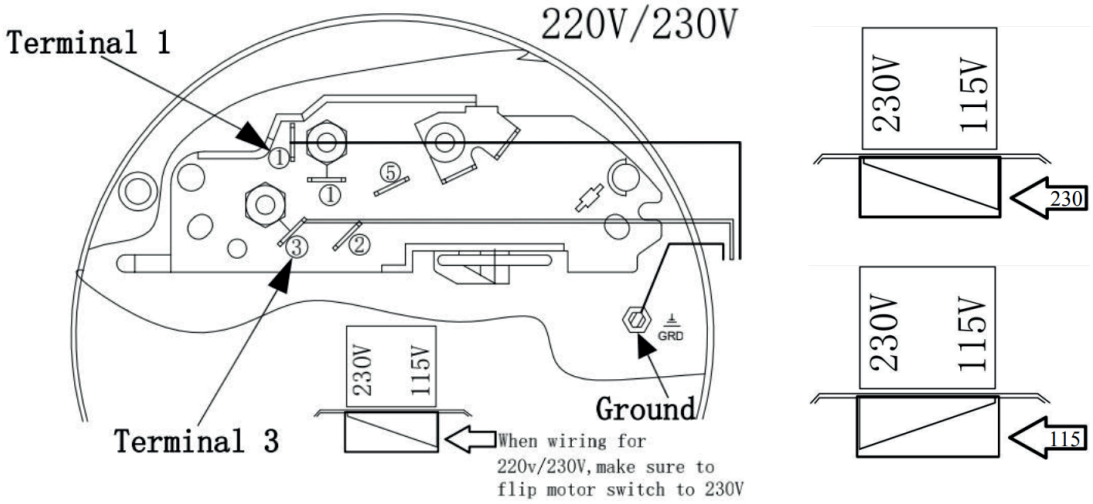
Install, ground, bond, and wire motor in accordance with local or national electrical code. Make sure to permanently ground the motor. Use green ground terminal provided under motor canopy or access plate. Use the appropriate size and wire type required by code. Connect motor ground terminal to electrical service ground.

Reference NEC codes for all wiring standards including, grounding, bonding, and general wiring procedures.

Wiring

For Single Speed Pumps:

If the pump comes with a power cord, no wiring needed. If not, wire the pump as below:



How to wire 230v

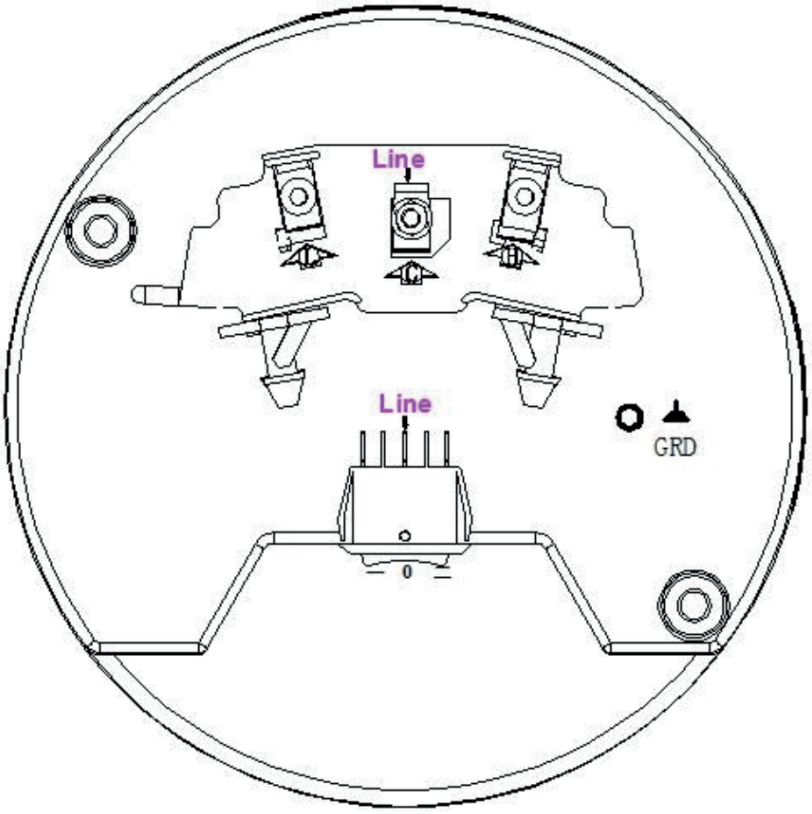
1. Make sure switch is at the 230v side.
2. Ground wire connects to the ground terminal.
3. Hot wires connect to terminal 1 and 3, either hot wire is compatible to terminal 1 or 3. 4. Turn on the power and run the pump.

How to wire 115v

1. Make sure switch is at the 115v side.
2. Ground wire connects to the ground terminal.
3. Hot wire connects to terminal 1 or 3, neutral wire connects to terminal 3 or 1. Either hot wire or neutral wire is compatible to terminal 1 or 3.
4. Turn on the power and run the pump.

For Two Speed Pumps:

If pump comes with a power cord, no wiring needed. If not, wire the pump as below:



1. Ground wire connects to the ground terminal.
2. If your power supply has two hot wires, connect them to each terminal marked with “Line”; If your power supply has one hot wire and one neutral wire, connect either of them to either of the terminal marked with “Line”.
3. Turn on the power and run the pump.

Make sure that the electrical supply available is suitable for the motor’s voltage, phase, and cycle, and that the wire size is adequate for the HP(KW) rating and distance from the power source.

Warning: All electrical wiring must be performed by a licensed electrician.

Warning: All electrical wiring must conform to local codes and NEC regulations.

Warning: Use copper conductors only.

Electrical Guidance for 60Hz Single phase motors					
Rated		Volts	Circuit Breaker Amps	Branch Fusetron Amps	Recommended Wire Size 0-50’
KW	HP				
0.37	0.5	115	15	15	No. 14
0.55	0.75	115 230	15 10	15 6.25	No. 14 No. 14
0.75	1	115 230	20 10	20 9	No. 12 No. 14
1.1	1.5	115 230	30 15	30 15	No. 10 No. 14
1.55	2	115 230	30 15	30 12	No. 10 No. 14
1.88	2.5	230	20	20	No. 12

Voltage from the power must be in the range from 90% to 110% of the motor name plate rated voltage. Otherwise, the motor may overheat and result in overload tripping and reduced component life.

Install, ground, bond, and wire motor in accordance with local or NEC requirements. Motor should be grounded permanently by connecting ground terminal to electrical service ground.

Start-Up and Operation

Prior to Start-Up

If it is necessary to perform a pressure test prior to initial use to ensure pump is functioning properly, then the following criteria should be considered:

1. Hire a professional for the test.
2. Ensure all pump components are sealed properly to prevent leaks.
3. Remove any trapped air in the system by fully opening the filter air relief valve until a steady stream of water is discharged.
4. Allow no more than 40 PSI at water temperature no higher than 100 F.
5. Do not run pressure test for longer than 24 hours. Inspect all parts immediately to verify they are intact and functioning properly.
6. Fill strainer housing with water to suction pipe level. Never operate the pump without water. Water acts as a coolant and lubricant for the mechanical shaft seal.

CAUTION- NEVER run pump dry. Running pump dry may damage seals, causing leakage, flooding, and voids warranty. Fill strainer housing with water before starting motor.

Do NOT add chemicals to the pool/spa system directly in front of pump suction. Adding undiluted chemicals may damage pump and voids the warranty.

ATTENTION- Before removing strainer cover:

1. STOP PUMP before proceeding.

2. CLOSE VALVES in suction and outlet pipes
3. RELEASE ALL PRESSURE from pump and piping system using filter manual air relief valve.

Priming Pump
All suction and discharge valves must be open as well as filter air relief valve when starting the circulating pump system. Failure to do so could result in severe personal injury.

Priming Pump Placed Below Water Level
● The pump will prime itself if it is placed lower than the water level.

Priming Pump Placed Above Water Level - If water level is lower than the pump, then following these instructions for priming. The suggested installation of the pump is 12” above the pool water level. The pump should not be installed more than 30” above the pool water level.
● Turn Power off to pool pump
● Make sure pool water is halfway up pool skimmer face
● Open suction valves
● Open discharge valves
● Open filters air release valve
● Unscrew and remove pump lid
● Remove any debris from pump basket
● Clean pool filter if needed
● Clean pool skimmer basket if needed
● Fill pump strainer basket with water from garden hose
● Clean and lubricate strainer cover O-ring each time it is removed. Inspect O-ring and place it back on the strainer cover.
● Turn the strainer cover clockwise to tighten. NOTE: Tighten the strainer cover by hand only. NO wrenches.
● Turn on the power to the pump and wait for the pump to prime. This may take up to five (5) minutes. Priming time depends on the vertical length of the suction lift and the horizontal length of the suction pipe. If the pump does not prime within five minutes, stop the motor and determine the cause. Be sure all suction and discharge valves are open when the pump is running
● Once the water starts coming out of the pool filter air release close pool filter air release

Helpful Videos for Pool Pump Priming
● Video on How to Prime a Pool Pump -
https://www.inyopools.com/HowToPage/how_to_prime_a_pool_pump.aspx

● Video on How to Determine Why a Pool Pump Won't Prime -
https://www.inyopools.com/HowToPage/how_to_determine_why_a_pool_pump_won_t_prime.aspx

● Video on How to Identify and Correct Air Leaks -
https://www.inyopools.com/HowToPage/how_to_identify_and_correct_air_leaks.aspx

● Video on How to Correct Swimming Pool Plumbing Issues -
https://www.inyopools.com/blog/how-to-fix-priming-problems-in-your-pool-plumbing/

 **ATTENTION:** Wait five seconds before re-starting the pump. Failure to do so may cause reverse rotation of motor and seriously damage the pump.

Maintenance
● Clean strainer basket regularly. Do NOT strike basket to clean. Inspect strainer cover gasket regularly and replace as necessary.
● Pumps have self-lubricating motor bearings and shaft seals. No lubrication is necessary. ● Keep motor clean. Ensure air vents are free from obstruction to avoid damage. Do NOT use water to hose off motor.
● Occasionally, shaft seals must be replaced. Replace with genuine seal assembly kit.

Storage and Winterization

Do not purge the system with compressed air. Doing this can cause inside components to explode, causing injury or death. Only use a low pressure (below 5 PSI), high volume blower when air purging the pump.

WARNING- Allowing the pump to freeze will void your warranty.

WARNING- Only use propylene glycol as antifreeze in your pool/spa. Propylene glycol is nontoxic and will not damage plastic system components. Other antifreeze combinations may damage plastic components in the system. Drain all water from the pump and piping whenever you are expecting freezing temperatures or when storing the pump for a long period of time.

Keep motor dry and covered during storage. To avoid condensation/corrosion issues, do NOT cover or wrap the pump with plastic film or bags.

1. Drain water level below all inlets to the pool.
2. Remove drain plug from bottom of strainer body and remove the strainer cover from the housing. 3. Disconnect pump from mounting pad, wiring system (AFTER power has been turned OFF), and piping systems.
4. Once the water is removed from the pump, re-install the strainer cover and drain plugs. Store pump in a dry area.

Troubleshooting

Motor Will NOT Start. Check for:

1. Improper or loose wiring connections; open switches or relays; tripped circuit breakers, GFCI's, or blown fuses.

Solution: Check all connections, circuit breakers, and fuses. Reset tripped breakers or replace blown fuses.

2. Manually check rotation of motor shaft for free movement and lack of obstruction 3. If you have a timer, be certain it is working properly. Bypass it if necessary.

Motor Shuts OFF. Check for:

1. Low voltage at motor or power drop (frequently caused by undersized wiring or extension cord use).

Solution: Contact qualified professional to check that the wiring gauge is heavy enough.

NOTE: Your pump motor is equipped with an automatic thermal overload protector. The motor automatically shuts off if the power supply drops below a certain point. This prevents damage caused by heat buildup in the motor windings. The thermal overload protector will allow the motor to automatically restart once the motor cools. It will continue the ON/OFF cycle until the problem is corrected.

Motor Hums, But Does NOT Start. Check for:

1. Impeller jammed with debris.

Solution: Open the pump to review and remove the debris.

Pump Won't Prime. Check for:

1. Empty pump/strainer housing.

Solution: Make sure pump/strainer housing is filled with water and the cover O-ring is clean. Ensure the O-ring is properly seated in the cover O-ring groove. Make sure O-ring is lubricated and the strainer cover is locked firmly in position.

2. Loose connections on suction side.

Solution: tighten pipe/union connections.

3. Leaking O-rings or packing glands on valves.

Solution: Tighten, repair, or replace valves.

4. Strainer basket or skimmer basket loaded with debris.

Solution: Remove strainer housing cover or skimmer cover, clean basket, and refill strainer housing with water. Tighten cover.

5. Suction side clogged.

Solution: Contact a qualified repair professional

Block off to determine if pump will develop a vacuum. You should have 5”-6” of vacuum at the strainer cover. (Only your pool dealer can confirm this with a vacuum gauge.) You may be able to check by removing the skimmer basket and holding your hand over the bottom port with skimmer full and pump running. If no suction is felt, check the line for blockage.

A. If pump develops a vacuum, check for blocked suction line or dirty strainer basket. An air leak in the suction piping may also be the cause.

B. If pump does not develop a vacuum and pump has sufficient priming water, then:

- Recheck strainer housing cover and all threaded connections for suction leaks. Check if all system hose clamps are tight.
- Check voltage to ensure that the motor is rotating at full RPM’s.
- Open housing cover and check for clogging or an obstruction in suction. Check impeller for debris.
- Remove and replace shaft seal if it is leaking.

If you have trouble priming your pump then many times, this can be solved by reducing your total dynamic head (TDH) within your plumbing system. The following items can help reduce TDH and help with priming.

- Make sure to have at least a 12" run of straight pipe going into the suction outlet of the pump.
- Remove as many 90-degree plumbing fittings as possible from your plumbing, especially before the suction port of the pump. Two 45's are better than one 90-degree fitting when it comes to TDH.
- Use larger 2" pipe on the suction side of the pump.
- Check out our guide on fixing priming problems with your pool pump https://www.inyopools.com /blog/how-to-fix-priming-problems-in-your-pool-plumbing/

Low Flow. Generally check for:

1. Clogged or restricted strainer or suction line.

Solution: Contact a qualified professional.

2. Undersized pool piping.

Solution: Correct piping size.

3. Plugged, or restricted line of filter, valve partially closed (high gauge reading). Solution: Sand filters- backwash as per the manufacturer’s instructions
   a. D.E. filters- backwash as per the manufacturer’s instructions
   b. Cartridge filters- clean or replace cartridge

4. Air leak in suction (bubbles coming from return fittings).

Solution: Retighten suction and discharge connections using Teflon tape. Inspect other plumbing connections and tighten as required.

5. Plugged, restricted, or damaged impeller

Solution: Replace impeller, including new seal assembly.

Noisy Pump. Check for:

1. Air leak in suction piping, cavitations caused by restricted or undersized suction line or leaky joint, low water level in the pool, and unrestricted discharge return lines.

Solution: Correct suction conditions or throttle return lines. Holding hand over return fitting will sometimes prove this point or putting in a smaller eyeball fitting.

2. Vibration due to improper mounting.

Solution: Mount the pump on a level surface and secure the pump to the equipment pad.

3. Foreign matter in pump housing. Loose debris hitting impeller.

Solution: Clean the pump housing.

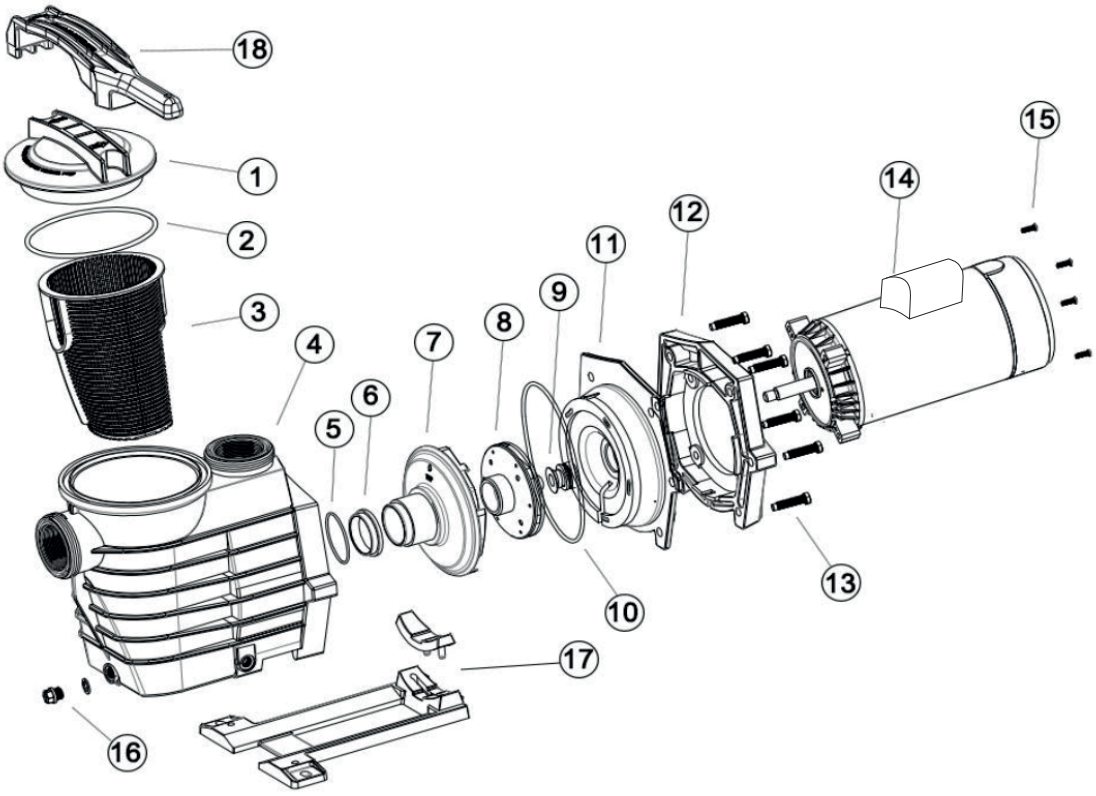
4. Motor bearings noisy from normal wear, rust, overheating, or seal damage.

Solution: Replace any seals that are leaking.

Statement of Warranty Policy

The Pureline Prime Plus pump was inspected before shipment from the warehouse. To original purchasers of this pump, Pureline Products warrants its products free from defects in materials and workmanship for a period of ONE (1) year from the date of purchase.

Parts which fail or become defective during the warranty period, except as a result of freezing, negligence, improper installation use or care, shall be repaired or replaced, at our option, without charge, within 90 days of receipt of the defective product. In the event of a breach of warranty within the applicable warranty period, Pureline Products shall have the option of (1) repairing, (2) supplying an identical or similar replacement, or (3) refunding for the purchase price.


18
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17