CIPU CSPPV546 Variable Speed Pool Pump User Manual

Contents

CIPU®

CIPU CSPPV546 Variable Speed Pool Pump

Product Information

- **Specifications:**
  - **Model:** Variable Speed Pump
  - **Available Horsepower Options:** 3HP, 1.5HP
  - **Model Numbers:** #CSPPV546, #72546

This variable speed pump is designed to provide flexibility and efficiency in water circulation and filtration systems. It offers multiple speed settings for optimal performance based on specific needs.

Product Usage Instructions

- **Installation:**
  - Review the user manual for detailed installation instructions.
  - Ensure proper electrical connection following safety guidelines.
  - Prime the pump before operation to ensure proper water flow.
- **Operation:**
  - Power on the pump and select the desired speed setting.
  - Monitor the pump operation for any unusual noises or vibrations.
  - Adjust the speed settings as needed for optimal water circulation.
- **Maintenance:**
  - Regularly clean the pump and filter to prevent clogging.
  - Check for leaks and proper sealing of connections.
  - Refer to the manual for any specific maintenance requirements.

FAQs

- **Q: How do I know which speed setting to use?**
  - **A:** The speed setting depends on factors like pool size, desired flow rate, and specific requirements. Refer to the manual for guidance or consult a professional.
- **Q: What should I do if the pump is making unusual noises?**
  - **A:** Turn off the pump immediately and inspect for any obstructions or mechanical issues. If problems persist, contact customer support for assistance.

- **Q: Can this pump be used for hot tubs or spas?**
  - **A:** While primarily designed for pools, some models may be suitable for hot tubs or spas. Check the product specifications or consult with the manufacturer for compatibility.

IMPORTANT SAFETY INSTRUCTIONS

IMPORTANT NOTICE
This guide provides installation and operation instructions for this pump.Co insult us 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.
- **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 them if missing or damaged.

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

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.

WARNING: Do not permit children to use this product. This pump is for use with permanent

CAUTION: 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 or 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 pump performance potential with old or questionable equipment.
- Code requirements for electrical connection differ from country to country, state to state, as well as local municipalities. Install equipment per 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 satety.

DANGER: SUCTION ENTRAPMENT HAZARD: STAY OFF THE MAIN DRAIN AND AWAY FROM ALL SUCTION OUTLETS! THIS PUMP IS NOT EQUIPPED WITH SAFETY VACUUM RELEASE SYSTEM (SVRS) PROTECTION AND DOES NOT PROTECT AGAINST BODY OR LIMB ENTRAPMENTS, DISEMBOWELMENTS (WHEN A PERSON SITS ON A BROKEN OR UNCOVERED POOL DRAIN) OR HAIR ENTANGLEMENTS.

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 UNDERWATER IF THEY COME NEAR 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, or 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.
- **Mechanical Entrapment:** When jewellery, 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 INACCORDANCE 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 the nearest point.
- Regularly inspect all covers for cracks, damage and advanced weathering.
- If a cover becomes loose, cracked, damaged, broken or missing, replace it 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 near any suction cover, pool drain or outlet.
- Disable suction outlets or reconfigure them into return inlets.

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 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 critical that the suction plumbing be installed according to the latest national and local codes for swimming pools.
WARNING: A clearly labelled 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.
CAUTION: For Installation of Electrical Controls at Equipment Pad (ON/OFF Switches, Timers and Automation Load Center)

Install all electrical controls at the equipment pad, such as on/off switches, timers, 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.

WARNING
Pumps improperly sized installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may or severe injury or property damage caused by a structural failure of the pump or other system component.

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. The 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 the 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 the filter manual air relief valve until all pressure has been discharged from the valve and a steady stream of water appears. Observe the 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.

Features

Pump Features

- Extremely quiet operation
- 2 in. Plumbing for simple replacement
- The see-through strainer pot lid allows easy inspection of the strainer basket
- Self-priming for quick, easy start-up

Motor Features

- High-Efficiency Permanent Magnet Motor
- 56 Square Flange
- Low noise
- Designed to withstand the outdoor environment
- Operates at lower temperatures due to high efficiency
- Exceeds all Department of Energy and Energy Star requirements.
- Permanent-magnet, totally enclosed fan-cooled (TEFC) motor.
- WEF:7.2 THP:3.0

INTRODUCTION

Drive Features
The pump features a premium efficiency variable frequency drive that provides flexibility in terms of motor speed and duration settings.
WARNING: This pump is for use with 230 Vrms nominal, and in pool pump applications ONLY. Connection to the

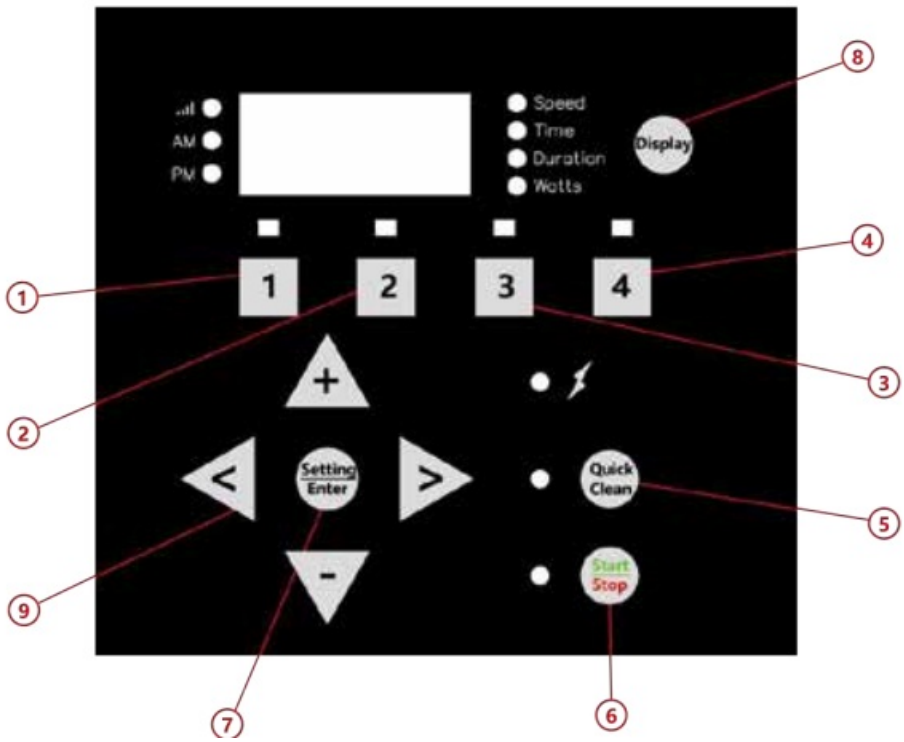
wrong voltage, or use in other applications may cause damage to equipment or personal injury. The pump's drive controls the speed settings as well as run durations. The pump can operate at speeds ranging between 1000 and 3450 RPM and will operate within the voltage of 230 Vrms nominal at either 50 or 60Hz input frequency. The pump is intended to run at the lowest speeds needed to maintain a sanitary environment and, at the same time, minimize energy consumption. Factors such as pool size, the presence of additional water features, the type of chemicals used to maintain sanitary conditions, and local environmental factors will impact optimal programming to maximize energy conservation. Determining the optimal settings and programming for your pool may require some trial and error.

- Simple user interface
- UV and rain-proof enclosure
- Onboard time of day schedule
- Adjustable priming mode
- Programmable Quick Clean mode
- Pump alarm display and retention
- Accepts 230V, 50/60Hz input power
- Auto power limiting protection circuit
- 24hr. clock retention for power outages

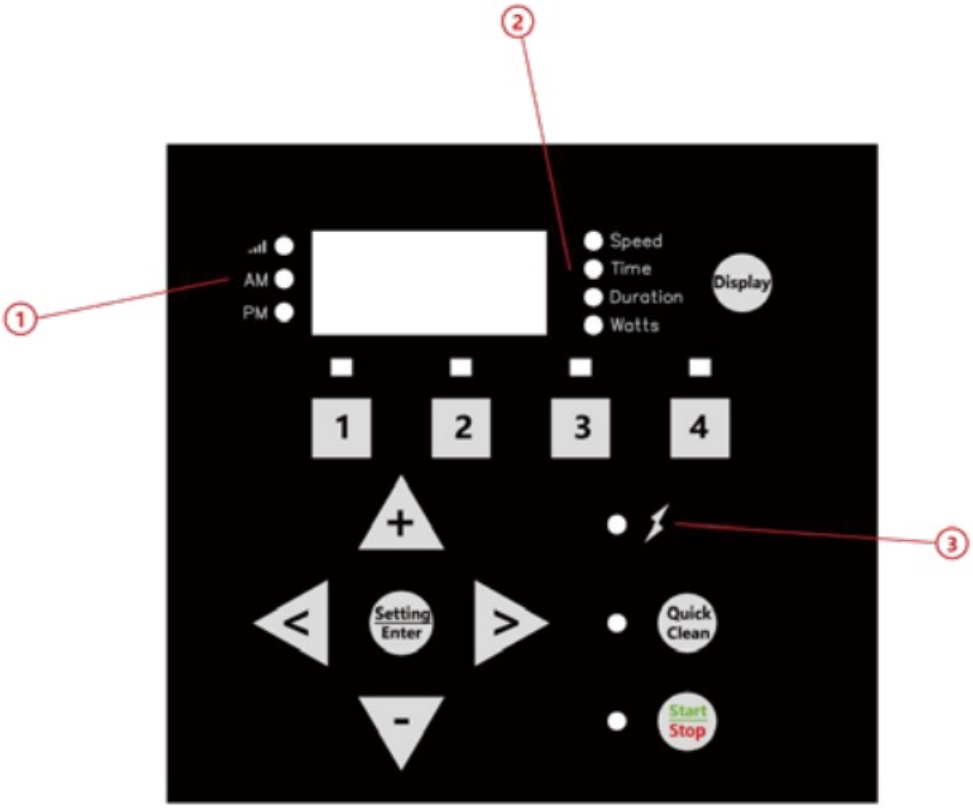
Model	Voltage (VAC)	Max Amps	Input (Hz)
72546	230	10.5	50/60

USING THE DRIVE KEYPAD

- Before operating the pump for the first time, the pump's internal clock and operational schedules must be programmed.
- Refer to Setting the Clock, page 6 and Programming Custom Schedules, page 7 for instructions regarding the programming of this pump for scheduled operation.
- The pump can be programmed and controlled from the drive keypad. Pump features and settings are also accessed using this keypad.
- **Note:** Functionality may vary based on other active features such as External Control Only Mode and/or Keypad Lockout.
- **Note:** Always close the keypad cover after use. This will prevent damage to the keypad and other drive components.
- **CAUTION:** Only press the keypad buttons with your fingers. Using screwdrivers, pens or other tools to program the pump will damage the keypad.
- **WARNING:** If power is connected to the pump motor, pressing any of the following buttons referred to in this section could result in the motor starting. Failure to recognize this could result in personal injury or damage to equipment.



1. **SPEED 1:** Press to select Speed 1(2850 RPM), and the LED light indicates that the current Speed 1 is running
2. **SPEED 2:** Press and select Speed 2(1730 RPM). When the LED is on, it indicates that the current speed 2 is running
3. **SPEED 3:** Press and select speed 3(2300 RPM), and the LED light indicates that the current speed 3 is running
4. **SPEED 4:** Press and select Speed 4(1150 RPM). When the LED is on, speed 4 is running
5. **Quick Clean key:** Quick clean key
6. **Start/Stop key:** Start/stop key: Start or stop the pump. When the indicator light is on, it indicates that the pump is running or in the specified mode. When the light blinks, it means that the pump is not running and the current time has not reached the start time of the next scheduled mode.
    - When the frequency converter is shut down, enter the main menu directory
7. **Display button:** used to switch between display contents when the water pump is running. 9 Arrow keys
    - **on the key:** Increase the speed or time when adjusting
    - **under the key:** reduce the speed or time when adjusting
    - **left key:** Move the cursor to the left



1. **Control panel digital tube:** used to view the current speed, time, duration, power consumption, Bluetooth connection prompt and other functions.
2. **Display mode LED indicator light:** with the display button to display the corresponding LED, the information displayed on the digital tube corresponds to a specific point. Blinking indicates the current editable parameter.
3. **Power LED indicator:** When the LED light shines, it means that the pump has been energized.

Only a qualified plumbing professional should install the pump. Refer to IMPORTANT SAFETY INSTRUCTIONS on pages iii for additional installation and safety information.

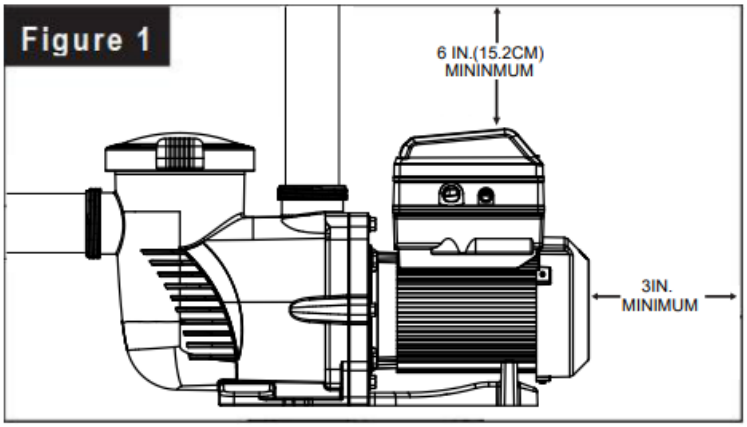
Location

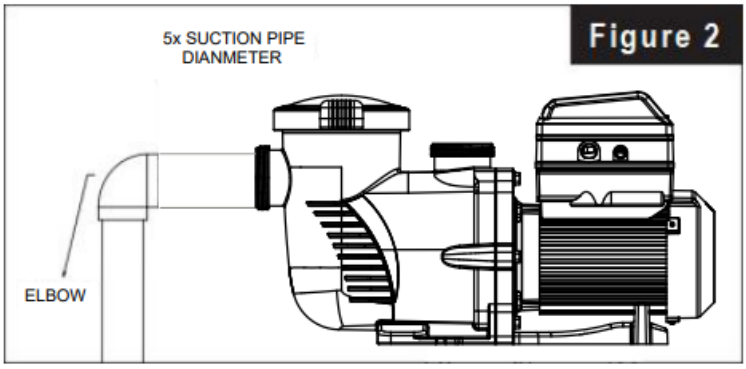
- **Note:** Do not install this pump within an outer enclosure or beneath the skirt of a hot tub or spa.
- **Note:** Ensure that the pump is mechanically secured to the equipment pad.

ENSURE THE INSTALL LOCATION MEETS THE FOLLOWING REQUIREMENTS:

1. Install the pump as close to the pool or spa as possible. To reduce friction loss and improve efficiency, use short, direct suction and return piping.
2. Install a minimum of 5 ft. (1.5 m) from the inside wall of the pool and spa. Canadian installations require a minimum of 9.8 ft. (3 m) from the inside wall of the pool.
3. Install the pump a minimum of 3 ft. (0.9 m) from the heater outlet.
4. Do not install the pump more than 5 ft. (1.5 m) above the water level.
5. Install the pump in a well-ventilated location protected from excess moisture (i.e. rain gutter downspouts, sprinklers, etc.).
6. Install the pump with a rear clearance of at least 3 in. (7.6 cm) so that the motor can be removed easily for

maintenance and repair. See Figure 1.





Piping

1. For improved pool plumbing, it is recommended to use a larger pipe size.
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. For most installations recommend installing a valve on both the pump suction and return lines so that the pump can be isolated during routine maintenance. However, we also recommend 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 diameter. See Figure 2.
    - **Example:** A 2.5 in. pipe requires a 12.5 in. (31.8 cm) straight run in front of the suction port. This will help the pump prime faster and last longer.
    - **Note:** DO NOT install 90° elbows directly into the suction or discharge ports.

Fittings and Valves

1. Do not install 90° elbows directly into the suction port.
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.

Electrical Installation

Warning

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. The pump must be installed by a licensed or certified electrician or a qualified service professional per the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard that could result in death or serious injury to users, installers, or others due to electrical shock, and may also cause property damage. 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. The pump accepts 230 V, 50 or 60 Hz single-phase input power. Power Connections are capable of handling up to 8 AWG solid or stranded wire.

Wiring

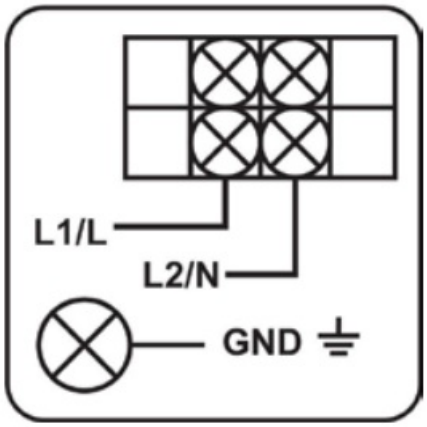
1. Ensure all electrical breakers and switches are turned off before wiring the motor.
    - **WARNING STORED CHARGE –** Wait at least 5 minutes before servicing.
2. Ensure supply voltage meets the requirements listed on the motor nameplate.
3. For wiring sizes and general requirements, follow specifications defined by the current National Electric Code and any local codes. When in doubt use a heavier gauge (larger diameter) wire.
4. Ensure all electrical connections are clean and tight.
5. Cut all wiring to the appropriate length so they do not overlap or touch when connected to terminals.
6. ALWAYS reinstall the drive lid after electrical installation or before leaving the pump unsupervised during servicing. This will prevent rainwater, dust or other foreign matter from accumulating in the drive.
    - **Note:** Ensure wires are not pinched between the drive body and lid.

Grounding

1. Permanently ground the motor using the Grounding Terminal inside the drive wiring compartment. Refer to the current National Electrical Code and any local codes for wire size and type requirements. Ensure the ground wire is connected to an electrical service ground.

Bonding

1. Using the Bonding Lug located on the side of the motor, bond the motor to all metal parts of the pool structure, electrical equipment, metal conduit and metal piping within 5 ft.(1.5m) of the inside walls of the swimming pool, spa or hot tub per the current National Electrical Code and any local codes.
2. A solid copper bonding conductor of 8 AWG or larger is required. For Canadian installations, a 6 AWG or a larger solid copper bonding conductor is required.



OPERATION

Before operating the pump for the first time, the pump's internal clock and operational schedules must be programmed by following the steps in this manual. Refer to Setting the Clock below and Programming Custom Schedules on page 7, for instructions regarding the programming of this pump for scheduled operation.

NOTE
When programming a new schedule, please program the start time of speed 1-4 according to the time sequence of one day

Setting the Clock
When power is first connected to the pump the clock will blink to indicate that it has not been set. Custom schedules are based on this clock setting, so the clock must be set first.

1. Press Setting.
2. Use "+" and " to program the current time. Use "<" and ">" to move the modify cursor.
    - **Note:** In the 12 hours time format AM/PM will display on the left.

Using the Default Schedule
The default schedule is designed to provide sufficient daily turnover for a typical pool. See Table 2 for the default schedule.

The program	Start up time	Time of operation	Default speed
The default cycle is 22 hours a day			
speed1	8:00AM(8:00) (adjustable)	2H(adjustable)	2850 RPM (adjustable)
speed2	10:00AM(10:00) (adjustable)	10H(adjustable)	1730 RPM (adjustable)
speed3	8:00PM(20:00) (adjustable)	2H(adjustable)	2300 RPM (adjustable)
speed4	10:00PM(22:00) (adjustable)	8H(adjustable)	1150 RPM (adjustable)

Table 2

The default schedule will operate as follows:

1. **SPEED 1** will begin at 8:00 am and run at 2850 RPM for 2 hours.
2. **SPEED 2** will begin at 10:00 am and run at 1730 RPM for 10 hours.
3. **SPEED 3** will begin at 8:00 pm and run at 2300 RPM for 2 hours.
4. **SPEED 4** will begin at 10:00 pm and run at 1150 RPM for 8 hours.
5. At the end of speed 4, the pump will stop running for 2 hours and then run speed 1 again. Because the factory is set to run continuously for 22 hours every day until the user changes the default schedule.
    - Note: The Start/Stop button must be pressed, and the Start/Stop LED illuminated, for the pump to run.

Programming Custom Schedules

- To customize your pump's schedule, the pump must be stopped. Ensure that the Start/Stop LED is not

illuminated.

- When programming, the LED next to the parameter you are editing will blink.
  - **“Speed”** – Run Speed
  - **“Time”** – Start Time
  - **“Duration”** – Run Time

TO PROGRAM A CUSTOM SCHEDULE:

1. Press Start/Stop to stop the pump.
2. Press “1”. The SPEED 1 LED and the “Speed” parameter LED will blink while editing. See Figure 9.

Figure 9

3. Use “+” and ” to adjust the speed in RPM for SPEED 1, and use the “<” and “>” to move the cursor.
   - **Note:** The speed adjustment Stepping is 100/10/1 rpm
4. Press “1”. The SPEED 1 start time will display. The “Time” parameter LED will begin to blink. See Figure 10.

Figure 10

5. Use “+” and ” to adjust the SPEED 1 start time. use the “<” and “>” move the cursor.

- **Note:** The start time adjustment Stepping is 1 hour/10min/1 min

6. Press “1”. SPEED 1 duration will display. The “Duration” parameter LED will begin to blink. See Figure 11.

Figure 11

7. Use “+” and “” to adjust the SPEED 1 duration in hours and minutes, use the “<” and “>” move the cursor.
    - **Note:** The duration adjustment Stepping is 1 hour/10min
    - **Note:** If the duration is set to 0 hours, the pump will not run this program segment during this period
8. SPEED 1 is now successfully programmed.
    - **Note:** Pressing “1” will continue to cycle through these parameters, but changes are immediately saved as they are adjusted.
9. Press “2”. The SPEED 2 LED and “Speed” parameter LED will blink while editing.
10. Use “+” “*”<” and “>” to adjust the speed in RPM for SPEED 2.
11. Press “2”. The SPEED 2 duration will display.
12. Use “+”*” and “>” to adjust the duration of SPEED 2 in hours and minutes.
13. Repeat steps 9-12 to program SPEED 3. 4 and QUICK CLEAN.
14. Press Start/Stop and ensure the Start/Stop LED is illuminated. The pump is now active and will runthe programmed schedule.
    - **Note:** If the pump was stopped using the Start/ Stop button, the pump will not run until the Start/ Stop button is pressed again. If the Start/Stop LED is illuminated, the pump is on and will run the programmed schedule.

Speed Priorities (Non-External Control)

- For schedule duration settings, SPEEDs are prioritized as follows: SPEED 1 -> SPEED 2 -> SPEED 3 -> SPEED 4. SPEED 1 is the highest priority, while SPEED 4 is the lowest.
- The drive has priority Settings, as shown in the following table.

Example: Starting Schedule (Before Adjustment)

- **SPEED 1** start time = 8:00AM duration = 6 hours
- **SPEED 2** start time = 9:00AM duration = 1 hour
- **SPEED 3** start time = 10:00AM duration = 1 hour

- **SPEED 4** start time = 2:00PM duration = 1 hour

In this way, according to the priority, the water pump will run the speed1 mode from 8:00 a.m. to 2:00 p.m. (skip the speed2 and 3 modes in the middle, because speed2 and 3 have been included in the speed 1 operation period), and the speed4 mode will run from 2:00 p.m. to 3:00 p.m.

End Schedule (After Adjustment)

- **SPEED 1** start time = 8:00AM duration = 6 hours
- **SPEED 4** start time = 2:00PM duration = 1 hours

Operating the Pump While Running

CAUTION

- If power is connected to the pump, pressing any of the following buttons referred to in this section could result in the motor starting. Failure to recognize this could result in personal injury or damage to equipment.

Pressing the Display button will cycle through the current parameters:

- **Speed** – current run speed
- **Time** – current time of day
- **Duration** – the amount of time remaining at current run speed

Watts – watts currently being consumed

- Pressing any of the SPEED Buttons (“1”, “2”, “3”, “4” or Quick Clean) while the pump is running will act as a temporary override.
- The pump will run the speed and duration programmed for that button. Once completed the pump will return to the appropriate point in the programmed schedule.
- **Note:** If schedule speeds are adjusted while the pump is running, the pump will run at the entered speed for the rest of the program’s duration, but will not save the adjustments.

Priming

CAUTION: This pump is shipped with Priming mode ENABLED. The pump will ramp up to 3200 RPM when the pump is initially started.

Before turning the pump ON:

1. Open the filter air relief valve.
2. Ensure rees in all completely open and clear of any blockages.
3. Ensure the pump is filled with water.
4. Stand clear of the filter or other pressurized vessels.

WARNING: DO NOT run the pump dry, the shaft seal will be damaged and the pump will start leaking. If this

occurs, the damaged seal must be replaced. ALWAYS maintain the proper water level in your pool (halfway up the skimmer opening). If the water level falls below the skimmer opening, the pump will draw air through the skimmer, 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 body, impeller and seal and may cause property and personal injury.

- When the pump starts, the start will run automatically in addition to running a quick cleaning cycle. The default startup speed is 2400 RPM the pump will slowly rise to 3200 RPM and will last 5 minutes. The drive will display the remaining time
- **Note:** After the pump's priming cycle has completed, if there is time remaining on the control system's priming timer the pump will run the control system priming speed until the timer expires.
- During boot, the boot speed can be adjusted between 3200 RPM and 3450 RPM with "+" and "-"
- **Note:** The first startup starts with a countdown of 5 minutes. You can press speed1, 2, 3, 4 to pre-exit the self-priming.
- **Note:** If the pump is started again, the pump will decide whether to self-priming based on the current environment. the judgment time is 20 seconds.
- Priming time can change based on local environmental conditions such as water temperature, atmospheric pressure, and your pool's water level. All of these things should be taken into consideration when setting the priming speed. Test and verify priming speeds more than once, letting the water drain from the system in between each test.
- **Note:** To prevent air from entering the system, the pump strainer pot should always be filled with water up to the bottom of the suction port.

Programming Quick Clean

- The pump is equipped with a Quick Clean feature, which can be engaged to temporarily run at higher or lower speeds ranging from 1700 to 3450 RPM.
- At the end of a Quick Clean cycle, the pump will automatically return to the appropriate point in its programmed schedule.

TO PROGRAM QUICK CLEAN:

1. Press Start/Stop to stop the pump.
2. Press Quick Clean. The Quick Clean LED and "Speed" parameter LED will blink while editing. See Figure 14.

Figure 14

3. Use “+” and ” to adjust the Quick Clean speed in RPM, and use the “<” and “>” to move the cursor.
    - **Note:** The speed adjustment Stepping is
4. Press Quick Clean. The Quick Clean duration will display. The “Duration” parameter LED will blink while editing. See Figure 15.

Figure 15

5. Use “+” and “” to adjust the Quick Clean duration in hours and minutes, use the “<” and “>” to move the cursor.
    - **Note:** The duration adjustment Stepping is 1hour/10min
    - **Note:** The duration can be adjusted from 10 minutes to 24 hours
    - **Note:** Quick Clean duration does not affect the start

Factory Reset

- The drive can be reset to factory settings if necessary.
- A Factory Reset will erase all programmed settings and schedules, except for the time of day.
- Be sure that it is necessary before performing a Factory Reset, as the results are immediate.

TO PERFORM A FACTORY RESET:

1. If the pump is running, press the Start/Stop button to stop the pump.
2. Press and hold “1”, and “2” for 3 seconds.
3. If the factory reset is successful, you will hear a 3-second prompt tone.
4. Reprogram the schedule and priming speed as described in the previous sections. The pump must be turned back on with the Start/Stop button before it will run again. The pump will run the programmed schedule upon initial start-up.

MAINTENANCE

- **WARNING:** DO NOT open the strainer pot if the pump fails to prime or if the pump has been operating without water in the strainer pot. Pumps operated in these circumstances may experience a build-up of vapour pressure and may contain scalding hot water. Opening the pump may cause serious personal injury. To avoid the possibility of personal injury, make sure the suction and discharge valves are open and the strainer pot temperature is cool to the touch, then open with extreme caution.
- **WARNING:** GAlways disconnect power to the pump at the circuit breaker and disconnect the digital input 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. R
- **CAUTION:** To prevent damage to the pump and for proper operation of the system, clean the pump strainer and skimmer baskets regularly. Read all servicing instructions before working on the pump.

Cleaning the Pump Strainer Basket
The strainer pot is located at the front of the pump and houses the pump strainer basket. The strainer basket can be viewed through the strainer pot lid and should be visually inspected at least once a week. Regularly emptying and cleaning the strainer basket will lead to higher filter and heater efficiency and prevent unnecessary stress on the pump motor.

TO CLEAN THE STRAINER BASKET:

1. Press Start/Stop to stop the pump and shut off all electrical power to the pump at the circuit breaker.
2. Open the filter air relief valve and relieve all pressure from the filtration system.
3. Turn the strainer pot lid counter-clockwise and remove it from the pump.
4. Remove debris and rinse out the basket. Replace the basket if it is cracked or damaged.
5. Place the basket into the strainer pot. Ensure the notch in the bottom of the basket is aligned with the rib in the bottom of the strainer pot.
6. Fill the strainer pot with water up to the inlet port.
7. Clean the lid O-ring and sealing surface of the strainer pot.
    - **Note:** It is important to keep the lid O-ring clean and well-lubricated.
8. Reinstall the lid by placing it onto the strainer pot and tightening it clockwise until the lid handles are horizontal.
    - **Note:** Ensure the lid O-ring is properly placed and is not being pinched between the lid and strainer pot.
    - **Note:** Ensure that the side of the lid marked “Front” is positioned at the front of the pump.
9. Open the filter air relief valve and stand clear of the filter.
10. Reestablish electrical power to the pump at the circuit breaker and start the pump.
11. When a steady stream of water flows from the filter air relief valve, close the valve.

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 the motor has been damaged by dirt it may void the motor warranty.
5. Clean the lid, O-ring, and sealing surface of the strainer pot regularly.

Protect against moisture

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

WARNING

- THIS SYSTEM OPERATES UNDER HIGH PRESSURE.
- When any part of the circulating system 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 above instructions.

Refer to the Motor/Hydraulics Assembly Diagram, on the next page, for a parts breakdown of the pump.

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

Pump Disassembly

TOOLS REQUIRED:

- Adjustable wrench
- #2 Phillips screwdriver
- Flat blade screwdriver

TO DISASSEMBLE THE PUMP:

1. Press Start/Stop to stop the pump and disconnect all power to the pump at the circuit breaker.
2. Disconnect any digital inputs or communication cables from the pump (if connected).
3. Close all valves in the suction and discharge lines.
4. Relieve all system pressure at the filter's air relief valve.
5. Remove both drain plugs from the bottom of the strainer pot.
6. Using an adjustable wrench, remove the two strainer pots through bolts and nuts securing the motor/hydraulics assembly to the strainer pot.
7. Using an adjustable wrench. open-end wrench or socket, and remove the four remaining strainer pot bolts.
8. GENTLY separate the motor/hydraulics assembly from the strainer pot.
9. Using an adjustable wrench, remove the two screws securing the diffuser to the seal plate. Remove the diffuser.
10. Using an adjustable wrench, hold the motor shaft in place at the rear of the motor. This will prevent the motor shaft from spinning while removing the impeller and impeller screw.
11. Continue to hold the motor shaft in place. Remove the impeller screw and washer clockwise using a #2 Phillips screwdriver.
12. Remove the impeller counter-clockwise by hand.
13. Using a 9/16 in. wrench, remove the four (4) bolts securing the seal plate to the motor.
14. Remove the seal plate from the motor/drive assembly.

Pump Reassembly

1. Place the seal plate onto the motor assembly, ensuring the side marked "UP" is at the top.
2. Using an adjustable wrench, reinstall the motor/seal plate Bolts in a criss-cross pattern the seal plate to the motor with the four motor bolts. Tighten to 70-80 in-lbs. (81-92 kg/cm).
3. Using an adjustable wrench, hold the motor shaft in place at the rear of the motor. This will prevent the motor shaft from spinning while reinstalling the impeller and impeller screw.
4. Continue to hold the motor shaft in place and reinstall the impeller onto the motor shaft clockwise hand tight.
5. Continue to hold the motor shaft in place and reinstall the impeller screw and washer. Tighten to 25 in-lbs. (29 kg/cm).
    - **Note:** The impeller screw is reverse threaded and tightens counter-clockwise.
6. Reinstall the diffuser onto the seal plate using the two diffuser screws.
7. Inspect the diffuser seal and seal plate gasket for damage and replace if necessary. Grease both before continuing.
8. Using an adjustable wrench, secure the strainer pot to the motor/hydraulics assembly with the six strainer pot bolts and washers.
    - **Note:** Do not tighten the two through bolts until all six bolts are in place and the finger tightened. Tighten in a criss-cross pattern to 110 in-lbs (127 kg/cm).
    - **Note:** Ensure the seal plate gasket is not pinched between the strainer pot and motor assembly.

9. Reinstall both drain plugs into the bottom of the strainer pot.
10. To restart the pump, continue to Restarting the Pump, page 13.

Restarting the Pump

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

CAUTION

- DO NOT run the pump dry. The shaft seal will be damaged and require replacement.
- ALWAYS maintain the proper water level in your pool (halfway up the skimmer opening). If the water level falls below the skimmer opening, the pump will draw air through the skimmer, lose prime and cause the pump to run dry.
- Continued operation in this manner could cause a loss of pressure, damage the pump and/or property or personal injury.

TO PRIME THE PUMP:

1. Press Start/Stop to stop the pump and disconnect all power to the pump at the circuit breaker.
2. Relieve all pressure from the filtration system at the filter air relief valve.
3. Remove the strainer pot lid by twisting it in a counter-clockwise direction.
4. Fill the strainer pot up to the inlet port with water.
5. Place the lid onto the strainer pot, then turn clockwise to lock in place.
    - **Note:** The lid is properly locked when the handles are nearly perpendicular to the pump body.
6. Return power to the pump at the circuit breaker.
7. Open the filter air relief valve.
8. Stand clear of the filter and press the Start/Stop button to start the pump.
9. Bleed air from the filter air relief valve until a steady stream of water appears, then close the relief valve.
10. The pump will run a priming cycle and, if successful, begin normal operation.

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

TO PREVENT FREEZE DAMAGE:

1. Press Start/Stop to stop the pump and disconnect all power to the pump at the circuit breaker.
2. Disconnect all power to the pump at the circuit breaker.
3. Relieve all pressure from the filtration system at the filter air relief valve

4. Remove both drain plugs from the bottom of the strainer pot and drain the pump. Store the plugs in the strainer basket.
5. Cover the motor to protect it from severe rain, snow and ice.
    - **Note:** Do not wrap the motor with plastic or other air-tight materials during winter storage. Never cover the motor when operating or expecting operation.

TROUBLESHOOTING

WARNING: Diagnosing certain symptoms may require interaction with, or proximity to, components that are energized with electricity. All servicing should be performed by a qualified service professional. Contact with electricity can cause death, personal injury, or property damage.

Troubleshooting Chart

Problem	Possible Cause	Corrective Action
Pump failure.	The pump will not prime – Air in the suction line or pump	1. Inspect suction line plumbing and valve(s) for damage or loose connections. 2. Ensure the strainer pot lid is sealing properly. Verify lid O-ring is in place. 3. Ensure proper pool water level and water is available to the skimmer.
	The pump will not prime – Not enough water	1. Ensure the suction line and pump strainer pot are full of water. 2. Ensure the suction line valve is working and open (some systems do not have valves). 3. Ensure proper pool water level and water is available to the skimmer.
	Strainer basket excessively dirty or full	Clean strainer basket. See *Cleaning the Pump Strainer Basket, page 11*.
	The strainer pot O-ring is damaged	Inspect strainer pot O-ring for damage. Replace if necessary.
Reduced capacity and/or head.	Air in the suction line or pump	1. Inspect suction line plumbing and valve(s) for damage or loose connections. 2. Ensure the strainer pot lid is sealing properly. Verify lid O-ring is in place. 3. Ensure proper pool water level and water is available to the skimmer. Disassemble the pump (*Pump Disassembly, page 12*) and remove debris from the impeller. Clean strainer basket. See *Cleaning the Pump Strainer Basket, page 11*.
	Clogged impeller	
	Strainer basket excessively dirty or full	

The pump fails to st art.	The mains voltage is not pres ent Motor is locked The motor shaft is damaged	1. Replace fuse, reset breaker 2. Tighten mains wire connections. Disassemble the pump (*Pump Disassembly, page 12*) a nd attempt to rotate the motor shaft by hand to remove any blockage. Replace pump.
The pump runs and then stops.	Over temperature FAULT Over-current FAULT	Ensure the motor fan cover at the rear of the motor is fr ee of dirt and debris. Use compressed air to clean. The pump will automatically restart after one (1) minute.
The pump is noisy.	Debris in contact with the fan Strainer basket excessively di rty or full Loose mounting	Ensure the motor fan cover at the rear of the motor is fr ee of dirt and debris. Use compressed air to clean. Clean strainer basket. See *Cleaning the Pump Strainer Basket, page 11*. Ensure mounting bolts and pump bolts are tight.

Problem	**Possible Cause**	**Corrective Action**
The pump runs with out flow.	Impeller is loose Air in the suction line or pump Clogged or restricted plumbin g	Ensure the fan at the rear of the pump is spinning. If so, disassemble the pump (*Pump Disassembly, page 12*) a nd ensure the impeller is correctly installed. 1. Inspect suction line plumbing and valve(s) for dama ge or loose connections. 2. Ensure the strainer pot lid is sealing properly. Verify lid O-ring is in place. 3. Ensure proper pool water level and water is availabl e to the skimmer. 1. Inspect for and clear any blockage in the strainer po t or suction line. 2. Inspect for blockage in discharge piping including p artially closed valve or dirty pool filter.

Alarms and Fault Codes

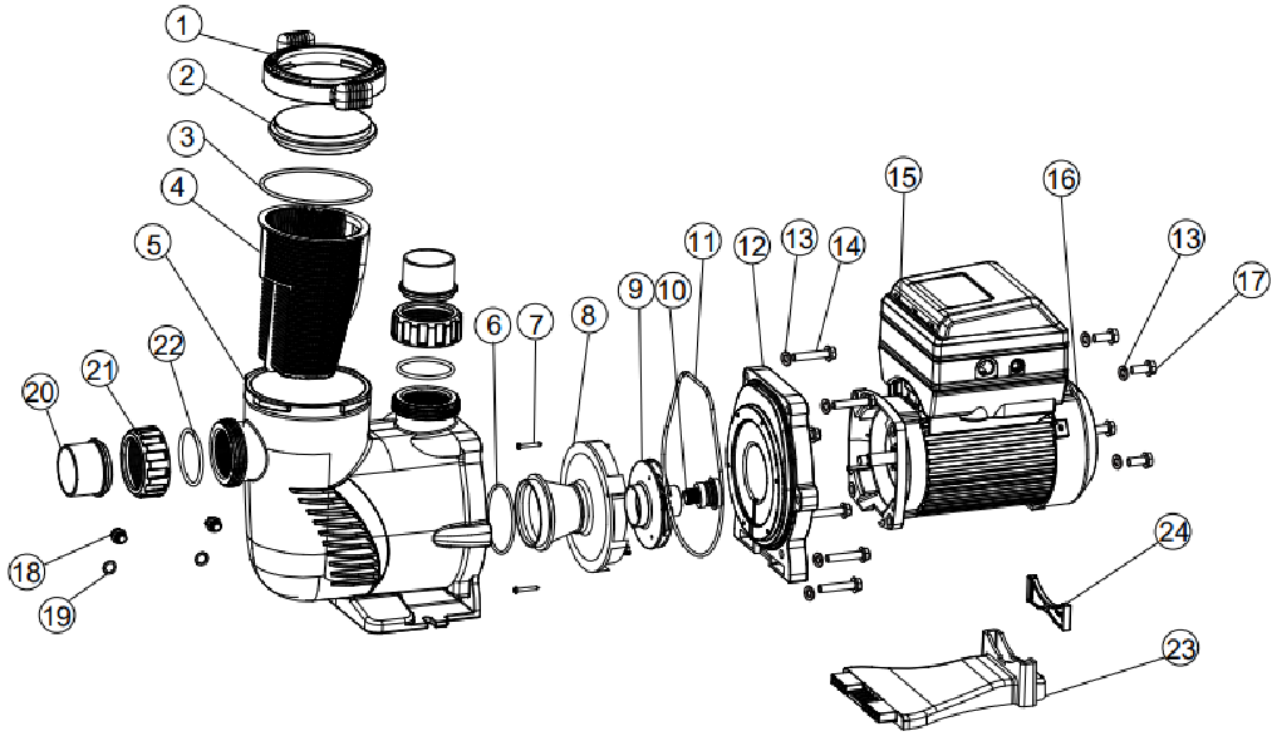
If an alarm is triggered the drive will display a fault code text and the pump will stop running. Disconnect power to the pump and wait until the keypad LEDs have all turned off, then reconnect power. If the error continues to appear after power is reconnected, proper troubleshooting will be required. Use the error description table below to begin troubleshooting.

Fault Code	Description
1	Blocked or motor wire short circuit or high-temperature rise
2,4,6	The input voltage is too high
8	The input voltage is too low
16,128	The motor fails to start normally
256	Motor phase loss or the motor and driver are not connected well
300	No load
301	Overtemperature

- **POWER OUT FAILURE –** Incoming supply voltage is less than 190 VAC or the controller is disturbed, and the input voltage exceeds the limit value.
- **16,128 – The motor fails to start normally:** The motor is stuck, the ground wire of the motor is not properly connected, or the driver is not correctly installed on the motor.
- **300 – No load:** Water may not be absorbed.
- **301 – Overtemperature:** The temperature of components inside the driver exceeds the limit.

It is possible to have two or more abnormalities at the same time. For example, when the motor stops abnormally, error code 7 is displayed, indicating the superposition of error codes 1, 2 and 4.

REPLACEMENT PARTS



Item	Part. No.	Description
1	47276502920	Lid Clamp
2	47252707089	Lid
3	5431042080	O-Ring
4	47276803001	Basket
5	47276801920	Pump housing
6	5431032080	Diffuser
7	5212025000	Screw ST4-2X38
8	47254703080	Diffuser
9	47255671000	Impeller
10	5028014000	Seal Assembly
11	5431045080	O-Ring
12	47276802920	Pump cover

Item	Part. No.	Description
13	5244015000	Gasket M10
14	5225012000	Screw 3/8-16*1 1/2 UNC
15	6104010024	Drive Cover For 3.0HP
16	6001010010	Motor For 3.0HP
17	5221008000	Screw M10*25
18	48860105920	Drain plug
19	5432002080	Gasket
20	49130101920	Adaptor
21	49130102920	Adaptor cap
22	5431081080	O-Ring
23	47276804920	Mounting Foot
24	47255302920	SupportingFoot

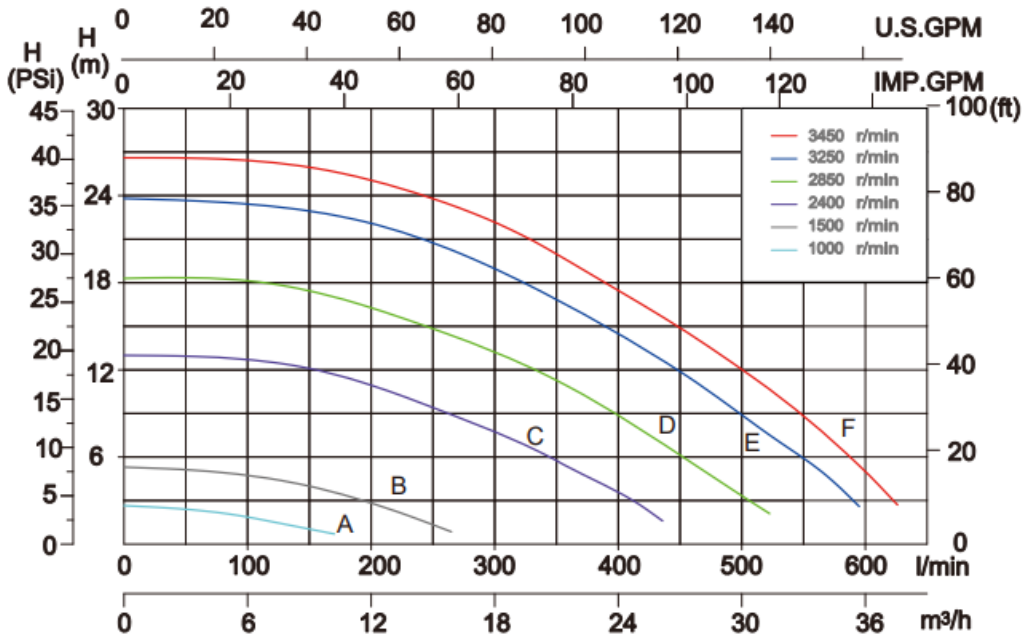
TECHNICAL DATA

Technical Specifications (3.0 HP Models)

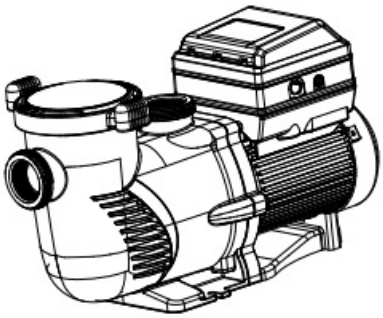
Input Voltage Nominal	230 VAC
Input Current	10.5 Amps
Input Frequency	1PH, L1-L2 or L-N,50 or 60 Hz
Max Input Watts	2415 W
Max Shaft Horsepower	3.0 HP
Speed Range	750 – 3450 RPM

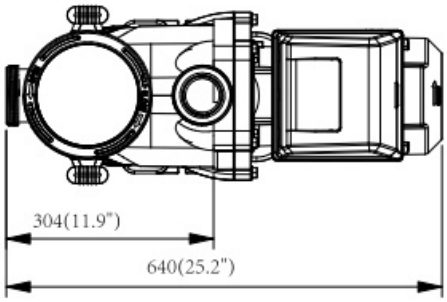
Environmental Enclosure Rating	NEMA Type 3 / IPX5
Ambient Condition Range	
Storage	-40°C to +60°C (-40°F to 140°F)
Operating	0-50°C (32-122°F)
Humidity	Relative 0-95% Non-Condensing

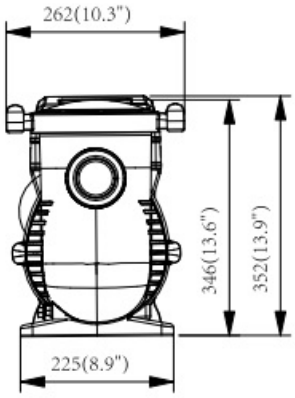
Performance Curves (3.0 HP Models)

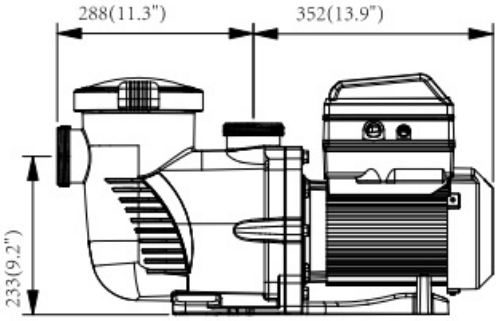


Pump Dimensions (3.0 HP Models)

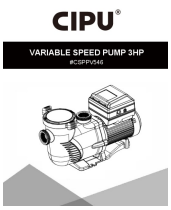








Documents / Resources

	CIPU CSPPV546 Variable Speed Pool Pump [pdf] User Manual CSPPV546, CSPPV546 Variable Speed Pool Pump, Variable Speed Pool Pump, Speed Pool Pump, Pool Pump, Pump, 72546

References

- day.Be
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