

CircuPool® SmartFlo® AF



Installation and Operation Guide

Models: **UAF1.3H** **UAF2.2H** **UAF2.2P** **UAF3.9P**







Adaptive Flow Variable-Speed Pool Pump
Wi-Fi Connected Pump with Target Flow Control

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SAFETY INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS. Read and follow all instructions. Ensure all owners / operators of this equipment have access to these instructions. Save all instructions. When installing and using this electrical equipment, basic safety precautions should always be followed, including the following. Please consult manufacturer with any questions regarding this equipment.


	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 or property damage:
	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.

 **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 PERSON. 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.**

 **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. 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.

 Do not permit children to use this product. This appliance is not intended for use by persons 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.

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

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


THIS PUMP IS NOT EQUIPPED WITH A SAFETY VACUUM RELEASE SYSTEM (SVRS); IT PRODUCES HIGH LEVELS OF SUCTION AND CREATES A STRONG VACUUM AT THE MAIN DRAIN AT THE BOTTOM OF THE BODY OF WATER. THIS SUCTION IS SO STRONG THAT IT CAN TRAP ADULTS OR CHILDREN UNDER WATER IF THEY COME IN CLOSE PROXIMITY TO A DRAIN OR A LOOSE OR BROKEN DRAIN COVER OR GRATE.




THE USE OF UNAPPROVED COVERS OR ALLOWING USE OF THE POOL OR SPA WHEN COVERS ARE MISSING, CRACKED OR BROKEN CAN RESULT IN BODY OR LIMB ENTRAPMENT, HAIR ENTANGLEMENT, BODY ENTRAPMENT, EVISCEATION AND/OR DEATH.

The suction at a drain or outlet can cause the hazards including but not limited to the following: (i) **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. (ii) **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. (iii) **Body Entrapment:** When a portion of the body is held against the drain cover trapping the swimmer underwater. This hazard is present when the drain cover is missing, broken or the cover flow rating is not high enough for the pump or pumps. (iv) **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. (v) **Mechanical Entrapment:** When jewelry, swimsuit, hair decorations, finger, toe or knuckle is caught in an opening of an outlet or drain cover. This hazard is present when the drain cover is missing, broken, loose, cracked, or not properly secured.

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

 **MINIMIZE THE RISK OF INJURY DUE TO SUCTION ENTRAPMENT HAZARD,** including but not limited to the following: (i) A properly installed and secured ANSI/ASME A112.19.8 approved anti-entrapment suction cover must be used for each drain. (ii) Each suction cover must be installed at least three (3') feet apart, as measured from the nearest point to nearest point. (iii) Regularly inspect all covers for cracks, damage and advanced weathering. (iv) If a cover becomes loose, cracked, damaged, broken or is missing, replace with an appropriate certified cover. (v) Replace drain covers as necessary. Drain covers deteriorate over time due to exposure to sunlight and weather. (vi) Avoid getting hair, limbs or body in close proximity to any suction cover, pool drain or outlet. (vii) Disable suction outlets or reconfigure into return inlets.

 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.

CAUTION General Warnings: • The pump is not submersible.

- 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 capable of high flow rates; use caution when installing and programming to limit pumps 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 in accordance with the National Electrical Code and all applicable local codes and ordinances.
- Do not install in tightly enclosed areas that will not allow adequate motor ventilation

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

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

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

(i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming pools, Spas and Hot Tubs or

(ii) A properly designed and tested suction-limiting vent system or

(iii) An automatic pump shut-off system.

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

(A) A SVRS meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or

(B) A properly designed and tested suction-limiting vent system, or

(C) An automatic pump shut-off system, or

(D) Disabled submerged outlets, or

(E) Suction outlets shall be reconfigured into return inlets.

• Before servicing the pump; switch OFF power to the pump by disconnecting the main circuit to the pump.

• Do not store chemicals near your pool equipment. Chemical fumes or spills can corrode and weaken equipment and structures.

• Do not subject pool filter and/or pump to piping system pressurization tests.

• **Do not start pump dry. Running pump dry will cause severe damage.** Keep all suction components clear of debris, leaves dirt, hair, paper, or other of obstructions that result in increased potential for suction entrapment and impeded flow through pump. **Running the pump in this manner will void the warranty.**

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



Install all electrical controls at equipment pad, such as on/off switches, timers, and control systems, etc. to allow the operation (startup, shut-down, or servicing) of any pump or filter so the user does not place any portion of his/her body over or near the pump strainer lid, filter lid or valve closures. This installation should allow the user enough space to stand clear of the filter and pump during system start-up, shut down or servicing of the system filter.

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.**

(continued from above) 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 individual, and must conform to all national, state, and local codes.

• Install to provide drainage of compartment for electrical components.

• These instructions contain information for a variety of pump models and therefore some instructions may not apply to a specific model. All models are intended for use in swimming pool applications. The pump will function correctly only if it is properly sized to the specific application and properly installed.

WARNING If existing electrical wires or suction components are found to be damaged, broken, cracked, missing, or unsecured, replace or replace immediately.

WARNING This pump is capable of high flow rates. Incorrectly installed equipment may fail, causing severe injury or property damage. Improperly configured or programmed pump controls can cause damage to the existing pool equipment and plumbing especially if old, questionable, or not properly matched to pump. Pumps improperly sized or installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may include but not be limited to electric shock, fire, flooding, suction entrapment or severe injury or property damage caused by a structural failure of the pump or other system component.

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

CAUTION Safe operation of other pool equipment, such as a salt chlorination system, often requires a minimum water flow rate. Verify that you get sufficient water flow when pump is set to low RPM speeds. Never operate a salt chlorinator when the flow of water is not present, restricted, or insufficient. If water flow to the salt chlorinator is restricted or insufficient, a build-up of flammable gases will result in hazardous conditions.

CAUTION Proper pool chemistry must be maintained at all times.

WARNING Always disconnect power to the pool pump at the circuit breaker before servicing the pump.

Pumps and replacement motors that are single-speed and one (1) Total HP or greater cannot be sold, offered for sale, or installed in a residential pool for filtration use in California, Title 20 CCR sections 1601-1609.

SAVE THESE INSTRUCTIONS



SmartFlo AF Series Owner's Manual

INTRODUCTION

Congratulations on your recent purchase of a **CircuPool SmartFlo AF Series** Variable Speed Pump. The SmartFlo AF Series uses a whisper quiet Adaptive Flow motor for ultra energy-efficient operation and heavy-duty construction to provide a rugged and tested design perfect for in-ground or permanently installed above-ground pools. Its adjustable & programmable motor allows you to go beyond selecting the optimal motor speeds – you can the select optimal flow rates and run times for your pool’s needs – easily achieving pool circulation targets for ideal filtration, and helping to eliminate energy waste & excessive operation. Please take a moment to read through the entire manual before installing your new unit. Your pump must be installed and operated as specified.

GETTING STARTED

READ ENTIRE MANUAL FIRST - To ensure consistent & reliable operation, the pool and equipment must be used and maintained as specified. Most issues are easily avoidable with correct maintenance.

Before installation or operation, please take the time to read this entire manual, compare package contents with the parts list, and gather tools required. Improper installation may void the warranty and create unnecessary hazards. This manual contains instructions to help ensure that your installation meets the recommended standards. Spending the time to understand your system and its functions will assure successful, trouble-free operation.

As with any electrical device, it is very important that the installation and service of this equipment be performed by a qualified person with the skills and experience required to do it safely and correctly. Improper installation or service can result in severe electrical shock to the installer or user of the equipment or pool. Please choose your installer with great care! Be sure to familiarize yourself with the pool chemistry requirements and maintenance procedures.

Please visit www.circupool.com/help for more information, tips, and troubleshooting assistance.

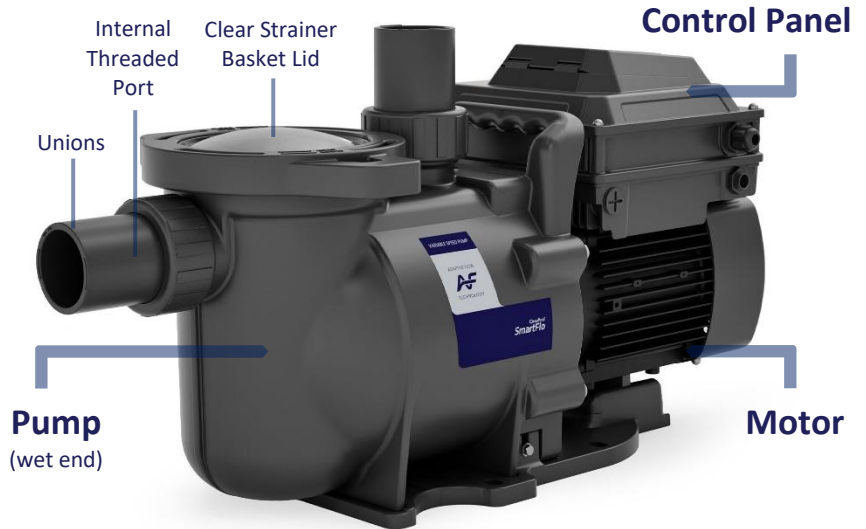


This pump is intended for use in pool pump applications ONLY. Voltage requirements vary by model. Always verify the rated supply voltage on the pump nameplate and in the manual Electrical Requirements section before wiring. Connection to the wrong voltage or use in other application may cause damage to equipment or personal injury.

SMARTFLO AF SYSTEM OVERVIEW

Features:

- Adaptive Flow with Target Flow control.
- Variable frequency drive / inverter-controlled, totally-enclosed fan-cooled motor design.
- Wi-Fi connectivity, app control
- Highly energy efficient, quiet operation.
- Energy-Star 3.1, DOE, CEC, UL, CUL Certified
- Unionized fittings for simple replacement.
- Self-priming for quick, easy startup. NSF 50 Priming tested.
- Adjustable priming mode.
- Programmable quick clean mode.
- Tool-free strainer cover for easy cleaning and maintenance. See-through lid permits easy inspection of strainer basket.
- IP55-rated enclosure for reliable outdoor operation.
- Onboard time of day schedule.
- Diagnostic alarm display & retention.
- Active power factor correction.
- Auto power limiting protection circuit.
- Onboard clock retention for power outages.
- Lockout mode for the keypad



Features - Your SmartFlo AF Pump

The SmartFlo AF swimming pool pump uses an Adaptive Flow variable speed motor with Target Flow Control, making it easy for you to achieve highly efficient, purposeful pool circulation. The SmartFlo AF's controls are user-friendly, both on the motor and in the app, and allow control of flow rates / motor speed and scheduling so you can precisely optimize pool system performance and maximize energy savings.

Set your pool system up to move exactly the optimal amount of water needed to achieve proper circulation & skimming, to optimize filtration performance, and ensure other flow-dependent pool equipment are able to operate within their ideal flow rate ranges.

NOTE: Maximum flow varies by installation; refer to the performance curve for achievable flow rates.
 NOTE: Weighted Energy Factor (WEF) is a U.S. Department of Energy (DOE) efficiency metric for pool pumps, measuring the volume of water pumped (in gallons) per unit of energy consumed (kilowatt-hour).

UAF1.3H

Power	1.3 THP
Max Flow	Up to 91 GPM
WEF	10.1
Speed Range	450 - 3450 RPM

UAF2.2H

Power	2.2 THP
Max Flow	Up to 135 GPM
WEF	8.8
Speed Range	450 - 3450 RPM

UAF2.2P

Power	2.2 THP
Flow Range	Up to 136 GPM
WEF	8.6
Speed Range	450 - 3450 RPM

UAF3.9P

Power	3.9 THP
Flow Range	Up to 172 GPM
WEF	7.3
Speed Range	450 - 3450 RPM

INSTALLATION

IMPORTANT: Only a qualified individual should install the pump. Failure to follow these instructions correctly could result in serious injury or property damage.

Installation Location

Do not install this pump within an outer enclosure or beneath the skirt of a hot tub or spa unless marked accordingly. Airflow is required for motor.

Leave enough space for maintenance and service. Ensure that the pump is mechanically secured to the equipment pad.

Be sure pump location meets the following requirements:

- 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.
- Install a minimum of 5 feet (1.52 meters) away from the inside wall of the pool and spa. Canadian installations require a minimum of 9.8 feet (3 meters) from the inside wall of the pool.
- Install the pump a minimum of 3 feet (0.9 meters) from any heater exhaust discharge.
- Do not install the pump more than 8 feet (2.6 meters) above the water level.
- Install the pump in a well-ventilated location protected from excess moisture (i.e. rain gutter downspouts, sprinklers, etc.).
- Install the pump with a top clearance of at least 12 inches (30.5 cm) so that the pump strainer basket can easily be removed. See **Figure 2**.
- Install the pump with a rear clearance of at least 3 inches (7.6 cm) and a top clearance of 6 inches (15.2 cm) so that the motor can be removed easily for maintenance and repair. See **Figure 2**.

Piping

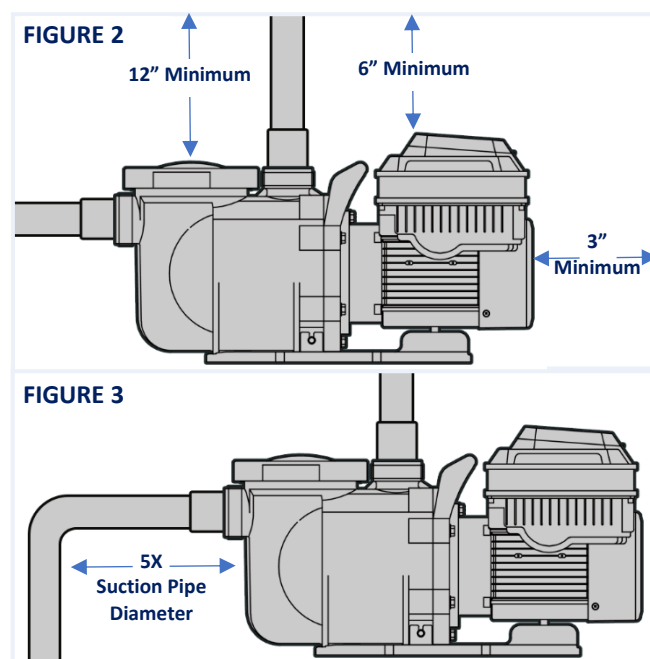
Unionized pump ports also internally accept MIP-threaded PVC piping or high-heat pump unions. Be sure that suction & discharge ports are in an ideal position (see previous section "Pump Configuration").

- For optimal pool plumbing efficiency, it is recommended to use a larger pipe size.
- Piping on the suction side of the pump should be the same or larger than the return line diameter.
- For most installations, installing a valve on both the pump suction and return lines allows that the pump to be isolated during routine maintenance.

Piping (continued)

- Total piping length on the suction side of the pump should be as short as possible. 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 3**.

Example: A 2 inch pipe requires a 10 inch (25.4 cm) straight run in front of the suction inlet of the pump. This improves priming performance and helps reduce hydraulic stress on pump components.



NOTE: DO NOT install 90° elbows directly into the pump inlet or outlet.

Fittings and Valves

- "Sweep" style elbows provide increased efficiency.
- Do not install 90° elbows directly into pump inlet.
- 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.
- 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.
- If installing in parallel with another pump, be sure to install check valves when plumbing. This helps prevent reverse rotation of the impeller and motor. The pump should not be connected in series with other pumps.

Electrical Requirements

⚠ WARNING



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

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

Read all servicing instructions before working on the pump.

Model:	Total HP	Voltage (VAC)	Max Current (A)	Input (Hz)
UAF1.3H-1100-5A	1.3 THP	115 / 208-230	12 / 6.6-6.0	50/60
UAF2.2H-1100-5A	2.2 THP	115 / 208-230	13.8 / 8.5-7.4	50/60
UAF2.2P-1100-5A	2.2 THP	115 / 208-230	13.8 / 8.5-7.4	50/60
UAF3.9P-1100-5A	3.9 THP	230	13A	50/60

For models which can utilize 115V connections, the pump accepts Line-Neutral-Ground. For models which utilize 230V connections, this pump accepts both Line-Neutral-Ground and Line-Line-Ground electrical systems. The terminal block connections are capable of handling up to 10 AWG solid or stranded wire. Dual-voltage models automatically accommodate either 115/120 V or 208–230 V single-phase input without the need for voltage selection or internal reconfiguration. Always verify the rated input voltage on the pump nameplate before installation. The connections must be permanently made to the grounding terminal (see Figure 3) in the field wiring compartment according to the local electrical code.

This pump must be permanently connected by a 15-amp (minimum) or 20-amp (recommended) circuit breaker as specified in the local electrical code.

Circuit Protection: The pump must be supplied by a circuit protected by a Ground Fault Circuit Interrupter (GFCI), in accordance with all national and local electrical codes.

NOTE: ALWAYS reinstall the motor drive cover onto the field wiring compartment when leaving the pump unsupervised. This ensures a safe environment and will prevent foreign matter (such as water, dust, etc.) from entering the drive.

NOTE: If connecting the pump to an automation system, the pump should receive continuous power directly from a circuit breaker, which has no other appliances or lights connected on the same circuit.

Wiring Overview and Installation



Power should be turned off when installing, servicing, or repairing electrical components. Electric shock could cause serious injury. Observe all warning notices posted on the existing equipment, pump, and in these installation instructions.

STORED CHARGE - Always wait five (5) minutes after disconnecting the power from the pump before opening or servicing the drive.

1. Be sure all electrical breakers and switches are turned off before wiring motor. Wait at least 5 minutes before servicing to ensure there is no stored charge.
2. Input power **MUST** match the requirements on the pump motor nameplate.
3. Choose a wire size (at least 12 AWG recommended) for the pump in accordance with the current National Electrical Code and all applicable local codes and ordinances. When in doubt use a heavier gauge (larger diameter) wire. Be sure the wiring voltage is within the operating range.
4. Access wiring terminals within the motor drive. Use a Phillips screwdriver to loosen the 4 screws and open the cover (Figure 4). **NOTE:** Open the motor drive cover slowly to prevent damage to the wiring at the connection between the control panel and the circuit board.
5. Route the input power wiring through the provided cable entry opening. For hardwired installations, a listed conduit fitting must be used in accordance with applicable codes. The supplied grommet is intended only for flexible cord installations where permitted by code and the equipment listing.
6. Locate the wiring terminals on the circuit board (as indicated in Figure 5).
7. Refer to Figures 6-7 for wiring configurations based on voltage input and relevant model. Connect wiring as specified.
 - **Grounding:** Ensure that the motor is properly grounded using the Grounding Terminal as shown in Figure 6-7 inside the motor drive. Use the correct wire size and type specified by the current National Electrical Code. Be sure the ground wire is connected to an electrical service ground.
8. Be sure all electrical connections are clean and tight.
9. Cut wires to the appropriate length so they do not overlap or touch when connected to the terminal board.
10. Reinstall the motor drive cover, making sure that wires are not pinched between the drive body and lid.

(Wiring section continued on next page)



Figure 4

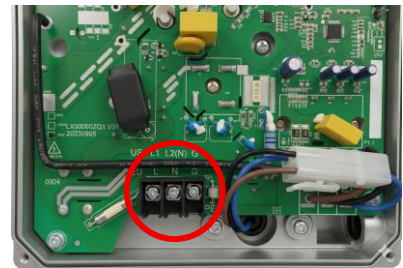


Figure 5

For **115V/60HZ** input:

Terminal 1 (Live Wire), Terminal 2 (Neutral Wire), Terminal 3 (Ground Wire).

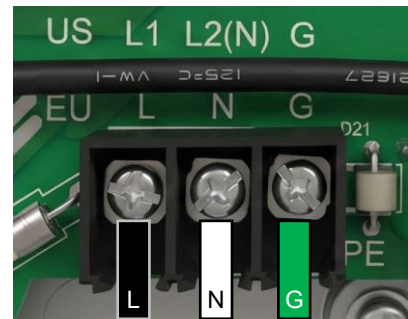


Figure 6

For **208-230V/60HZ** input:

Terminal 1 (Live Wire 1), Terminal 2 (Live Wire 2), Terminal 3 (Ground Wire).

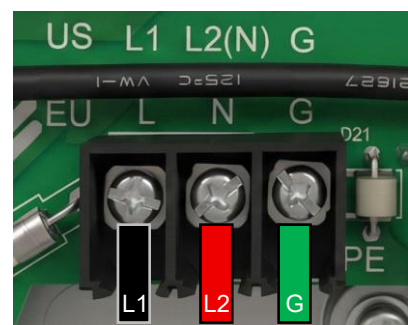


Figure 7

Wiring Overview and Installation (continued)



Do not bury the cord. Locate cord to minimize traffic interaction or abuse from lawn mowers, trimmers, and other equipment.

To reduce risk of electric shock, replace damaged cord immediately.

To reduce risk of electric damage or shock, do not install the pump in areas subject to flooding, standing water, or uncontrolled water spray. Install on a level, well-drained surface and provide adequate drainage.

To reduce risk of electric shock, do not use extension cord to connect to electric supply; provide a properly located outlet (connect only to a grounding type receptacle).

11. The pump should be permanently connected to a circuit breaker; during use, pump should be powered continuously if the pump is to be controlled by its onboard programming. Confirm that, where a GFCI circuit breaker is used, the pump is supplied by a dedicated circuit with no other electrical loads (lights or other appliances). Confirm that the ground wire is connected to an electrical service ground.
12. **Bonding:** Use the Bonding Lug located on the side of the motor (Figure 8). Use a solid copper bonding conductor not smaller than 8 AWG (NOTE: For Canada, a 6 AWG or larger solid copper bonding conductor is required). Bond the motor to all metal parts of the pool structure and to all electrical equipment, metal conduit and metal piping within 5 feet (1.5 M) of the inside walls of the swimming pool, spa or hot tub in accordance with the current National Electrical Code.

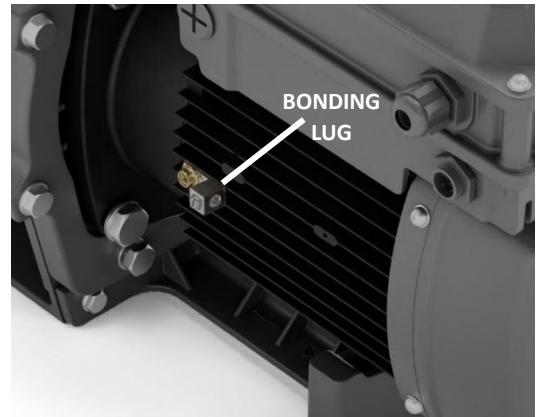


Figure 8

The bonding lug should be used to bond the motor frame to the equipment pad.

ONBOARD PUMP CONTROLS

Control Panel Overview

Access the Control Panel keypad and screen by lifting the cover on top of the motor driver.

IMPORTANT: Keep cover closed when not in use in order to protect the controls.



If power is connected to the Variable Speed 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.



FIGURE 9

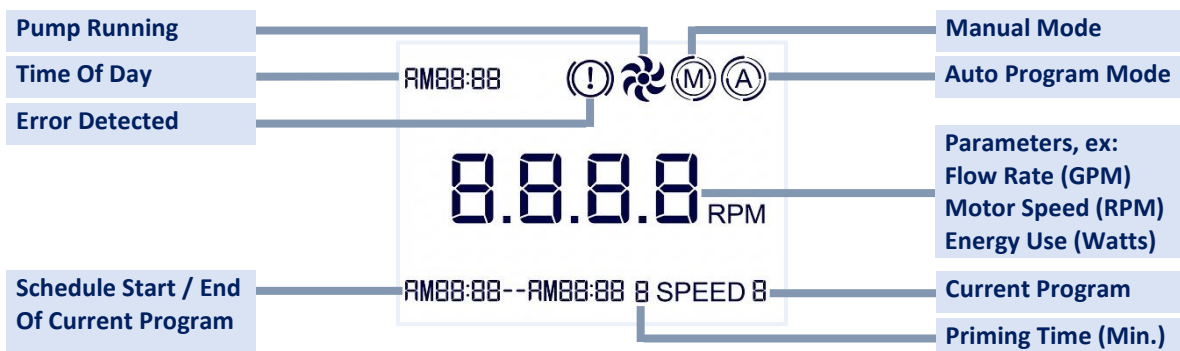


FIGURE 10

Keypad Navigation / Controls

1. **POWER Indicator** – Red LED is illuminated when pump is connected to input power.
2. **COM Indicator** – Yellow LED is illuminated when pump is connected via RS-485 communication cable to a 3rd-party controller / automation system, and has given up control rights to that device.
3. **RUN Indicator** – Green LED is illuminated when pump is actively running.

Keypad Navigation / Controls (continued)

4. **POWER ON / OFF Button** – Initializes or shuts down the pump controls. When the pump is shut down, the pump is unable to run from any type of input.
5. **▲ Button** – Use to increase displayed values, such as Flow Rate / Motor Speed / Time (hours, minutes)
6. **▼ Button** – Use to decrease displayed values, such as Flow Rate / Motor Speed / Time (hours, minutes)
7. **MORE Button** – Use to cycle through available options. This is used in the following circumstances:
 - Viewing operational parameters – When the pump is running, press **MORE** to cycle through the pump's current operational parameters: the Motor Speed, the Flow Rate, & the Watts used.
 - Changing Program settings – When setting Programming, press **MORE** to cycle through the available Program settings: the Program's Flow Rate / Motor Speed, and the Time (hours, minutes)
 - Changing Pump Settings – Hold the **MORE** button for 3 seconds to enter the main Settings menu. Press the **MORE** button to cycle through System Time, Self-Priming Speed, and Self-Priming Time. Use **▲ / ▼** to adjust each setting.
8. **PUMP PROGRAM Buttons** - Use to select the desired Pump Program.
 - In Manual Mode – Pressing **① / ② / ③** will run at the pump at the programmed GPM / RPM
 - Hold **① / ② / ③** for 3 seconds to set its program. Use **MORE / ▲ / ▼** to set the flow / speed.
 - In Automatic Program Mode – Pressing **① / ② / ③** allows you to check what is programmed.
 - Hold **① / ② / ③** for 3 seconds to set its program. Use **MORE / ▲ / ▼** to set the flow / speed and the running times.
9. **QUICK CLEAN Button** – In either Mode, press to run Quick Clean program. A countdown will begin. Hold button for 3 seconds to edit its program. Use **MORE / ▲ / ▼** to set the flow / speed and the run time.

ADDITIONAL KEYPAD FUNCTIONS

- **Toggle Manual Mode / Automatic Program Mode** – With the pump in its OFF state (use **Power ON / OFF** button to deactivate pump if running), press and hold the **MORE + ▼** buttons simultaneously for 3 seconds. The pump will switch between modes, as indicated by the corresponding “M” or “A” icon that appears on the LCD screen.
- **Lock / Unlock the Keypad** – When the default display is present on the LCD screen, press and hold the **MORE + QUICK CLEAN** buttons simultaneously for 3 seconds, and the keypad will lock / unlock.
- **Toggle Button Sound** - When the default display is present on the LCD screen, press and hold the **MORE+①** buttons simultaneously for 3 seconds to turn on/off the sound when a button is pressed.
- **Restore Factory Settings** – With the pump in its OFF state (press **Power ON / OFF** button to deactivate pump if running), press and hold the **MORE + ▲** buttons simultaneously for 3 seconds to restore the factory settings.

ONBOARD PUMP SETTINGS



If power is connected to the Variable Speed 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.

If customizations are desired, complete all setup before allowing the pump to run for the first time.



Scan to download



APP SETUP RECOMMENDED

For the easiest setup experience and for full functionality, we recommend using the app for both initial setup and any subsequent programming or changes. See page 16 for pairing instructions and additional app setup.

IMPORTANT: To use Target Flow Control and set the flow rate (GPM) in either Manual or Automatic Program mode, you must utilize the app.

The following instructions provide the steps to take if app setup is unavailable.

SYSTEM DEFAULTS - The pump's factory default setting is Manual Mode.

Program	Allowable Range	Default	Run Time (Automatic Program Mode)
①	450 – 3450 RPM	3000 RPM	AM 08:00 – AM 10:00
②	450 – 3450 RPM	1400 RPM	AM 08:00 – PM 20:00
③	450 – 3450 RPM	2200 RPM	PM 20:00 – PM 22:00
QUICK CLEAN	450 – 3450 RPM	3450 RPM	10 Minute Duration, when activated



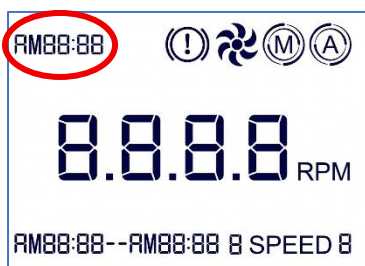
If setting the pump to run by RPM, it is possible to set an RPM that is too low for the proper operation of your other pool system components. This varies by pool and pump model installed, but use caution and monitor performance for RPM's in the 1000 – 1800 range or lower. For this reason, we recommend setting flow rate targets (GPM) based on the minimum flow requirements published by the respective manufacturer(s) of your other pool system components.

Setting the Clock



When the pump is first installed, it is necessary to set the clock. Any daily schedule set by the user must be based on an accurate time setting. Set the clock once power is connected and the red **POWER** LED is illuminated.

IMPORTANT: Once connected via app, the time will automatically be paired. See page 16 for app setup.



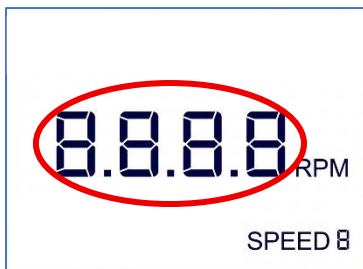
To Set the Clock:

1. Hold the **MORE** button for 3 seconds to enter the main Settings menu.
2. The "Hours" digits of the time will begin to flash slowly. Use ▲ / ▼ to set the hour.
3. Press the **MORE** button and the "Minutes" digits will begin to flash slowly. Use ▲ / ▼ to set the minutes.
4. The clock setting will be saved when no button is pressed for 5 seconds.

Additional Pump Settings

SETTING PROGRAMMED SPEEDS IN MANUAL MODE

Begin with the pump in the OFF state (green light should be off, press **POWER ON / OFF** button if running).

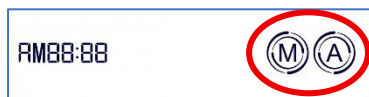


1. Press and hold one of the Program buttons (① / ② / ③) for 3 seconds. The chosen Program number will appear in the lower right corner of the screen.
2. The Program's RPM will be flashing on the screen. Use ▲ / ▼ to set the RPM.
3. The Program setting will be saved when no button is pressed for 5 seconds.

Repeat this procedure for additional Programs.

SWITCH BETWEEN MANUAL MODE AND AUTOMATIC PROGRAM MODE

Begin with the pump in the OFF state (green light should be off, press **POWER ON / OFF** button if running).



1. Press and hold the **MORE** + ▼ buttons simultaneously for 3 seconds.
2. The pump will switch between modes, as indicated by the corresponding "M" or "A" icon that appears on the LCD screen.

MANUAL MODE allows you to set the pump to run at a constant rate until you change the program or switch modes. AUTOMATIC PROGRAM MODE allows you to set dynamic pump operation throughout the day, in order to tailor its operation for periods of higher or lower flow; this allows you to optimize circulation & operation of other pool system components, while also allowing you to minimize energy use in the process.

SETTING PROGRAMMED SPEEDS/TIMES IN AUTOMATIC PROGRAM MODE

Begin with the pump in the OFF state (green light should be off, press **POWER ON / OFF** button if running).



1. Press and hold one of the Program buttons (① / ② / ③) for 3 seconds. The chosen Program number will appear in the lower right corner of the screen.
2. The Program's RPM will be flashing on the screen. Use ▲ / ▼ to set the RPM.
3. Press **MORE** to switch to the time setting. The running time at the lower left corner of the screen will be flashing. Use ▲ / ▼ to set the Hours of the start time. Press **MORE** to switch to the Minutes of the start time, and then Hours / Minutes of the end time, using ▲ / ▼ as needed to set the times.
4. The Program setting will be saved when no button is pressed for 5 seconds.

Repeat this procedure for additional Programs. The Pump will automatically run any Program if the time of day is within the Program's scheduled start / end time. The Pump will be idle during any time of day which is outside of any Program's scheduled start / end time.

NOTE: In AUTO, if the set times overlap for any Programs, ① has priority over ②, which has priority over ③.

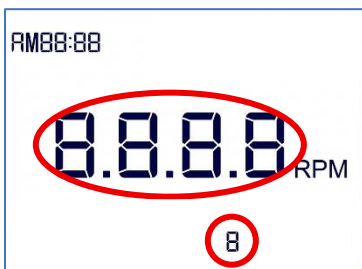
NOTE: The times set for any Program cannot cross midnight. If Program's schedule overlaps midnight, the Pump will stop running at midnight and remain idle until the next available Programmed start time. If you desire your pump to run over night, consider: begin your programming at AM 00:00, set it to be idle during the day, and resume operation in the evening up until midnight.

Additional Pump Settings (continued)

CHANGING QUICK CLEAN SETTINGS

1. Press and hold the **QUICK CLEAN** button for 3 seconds.
2. The Program's RPM will be flashing on the screen. Use ▲ / ▼ to set the RPM.
3. Press the **MORE** button until the duration flashes. Use ▲ / ▼ to set the duration.
4. The setting will be saved when no button is pressed for 5 seconds.

SETTING THE PRIMING SPEED



To Set the Priming Speed:

1. Hold the **MORE** button for 3 seconds to enter the main Settings menu.
2. Press the **MORE** button until the RPM's flash. Use ▲ / ▼ to set the priming RPM.
3. Press the **MORE** button until the digit flashes. Use ▲ / ▼ to set the priming duration.

The factory default setting is run at the maximum speed (3450RPM) and times (10 minutes) to ensure air is discharged from the pipe.

LOCK / UNLOCK KEYPAD

Begin with the pump in the ON state (green light should be on, press **POWER ON / OFF** button if not running).



1. Press and hold **MORE + QUICK CLEAN** for 3 seconds. The keypad will be locked / unlocked.

TURN OFF/ON BUTTON SOUNDS

Begin with the pump in the ON state (green light should be on, press **POWER ON / OFF** button if not running).

1. When viewing the main display screen, press and hold **MORE + ①** for 3 seconds. The button sounds will be disabled / enabled.

RESETTING FACTORY DEFAULT SETTINGS

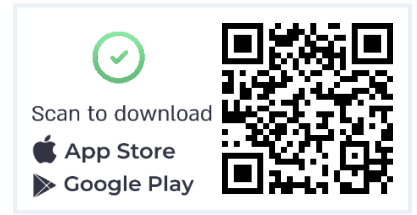
Begin with the pump in the ON state (green light should be on, press **POWER ON / OFF** button if not running).

1. Press and hold **MORE + ▲** for 3 seconds. The factory default settings will be restored.

APP CONTROLS

You can stay connected with your SmartFlo AF pump using the mobile app. It is recommended to use the app for the simplest setup and programming experience.

PERMISSIONS: During the initial startup of the app, it will request your approval for permissions that are **critical** to the operation of the app. **Please allow** the requested permissions for proper operation.



Pairing

1. Make sure the pump is powered on (red **POWER** LED is illuminated).
2. Verify that your mobile device's Bluetooth is enabled, and you are connected with a 2.4 GHz Wi-Fi network.
3. Press and hold the ▲ and ▼ buttons simultaneously for 3 seconds.
4. The pump will have entered pairing mode when the yellow **COM** LED will begin flashing. The pump will stay in pairing mode for the next 5 minutes or until the pump and app have successfully been paired.
5. Proceed to the app to add your pump and complete the pairing process.
 - Allow sufficient time for the app to search for, find, and connect with the pump.
 - Be prepared to select the desired Wi-Fi network (2.4 GHz required) and input the network's password.

NOTE: The distance between the pump and the router should be as close as possible. A reasonable maximum distance from typical home Wi-Fi routers is 150 feet in open areas. Line of sight to the Wi-Fi signal is always preferred. Poor signals may allow the devices to attempt to connect but cause the process to ultimately fail. The system requires a 2.4 GHz Wi-Fi network; Wi-Fi networks with a 2.4 GHz band have better range and penetration through walls, making it preferable for outdoor setups. For greater distances, consider adding commonly available Wi-Fi extenders or mesh systems. Factors that can obstruct Wi-Fi signals include locations behind dense or metallic objects, and proximity to strong electrical sources.

Main Screen

The screenshot shows the main interface of the SmartFlo AF app. At the top, there's a gear icon for settings and a toggle for 'Manual / Auto Program'. Below this are three gauges: Motor Speed (RPM), Flow (GPM), and Energy Use (Watts). A large power button is in the center. At the bottom, there are three program selection buttons (1, 2, 3) and a 'Quick Clean' button. The interface is annotated with callouts:

- Pump Settings:** Allow Manual / Auto Program toggle, priming options, quick clean options, unit of flow
- Operation Parameters:** Motor Speed (RPM), Flow (GPM), Energy Use (Watts)
- Priming Countdown:** (indicated by dashed boxes)
- On / Off Toggle:** (power button)
- Select RPM Control:** Standard (Set RPM)
- Flow / Speed Setting:** 28 GPM
- Program Select (1-3):** Set each Program's GPM / RPM and Start Time / Stop Time (Automatic Program mode)
- Manual / Auto Program:**
 - Manual: runs at set flow / speed until you make a change.
 - Automatic Program: runs at set flow / speed according to schedule.
- Error Code Reporting:** (indicated by dashed boxes)
- Select GPM Control:** Adaptive Flow (Set GPM)
- Program Start/Stop Time:** 5 : 30 PM, 6 : 30 PM
- Quick Clean:** (Quick Clean button)

NOTE: See pages 13-15 for more important programming details.

OPERATING THE PUMP



WARNING Before starting the pump, ALWAYS follow the instructions below. Failure to follow these instructions could result in property damage and/or personally injury.

1. Open the air relief valve on the filter (and prefilter, if present).
2. Open all suction and return live valves.
3. Ensure pool return line is completely open and clear of any blockages.
4. Ensure the strainer pot is full of water.
5. Stand clear of the filter or other pressurized vessels.

Priming The Pump

The SmartFlo AF has its priming mode enabled by default, preset for 10 minutes of priming at maximum speed operation (3450 RPM). Unless the priming settings are changed, the pump will run this preset when the pump starts each time.

The pump must be filled with water and primed before initial startup and after servicing. To avoid permanent damage to the pump, follow these instructions below each time priming is required.



WARNING The pump should never run without water. If the pump is run dry, the shaft seal will be damaged and the pump will start leaking. If this occurs, the damaged seal must be replaced.



WARNING ALWAYS maintain proper water level in your pool (at least half way up 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 case, impeller and seal and may cause property and personal injury.

PRIMING INSTRUCTIONS

IMPORTANT: Initial Safety Steps

- No Power - Pump should be in its OFF state, and power should be disconnected at the circuit breaker
- No Pressure - The filter's air relief valve should be opened and all pressure relieved from the filtration system.
- If Pump is installed below water level of the pool (flooded Installations) – Close return and suction lines prior to opening pump strainer pot lid.

Priming Steps

1. Remove the pump strainer pot lid by turning it counter-clockwise.
 2. Fill the pump strainer pot with water to the level of the suction port.
 3. Securely reinstall the pump strainer pot lid. (Ensure the lid O-ring is present and properly seated)
 4. Ensure that all valves are open on return and suction lines.
 5. Open the air relief valve on the filter, and stand clear of the filter.
 6. Re-establish power to the pump at the circuit breaker. (Red "Power" LED on pump keypad should be on)
 7. Press the ON/OFF button on the pump keypad. (Green "Run" LED on pump keypad should be on). The pump will begin to prime (if enabled) and ramp up to the programmed priming speed.
 8. When water steadily comes out of the filter's air relief valve, close the valve. The system should now be free of air and recirculating water to and from the pool.
- **IMPORTANT:** If the pump does not prime within 10 minutes, turn the pump off and check the suction system for leaks or blockages, check your priming settings, or see page 23 for Troubleshooting.
 - **Priming Optimization (Optional)** - The pump's priming speed and duration are adjustable. If full prime is consistently achieved in less time than the programmed priming duration, the duration may be reduced to minimize unnecessary high-speed operation. Priming speed may also be reduced, provided the pump continues to reliably achieve and maintain full prime under normal operating conditions. If the pump fails to establish or maintain prime, restore priming settings and verify stable operation before making further adjustments.

Operation Overview

The CircuPool SmartFlo AF is a Target Flow / Adaptive Variable-Speed Pump. Target Flow pumps allow you to set specific flow rates (GPM) for each program or schedule. Additionally, the SmartFlo AF provides consistent operation - the pump automatically adjusts motor speed to maintain the selected flow as system conditions change.

NOTE: All flow rates mentioned below are for illustration purposes only. Because pool size, plumbing configuration, and equipment vary widely, exact flow requirements differ between installations. Proper flow rates should be based off published requirements of the other installed pool system components, as well as observed results meeting pool system needs.

OVERVIEW

In most cases, lower flow rates for longer durations provide effective circulation while minimizing energy consumption.

Typical Residential Flow Reference (Illustrative Only)			
Pool Type	Lower Flow	Moderate Flow	Higher Flow
Inground	25–40 GPM	35–60 GPM	60–80 GPM
Aboveground	20–30 GPM	30–40 GPM	40–50 GPM

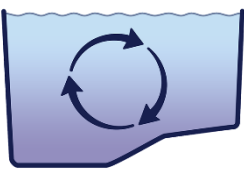
Actual flow requirements vary by installation. Some pool systems (ex: with spas or water features) may require higher flow rates.

While optimizing for this strategy, you also want to meet pool system needs, such as:

- Maintain consistent sanitation & chemical distribution
- Support effective surface skimming
- Meet minimum flow requirements of connected equipment
- Maximize filtration efficiency

The pump should be programmed to meet these needs in a way that minimizes energy consumption. An optimized schedule is unique to each pool's hydraulic characteristics (Total Dynamic Head), equipment configuration, environment, and usage patterns. To get the most out of your pump, operation should typically align with the following objectives in most cases.

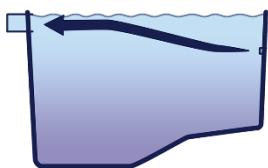
1. PROVIDE CIRCULATION



The purpose of circulation is to maintain uniform water chemistry and prevent stagnation. Circulation effectiveness is determined by mixing and surface movement — not solely by turnover rate. Run the pump long enough each day to maintain clear, stable water conditions appropriate to pool use and sanitation method.

With Target Flow control, select a flow rate that provides steady, uniform water movement throughout the pool.

2. PROVIDE SURFACE SKIMMING



Select a flow rate that produces visible and consistent skimmer draw for at least part of each day.

Short periods at moderately higher flow may improve removal of heavier debris or sediment.

Because the pump automatically adjusts RPM to maintain the programmed flow, skimming performance remains more consistent as filter pressure changes.

3. OPTIMIZE FILTRATION PERFORMANCE



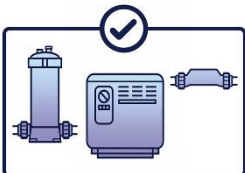
Target Flow control provides simpler and more precise management of filtration rates. Filtration efficiency generally improves at lower flow rates. For optimal performance:

- Select a flow rate below the filter’s maximum rated flow.
- When practical, select a flow rate near or below the media’s typically suggested filtration rate. This is based on the sq. ft. size of the filter; multiply your filter’s sq. ft. by the filtration rate to find your filter’s optimal GPM. For residential pools, many pool filters operate efficiently:
 - Cartridge Filters: below 0.35-0.40 GPM/sq. ft.
 - Sand Filters: below 15-20 GPM/sq. ft.
 - DE Filter: below 1.5-2.0 GPM/sq. ft.
- Avoid sustained operation at unnecessarily high flow rates, which may reduce filtration effectiveness and increase energy consumption.

Additionally, lower programmed flow reduces filter pressure, minimizes channeling (sand filters), and reduces mechanical stress on filter elements (cartridge and DE).

4. ENABLE FLOW-DEPENDENT EQUIPMENT

(Always verify the specific equipment’s published requirements)



Program flow rates sufficient to meet the minimum operating requirements of:

- Heaters
- Heat pumps
- Solar heating systems
- Cleaners
- Spa / water features
- Salt chlorine generators

If equipment fails to activate, increase programmed flow incrementally until stable operation is confirmed. When you choose higher flow rates as required for the functionality of a component of your pool system, return to lower flow rates when these functions are not active.

Because the CircuPool adaptive flow pump maintains constant flow, equipment performance can remain stable even as filter loading increases.

5. TURNOVER CONSIDERATION



Turnover may be used as a reference for estimating total daily circulated volume.

Most residential pools maintain satisfactory water quality within approximately 0.5–1.5 turnovers per day. Operating significantly beyond this range often produces diminishing filtration benefits while increasing energy use.

With Target Flow control, turnover can be calculated more easily, based on the total programmed GPM and runtime you choose. Turnover can be a helpful benchmark, but it should not be used in isolation as a primary factor in determining pump operations.

6. ENERGY OPTIMIZATION



Using Target Flow Control, a substantial amount of energy optimization is already built-in when choosing proper flow rates to meet your pool system's needs. Since many aspects of pool system operation allow a range of flow rates, additional optimization may still be beneficial. After confirming stable circulation, skimming effectiveness, and proper operation of flow-dependent equipment, consider continuing to:

- Reduce programmed flow rates incrementally.
- Identify the lowest flow rate that maintains desired performance.
- Avoid unnecessarily high programmed flow.

Because pump power usage increases dramatically when higher set flow rates cause increased motor RPM, even small reductions in programmed GPM can produce meaningful energy savings.

For example, if acceptable flow rates are achieved at 50% pump motor speed, the pump's power consumption may be reduced by as much as 80-90% than at high speed.

7. OBSERVE AND ADJUST



After customizing programming:

- Verify all plumbing and equipment remain completely filled with water.
- Confirm filter pressure remains within equipment ratings.
- Ensure no abnormal vibration or noise is present.
- Confirm heaters and salt systems activate properly at programmed flow rates.

Monitor water clarity, debris removal, and system behavior during the first several days and adjust settings as needed.

Adaptive Operation Consideration - If motor RPM increases significantly over time to maintain the same programmed flow rate, inspect and clean the filter as needed.

MAINTENANCE



WARNING Always disconnect power to the pump at the circuit breaker and relieve pressure in the filtration system before servicing the pump. Failure to do so could result in death or serious injury to servicer, pool users or others due to electric shock. Only qualified individuals should attempt to service the equipment. Observe all warning notices posted on the existing equipment, pump, and in these installation instructions. **STORED CHARGE** - Always wait five (5) minutes after disconnecting the power from the pump before opening or servicing the drive.



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



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

Routine Maintenance

This pump is designed to require little-to-no regular service, just routine maintenance to keep the strainer basket clean. The basket must be kept clean of leaves and debris at all times. View the basket through the clear lid to inspect for leaves and debris. Regardless of the length of time between filter cleaning, it is most important to visually inspect the basket at least once a week. A consistently clean strainer basket can lead to higher efficiency operation of pool equipment & reduced motor stress.



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.



CLEANING THE PUMP STRAINER BASKET

1. Press the ON/OFF button to stop the pump and turn off the pump at the circuit breaker.

2. Open the filter's air relief valve to release all pressure from the filtration system.

Note: If Pump is installed below water level of the pool (flooded Installations) – Close return and suction lines prior to opening pump strainer pot lid.

3. Turn the lid in a counter-clockwise direction until it releases, lift lid off of pump.

4. Remove the basket and all debris. Rinse out the basket. Replace the basket if it is damaged.

5. Put the basket back into the housing. Be sure to align the opening in the front of the strainer basket with the pump's suction port.

6. Fill the pump strainer pot with water to the level of the suction port.

7. Clean the cover, O-ring, and sealing surface of the pump pot. **NOTE:** It is important to keep the lid O-ring clean and well lubricated.

8. Reinstall the lid by placing the lid on the pot. Be sure the lid O-ring is properly placed. Seat the lid on the pump then turn clockwise until the handles are horizontal and lid fully mates to pump housing.

9. Ensure that all valves are open on return and suction lines and have been returned to proper position.

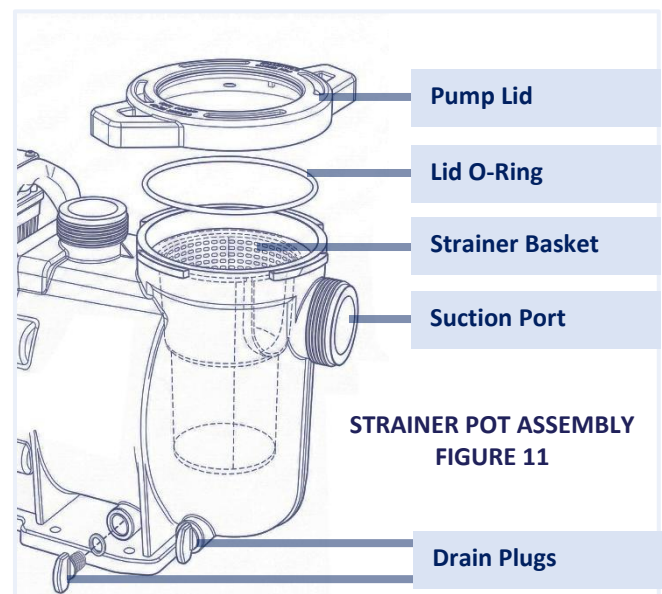
10. Open the air relief valve on top of filter, and stand clear of the filter.

11. Re-establish power to the pump at the circuit breaker. (Red "Power" LED on pump keypad should be on) Stand clear of the filter. Start the pump.

12. Press the ON/OFF button on the pump keypad. (Green "Run" LED on pump keypad should be on).

13. Bleed air from the filter until a steady stream of water comes out. Close the manual air relief valve. The system should now be free of air and recirculating water to and from the pool.

IMPORTANT: If the pump does not prime within 10 minutes, turn the pump off and check the suction system for leaks or blockages, check your priming settings, or see page 23 for Troubleshooting.

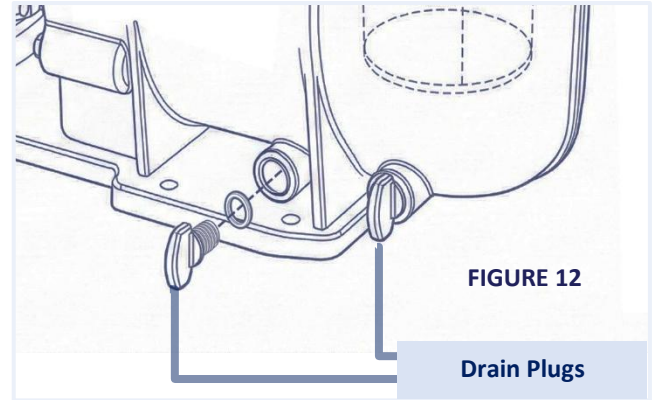


Winterizing / Weather Care



Do not solely rely on Freeze Protection automation to protect your filtration system from freezing temperatures.

You are responsible for determining when freezing conditions may occur. If freezing conditions are possible, 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.

PREVENT FREEZE DAMAGE FROM OCCURRING TO THE PUMP

Follow the procedures below:

1. Press the **ON/OFF** button to stop the pump and **shut off electrical power for the pump at the circuit breaker.**
2. Open the filter's air relief valve and **relieve all pressure from the filtration system.**
3. Remove the two drain plugs by unscrewing them from the pump's housing (both are located on the strainer pot, see **Figure 12**).
4. Drain all water out of the pump housing. Store the plugs in the pump basket.
5. Cover the motor to protect it from severe rain, snow and ice. **NOTE:** Do not wrap motor with plastic or other airtight materials during winter storage. The motor may be covered during a storm, winter storage, etc., but never when operating or expecting operation.

As a back-up, the SmartFlo AF may be programmed via the app to help ensure the water circulates when air temperatures get cold.

PUMP CARE

Protect from heat. Shade the motor from the sun. Provide a well-ventilated environment to prevent over-heating. Maintain a minimum clearance of 3 inches behind the motor fan to allow proper circulation and pump maintenance.

Protect against dirt and chemicals. Keep equipment area as clean as possible. Keep chemicals away from motor. Dust should not be stirred up or swept near the motor during operation. Dirt damage to the motor may void the warranty. It is important to clean the lid, the O-ring, and the sealing surface to the strainer pot.

Protect against moisture. Splashing, directed or sprayed water should be avoided. Install the pump in an area which is protected from flooded conditions or extreme conditions. Let motor internals dry before operating if they have become wet. Flooded pumps should not be operated. Water damage to a motor may void the warranty.

Restarting the pump – See page 17 for priming instructions.

TROUBLESHOOTING



WARNING Always disconnect power to the pump at the circuit breaker and relieve pressure in the filtration system before servicing the pump. Failure to do so could result in death or serious injury to servicer, pool users or others due to electric shock. Only qualified individuals should attempt to service the equipment. Observe all warning notices posted on the existing equipment, pump, and in these installation instructions. **STORED CHARGE** - Always wait five (5) minutes after disconnecting the power from the pump before opening or servicing the drive. Diagnosing certain symptoms may require close interaction with, or in close proximity to, components that are energized with electricity. Contact with electricity can cause death, personal injury, or property damage. When trouble shooting the pump, diagnostics involving electricity should be cared for by a qualified individual.



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.

SCENARIO:	POSSIBLE CAUSE:	SUGGESTED ACTION:
Priming Issue	Not enough water.	Be sure the suction lines, pump, strainer, and pump volute are full of water. Be sure valve on suction line is working and open (some systems do not have valves). Check water level to make sure water is available through skimmer.
	Air leak in suction / too much air.	Check suction piping and valve glands on any suction gate valves. Secure lid on pump strainer pot and be sure lid O-ring is undamaged and in place. Check water level to be sure skimmer is not drawing air.
	Pump strainer basket is clogged.	Clean strainer basket and pump body (page 21).
	Priming speed or duration too low	Adjust priming parameters until the pump consistently primes.
Reduced capacity and/or head.	Air pockets or leaks in suction line.	Check suction piping and valve glands on any suction gate valves. Secure lid on pump strainer pot and be sure lid o-ring is in place. Check water level to be sure skimmer is not drawing air.
	Clogged impeller.	Contact customer support; disassemble and clean debris from impeller.
	Pump strainer basket is clogged.	Clean strainer basket and pump body (page 21).
Pump fails to start.	Mains Voltage is not present	Check input power and all electrical switches / breaker / GFCI, check mains wiring and connection at motor terminals.
	Pump shaft is locked	Check if the pump can be rotated by hand and remove any blockage.
	Pump shaft is damaged	Contact customer support; replace the motor or the bearing.
Pump runs then stops.	Overheating is occurring	Check that back of pump is free from dirt and debris. Use compressed air to clean.
	Supply circuit capacity or voltage instability	Verify conductor size (12 AWG or larger), breaker rating (15A or larger), and dedicated circuit requirements meet installation specifications. Ensure supply voltage remains stable under load. Excessive wire length may cause voltage drop and nuisance tripping. Consult a qualified electrician.
	Other error code displayed	Check error codes on page 25.

Pump increases speed during Target Flow operation	Circulation conditions have changed (ex: cleaner or water feature has engaged)	Normal adaptive behavior, pump is compensating to maintain target flow. If it is known that increased motor operation is needed at regularly scheduled times, consider proactively scheduling a constant speed program for the most seamless operation.
Pump is noisy.	Debris in contact with fan or inhibiting air flow through ventilation.	Check that back of pump motor is free from dirt and debris. Use compressed air to clean. Ensure fan is undamaged.
	Debris in strainer basket	Clean strainer basket.
	Debris inside impeller	Clean pump body and impeller.
	Loose mounting	Check that pump's mounting bolts and pump are tight.
	Pump shaft is damaged	Replaced damaged part(s), motor or bearings.
	Unstable voltage	If pump makes high pitched noise when running at high speed, open controller to check if the connection is loose and reconnect the plug.
Pump runs without flow.	Impeller is loose	Check that pump is spinning by looking at fan on back of Variable Speed Pump. If so, check that pump impeller is correctly installed.
	Air leak	Check plumbing connections and verify they are tight.
	Clogged or restricted plumbing	Check for blockage in strainer or suction side piping. Checked for blockage in discharge piping including partially closed valve or dirty pool filter.

For more information or troubleshooting, visit www.circupool.com/help

Errors and Alarms

If a fault is detected, the control screen and app will display the error code text and the pump will stop running. Disconnect power to the pump and wait until the keypad LEDs have all turned off. At this point, reconnect power to the pump. If the error has not cleared, then troubleshooting will be required. Use the error description table below to begin troubleshooting.

NOTE: If conditions causing E002 recover, the pump will automatically resume operation. All other codes require restart.

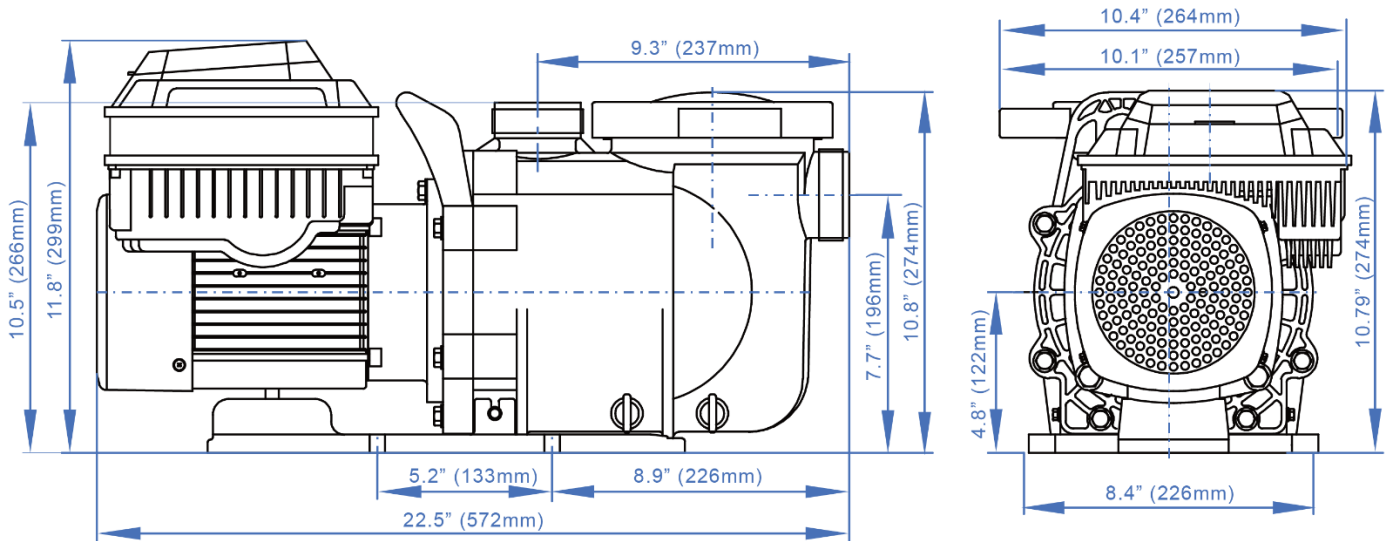
ERROR CODE	ERROR DESCRIPTION	POSSIBLE CAUSE:	SUGGESTED ACTION:
E001	Intelligent Power Module (IPM) failure	<ul style="list-style-type: none"> Power electronic components are damaged. Interference causes mis-operation. Poor ground connection. 	<ul style="list-style-type: none"> Check whether there is strong interference around. Check the ground wire. Contact customer support.
E002	Output current exceeds limit	<ul style="list-style-type: none"> Sudden change or abnormality of load. 	<ul style="list-style-type: none"> Check the load or reduce sudden changes to load.
E006	Input voltage is too high	<ul style="list-style-type: none"> Abnormal input voltage. Load disconnection. 	<ul style="list-style-type: none"> Check input power. Check if the load is disconnected.
E009	Input voltage is too low	<ul style="list-style-type: none"> Input voltage is low. 	<ul style="list-style-type: none"> Check input power.
E011	Motor overload	<ul style="list-style-type: none"> The voltage of the power is too low. The motor stalls or the load changes suddenly. 	<ul style="list-style-type: none"> Check the voltage. Check the load.
E013	Output phase loss	<ul style="list-style-type: none"> Output wiring U/V/W phase loss. The three-phase load is seriously unbalanced. 	<ul style="list-style-type: none"> Check output wiring. Check the motor and cables.
E014	Controller overheating	<ul style="list-style-type: none"> The ambient temperature is too high. The control board is abnormal. 	<ul style="list-style-type: none"> Minimize contributing factors adding to ambient temperature. Increase airflow, cross circulation, and shading.
E018	Faulty current sampling circuit	<ul style="list-style-type: none"> The current detection-element is abnormal. Abnormal amplifier circuit. 	<ul style="list-style-type: none"> Contact customer support. Contact customer support.
E021	Display board EEPROM failure	<ul style="list-style-type: none"> Bad connection between the display board and the main drive board. EEPROM damage. 	<ul style="list-style-type: none"> Replace the connecting cable between the display board and the main drive board. Contact customer support.
E040	Static blockage failure	<ul style="list-style-type: none"> Motor mechanical lock-up. 	<ul style="list-style-type: none"> Check the load.
E048	Power Factor Correction (PFC) overcurrent	<ul style="list-style-type: none"> The voltage is too low. PFC circuit failure. 	<ul style="list-style-type: none"> Check the voltage. Contact customer support.
E095	Communication Fault	<ul style="list-style-type: none"> Display circuit board has bad connection with the main circuit board. 	<ul style="list-style-type: none"> Check the wiring and connectors. Contact customer support.
E030	Run Dry alarm	<ul style="list-style-type: none"> Possible run dry conditions detected. The pump has not fully established stable prime before priming mode ended 	<ul style="list-style-type: none"> Check whether the water is sufficient water in pump. Ensure pump establishes prime.
LOF	Run Dry alarm	<ul style="list-style-type: none"> Flow rate is lower than 18GPM Error code may temporarily display when stopping pump. 	<ul style="list-style-type: none"> Check the flow setting. Check the suction / discharge plumbing. Contact customer support.

SPECIFICATIONS & PARTS

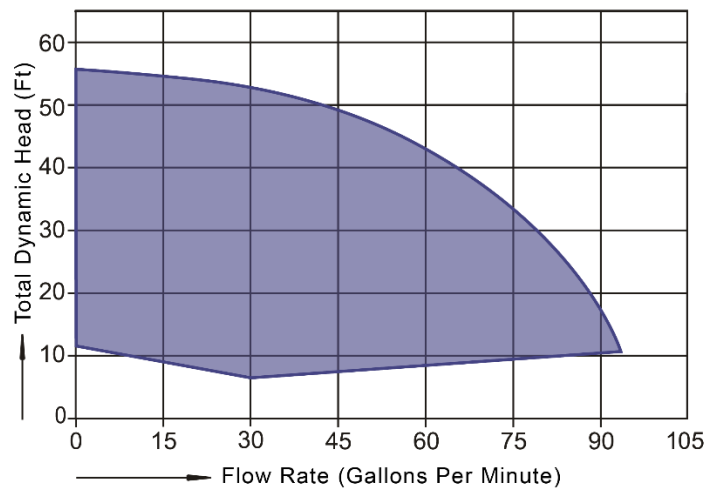
Specifications – UAF1.3H-1100-5A

OVERALL RATINGS	
Model	UAF1.3H
Input Voltage	115 / 208-230 VAC
Input Frequency	Single phase, L1-L2 or L-N, 50 or 60 Hz
Input Current	12 / 6.6-6.0 A
Total Horsepower	1.3 HP
Max Flow Rate (Qmax)	up to 91 GPM
Max Head, Zero Flow (Hmax)	55 ft
WEF Rating	10.1
Speed Range	450 – 3450 RPM
Port Size	1.5" x 2"

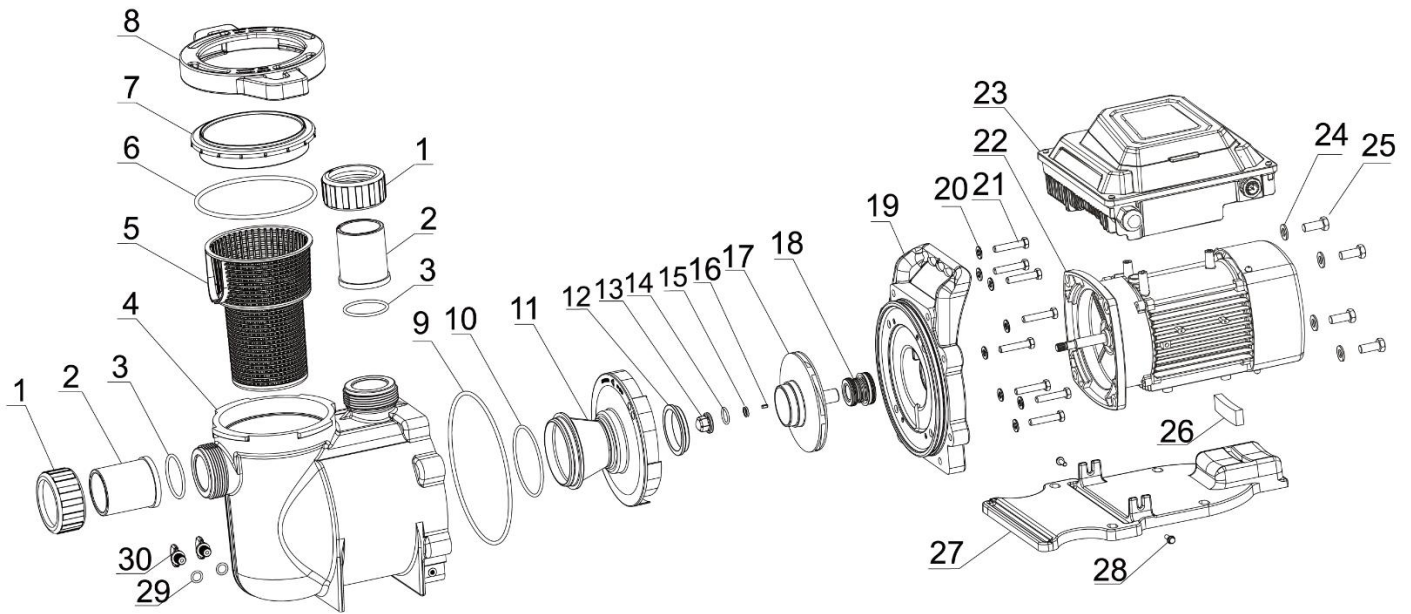
PUMP DIMENSIONS



PERFORMANCE CURVE



Replacement Parts – UAF1.3H-1100-5A

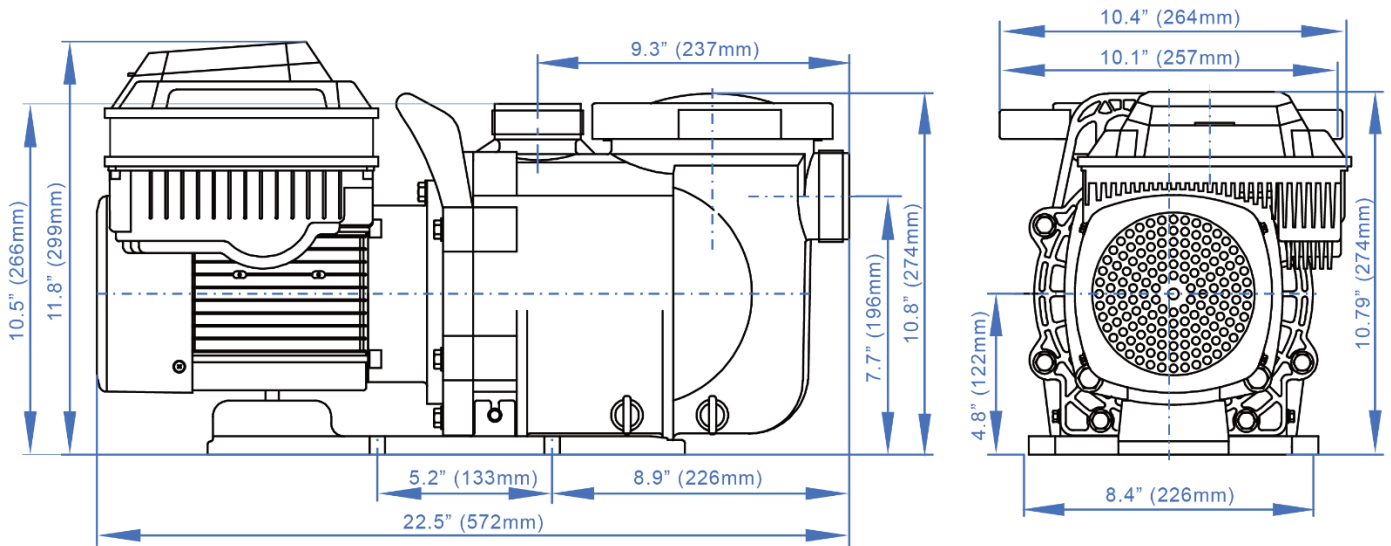


REF. NO.	DESCRIPTION	QTY.
1	Plumbing Threaded Collar	2
2	Plumbing Union	2
3	Plumbing O-Ring d54x3.5	2
4	Pump Housing (SFP)	1
5	Strainer Basket (SFP)	1
6	Strainer Cover Oring (SFP)	1
7	Clear Strainer Cover (SFP)	1
8	Strainer Cover lid (SFP)	1
9	Seal Plate O-Ring d188x4.5	1
10	Diffuser O-Ring d85x3.5	1
11	Diffuser	1
12	Impeller Wear Ring	1
13	Impeller Nut	1
14	Impeller O-Ring d17x2.4	1
15	Spring Washer	1
16	Flat Key	1
17	Impeller	1
18	Shaft Seal Assembly	1
19	Seal Plate (SFP)	1
20/ 21	Washer and hexagon bolt M8x45	8
22	1.3hp Pump Motor	1
23	Control Module	1
24	Washer	4
25	Hexagon bolt M10x25	4
26	Pump Motor Mounting Guide	1
27	Pump Motor Base	1
28	Hexagon bolt M5x16 and plain washer $\Phi 5 \times \Phi 15$	2
29	Drain Plug O-Ring d11x2.4	2
30	Drain Plug	2

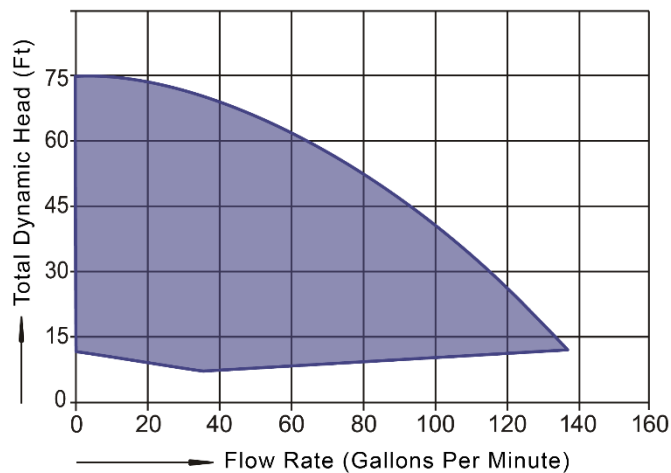
Specifications – UAF2.2H-1100-5A

OVERALL RATINGS	
Model	UAF2.2H
Input Voltage	115 / 208-230 VAC
Input Frequency	Single phase, L1-L2 or L-N, 50 or 60 Hz
Input Current	13.8 / 8.5-7.4 A
Total Horsepower	2.2 HP
Max Flow Rate (Qmax)	up to 135 GPM
Max Head, Zero Flow (Hmax)	72 ft
WEF Rating	8.8
Speed Range	450 – 3450 RPM
Port Size	1.5" x 2"

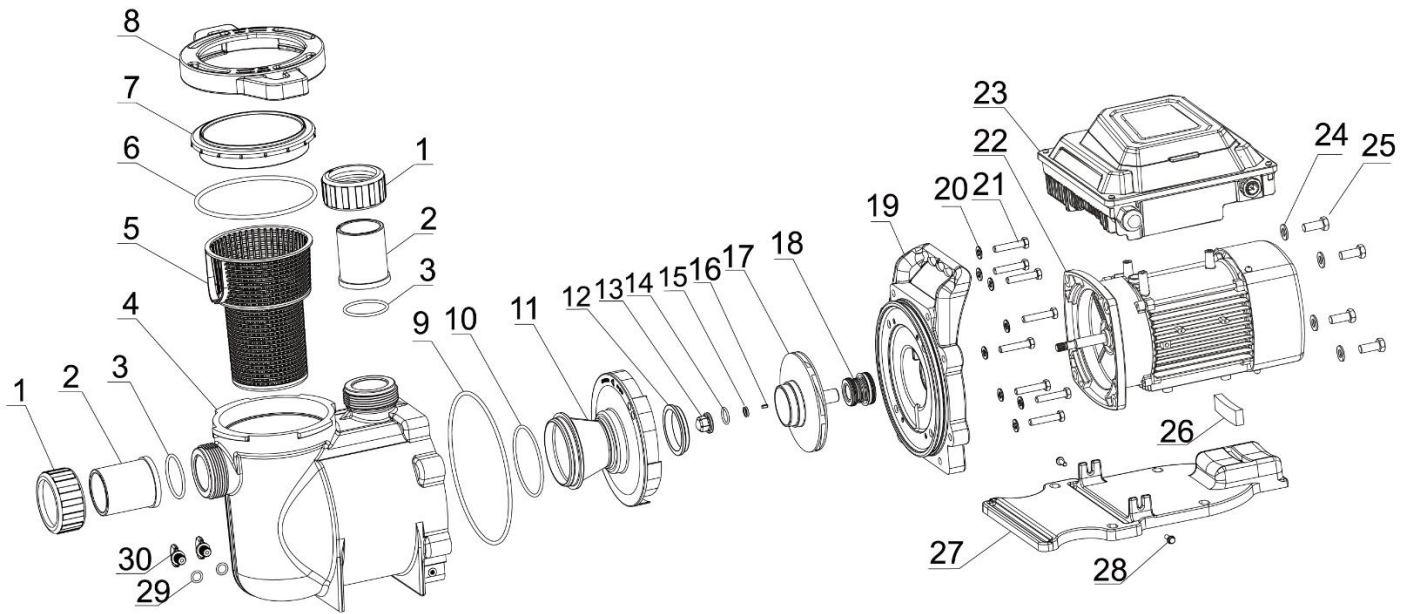
PUMP DIMENSIONS



PERFORMANCE CURVE



Replacement Parts – UAF2.2H-1100-5A

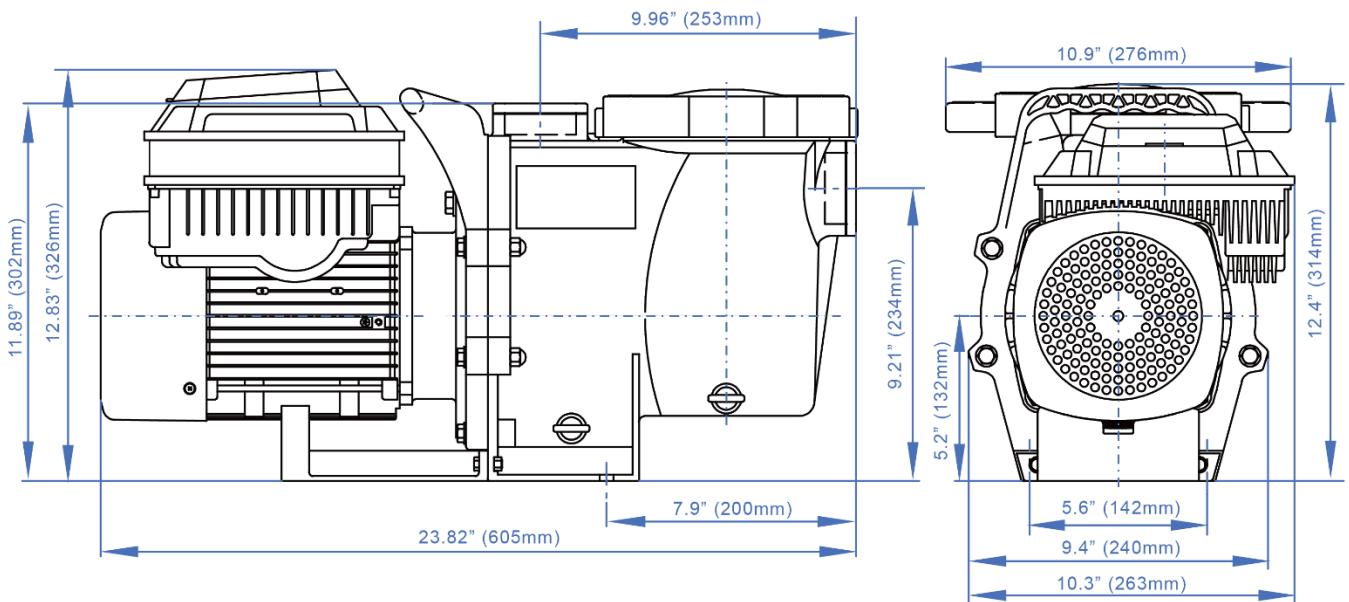


REF. NO.	DESCRIPTION	QTY.
1	Plumbing Threaded Collar	2
2	Plumbing Union	2
3	Plumbing O-Ring d54x3.5	2
4	Pump Housing (SFP)	1
5	Strainer Basket (SFP)	1
6	Strainer Cover Oring (SFP)	1
7	Clear Strainer Cover (SFP)	1
8	Strainer Cover lid (SFP)	1
9	Seal Plate O-Ring d188x4.5	1
10	Diffuser O-Ring d85x3.5	1
11	Diffuser	1
12	Impeller Wear Ring	1
13	Impeller Nut	1
14	Impeller O-Ring d17x2.4	1
15	Spring Washer	1
16	Flat Key	1
17	Impeller	1
18	Shaft Seal Assembly	1
19	Seal Plate (SFP)	1
20/ 21	Washer and hexagon bolt M8x45	8
22	1.3hp Pump Motor	1
23	Control Module	1
24	Washer	4
25	Hexagon bolt M10x25	4
26	Pump Motor Mounting Guide	1
27	Pump Motor Base	1
28	Hexagon bolt M5x16 and plain washer $\Phi 5 \times \Phi 15$	2
29	Drain Plug O-Ring d11x2.4	2
30	Drain Plug	2

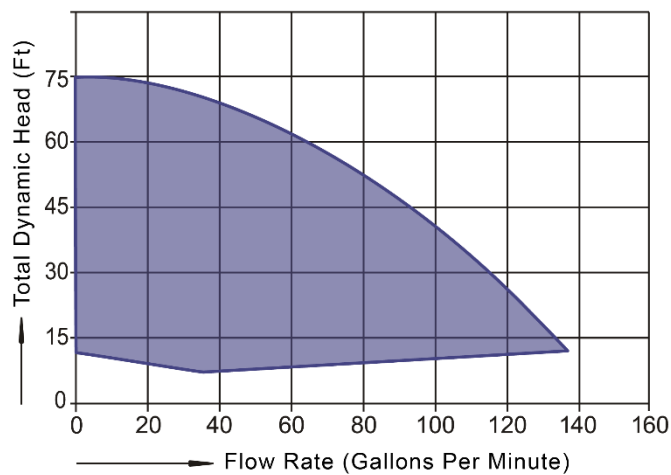
Specifications – UAF2.2P-1100-5A

OVERALL RATINGS	
Model	UAF2.2P
Input Voltage	115 / 208-230 VAC
Input Frequency	Single phase, L1-L2 or L-N, 50 or 60 Hz
Input Current	13.8 / 8.5-7.4 A
Total Horsepower	2.2 HP
Max Flow Rate (Qmax)	up to 136 GPM
Max Head, Zero Flow (Hmax)	70 ft
WEF Rating	8.6
Speed Range	450 – 3450 RPM
Port Size	2"

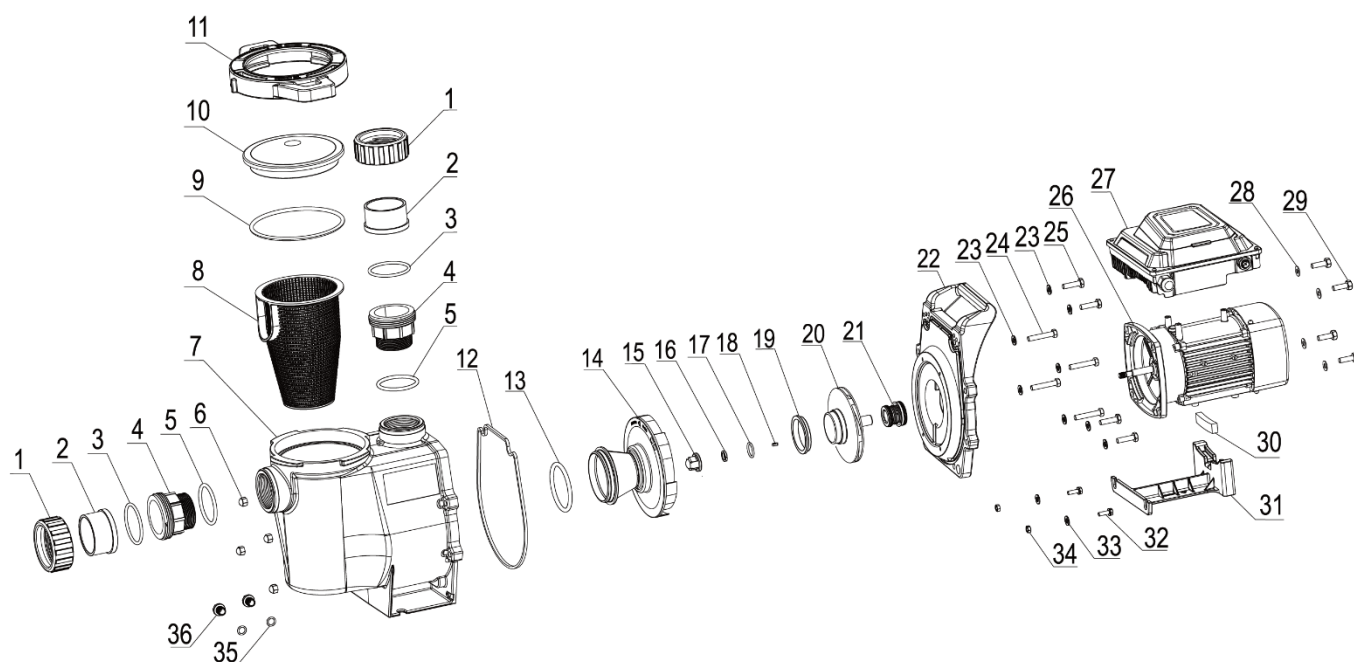
PUMP DIMENSIONS



PERFORMANCE CURVE



Replacement Parts – UAF2.2P-1100-5A

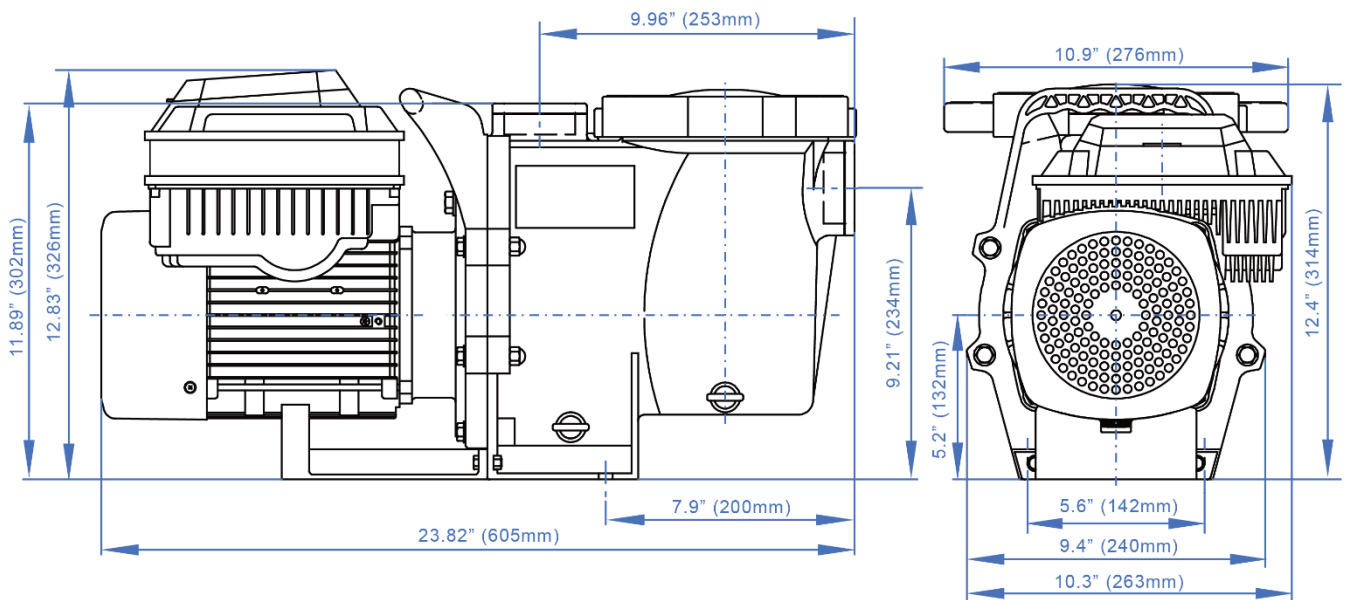


REF. NO.	DESCRIPTION	QTY.
1	Plumbing Threaded Collar	2
2	Plumbing Union	2
3	Plumbing O-Ring d62x4.5	2
4	Transition Union	2
5	Plumbing O-Ring d54x3.5	2
6	Acorn Nut	4
7	Pump Housing (SWP)	1
8	Strainer Basket (SWP)	1
9	Strainer Cover O-Ring d147x6	1
10	Clear Strainer cover (SWP)	1
11	Strainer Cover lid (SWP)	1
12	Seal Plate Gasket	1
13	Diffuser O-Ring d85x3.5	1
14	Diffuser	1
15	Impeller Nut	1
16	Spring Washer	1
17	Impeller O-Ring d17x2.4	1
18	Flat Key	1
19	Impeller Wear Ring	1
20	Impeller	1
21	Shaft Seal Assembly	1
22	Seal Plate	1
23	Washer (Large)	8
24	Hex Bolt M8x45	4
25	Hex Bolt M8x35	4
26	3.9hp Pump Motor	1
27	Control Module	1
28	Washer	4
29	Hex Bolt M10x20	4
30	Pump Motor Mounting Guide	1
31	Pump Motor Base	1
32/33	Hexagon head bolt and plain washer assembly M6x20	2
34	Hex Nut	2
35	Drain Plug O-Ring d11x2.4	2
36	Drain Plug	2

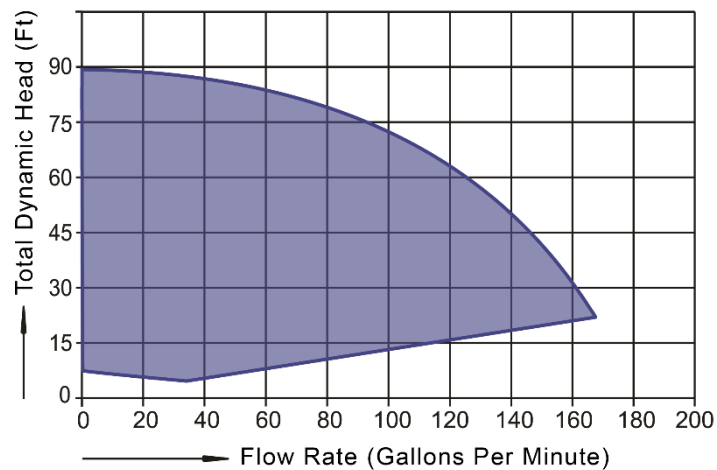
Specifications – UAF3.9P-1100-5A

OVERALL RATINGS	
Model	UAF3.9P
Input Voltage	230 VAC
Input Frequency	Single phase, L1-L2 or L-N, 50 or 60 Hz
Input Current	13 A
Total Horsepower	3.9 HP
Max Flow Rate (Qmax)	up to 172 GPM
Max Head, Zero Flow (Hmax)	88 ft
WEF Rating	7.3
Speed Range	450 – 3450 RPM
Port Size	2"

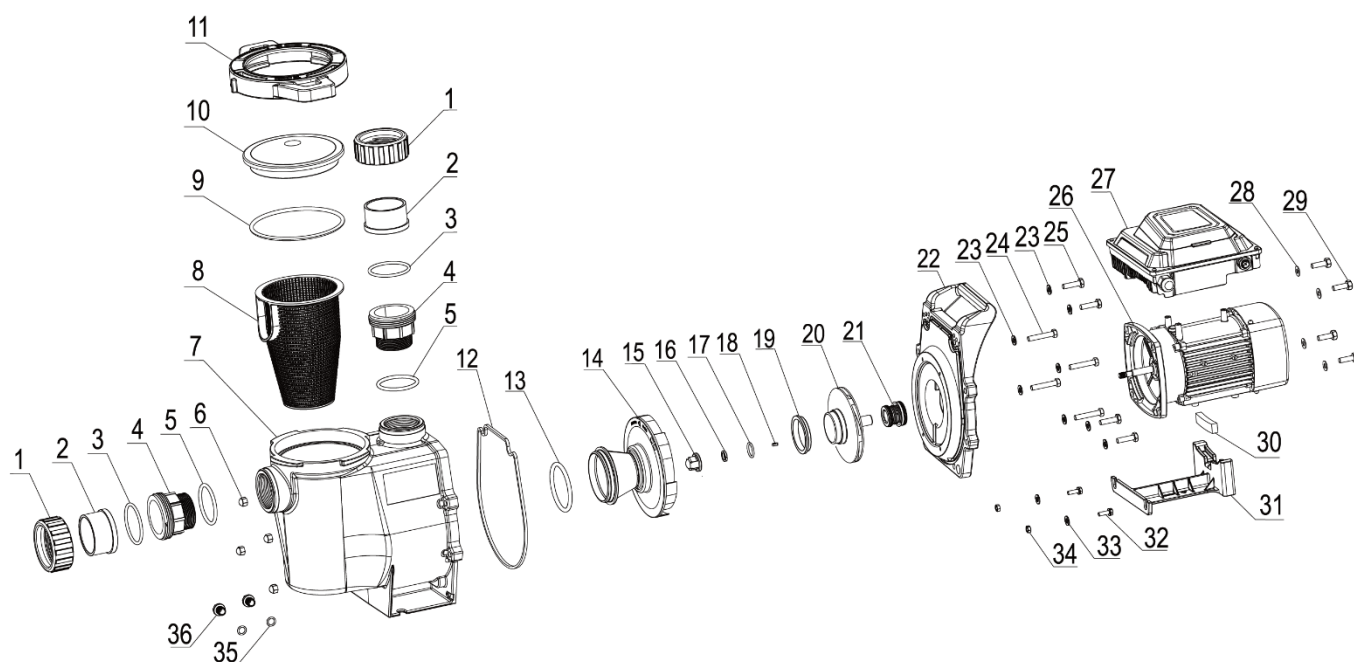
PUMP DIMENSIONS



PERFORMANCE CURVE



Replacement Parts – UAF3.9P-1100-5A



REF. NO.	DESCRIPTION	QTY.
1	Plumbing Threaded Collar	2
2	Plumbing Union	2
3	Plumbing O-Ring d62x4.5	2
4	Transition Union	2
5	Plumbing O-Ring d54x3.5	2
6	Acorn Nut	4
7	Pump Housing (SWP)	1
8	Strainer Basket (SWP)	1
9	Strainer Cover O-Ring d147x6	1
10	Clear Strainer cover (SWP)	1
11	Strainer Cover lid (SWP)	1
12	Seal Plate Gasket	1
13	Diffuser O-Ring d85x3.5	1
14	Diffuser	1
15	Impeller Nut	1
16	Spring Washer	1
17	Impeller O-Ring d17x2.4	1
18	Flat Key	1
19	Impeller Wear Ring	1
20	Impeller	1
21	Shaft Seal Assembly	1
22	Seal Plate	1
23	Washer (Large)	8
24	Hex Bolt M8x45	4
25	Hex Bolt M8x35	4
26	3.9hp Pump Motor	1
27	Control Module	1
28	Washer	4
29	Hex Bolt M10x20	4
30	Pump Motor Mounting Guide	1
31	Pump Motor Base	1
32/33	Hexagon head bolt and plain washer assembly M6x20	2
34	Hex Nut	2
35	Drain Plug O-Ring d11x2.4	2
36	Drain Plug	2

CIRCUPOOL LIMITED WARRANTY

CircuPool SmartFlo AF Series Variable Speed Pumps carry the following Limited Warranty should failure occur due to faulty manufacture or materials, during normal use and service. For residential use, the manufacturer warrants to the original purchaser that the equipment shall be free of manufacturer's defects at the time of sale, and upon examination shall provide replacement parts in accordance with the following schedule: 5 Years Pump Body / 2 Year Motor.

For Commercial use (any pool that is not for private single-family use, or the use of which is subject to regulation), parts are warranted against defect for a period of one year.

This limited warranty is subject to the following terms, conditions, and exclusions:

1. To obtain the benefits of this warranty, contact the warranty department for troubleshooting. You may obtain current contact information at www.circupool.com/help. Warranty claims must be initiated in a timely manner. Upon discovery of a defect, the warranty department will issue a Return Merchandise Authorization (RMA) and defective items and parts are to be shipped by customer to an authorized service representative, freight prepaid.

Upon examination, the determination of the cause of failure shall be made solely by CircuPool Products. The date upon which the claim is submitted, and an RMA is issued shall solely serve to determine at what point the claim falls within the schedule of warranty proration, in comparison with the original purchase date. **No packages will be accepted without a RMA number.**

2. Should a defect in any item or part covered by the warranty become evident during the warranty's term, CircuPool Products will at its sole discretion repair or replace such item or part. CircuPool Products reserves the right to replace defective parts with new or refurbished parts. This warranty does not include the cost of labor or transportation charges for equipment or component parts to or from CircuPool Products, or the removal, reinstallation, or any such costs incurred in obtaining warranty replacements or repair.

3. This warranty extends to the original retail purchaser and original installation site only, beginning at the original date of purchase, and is non-transferrable.

4. The warranty contains the following exclusions. O-Rings, rubber gaskets and seals, electrical fuses, and circuit-breaker components are normal replacement items subject to wear and are excluded from the warranty. Product discoloration, or any other cosmetic or superficial damage or deterioration, regardless of its cause, is not covered by this warranty. The warranty is not applicable to problems arising from circumstances outside the control of CircuPool Products, including, but not limited to the following:

- A. Damage or premature wear due to improper pool chemistry, and failure to maintain pool water chemistry in accordance with the recommendations contained in the owner's manual.
- B. Damage due to improper installation or connection to improper voltages, including materials and workmanship supplied by others.
- C. Damage due to negligence or failure to properly maintain equipment, including operation with insufficient water flow or the maintenance of clean and tight electrical connections.
- D. Damage due to improper service, as well as unauthorized equipment modifications and use of non-genuine replacement parts.
- E. Damage due to misapplication, improper sizing, misuse, abuse, or failure to operate equipment as specified in the owner's manual and overuse.
- F. Problems resulting from tampering, accident, fire, flood, freezing, lightning, insects, or other natural elements, or other circumstances beyond the control of CircuPool Products.
- G. Damage due to over-tightening of threaded components or excessive pressure or stress.

The liability of CircuPool Products shall not exceed the repair or replacement of defective items or parts under the referenced limited warranty terms. There are no implied warranties of merchantability or fitness for a particular purpose that apply to this equipment. Under no circumstances shall CircuPool Products, its agents, employees, and affiliates be liable for any loss, damage, injury, inconvenience or loss of time, incidental expenses such as labor and material charges, or any other incidental, special, or consequential damages, which may result from the use, installation, removal, or reinstallation of its equipment and parts.

Disclaimer: This limited warranty is the entire warranty. No other warranties apply, expressed or implied. This warranty is valid only in the United States of America. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty supersedes all previous publications. Any dispute between the original purchaser and CircuPool Products will be settled by binding arbitration, conducted in Harris County, Texas, under the rules of the American Arbitration Association.

