PENTAIR

STA-RITE®

INTELLIFLO**XF**® AND INTELLIPRO**XF**® VSF
VARIABLE SPEED AND FLOW PUMP
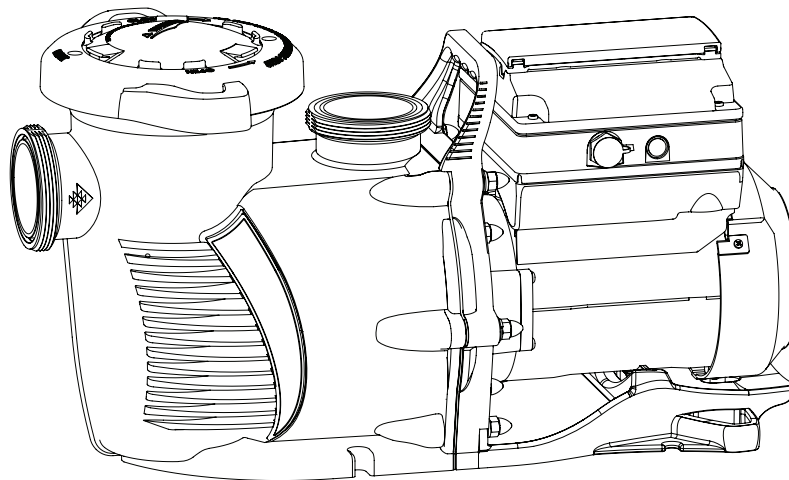
INSTALLATION AND
USER'S GUIDE

ENERGY STAR

Eco Select®
Efficiency • Conservation
PENTAIR

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

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TABLE OF CONTENTS

* Translated versions of this manual are available online at / La versión en español de este manual del producto, se puede encontrar en línea a / La version française de ce manuel est disponible à : **https://pentairpool.com/en/products/pumps/intellifloxf%20vsf** or **https://pentairpool.com/en/products/pumps/intelliproxf%20vsf**

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

IMPORTANT NOTICE

This guide provides installation and operation instructions for this pump. Consult Pentair with any questions regarding this equipment.

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

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

READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

This is the safety alert symbol. When you see this symbol on your system or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER Warns about hazards that can cause death, serious personal injury, or major property damage if ignored.

⚠ WARNING Warns about hazards that may cause death, serious personal injury, or major property damage if ignored.

⚠ CAUTION Warns about hazards that may or can cause minor personal injury or property damage if ignored.

NOTE Indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

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

⚠ WARNING Do not permit children to use this product.

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

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

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

General Warnings

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

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

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

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

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

The suction at a drain or outlet can cause:

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

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

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

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

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

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

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

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

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

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

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

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

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

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

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

(iii) An automatic pump shut-off system.

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

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

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

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

(D) Disabled submerged outlets, or

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

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

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

⚠ DANGER **HAZARDOUS PRESSURE: STAND CLEAR OF PUMP AND FILTER DURING START UP**

Circulation systems operate under high pressure. When any part of the circulating system (i.e. locking ring, pump, filter, valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the pump housing cover, filter lid, and valves to violently separate which can result in severe personal injury or death. Filter tank lid and strainer cover must be properly secured to prevent violent separation. Stand clear of all circulation system equipment when turning on or starting up pump.

Before servicing equipment, make note of the filter pressure. Be sure that all controls are set to ensure the system cannot inadvertently start during service. Turn off all power to the pump. **IMPORTANT: Place filter manual air relief valve in the open position and wait for all pressure in the system to be relieved.**

Before starting the system, fully open the manual air relief valve and place all system valves in the "open" position to allow water to flow freely from the tank and back to the tank. Stand clear of all equipment and start the pump.

IMPORTANT: Do not close filter manual air relief valve until all pressure has been discharged from the valve and a steady stream of water appears. Observe filter pressure gauge and be sure it is not higher than the pre-service condition.

General Installation Information

- All work must be performed by a qualified service professional, and must conform to all national, state, and local codes.

- Install to provide drainage of compartment for electrical components.

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

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

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

Warnings and safety instructions for Pentair Aquatic Systems pumps and other related products are available at: **http://www.pentairpool.com/pool-owner/safety-warnings/** or call (800) 831-7133 for additional free copies of these instructions.

Please refer to **http://www.pentairpool.com/pool-owner/safety-warnings/** for warning and safety instructions related to the this product.

SAVE THESE INSTRUCTIONS

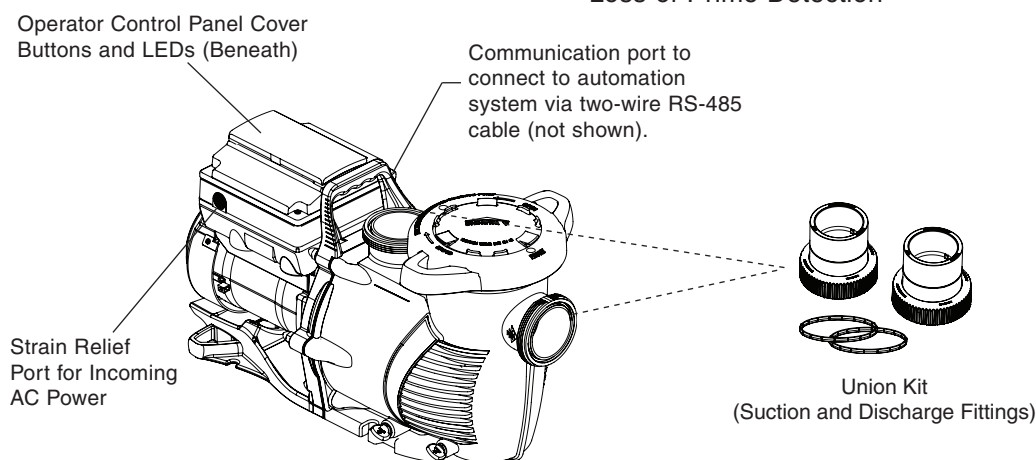Warning Page P/N 352557 Rev. B 9/16

PUMP OVERVIEW

The IntelliFloXF® VSF Variable Speed and Flow Pump can be programmed to run at a speed or a constant flow rate over set time intervals for maximum operating efficiency and energy conservation for a variety of inground pools.

- The pump can operate from 450 RPM to 3450 RPM with four preset speeds of 750, 1500, 2350 and 3110 RPM, or the pump can be set to control its own speed and maintain a constant flow rate.

- The pump can adapt to any application below 140 GPM. Simply program the pump to suit the application, and the pump will automatically determine perfect operating conditions for that specific flow rate.

- Up to 8 customizable programs that can be set for constant flow or speed in either Manual, Egg Timer or Schedule modes.

- Pump control panel alarm LED and error messages warn the user of improper operation.

- Programmable priming mode with automatic detection of prime for easy start-up and automatic detection of loss of prime.

- Compatible with most cleaning systems, filters, and jet action spas.

- UL/CUL/NSF

Drive Assembly and Control Panel

The IntelliFloXF or IntelliProXF VSF pump drive is designed to produce maximum motor operational efficiency. The drive controls the motor's rotational speed by controlling the frequency of the supplied current. It also protects the motor and pump from operating outside of their intended operating parameters.

The control panel can be mounted on the pump in four different directions in order to provide the user the best access. The control panel can also be mounted in a more convenient location with the help of the keypad relocation kit (P/N 356904Z [Almond] or 356905Z [Black]).

External Control

IntelliTouch®, EasyTouch®, SunTouch® Control Systems and IntelliComm® Communication Centers can remotely control the IntelliFloXF VSF pump. The pump's communications address and other functions are accessible from the pump's control panel.

- RS-485 communication cable included

- IntelliTouch systems control 8 IntelliFlo pumps using 8 programs per pump.

- EasyTouch systems control 2 IntelliFlo pumps using 8 programs per pump.

- SunTouch systems control one IntelliFlo pump using 8 programs.

- IntelliComm systems control one IntelliFlo pump using the 4 External Control programs.

Motor Features
- High Efficiency Permanent Magnet Synchronous Motor (PMSM)
- Superior speed control
- Operates at lower temperatures due to high efficiency
- Designed to withstand outdoor environment
- Totally Enclosed Fan Cooled (TEFC) Motor
- 56 Square Flange
- Low noise

Drive Features
- Active Power Factor Correction
- UL 60730 Compliant
- Rotatable Keypad
- Easy Overhead Wiring
- High Drive Operational Efficiency
- Sensorless Flow and Pressure Control Technology
- Loss of Prime Detection

Operator Control Panel Cover Buttons and LEDs (Beneath)

Communication port to connect to automation system via two-wire RS-485 cable (not shown).

Strain Relief Port for Incoming AC Power

Union Kit (Suction and Discharge Fittings)

Variable Speed and Flow Drive Assembly

INSTALLATION

Only a qualified plumbing professional should install the IntelliFloXF® VSF Variable Speed and Flow Pump. Refer to *"Important Pump Warning And Safety Instructions"* on pages ii - iii for additional installation and safety information.

Note: IntelliFloXF VSF and IntelliProXF VSF pumps cannot be connected in series with other pumps.

Location

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

Note: Ensure that the pump is mechanically secured to the equipment pad.

Be sure the pump 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 piping returns.

2. Install a minimum of 5 feet (1.52 meters) from the inside wall of the pool and spa. Canadian installations require a minimum of 9.8 feet (3 meters) from pool water level.

3. Install the pump a minimum of 3 feet (.9 meters) from the heater outlet.

4. Do not install the pump more than 10 feet (3.1 meters) above the water level.

5. Install the pump in a well ventilated location protected from excessive moisture (i.e., rain gutter downspouts, sprinklers, etc.)

6. Install the pump with a rear clearance of at least 3-inches (76.2 mm) so that the motor can be removed easily for maintenance and repair. See **Figure 1**.

Piping

1. For improved pool plumbing, it is recommended to use a larger pipe size. When installing the inlet and outlet fittings (male adaptors), use thread sealant.

2. Piping on the suction side of the pump should be the same or larger than the return line diameter.

3. Plumbing on the suction side of the pump should be as short as possible.

4. For most installations Pentair recommends installing a valve on both the pump suction and return lines so that the pump can be isolated during routine maintenance. We also recommend a valve, elbow or tee installed in the suction line should be no closer to the front of the pump than five (5) times the suction line pipe diameter. See **Figure 2**.

   Example: A 2.5-inch pipe requires a 12.5-inch (318 mm) straight run in front of the suction inlet of the pump). This will help the pump prime faster and last longer.

   Note: DO NOT install 90° elbows directly into the pump inlet and outlet.

Electrical Requirements

• Install all equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.

• A means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

Figure 1: Pump Rear and Vertical Clearance
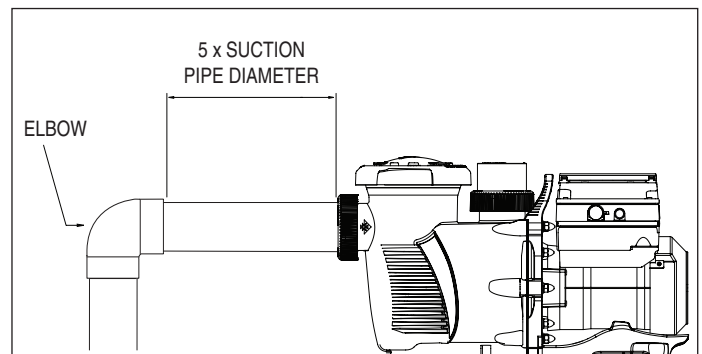
Figure 2: Recommended Piping

Optional Keypad Relocation Kit

In special cases when the user lacks easy or convenient access to the IntelliFloXF or IntelliProXF VSF pump, a Keypad Relocation Kit (P/N 356904Z [Almond] or 356905Z [Black]) may be purchased from your local pool equipment supplier. This kit allows the user to remove the keypad from the top of the drive and mount the keypad in a fixed location with better access.

For installation instructions refer to the *Keypad Relocation Kit Installation Instructions* provided with the kit.

Fittings and Valves

1. Do not install 90° elbows directly into pump inlet.

2. Flooded suction systems should have valves installed on suction and discharge pipes for maintenance, however, the suction 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.** This pump must be installed by a licensed or certified electrician or a qualified service professional in accordance with the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to users, installers, or others due to electrical shock, and may also cause damage to property.
	Always disconnect power to the pump at the circuit breaker before servicing the pump. Failure to do so could result in death or serious injury to service people, users or others due to electric shock.
	Read all servicing instructions before working on the pump.

Note: ALWAYS reinstall the drive lid onto the field wiring compartment when leaving the pump unsupervised during servicing. This will prevent foreign matter (i.e. rainwater, dust, etc.) from accumulating in the drive.

Note: When connecting the pump to an automation system (IntelliTouch®, EasyTouch®, SunTouch® Control Systems and IntelliComm® Communication Center), continuous power must be supplied to the pump by connecting it directly to the circuit breaker. When using an automation system, be sure that no other lights or appliances are on the same circuit.

Wiring

1. Be sure all electrical breakers and switches are turned off before wiring motor.

⚠ WARNING	**STORED CHARGE** - Wait at least sixty (60) seconds before servicing.

2. Be sure that the supply voltage meets the requirements listed on the motor nameplate. If these requirements are not met, permanent damage may occur.

3. For wiring sizes and general guidelines for proper electrical installation, please follow the specifications defined in the National Electric Code and any local codes as required.

4. Use strain relief and be sure all electrical connections are clean and tight.

5. Cut the wires to the appropriate length so they do not overlap or touch when connected.

6. Reinstall the keypad after wiring the pump by plugging the cover back into the drive wiring connection and re-seating the keypad in the desired orientation with the four (4) corner screws.

   Note: Ensure that the keypad cable is not pinched between the drive and keypad during re-seating.

Ground Wire Connection (Green Screw)

Drive Wiring Connection

1/2" NPD Conduit Port

Bonding Lug

Field Wiring Compartment

Grounding

1. Permanently ground the drive using the green ground screw, as shown below. Use the correct wire size and type specified by National Electrical Code. Be sure the ground wire is connected to an electrical service ground.

2. The pump should be permanently connected to either a circuit breaker, 2-pole timer or 2-pole relay.

   Note: If AC power is supplied by a GFCI circuit breaker, the pump should be wired on its own independent circuit **unless the pump is operated in tandem with a Pentair salt chlorine generator.**

Bonding

1. Bond the motor to the structure in accordance with the National Electrical Code. Use a solid copper bonding conductor not smaller than 8 AWG. For Canadian installations, a 6 AWG or larger solid copper bonding conductor is required. Run a wire from the external bonding screw or lug to the bonding structure.

2. Connect the wire from the accessible bonding lug on the motor to all metal parts of the swimming pool, spa, or hot tub structure and to all electrical equipment, metal conduit, and metal piping within 5 feet (1.52 meters) of the inside walls of the swimming pool, spa, or hot tub. Run a wire from the external bonding screw or lug to the bonding structure.

Note: When the pump is started and stopped by removing power with a relay or timer, a two-pole device should be used to apply and remove power to both POWER LINE TERMINALS.
Pentair offers 2-Pole 20 Amp GFCI breakers (P/N PA220GF) which offer 6 milliamp personnel protection while meeting 2008 to current NEC Standards for Pool Pumps.
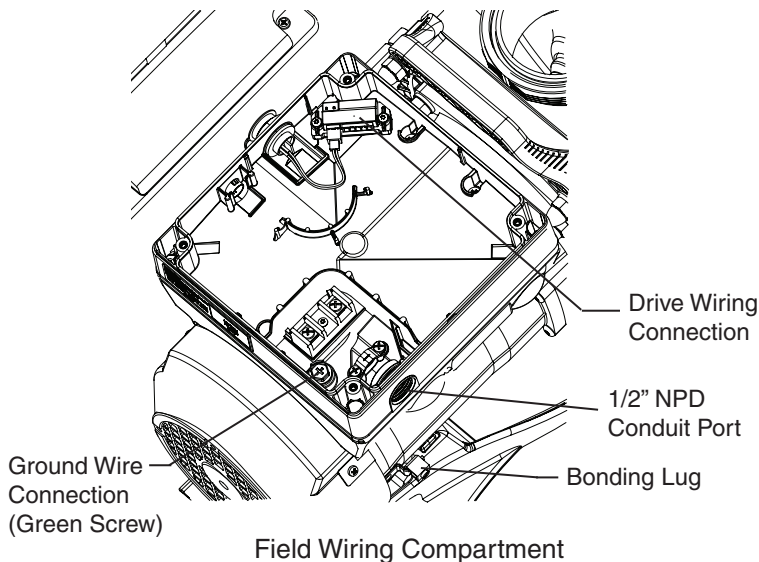
Connecting to an Automation System

All IntelliFlo and IntelliPro pumps, including the IntelliFloXF® VSF Variable Speed and Flow Pump, are compatible with Pentair Automation Systems.

An RS-485 communication cable is provided with the pump and will be used to connect the pump to a Pentair automation system.

Refer to the automation system manual for further details on how to connect and use the system with your variable speed pump.

⚠ WARNING An IntelliTouch® Control System with firmware 1.170 or earlier will display "VSF+SVRS" in the pump type/selection. While you will choose this option, **the IntelliFloXF VSF pump DOES NOT incorporate SVRS entrapment protection.**

OPERATING THE PUMP

NOTE: When setting up the IntelliFloXF® VSF Variable Speed and Flow Pump, the user must set the pump's internal clock and establish an operation schedule by following the steps in this manual. Please refer to user's guide sections: 'Set Time' (page 10) and 'Set Programs 1-8 in Schedule Mode' (page 15) to schedule a time to run the pump.

> **⚠CAUTION** This pump is shipped with Priming mode ENABLED. Unless the Priming settings are changed in the menu, **be aware that the pump will speed up to the maximum speed when the pump is powered on for the first time, and the Start/Stop button is pressed.** To change the maximum speed of the pump, refer to page 10.
>
> Before turning the pump ON, be sure the following conditions are met:
> 1. Open filter air relief valve.
> 2. Open valves.
> 3. Pool return is completely open and clear of any blockages.
> 4. Water in the pump basket.
> 5. Stand clear of the filter or other pressurized vessels.

Priming the Pump

Prime the pump before starting the pump for the first time. Remove the lid and fill the basket with water. The pump basket must be filled with water before initial start up or after servicing.

Follow the steps below to prime the pump for start up:

1. Press **Start/Stop** to stop the pump. Disconnect the pump main power supply and communication cable.

2. Close all valves in suction and discharge pipes. Relieve all pressure from the system.

3. Remove the pump lid and locking ring.

4. Fill the pump strainer pot with water.

5. Reassemble the pump lid and locking ring onto the strainer basket. The pump is now ready to prime.

6. Open all valves in suction and discharge pipes.

7. Open the filter air relief valve and stand clear of the filter.

8. Connect power to the pump. Be sure green power light is on.

9. Press **Start/Stop** to start the pump. The pump will enter into priming mode (if enabled) and speed up to the maximum speed set in the pump menu settings.

10. When water comes out of the filter air relief valve, close the valve. The system should now be free of air and recirculating water to and from the pool

11. Do not allow your pump to run longer than 30 minutes time without developing full flow. If the pump does not prime, check your priming settings on the control panel or see the "Troubleshooting" section on pages 25-27.

Lid — Locking Ring

Volute

Top View
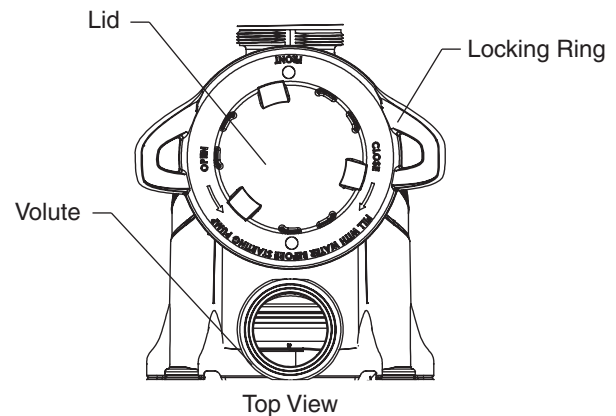
Priming Features

The default priming setting is ENABLED.
The pump also allows you to set the following from the operator control panel:

- Priming speed
- Priming range (1-10)
- Priming delay

Set up instructions on page 19.

> **⚠CAUTION** Do not add chemicals to the system directly in front of pump suction. Adding undiluted chemicals may damage the pump and will void the warranty.

> **⚠CAUTION** This is a variable speed pump. Typically the lower speeds are used for filtration and heating. The higher speeds can be used for spa jets, water features, and priming.

> **⚠CAUTION** DO NOT run the pump dry. If the pump is run dry, the mechanical seal will be damaged and the pump will start leaking. If this occurs, the damaged seal must be replaced. ALWAYS maintain proper water level in your pool (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.

Using the Operator Control Panel

Use the operator control panel to start and stop the IntelliFloXF® VSF Variable Speed and Flow Pump, set, and change programs, and access pump features and settings.

Controls and LEDs on Keypad

1. **Button 1:** Press to select Program 1 (750 RPM). LED on indicates Program 1 is active.

2. **Button 2:** Press to select Program 2 (1500 RPM). LED on indicates Program 2 is active.

3. **Button 3:** Press to select Program 3 (2350 RPM). LED on indicates Program 3 is active.

4. **Button 4:** Press to select Program 4 (3110 RPM). LED on indicates Program 4 is active.

5. **Back:** Goes one step back in menu; exits without saving current setting.

6. **Save:** Saves current menu item setting. When a parameter has been adjusted the "Save?" icon will be displayed.

7. **Menu:** Accesses the menu items when and if the pump is stopped.

8. **Select:** Press to select the currently displayed option on the screen.

9. **Arrow buttons:**
   - **Up arrow:** Move one level up in the menu or increase a digit when editing a setting.
   - **Down arrow:** Move one level down in the menu or decrease a digit when editing a setting.
   - **Left arrow:** Move cursor left one digit when editing a setting.
   - **Right arrow:** Move cursor right one digit when editing a setting.

10. **Quick Clean:** Pump increases to a higher RPM (for vacuuming, cleaning, adding chemicals, etc.). LED light is on when active.

11. **Time Out:** Allow the pump to remain in a stopped state for a set period of time before resuming normal operation. LED is on when active.

12. **Start/Stop button:** To start or stop the pump. When LED is on, the pump is running or in a mode to start automatically.

13. **Reset button:** Reset alarm or alert.

14. **LEDs:**

   ⚡ **On:** Green light when pump is powered on.

   ! **Warning:** On if warning condition is present. *See "Alerts and Warnings" on page 25.*

   🔔 **Alarm:** Red LED on if alarm condition occurs. *See "Alerts and Warnings" on page 25.*

15. **Control Panel LCD Screen:**
   - **Line 1:** Key icon indicates password protection mode is active. If password protect is not enabled, no key icon is displayed. Also shows current time of day. Active cursors display when arrow key input is available.
   - **Line 2:** Displays current pump speed/flow (RPM/GPM).
   - **Line 3:** Countdown time and watts
   - **Line 4:** Current pump status and current feature. "Save?" will display on this line when a parameter adjustment can be saved.

Control Panel #1-8

Control Panel #9-15
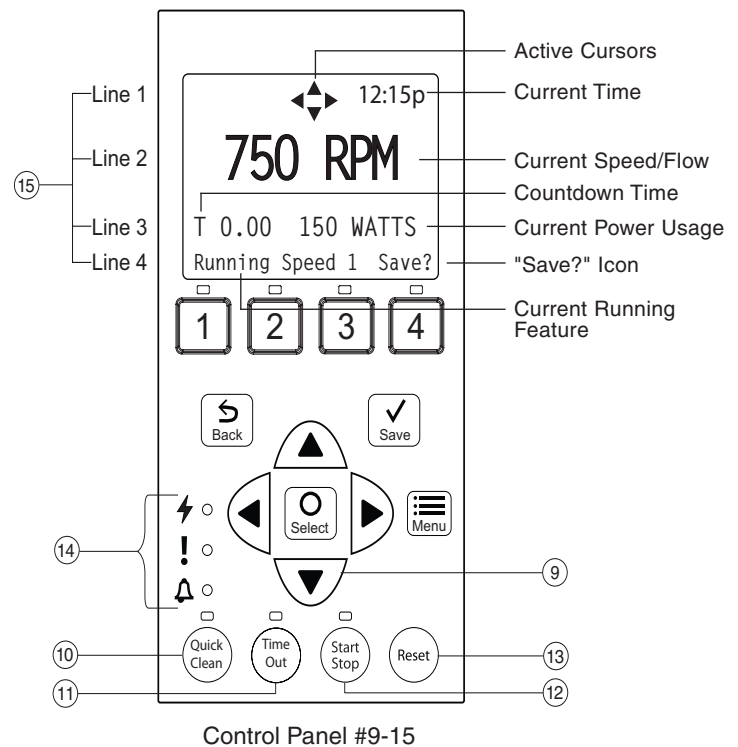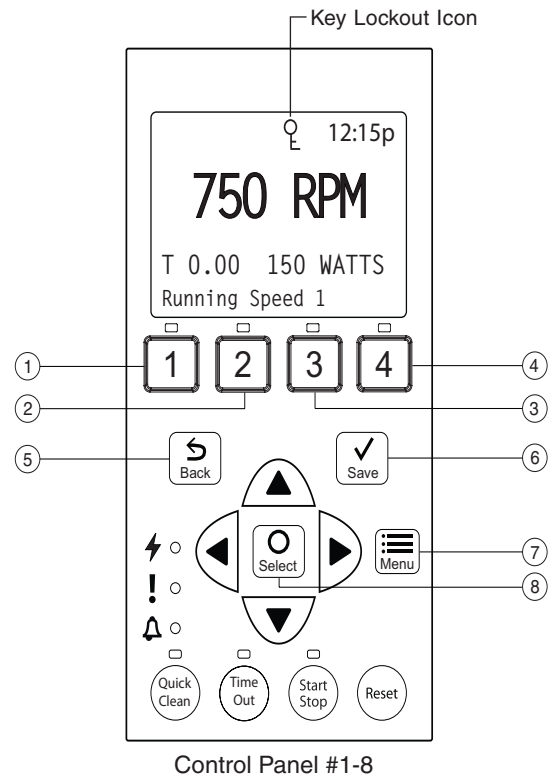
Note: Always close the keypad cover after using the keypad.

Note: Using screwdrivers or pens to program the pump will damage the keypad overlay. Use your fingers only when programming the pump.

Stopping and Starting the Pump

Starting the Pump

1. Be sure the pump is powered on and the green power LED is on.
2. Select one of the program buttons, then press the **Start/Stop** button (LED on) to start the pump. The pump will go into priming mode if priming feature is enabled.

Stopping the Pump

1. Press **Start/Stop** to stop the pump.

When servicing equipment (filters, heaters, chlorinators etc.), disconnect the communication cable, and switch OFF circuit breaker to remove power from the pump.

Note: The pump can automatically restart if the communication cable is connected.

Adjusting and Saving a Pump Speed/Flow

1. While the pump is running, press the **Up** or **Down** arrow to adjust to desired speed or flow setting.
2. Press and hold down a **Program** button (1-4) for three (3) seconds to save speed/flow to the button or press **Save** to save the speed/flow.

Operating the Pump at Preset Speeds

The pump is programmed with four default speeds of 750, 1500, 2350 and 3110 RPM. Program buttons 1-4 are for each of the preset speeds as shown below.

1. Be sure the pump is powered on and the green power LED is on.
2. Press the **Program** button (1- 4) corresponding to the desired preset speed and release quickly. The LED above the button will turn on.
3. Press **Start/Stop**. The pump will quickly change to the selected preset speed.

LED lit
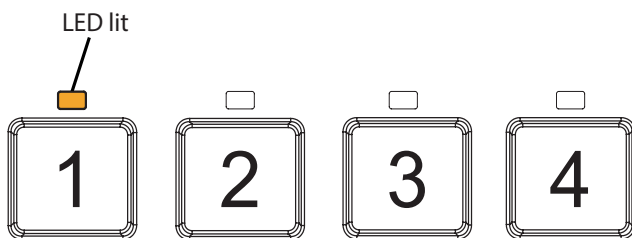
Pump Operating Modes

The IntelliFloXF® VSF Variable Speed and Flow Pump can be programmed in three different modes:

Programs 1-4 can be programmed in all three modes. Programs 5-8 can only be programmed in Schedule mode since there are no buttons on the control panel for Programs 5-8. The default setting for Programs 5-8 is "Disabled".

Program Menu Tree Options

Manual

Assigns a speed or flow to one of the four Program buttons on the control panel. This mode can only be used for programs 1-4. Programs 1 and 2 are Manual by default.

To operate in Manual mode, press one of the four program buttons and then press the **Start/Stop** button. The pump will run the assigned speed or flow assigned to that program button.

Egg Timer

Programs 1-4 can be programmed to run at a certain speed or flow and for a duration of time once a program button is pressed.

Programs 3 and 4 are Egg Timers by default. If you desire a different method of operation, programs 3 and 4 can be changed to Manual mode in the control menu.

To operate in Egg Timer mode, press a program button and then press **Start/Stop**. The pump will run that setting for the set amount of time and then turn off.

Schedule

Programs 1-8 start and stop at a specific time during a 24 hour period. Speeds or flows programmed in Schedule mode will override any manually selected speed or flow once the next Schedule command commences.

Program Types

This pump can run saved programs at either constant speeds or constant flow rates. This gives the user the ability to precisely assign the output from the pump so that no energy is wasted and the job is completed accurately.

Operator Control Panel: Pump Menu Guide

MENU — Press MENU button to access menus

SETTINGS (pages 10-13)

Date and Time
- Date
  - Months (1-12)
  - Days (1-31)
  - Years (2010-2100 Plus)
- Time
  - Hours (24hr Mode: 0-23) (12hr Mode: 1-12 AM & PM)
  - Minutes (0-60)
- Hour Format
  - AM/PM - Default: AM/PM
  - 24 Hour

Min/Max
- Set Min Speed (450-1700 RPM) - Default: 450 RPM
- Set Max Speed (1900-3450 RPM) - Default: 3450 RPM
- Set Min Flow (20-70 GPM) - Default: 20 GPM
- Set Max Flow (80-140 GPM) - Default: 140 GPM
- Flow Limit Speed (Disabled / Enabled) - Default: Disabled
- Max Pressure (1-50 PSI) - Default: 30 PSI
- Pressure Limit Speed (Disabled / Enabled) - Default: Disabled

Device
- Pump Address (1-16) - Default: 1
- Contrast Level (1-5) - Default: 3
- Language
  - English - Default: English
  - Português
  - Deutsch
  - Italiano
  - Nederlands
  - Español
  - Français
- Temperature Unit
  - Fahrenheit - Default: F°
  - Celsius C°
- Flow Unit
  - GPM - Default: GPM
  - LPM
- Pressure Unit
  - PSI - Default: PSI
  - BAR
- Password
  - Disabled - Default: Disabled
  - Enabled
    - Password Timeout (1 min. to 6 hrs.) - Default: 1 hour
    - Set Password (0000 - 9999) - Default: 1234
- Ramping
  - Ramp Up
    - Fast - Default: Fast
    - Medium
    - Slow
  - Ramp Down
    - Fast - Default: Fast
    - Medium
    - Slow
- Firmware Version

Alarm Log (1-10)

PROGRAM 1-8 (pages 14-15)

Program 1-4
- Manual
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM) - Default Program 1-2: Manual
- Schedule
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM)
  - Start Time
  - Stop Time
- Egg Timer
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM) - Default Program 3-4: Egg Timer
  - Duration

Program 5-8
- Disabled
  - Default: Disabled
- Schedule
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM)
  - Start Time
  - Stop Time

MENU TREE CONTINUES TO NEXT PAGE

Operator Control Panel: Pump Menu Guide (cont.)

EXT CONTROL
(page 16)

Program 1 — Enabled - Default ——— Type (Speed / Flow) Default: Speed
                                                 Set Speed or Flow - Default: 750 RPM
                                                 Stop Delay (0 min. to 10 min.) Default: 0 Minutes
                 Pump Off

Program 2 — Enabled - Default ——— Type (Speed / Flow) Default: Speed
                                                   Set Speed or Flow - Default: 1500 RPM
                                                 Stop Delay (0 min. to 10 min.) Default: 0 Minutes
                 Pump Off

Program 3 — Enabled - Default ——— Type (Speed / Flow) Default: Speed
                                                   Set Speed or Flow - Default: 2350 RPM
                                                 Stop Delay (0 min. to 10 min.) Default: 0 Minutes
                 Pump Off

Program 4 — Enabled - Default ——— Type (Speed / Flow) Default: Speed
                                                   Set Speed or Flow - Default: 3110 RPM
                                                 Stop Delay (0 min. to 10 min.) Default: 0 Minutes
                 Pump Off

FEATURES
(page 17)

Time Out ——— Time Out Duration (1 min. to 10 hrs.) Default: 3 hours

Quick Clean ——— Type (Speed / Flow)
                         Set Speed or Flow (450-3450 RPM or 20-140 GPM)
                         Quick Clean Duration (1 min. to 10 hrs.) Default: 10 minutes

PRIMING
(pages 17-19)

Disabled/Enabled ——— Disabled / Enabled - Default: Enabled

Priming Speed ——— Set Speed (2400-3450 RPM) Default: 3450 RPM

Max Priming Duration ——— (1 min. to 30 min.) Default: 11 minutes

Priming Range ——— (1 - 10) Default: 5

Priming Delay ——— (1 sec. to 10 min.) Default: 20 seconds

Loss of Prime ——— Enabled / Disabled - Default: Enabled

THERMAL MODE
(page 20)

Disabled/Enabled ——— Disabled / Enabled - Default: Enabled

Set Type ——— Speed - Default: Speed
               Flow

Set Speed/Flow ——— Set Speed (450-3450 RPM) Default 1000 RPM
                        Set Flow (20-140 GPM) Default: 40 GPM

Pump Temperature ——— 40° F - 50° F (4.4° C through 10° C) Default: 40° F (4.4° C)

```
┌─────────────────────┐
│       MENU          │
└─────────────────────┘
   ┌──────────────────┐
   │    SETTINGS      │──── **Pump Menu: Settings**
   └──────────────────┘
```

Set Date and Time

The time controls all scheduled times, functions, and programmed cycles and stores the correct time for up to 96 hours after power is turned off. Reset if the power is off longer than 96 hours.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Date and Time". Press **Select**.
5. Press **Select** again and use **Up** or **Down** arrows to set the date.
6. Press **Save** to save user input and return to "Date and Time."
7. Use the **Up** or **Down** arrows to scroll to "Time". Press **Select**.
8. Use the **Up** or **Down** arrows to scroll to edit the time.
   Note: To set AM/PM or a 24 hour clock see the next section "Set AM/PM or 24 Hour Clock."
9. Press **Save** to save. To cancel any changes, press **Back** to exit without saving.
10. Press **Back** to exit.

Set AM/PM or 24-Hour Clock

To change the time from a 12 hour clock (AM/PM) to a 24 hour clock:

1. Press **Menu**.
2. Press **Select** to select "Settings".
3. Use the **Up** or **Down** arrows to scroll to "Date and Time". Press **Select**.
4. Use the **Up** or **Down** arrows to scroll to "AM/PM". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to choose between 24 hr. and AM/PM.
6. Press **Save** to save. To cancel any edits, press **Back** to exit without saving.
7. Press **Back** to exit.

Set Minimum Speed (RPM)

The minimum pump speed can be set from 450 RPM to 1700 RPM. The default setting is 450 RPM.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Set Min Spd".
6. Press **Select** to change the setting. The cursor will appear in the first number column (ones).

7. Press the **Up** or **Down** arrows to edit the minimum speed setting from 450 to 1700 RPM.
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

Set Maximum Speed (RPM)

The maximum speed can be set from 1900 RPM to 3450 RPM (default is 3450). Use this setting to set the maximum running speed of the IntelliFloXF® VSF Variable Speed and Flow Pump.

Note: Maximum and minimum speed settings, and the associated alarms, remain active when in Flow mode.

1. Check that the green power LED is on.
2. Press **Menu.**
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Set Max Spd".
6. Press **Select** to change. The cursor will appear in the first number column (ones).
7. Press **Up** or **Down** arrows to edit the maximum speed setting from 1900 to 3450 RPM.
8. Press **Save** to save. Press **Back** to exit. To cancel, press the **Back** to exit without saving.

> **Note:** Maximum Speed will limit Priming Speed, except in one case. If the Maximum Speed is set below the lowest available Priming Speed (2400 RPM) then the pump will exceed the Maximum Speed while the priming feature is running. This prevents the pump from having trouble priming if the Maximum Speed is set this low. If this is a problem, priming can be disabled in the Priming Menu (see "Priming" section on page 17).

Set Minimum Flow Rate (GPM)

The minimum programmed flow rate can be set from 20 GPM to 70 GPM.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max" and press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Set Minimum Flow".
6. Press **Select** to change the setting. The cursor will appear in the first number column (ones).
7. Press the **Up** or **Down** arrows to edit the minimum flow rate setting from 20 to 70 GPM.
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

```
┌──────────────────┐
│      MENU        │
└──────────────────┘
        │
┌──────────────────┐
│    SETTINGS      │────  **Pump Menu: Settings**
└──────────────────┘
```

Set Maximum Flow Rate (GPM)

The maximum programmed flow rate can be set from 80 GPM to 140 GPM.

Note: Maximum and minimum speed settings, and the associated alarms, remain active when in Flow mode.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Set Maximum Flow".
6. Press **Select** to change the setting. The cursor will appear in the first number column (ones).
7. Press the **Up** or **Down** arrows to edit the maximum flow rate setting from 80 to 140 GPM.
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

Set Flow Limit for Speed Program

The flow limit in constant speed program type is disabled by default. This setting allows the user to ensure that the drive does not exceed the flow rate output that is set when they are operating in a constant speed mode. The system may change during a run at a constant speed that would increase the flow rate, it this feature is enabled then the pump will automatically limit itself to keep below the previously set Maximum Flow Rate.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max" and press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Flow Limit (Speed)".
6. Press **Select** to move the cursor over the "Disabled".
7. Press and the **Up** or **Down** arrows to change it to "Enabled".
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

Set Maximum System Pressure

The maximum pressure can be set using the drive, so that the pump does not exceed a set system pressure level when it is asked to do a high power job, or if the system changes during normal operation. This gives the user a better way than Maximum Speed to limit the output of their pump. If the system is less restrictive, then the pump is still capable of the higher flow rates than it would have been if the user had used a speed limit, but the pressure is still limited where the user needed it to be limited.

The pressure is the total system head, so it is a product of the suction pressure and the discharge pressure. The calculated value is equivalent to Total Dynamic Head (TDH). This value may not correspond with the filter's pressure reading, because it is the TDH across the pump and not the local pressure of the filter.

When the pump is running a Flow Program, it will always attempt to reach the set flow no matter what the system setup is. If the system pressure changes during the run (such as from filter dirt loading, or manually changing a valve position), the drive adjusts motor RPM to maintain a consistent flow rate.

In some cases the newly requested motor speed will increase the discharge pressure in order to maintain the requested flow rate. While maintaining the flow rate, the drive will remain within the pressure and speed limits set within the Min/Max menu. If the pump meets one of the limits, it will continue to run at the limit and the warning light will illuminate. The limit warning will be displayed on the bottom of the drives' keypad screen indicating that the requested flow rate is not being achieved and which limit that the drive is running into.

When the pump is running a Speed Program, the drive is not monitoring the flow or pressure limits by default. These features need to be Enabled in the Min/Max menu.

To Set Maximum System Pressure:

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Set Maximum Pressure".
6. Press **Select** to change the setting. The cursor will appear in the first number column (ones).
7. Press the **Up** or **Down** arrows to edit the maximum flow rate setting from 1 to 50 PSI.
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

```
┌──────────────────┐
│      MENU        │
└──────────────────┘
        │
┌──────────────────┐
│    SETTINGS      │──── **Pump Menu: Settings**
└──────────────────┘
```

Set Pressure Limit for Speed Program

While Pressure Limit is active whenever the pump is operating a Flow type of program, the pressure limit is disabled by default when running the pump in a constant speed mode. Enabling this feature will make sure that the drive is monitoring the system pressure when operating in constant speed mode also.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Min/Max". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Press Limit (Speed)".
6. Press **Select** to move the cursor over the "Disabled".
7. Press and the **Up** or **Down** arrows to change it to "Enabled".
8. Press **Save** to save. To cancel, press **Back** to exit edit mode without saving.
9. Press **Back** to exit.

Pump Address

Use this setting if your pump is connected via the RS-485 COM port to a Pentair automation system.

The default pump address is #1 and only needs to be changed when there is more than one pump on an automation system. Change the address to allow the automation system to send a command to the correct pump. The pump address can be set from 1-16.

Refer to the automation system manual for further details on how to connect and use an automation system with your variable speed pump.

1. Be sure the green power LED is on and the pump is stopped.
2. Press **Menu.**
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Device". Press **Select**.
5. Use the **Up** or **Down** arrows to scroll to "Pump Address". Press **Select**.
6. Press **Up** or **Down** arrows to change the address number from 1-16.
7. Press **Save** to save. To cancel any changes, press **Back** to exit without saving.
8. Press **Back** to exit.

Set Screen Contrast

The default contrast setting for the LCD screen is 3. Screen contrast levels can be adjusted from 1 to 5 units for low or high lighting conditions.

Note: Changes to the contrast setting do not update instantaneously. Changes to this setting must be saved before the contrast level changes.

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrow to scroll to "Device". Press **Select**.
5. Use the **Up** or **Down** arrow to scroll to "Contrast Level."
6. Press **Select**. Screen will show current contrast setting number. Use **Up** or **Down** to change number.
7. Press **Save** to save. To cancel any changes, press **Back** to exit without saving.
8. Press the **Back** button to exit.

Set Control Panel Language

To access the language menu:

1. Check that the green power LED is on.
2. Press **Menu** and press **Select** to select "Settings".
3. Use the **Up** or **Down** arrows and scroll to "Device". Press **Select**.
4. Use the **Up** or **Down** arrows to scroll to "Select Language". Press **Select**.
5. Use the **Up** or **Down** arrows to choose the desired language.
6. Press **Save** to select the control panel language. To cancel any changes, press **Back** to exit without saving.
7. Press **Back** to exit.

Set Temperature Unit

The default setting is Fahrenheit (°F). The pump can be set to either Celsius (°C) or Fahrenheit (°F).

1. Check that the green power LED is on.
2. Press **Menu**.
3. Press **Select** to select "Settings".
4. Use the **Up** or **Down** arrows to scroll to "Device" menu item. Press **Select**.
5. Use **Up** or **Down** arrows to scroll to "Temperature Units". Press **Select**.
6. Use **Up** or **Down** arrows to choose Celsius (°C) or Fahrenheit (°F).
7. Press **Save** to save. To cancel any changes, press **Back** to exit without saving.
8. Press **Back** to exit.

```
┌─────────────────────┐
│        MENU         │
└─────────────────────┘
         │
┌─────────────────────┐
│      SETTINGS       │──── Pump Menu: Settings
└─────────────────────┘
```
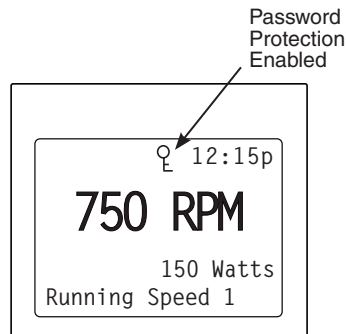
Password Protection

The default setting for password protection is disabled. When this feature is enabled, the pump display will prompt for the password before allowing access to the control panel and buttons.

The entered password is any combination of four (4) digits.

- The pump can always be stopped by pressing **Start/Stop**, even when password protection is enabled.

- If the pump is stopped, the pump cannot be turned back on with **Start/Stop** while running in manual mode.

- Pressing **Start/Stop** when the pump is off will return it back to the Running Cycles Mode and run at the next scheduled run time. If the present time is within the scheduled run time, the pump will run the scheduled speed.

- All functions including programming are disabled in Password Protection Mode.

- Screen will read "Enter Password" if any button other than the **Start/Stop** button is pressed

- Key icon displayed in the upper left side of the screen when Password Protection is on.

Password Protection Enabled

```
┌───────────────────────┐
│  ⚷  12:15p            │
│                       │
│  750 RPM              │
│                       │
│           150 Watts   │
│  Running Speed 1      │
└───────────────────────┘
```

Setting Password

1. Check that the green power LED is on.

2. Press **Menu**. Press **Select** to select "Settings".

3. Use the **Up** or **Down** arrow to scroll to "Device". Press **Select.**

4. Press **Up** or **Down** arrow to scroll to "Password". Press **Select.**

5. The default setting is "Disabled". Press **Up** or **Down** arrow to change the setting to "Enabled". Press **Save** to save.

6. Press the **Down** arrow. "Password Timeout" will be displayed. The factory default time is 1 hour. This means the IntelliFloXF® VSF Variable Speed and Flow Pump will go into Password Protection mode 1 hour after the last control panel key is pressed.

7. Press **Select** to enter edit mode. Use the **Up** or **Down** arrow to edit the time setting from 1 minute to 6 hours and press **Save** to save setting.

8. Press the **Down** arrow and then press **Select** on "Set Password" to change the setting.

9. Press the **Left** or **Right** arrows to move cursor and press the **Up** or **Down** arrow to change the password number to desired setting.

10. Press **Save** to save. To cancel any changes, press **Back** to exit without saving.

Entering Password

1. Press any button (besides the program buttons) to prompt the screen for a password.

2. To enter password, use the **Left** and **Right** arrows to move the cursor and the **Up** and **Down** arrow button to scroll through the digit then press **Save** to confirm.

Set Ramping Rate

The rate that the drive changes the motor speed can be reduced for smoother operation. This setting increases or decreases how quickly the pump can ramp up or down between two speeds. Rates can be set and adjusted for ramping up and ramping down individually.

If the **Start/Stop** button is ever pressed, the motor will immediately stop and will not follow the programmed ramping rate. The default setting is Fast, which is the traditional IntelliFloXF ramping rate. Medium will take twice as long to change speeds, and Slow will take three times as long.

To Set Ramping Rate:

1. Check that the green power LED is on.

2. Press **Menu**.

3. Press **Select** to select "Settings".

4. Use the **Up** or **Down** arrow to scroll to "Device". Press **Select**.

5. Use the **Up** or **Down** arrow to scroll to "Ramping". Press **Select**.

6. Use the **Up** or **Down** arrow to scroll to "Ramp Up". Press **Select** and use the **Up** or **Down** arrow to choose between "Fast", Medium or "Slow". Press **Save**.

7. Use the **Up** or **Down** arrow to scroll to "Ramp Down". Press **Select** and use the **Up** or **Down** arrow to choose between "Fast", Medium or "Slow". Press **Save**.

MENU

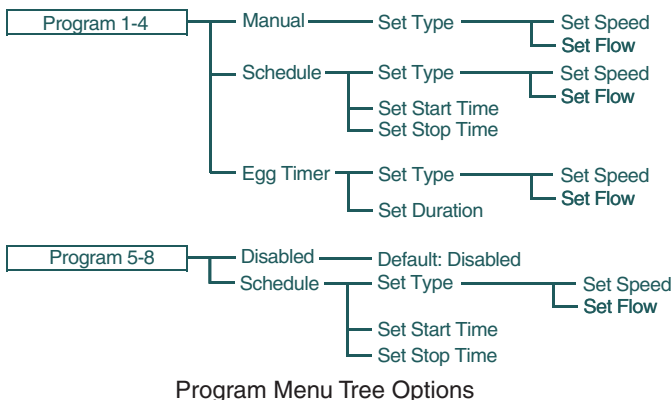PROGRAM 1-8 — **Pump Menu: Programs 1-8**

Pump Operating Modes

This pump can be programmed in three different modes:

Programs 1-4 can be programmed in all three modes. Programs 5-8 can only be programmed in Schedule mode since there are no buttons on the control panel for Programs 5-8. The default setting for Programs 5-8 is "Disabled".

Program 1-4 — Manual — Set Type — Set Speed / Set Flow

Schedule — Set Type — Set Speed / Set Flow

Set Start Time
Set Stop Time

Egg Timer — Set Type — Set Speed / Set Flow

Set Duration

Program 5-8 — Disabled — Default: Disabled

Schedule — Set Type — Set Speed / Set Flow

Set Start Time
Set Stop Time

Program Menu Tree Options

Manual

Assigns a speed or flow to one of the four Program buttons on the control panel. This mode can only be used for programs 1-4. Programs 1 and 2 are Manual by default.

To operate in Manual mode, press one of the four program buttons and then press the **Start/Stop** button. The pump will run the assigned speed or flow assigned to that program button.

Egg Timer

Programs 1-4 can be programmed to run at a certain speed or flow and for a duration of time once a program button is pressed.

Programs 3 and 4 are Egg Timers by default. If you desire a different method of operation, programs 3 and 4 can be changed to Manual mode in the control menu.

To operate in Egg Timer mode, press a program button and then press **Start/Stop**. The pump will run that setting for the set amount of time and then turn off.
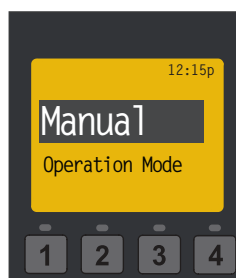
Schedule

Programs 1-8 start and stop at a specific time during a 24 hour period. Speeds or flows programmed in Schedule mode will override any manually selected speed or flow once the next Schedule command commences.

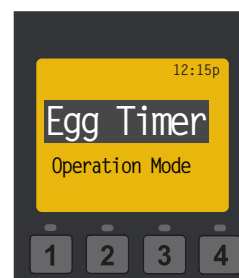## Set Programs in Manual Mode (Programs 1-4 Only)

1. Press **Menu**.

2. Use **Up** or **Down** arrows to scroll to "Program 1-8", then press **Select**.

3. Use **Up** or **Down** arrows to find the program (1-4) you wish to edit, then press **Select**.

4. "Operation Mode" will display. Press **Select** and use the **Up** or **Down** arrow to scroll to "Manual". Press **Save**.

5. Use the **Up** or **Down** arrow to scroll to "Set Type". Press **Select** and use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.

6. Use the **Up** or **Down** arrow to scroll to "Set Speed/ Flow". Press **Select** and use the **Up** or **Down** arrow to adjust the speed or flow settings.

7. Press **Save** to save the new speed or flow setting.

Set Programs in Egg-Timer Mode (Programs 1-4 Only)

1. Press **Menu**.

2. Use **Up** or **Down** arrows to scroll to "Program 1-8", then press **Select**.

3. Use **Up** or **Down** arrows to find the program (1-4) you wish to edit, then press **Select**.

4. "Operation Mode" will display. Press **Select** and use the **Up** or **Down** arrow to scroll to "Egg Timer". Press **Save**.

5. Use the **Up** or **Down** arrow to scroll to "Set Type". Press **Select** and use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.

6. Use the **Up** or **Down** arrow to scroll to "Set Speed/ Flow". Press **Select** and use the **Up** or **Down** arrow to adjust the speed or flow settings. Press **Save**.

7. Now press the **Down** arrow ("Egg Timer Duration" will display) and press **Select** to change. Use the **Up** or **Down** arrows to adjust the time.

8. Press **Save** to save the new time setting.

| Manual Mode Menu Screen | Egg Timer Menu Screen |

Set Programs 1-8 in Schedule Mode

In Schedule mode, Programs 1-8 can be programmed to run a certain speed or flow at a certain time of day. To run a scheduled speed or flow, press **Start/Stop**. The screen will display "Running Schedules" when it is ready to run a scheduled speed/flow. If **Start/Stop** is pressed while a scheduled speed/flow is running, the pump will stop running the scheduled speed/flow. The pump will not continue to run the scheduled speed/flow until the **Start/Stop** button is pressed again.

1. Press **Menu**.

2. Use **Up** or **Down** arrows to scroll to "Program 1-8", then press **Select**.

3. Use **Up** or **Down** arrows and press **Select** for the speed you wish to set and schedule.

4. "Operation Mode" will display. Press **Select** and use the **Up** or **Down** arrow to scroll to "Schedule". Press **Save**.

5. Use the **Up** or **Down** arrow to scroll to "Set Type". Press **Select** and use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.

6. Use the **Up** or **Down** arrow to scroll to "Set Speed/Flow". Press **Select** and use the **Up** or **Down** arrow to adjust the speed or flow settings.

7. Press **Save** to save the new speed or flow setting.

8. Press the **Down** arrow again, "Start Time" will display. Press **Select** - the cursor will highlight the minute column.

9. Use the **Up** or **Down** arrow to change the time and the **Left** or **Right** arrow to move cursor from minutes to hours.

10. Press **Save** to save the new start time setting.

11. Press **Down** arrow - "Stop Time" will display. Press **Select**. Repeat Steps 8-9 to set stop time.

12. Press **Save** to save the new stop time setting.

13. Press **Start/Stop**.

The IntelliFloXF® VSF Variable Speed and Flow Pump will prime and begin to run the programmed schedule at the specified start time.

When running in Schedule or Egg Timer mode, the countdown time (T 00:01) showing the hours and minutes remaining is displayed.

Programming Schedule for Constant Run

Two programs cannot be programmed with the same start and stop times. To run a program without stopping, set the Start time one minute after the stop time.

Example: A single program will run non-stop if programmed with a Start Time of 8:00 AM and a Stop time of 7:59 AM.


Note: The pump will not run the scheduled speeds or flows until the **Start/Stop** button is pressed (LED on) to place the pump in Schedule mode.

Scheduled Program Priority

When operating the pump in Schedule mode it is important to keep each program within its own individual run time. If program run times overlap the pump will prioritize programs as explained below:

Schedule priorities are in descending order as follows: Highest Flow » Lowest Flow » Highest Speed » Lowest Speed

- When two speed *OR* two flow program schedules overlap, the pump will run the higher RPM Speed or GPM Flow regardless of program in use.

- When both a speed *AND* flow program schedule overlap the pump will run the flow program first.

- A manual or egg timer command takes precedent over a running schedule. The manual or egg timer command will operate until completed, unless the next schedule program takes place or another command is given.

```
┌─────────────────┐
│      MENU       │
└────────┬────────┘
         │
┌────────┴────────┐
│   EXT CONTROL   │──┐
└─────────────────┘
```
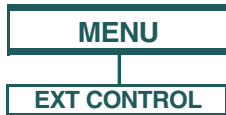
Pump Menu: External Control

External Control

This function is for programming speeds or flows that will run when the IntelliComm® Communication Center sends it a command. For example, Terminal 3 and 4 in the IntelliComm system will correspond to External Control Program #1. (5 and 6 to Ext Ctrl #2).

The Stop Delay feature allows the user to program the pump to run a Program after the External Control has been deactivated. This feature can be used to provide a cooling down period for the pump after a trigger signal from an installed heater has been deactivated. Each individual Program can have a Stop Delay of 1 to 10 minutes programmed.

Use the External Control feature to program the IntelliComm system power center.

External Control can also be used for disabling the pump by choosing "Pump Off" when selecting an operation mode. If this program is triggered via external control the pump will stop running for as long as the program is active. This feature could be useful for demand response systems using an IntelliComm to communicate with the pump.

To access the External Control menu:

1. Check that the green power LED is on.

2. Press the **Menu** button.

3. Use **Up** or **Down** arrow to scroll to "Ext. Ctrl.". Press **Select**.

4. "Program 1" will display. Press **Select** to enter the Program 1 menu.

5. "Operation Mode" will display. Press **Select** and use the **Up** or **Down** arrows to choose between "Enabled" or "Pump Off". Press **Save**.

    Note: The program you are attempting to edit must be enabled in order to proceed further into the menu.

6. Use the **Up** or **Down** arrow to scroll to "Set Type". Press **Select.**

7. Use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.

8. Use the **Up** or **Down** arrow to scroll to "Set Speed/Flow". Press **Select** and use the **Up** or **Down** arrow to adjust the speed or flow settings. Press **Save**.

9. If you do not wish to program a Stop Delay, continue to step 11. If you do wish to program a Stop delay press **Up** or **Down** arrow to scroll to "Stop Delay". Press **Select**.

10. Use the **Up** or **Down** arrows to change the Stop Delay setting. Stop Delay can be set from 0 minutes (disabled) to 10 minutes.

11. Press **Save** to save the settings.

12. Press **Back** to return to set Program 2.

13. Use **Up** or **Down** arrow to scroll to "Program 2".

14. Repeat Steps 4 through 11 to set Program 2, 3, and 4.

```
┌─────────────┐
│    MENU     │
└─────────────┘
┌─────────────┐
│  FEATURES   │─── Pump Menu: Features
└─────────────┘
```

Time Out

The Time Out feature keeps the IntelliFloXF® VSF Variable Speed and Flow Pump *from running it's programmed speeds or flows for a set duration adjustable in the menu.* The Time Out feature is displayed in hours and minutes (Hrs:Mins).

Once Time Out is finished, the pump will return to its previous mode of operation, the Start/Stop LED will be lit and ready to turn on at the next scheduled run time.

To access the Time Out menu:

1. Check that the green power LED is on.
2. Press **Menu**.
3. Use **Up** or **Down** arrows to scroll to "Features", then press **Select**.
4. Press **Select** to choose "Timeout".
5. "Timeout Duration" will display. Press **Select** to highlight the minutes column.
6. Press the **Left** arrow to move cursor to the hours column. Time out can be set from 1 minute to 10 hours.
7. Press **Save** to save the setting.

   Note: To cancel any changes, press **Back** to exit without saving.
8. Press **Back** to exit the menu.

Quick Clean

This feature can be used to increase the pump speed or flow for the purposes of vacuuming, cleaning, adding chemicals, after a storm for extra skimming capability.

Press the **Quick Clean** button (LED on) and then **Start/Stop** to start. When the Quick Clean cycle is over, the pump will resume regular schedules and return to "Schedule" mode.

To access the Quick Clean menu:

1. Check that the green power LED is on and the pump is stopped.
2. Press **Menu**.
3. Use **Up** or **Down** arrows to scroll to "Features", then press **Select**.
4. Press the **Down** arrow and press **Select** for "Quick Clean".
5. Press **Select** to choose "Set Type". Use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.
6. Use the **Up** or **Down** arrow to scroll to "Set Speed/Flow". Press **Select** and use the **Up** or **Down** arrow to adjust the speed or flow settings. Press **Save**.

7. Press **Save** to save the speed or flow setting.
8. Press the **Down** arrow and press **Select** for "Time Duration".
9. The cursor will highlight the minutes column. Use **Up** or **Down** arrows to change the time from 1 minute to 10 hours.
10. Press **Save** to save the time.
11. Press **Back** to exit the menu.

```
┌─────────────┐
│    MENU     │
└─────────────┘
┌─────────────┐
│   PRIMING   │─── Pump Menu: Priming
└─────────────┘
```
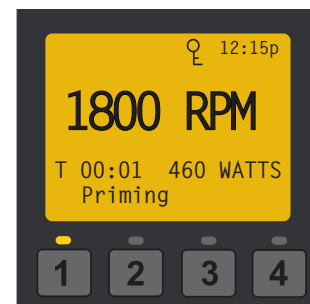
The default setting for Priming is ENABLED. This setting allows the pump to automatically detect if it is primed for startup.

The priming feature increases the pump speed to 1800 RPM and pauses for three (3) seconds. If there is sufficient water flow in the pump basket, the pump will go out of priming mode and run its commanded speed.

If the water flow is not sufficient, the pump speed will increase to the "Priming Speed" setting and remain for the priming delay time (default 20 seconds). If there is sufficient water flow in the pump basket at this time, it will exit priming mode and transition to the commanded speed.

If there is still insufficient flow in the pump basket, as determined by the Priming Range setting, the pump will try to prime at the "Priming Speed" for the amount of time set in the "Maximum Priming Time" menu. Once the pump achieves prime, it will resume normal operation after the preset priming delay.

> **Note:** It is possible to set **"**Maximum Speed" too low for the pump to properly prime. Maximum Speed will limit Priming Speed, except in one case. If the Maximum Speed is set below the lowest available Priming Speed (2400 RPM) then the pump will exceed the Maximum Speed while the priming feature is running. This prevents the pump from having trouble priming if the Maximum Speed is set this low. If this is a problem, priming can be disabled in the Priming Menu.

Display during priming

MENU

PRIMING
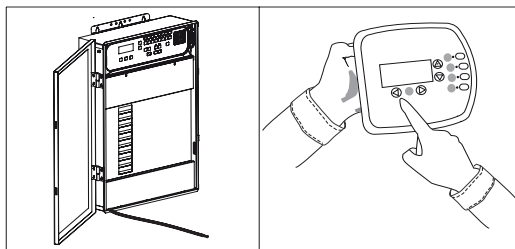— **Pump Menu: Priming**

Priming Features

Disabled/Enabled
Default: ENABLED
Allows IntelliFloXF® VSF Variable Speed and Flow Pump to automatically detect if pump if is primed for startup. The pump will speed up to 1800 RPM and pause for three (3) seconds - if there is enough water in the basket, the pump will go out of priming mode and run the commanded speed.

Priming Speed
Default: 3450 RPM
The priming speed can be set between 2400 RPM and 3450 RPM. If the pump is on an equipment pad that is close to the water level, it will not need to run at 3450 RPM to successfully prime. The setting can be lowered to prevent running at a higher speed than necessary.

Day to day factors (i.e. local ambient pressure, water/air temperatures, amount of water retained from last system run) can effect priming performance. Because of the frequently changing nature of these factors the priming speed should be set high enough to accommodate environmental and mechanical changes to ensure that the pump can successfully prime. Finding the most effective and efficient speed for your specific needs may take careful testing and evaluation of priming performance.

Max Priming Duration
Default: 11 minutes
The maximum priming time can be set from 1 - 30 minutes. This setting is the amount of time the pump will try to prime before it gives a priming error. If this occurs, fill the pump basket with water and restart the pump.

Priming Range
Default: 5
Priming range can be set from 1-10. The smaller the range, the more water the pump has to be moving to detect that it is primed. At larger ranges, the pump will detect that it is fully primed while moving less water. If the range is set too high, then the pump may exit Priming mode before it has fully primed. The range will automatically adjust with the priming set speed because the flow rates of the pump will be lower at lower speeds.

Priming Delay
Default: 20 seconds
Priming delay can be set from 1 second to 10 minutes.

When a pump ramps to full priming speed in an attempt to establish a prime, priming delay allows the pump to operate at that speed for an additional set period of time prior to continuing on to the requested or scheduled program.

Loss of Prime
Default: Enabled
This feature allows the pump to recognize unanticipated low-flow or no-flow situations while running a program.

For example, the pump will pause for one (1) minute after detecting that it has lost its prime unexpectedly. After this pause the pump will attempt to prime, and if prime is successful it will continue programmed operation. If priming is not successful the pump will continue attempting to prime, per normal priming operation, until a prime is achieved or priming error occurs and is displayed.
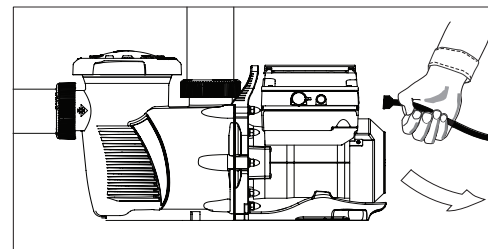
```
┌─────────────────┐
│      MENU       │
└────────┬────────┘
         │
┌─────────────────┐
│    PRIMING      │──── **Pump Menu: Priming**
└─────────────────┘
```

Setting Priming Features

1. Press **Menu**.

2. Use **Down** arrow to scroll to "Priming" and press **Select.**

3. The factory default is set to priming "Enabled". To disable, scroll to "Disabled" and press **Select**.

   Note: All priming features are only accessible if priming is "Enabled".

4. Press **Save** if you have changed the setting - this will save the selection.

5. Press the **Down** arrow to scroll to "Set Speed". Press **Select** to edit.

6. Use the **Up** or **Down** arrows to change the speed settings. Press **Save**.

7. Press the **Down** to scroll to "Max Priming Duration". Press **Select** to edit.

8. Use the **Up** or **Down** arrows to change the time from 1 minute to 30 minutes. Press **Save**.

9. Press the **Down** arrow to scroll to "Priming Range". Press **Select** to edit.

10. Use the **Up** or **Down** arrows to change from 1 to 10. Increasing the number allows the drive to detect prime with less water flow.

11. Press **Save**.

12. Press the **Down** arrow to scroll to "Priming Delay". Press **Select** to edit.

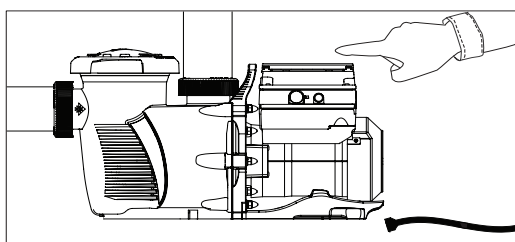13. Use the **Up** or **Down** arrows to change from 1 second to 10 minutes. Press **Save**.

⚠ **CAUTION**	Increasing the time causes the pump to stay in the priming mode longer.

14. Press the **Down** arrow to scroll to "Loss of Prime".

15. The factory default is "Enabled". To disable, press **Select** to edit and use the **Down** arrow to scroll to "Disabled". Press **Save**.

16. Press **Back** to exit the priming menu.

Disabling Priming with an Automation System

When the IntelliFloXF® VSF Variable Speed and Flow Pump is connected to an automation control system, (IntelliTouch®, EasyTouch® or SunTouch® Control Systems), *the priming feature on the pump cannot be disabled by the external automation control system only. It must also be disabled on the pump itself.*

If priming is enabled on start up, the pump responds to its internal settings *before* responding to commands from an automation control system.

If the pump is connected to an automation control system and priming is not desired, *disable the priming feature on both the pump and the automation control system.*

To disable priming with an automation system:

1. Disable the priming feature on the automation control system at the load center or using an IntelliTouch or EasyTouch system remote. (Refer to the automation control system user's guide for additional information).

2. Temporarily disconnect the RS-485 communication cable.

3. Open the lid to the control panel to disable priming on the pump. Press **Menu**, use the **Arrow** buttons to scroll and select "Priming", then select "Disabled" (the factory default is set to "Enabled"). Press **Back** to exit the menu.

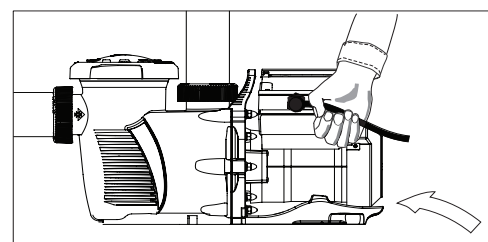4. Once priming is disabled, reinstall the RS-485 communication cable.

1. Disable priming on automation control system.

2. Disconnect the RS-485 communication cable.

3. Disable priming on pump.

4. Reinstall the RS-485 communication cable.

MENU

THERMAL MODE ── **Pump Menu: Thermal Mode**

The sensor for Thermal Mode is in the drive, on top of the motor. This feature allows you to set a speed (450-3450 RPM) or flow (20-140 GPM) that runs when the IntelliFloXF® VSF Variable Speed and Flow Pump goes into Thermal Mode. The temperature level that you wish Thermal Mode to start can also be set.

IMPORTANT NOTE: This feature is for protection of the pump. Do not depend on the Thermal Mode feature for freeze protection of the pool. Certain situations could cause the pump to sense a different temperature than actual air temperature.

Your automation systems air temperature sensor should be used to sense actual temperature. For example, if the pump is located indoors, the temperature of the room does not indicate the outdoor temperature. The pump does not sense the water temperature.

To access the Thermal Mode menu:

1. Check that the green power LED is on.

2. Press **Menu**.

3. Use the **Down** arrow to scroll to "Thermal Mode" and press **Select**.

4. The factory default for Thermal Mode is "Enabled". To disable Thermal Mode, press **Select** to highlight "Enabled".

5. Press the **Up** arrow - "Disabled" is displayed.

6. Press **Save** to save.

To Set Thermal Mode Speed/Flow and Pump Temperature:

Note: Thermal Mode features are only accessible if Thermal Mode is "Enabled".

1. Use the **Up** or **Down** arrows to scroll to "Set Type". Press **Select.**

2. Use the **Up** or **Down** arrow to choose between "Speed" or "Flow". Press **Save**.

3. Use the **Up** or **Down** arrow to scroll to "Set Speed/Flow". Press **Select.**

4. Use the **Up** or **Down** arrow to adjust the speed or flow settings. Press **Save**.

5. Press the **Down** arrow. "Temperature" will display. (This value will determine at what temperature the pump will activate Thermal Mode, default is 40° F/4.4° C).

6. Press **Select** to edit. Use the **Up** or **Down** arrow to adjust the settings.

7. Press **Save** to save the temperature setting.

   Note: To cancel any changes, press **Back** to exit without saving.

8. Press **Back** to exit.
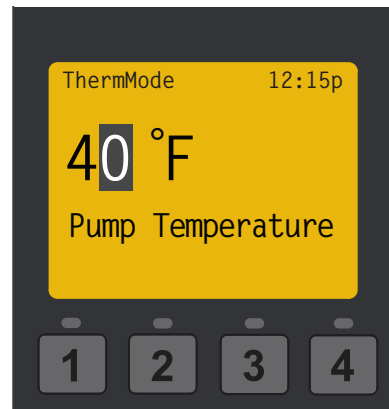
Setting the Thermal Mode Pump Temperature

Setting the Thermal Mode Pump Speed
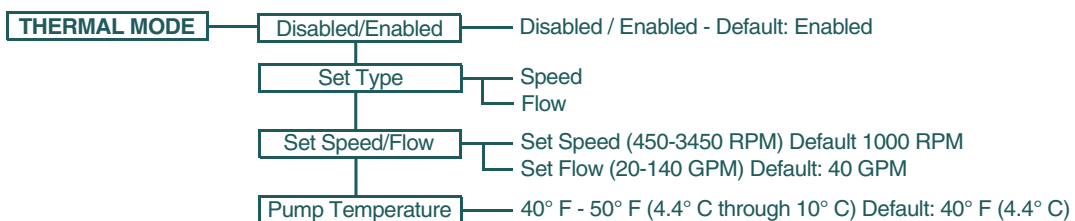
Thermal Mode Menu Options

> ⚠️ **WARNING** **DO NOT** open the strainer pot if IntelliFloXF® VSF Variable Speed and Flow 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, be sure the suction and discharge valves are open and strainer pot temperature is cool to touch, then open with extreme caution.

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

Pump Strainer Basket

The strainer basket (or 'strainer pot'), is located in front of the pump housing. The strainer basket must be kept clean and free of debris. Inspect basket through the lid on the top of the housing. Be sure to visually inspect the strainer basket at least once a week. Dirty strainer baskets reduce filter and heater efficiency and put abnormal stress on the pump motor.

Cleaning the Pump Strainer Basket

1. Press **Start/Stop** button on the pump and turn off the pump at the circuit breaker. Disconnect communication cable from pump.
2. Relieve pressure in the system.
3. Turn the lid/locking ring counter-clockwise and remove from the pump.
4. Remove debris and rinse out the basket. Replace the basket if it is cracked.
5. Put the basket back into the housing. Be sure to align the rib on the basket with the notch in the volute.
6. Fill the pump pot and volute up to the inlet port with water.
7. Clean the lid/locking ring, O-ring, and sealing surface of the pump pot.

    Note: It is important to keep the lid O-ring clean and well lubricated.

8. Reinstall the lid by placing the lid/locking ring on the pot. Be sure the lid O-ring is properly placed.

    Seat the lid/locking ring on the pump then turn clockwise until the locking ring handles are perpendicular to the inlet.

    Note: Ensure that the side of the lid/locking ring marked "Front" is positioned at the front of the pump.

9. Turn the power "ON" at the circuit breaker. Reconnect communication cable from pump.
10. Open the manual air relief valve on the top of the filter. Stand clear of the filter.
11. Wait until all pressure is relieved. Start the pump.
12. Bleed air from the filter until a steady stream of water comes out of the filter air relief valve. Close the manual air relief valve.

> ⚠️ **WARNING** **THIS SYSTEM OPERATES UNDER HIGH PRESSURE**. When any part of the circulating system (e.g., Lock Ring, Pump, Filter, Valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the lid to separate which can result in serious injury, death, or property damage.
> To avoid this potential hazard, follow above instructions.

Winterizing

To protect the pump electronics from freeze damage, the pump will switch on to generate internal heat as the temperature drops below freezing if Thermal Mode is enabled. *The Thermal Mode feature on the pump is not intended to protect the system plumbing from freezing.*

- In mild climate areas, when temporary freezing conditions may occur, run your filtering equipment all night to prevent freezing.
- You are responsible for determining when freezing conditions may occur. If freezing conditions are expected, take the following steps to reduce the risk of freeze damage. *Freeze damage is not covered under warranty.*

To prevent freeze damage, follow the procedures below:

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

> **Note:** The motor may be covered during a storm, winter storage, etc., but never when operating or expecting operation. Never wrap motor with plastic or other air tight materials during winter storage.

Strainer Pot Assembly
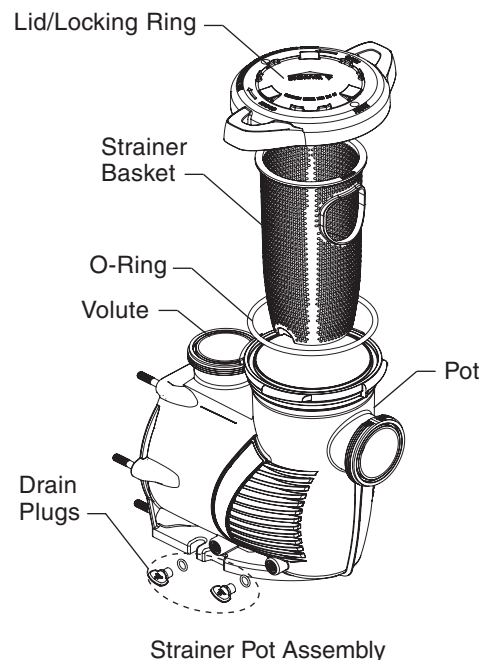
SERVICING

> ⚠️**WARNING** Always disconnect power to the IntelliFloXF® VSF Variable Speed and Flow Pump at the circuit breaker and disconnect the communication cable before servicing the pump. Failure to do so could result in death or serious injury to service people, users or others due to electric shock. Read all servicing instructions before working on the pump.

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

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

Motor and Drive 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.
4. Provide a minimum clearance of 3-inches behind the motor fan for proper circulation.

Protect against dirt

1. Protect from any foreign matter.
2. Do not store (or spill) chemicals on or near the motor.
3. Avoid sweeping or stirring up dust near the motor while it is operating.
4. If a motor has been damaged by dirt it may void the motor warranty.

Protect against moisture

1. Protect from continuous splashing or continuous sprayed water.
2. Protect from extreme weather such as flooding.
3. If motor internals have become wet - let it dry before operating. Do not allow the pump to operate if it has been flooded.
4. If a motor has been damaged by water it may void the motor warranty.
5. Be sure to close the keypad cover after every use.

Shaft Seal Replacement

The Shaft Seal consists primarily of two parts, a rotating ceramic seal housed in the impeller and a stationary spring seal in the sealplate. The pump requires little or no service other than reasonable care, however, a shaft seal may occasionally become damaged and must be replaced.

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

Pump Disassembly

Tools required:
- 1/4 inch Hex Allen wrench
- Flat blade and No. 2 Phillips head screwdrivers
- 9/16 inch wrench
- 3/4 inch socket wrench
- 9/64 inch Hex key wrench
- Torque Wrench

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

1. Turn off the pump circuit breaker at the main panel.
2. Disconnect the RS-485 communication cable from the pump (if connected to pump).
3. Drain the pump by removing the drain plugs. No tools are required.
4. Remove the four (4) Phillips head screws from the outer corners of the keypad.
5. Disconnect the keypad from the drive and set it to the side in a safe place.
6. Remove the three (3) Phillips head screws, located inside the drive, that anchor the drive to the motor.
7. Remove the drive by lifting upwards to separate it from the motor.
8. Use the 9/16-inch wrench to remove the six (6) nuts that hold the housing (strainer pot/volute) to the rear subassembly.
9. Gently pull the two pump halves apart, removing the rear subassembly.
10. Remove the three (3) hex head screws holding the diffuser in position with a 9/64 inch hex key wrench.
11. Hold the impeller securely in place by hand. Remove the impeller lock screw located at the center of the impeller. The screw is a left-handed thread and loosens in a clockwise direction. A deep well 3/4 inch socket and ratchet will fit the impeller screw. Remove the impeller screw o-ring. Inspect the o-ring for damage, cracks etc. Replace if damaged.

> ⚠️**CAUTION** The pump impeller may have sharp edges that could potentially cut or scratch the user's hands. Pentair recommends that safety gloves be worn when holding the impeller during disassembly and reassembly.

12. Use a 1/4-inch Allen wrench to hold the motor shaft. The motor shaft has a hex-shaped socket on the end which is accessible through the center of the fan cover.
13. To unscrew the impeller from the shaft, twist the impeller counterclockwise.
14. Remove the four (4) nuts from the seal plate to the motor, using a 9/16-inch wrench.
15. Place the seal plate face down on a flat surface and tap out the ceramic seal.
16. Clean the seal plate, seal housing, and the motor shaft.

- Pump illustrated parts view on the next page -

Pump Reassembly

1. When installing the replacement shaft seal, use silicone sealant on the metal portion before pressing into the seal plate as shown. **Note:** Use extreme care when applying sealant. Be sure no sealant contacts the seal plate surface or the ceramic seal. Allow sealant to cure overnight before reassembling.

2. Before installing the rotating portion of the seal into the impeller, be sure the impeller is clean. Use a light density soap and water to lubricate the inside of the seal. Press the ceramic seal into the impeller with your thumbs and wipe off the ceramic and carbon faces with a clean cloth.

3. Remount the seal plate to the motor using the four (4) lock washers and four (4) nuts.

4. Hand tighten impeller onto the motor shaft.

5. Screw in the impeller lock screw (counterclockwise to tighten).

6. Remount the diffuser onto the seal plate. Be sure the plastic pins and holding screw inserts are aligned (see "TOP" indicator).

   Note: Ensure that the seal plate o-ring is clean and free of debris.

7. Grease the diffuser o-ring and seal plate gasket prior to reassembly.

8. Assemble the motor subassembly to the housing. Do not tighten the nuts and washers until all four (4) motor bolts are in place. Using a torque wrench, install and tighten the four nuts to a torque value of 100 in-lbs (maximum). Do not overtighten the nuts.

   Note: Ensure that the seal plate gasket is properly seated inside of the pump assembly. The seal gasket can be pinched between the seal plate and the pump housing while tightening these six (6) nuts, preventing a proper seal and producing a slow leak when the pump is restarted.
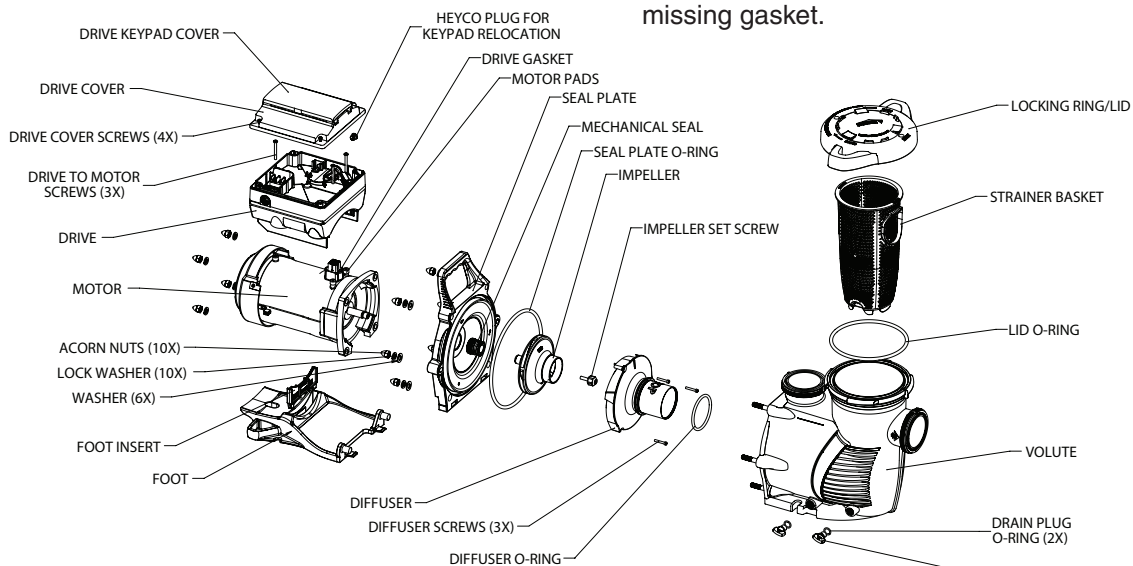
9. Reinstall the drive onto the top of the motor.

10. Fill the IntelliFloXF® VSF Variable Speed and Flow Pump with water.

10. Reinstall the pump lid/locking ring. See "Cleaning the Pump Strainer Basket" on page 21 for details

11. Reconnect the RS-485 communication cable to the pump.

12. Turn on the pump circuit breaker at the main panel.

13. Prime the pump; refer to "Priming the Pump" on page 5.

Drive Assembly Removal and Installation

⚠ WARNING To avoid dangerous or fatal electrical shock hazard, switch OFF power to motor before working on pump or motor.

⚠ CAUTION To avoid electrical hazard, do not remove the four tamper proof screws from the motor assembly.

To remove the drive and control panel from the motor assembly:

1. Be sure all electrical breakers and switches are turned off before removing the control panel.

2. Disconnect the RS-485 communication cable from the pump.

3. Remove the four (4) Phillips head screws from the outer corners of the keypad.

4. Unplug the keypad from the drive and set it to the side in a safe place.

5. Remove the three (3) Phillips head screws, located inside the drive, that anchor the drive to the motor.

6. Lift up the drive assembly and remove it from the motor adapter located on top of the motor assembly.

   Note: Be careful not to remove the gasket between the drive and motor, it is critical in keeping moisture out of the drive and motor. Replace the gasket if damaged. Do not reassemble with a damaged or missing gasket.

Pump Illustrated Parts View

Drive Assembly Removal and Installation, (continued)

⚠️ **CAUTION** Before installing this product, read and follow all warning notices and instructions on page ii - iii.

To install the drive assembly onto the motor assembly:

1. Be sure all electrical breakers and switches are turned off before installing the drive.

2. Be sure that the gasket between the drive and motor is in place. It is critical in keeping moisture out of the drive and motor. Replace the gasket if damaged. Do not reassemble with a damaged or missing gasket.

3. Verify that the three (3) orange motor post caps are in position before placing the drive on the motor assembly.

4. Align the drive assembly with the motor adapter and seat the drive on the motor assembly.

5. Secure and tighten the drive assembly with the three (3) Phillips head screws.

6. Plug the keypad back into the drive.

7. Place the keypad in the desired orientation on the drive and reattach the four (4) screws in the corners of the drive.

   Note: Ensure that the keypad cable is not being pinched between the drive and keypad.

Keypad Assembly

Keypad Screws (4x)

#10-24 X 2" Phillips Head Screws, Drive to Motor (3x)

Drive to Motor Gasket

Motor Post Caps (3x)

Drive Connector
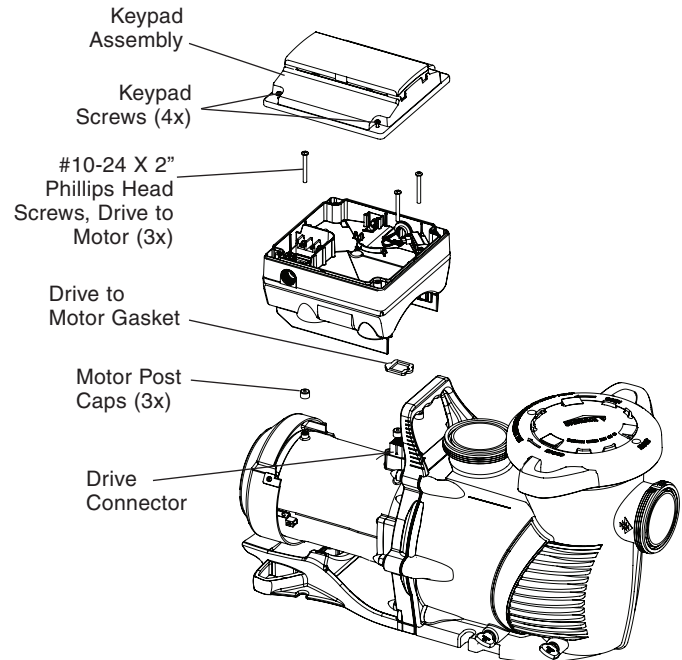
Drive Assembly and Removal

⚠️ **WARNING** **FIRE and BURN HAZARD** - The pump motor may run at a high temperatures. To reduce the risk of fire, do not allow leaves, debris, or foreign matter to collect around the pump motor. To avoid burns when handling the motor, shut off the motor and allow it to cool for 20 minutes before servicing. The pump provides an automatic internal cutoff switch to protect the motor from heat damage during operation.

TROUBLESHOOTING

> ⚠ **WARNING**   Always disconnect power to the IntelliFloXF VSF Variable Speed and Flow Pump at the circuit breaker and disconnect the communication cable before servicing the pump. Failure to do so could result in death or serious injury to serviceman, pool users or others due to electric shock. DO NOT attempt to adjust or service without consulting your dealer or a qualified pool technician. Read the entire Installation & User's Guide before attempting to use, service, or adjust the pool filtering system or heater.

Alerts and Warnings

The IntelliFloXF® VSF Variable Speed and Flow Pump displays all alarms and warnings on the control panel display. When an alarm or warning condition exists, the corresponding light will be lit on the display.

In the event of an alarm: The alarm light "⌂" will illuminate and all control panel buttons will be disabled until the alarm is cleared. Pressing the **Reset** button will clear the alarm once the fault condition has been resolved.

In the event of a warning: The warning light "❗" will illuminate, but the pump will continue to run. The speed, flow or pressure limit that is causing the warning must be adjusted in order to correct the warning.

Note: The pump will not start if the impeller is rotating.

Power Out/OFF
The incoming supply voltage is less than required. The drive faults to protect itself from over current. The drive contains capacitors that keep it powered up long enough to save the current run parameters. If power is restored during this process, approximately 20 seconds, the drive will not restart until completed.

Priming Failure
If the pump is not defined as primed within the "Max Priming Duration" it will stop and generate a "Priming Alarm" for 10 minutes, then attempt to prime again. The "Max Priming Duration" is set by the user on the priming menu as discussed on page 19. If the pump cannot prime within five attempts it will generate a permanent alarm that must be manually reset.

Overheat
If the drive temperature gets above 54.4° C (130° F) the pump will slowly reduce speed until the over temperature condition clears.

Thermal Mode
When active, the motor will run at the preset RPM until the drive internal temperature increases above the minimum. The pump's internal thermal protection is disabled when connected to an automation system. Thermal protection is provided by selecting YES at the ON WITH FREEZE portion of the circuit function menu in the IntelliTouch® Control System. To re-enable the internal thermal protection, the power to the drive must be cycled off then back on. **Important: See explanation of Thermal Mode on page 20.**

Over Current
Indicated that the drive is overloaded or the motor has an electrical problem. The drive will restart 20 seconds after the over current condition clears.

Over Voltage
Indicates excessive supply voltage or an external water source is causing the pump and motor to rotate thereby generating an excessive voltage on the drives internal DC buss. The drive will restart 20 seconds after the over voltage condition clears.

Internal Error
Indicates that the self-monitoring motor control software has encountered an error. Clear the alarm and restart the pump. If this alarm persists, contact Pentair Technical Service at 1-800-831-7133.

Speed Limit (Warning)
The pump has detected that it has met the maximum allowed speed set in the Min/Max menu. The pump will continue to run, but it will not achieve the desired speed.

Pressure Limit (Warning)
The pump has detected that it has met the maximum system pressure set in the Min/Max menu. The pump will continue to run, but it is not achieving the desired flow rate or speed because of the pressure limit. The feature is enabled by default while running a program at a constant flow rate, but must be enabled manually if the user wants the drive to monitor maximum pressure while running a constant speed program.

Flow Limit (Warning)
The pump has detected that it has met the maximum flow rate set in the Min/Max menu. The pump will continue to run, but it is not achieving the desired speed because it is running at the maximum flow rate. The Maximum Flow can be set in the Max/Min menu. This feature must be enabled in the Min/Max menu to be active while running a speed program.

Troubleshooting Chart

Problem	Possible Cause	Corrective Action
Pump failure. (For alert display messages, refer to Alerts and Warnings on page 25).	Pump will not prime - Air leak in suction. PRIME ERROR may be displayed.	Check suction piping and valve glands on any suction gate valves. Secure lid on pump strainer pot and be sure lid gasket is in place. Check water level to be sure skimmer is not drawing air.
	Pump will not prime - Not enough water.	Be sure the suction lines, pump, strainer, and pump volute are full of water.
	Pump does not come out of priming mode.	Adjust priming range to a higher setting (default setting is 5).
	Pump completes priming mode too early, and/or there is still a large amount of air in the housing	Adjust priming range to a lower setting (default setting is 5).
	Pump stainer basket is clogged.	Clean pump strainer pot.
	Pump strainer gasket is defective.	Replace gasket.
Reduced capacity and/ or head. (For alert display messages, refer to Alerts and Warnings on page 25).	Air pockets or leaks in suction line. PRIMING FAILURE may be displayed.	Check suction piping and valve glands on any suction gate valves.
	Clogged impeller. PRIMING FAILURE may be displayed.	Turn off electrical power to the pump. Remove the (6) bolts that holds the housing (strainer pot/volute) to seal plate. Slide the motor and seal plate away from the volute.
		Clean debris from impeller. If debris cannot be removed, complete the following steps: 1. Remove diffuser and o-ring. 2. Remove reverse-thread impeller screw and o-ring. 3. Remove, clean and reinstall impeller. 4. Reinstall reverse-thread impeller screw and o-ring.
		Reinstall diffuser, and o-ring.
		Reinstall motor and seal plate into volute.
		Reinstall seal plate nuts and volute and tighten securely.
	Pump strainer pot clogged. PRIMING FAILURE may be displayed.	Clean suction trap.
		Clean pump strainer pot.
Inadequate circulation. (For alert display messages, refer to Alerts and Warning on page 25).	Filter or pump basket dirty.	Check trap basket; if plugged, turn pump off and clean basket.
		Check and clean pool filter.
	Suction/discharge piping is too small.	Increase piping size.
	Speed is set too slow for proper filtration cycle.	Increase filtration run time.
Electrical problem. (For alert display messages, refer to Alerts and Warning on page 25).	Could appear as a "Low Voltage" alarm.	Check voltage at motor terminals and at panel while pump is running. If low, see wiring instructions or consult power company.
		Check for loose connections.
	Could appear as "Over Heat" alert.	Check line voltage; if less than 90% or more than 110% of rated voltage consult a licensed electrician.
		Increase ventilation.
		Reduce ambient temperature.
		Tighten any loose wiring connections.
		Motor runs too hot. Turn power to motor off. Check for proper voltage. Check for proper impeller or impeller rubbing.

Problem	Possible Cause	Corrective Action
Control panel LCD screen displays sporadically or flickers on/off.	Loose drive wiring connection.	Check the connection between the drive and keypad. See image on page 3. The drive wiring connection should be tight.
Mechanical troubles and noise.	The pump motor is running but with loud noise.	If suction and discharge piping are not adequately supported, pump assembly will be strained. Do not mount pump on a wooden platform! Securely mount on concrete platform for quietest performance.
	Foreign matter (gravel, metal, etc.) in pump impeller.	Disassemble pump, clean impeller, follow pump service instructions for reassembly.
	Cavitation.	Improve suction conditions.
		Increase pipe size.
		Decrease number of fittings.
		Increase discharge pressure.
	Speaking noise, especially evident at pump start-up or slow down.	Inspect motor slinger and motor shaft seal behind the slinger (NOT the pump's mechanical seal). Apply lubrication to the motor shaft rubber seals.
Pump does not respond to IntelliTouch, EasyTouch, SunTouch, IntelliComm system commands.	Improper automation setup.	1. Be sure that the communication cable is connected at both ends.
		2. Check that the pump local address matches with the address used in the IntelliTouch control system.
		3. Check that the pump has been assigned a circuit name on the IntelliTouch control system.
		4. Ensure that the pump display says "DISPLAY NOT ACTIVE".
	Communication network inoperative.	A defective device on the network can inhibit the proper operation of other network device. Devices should be disconnected sequentially until the network starts working.

REPLACEMENT PARTS
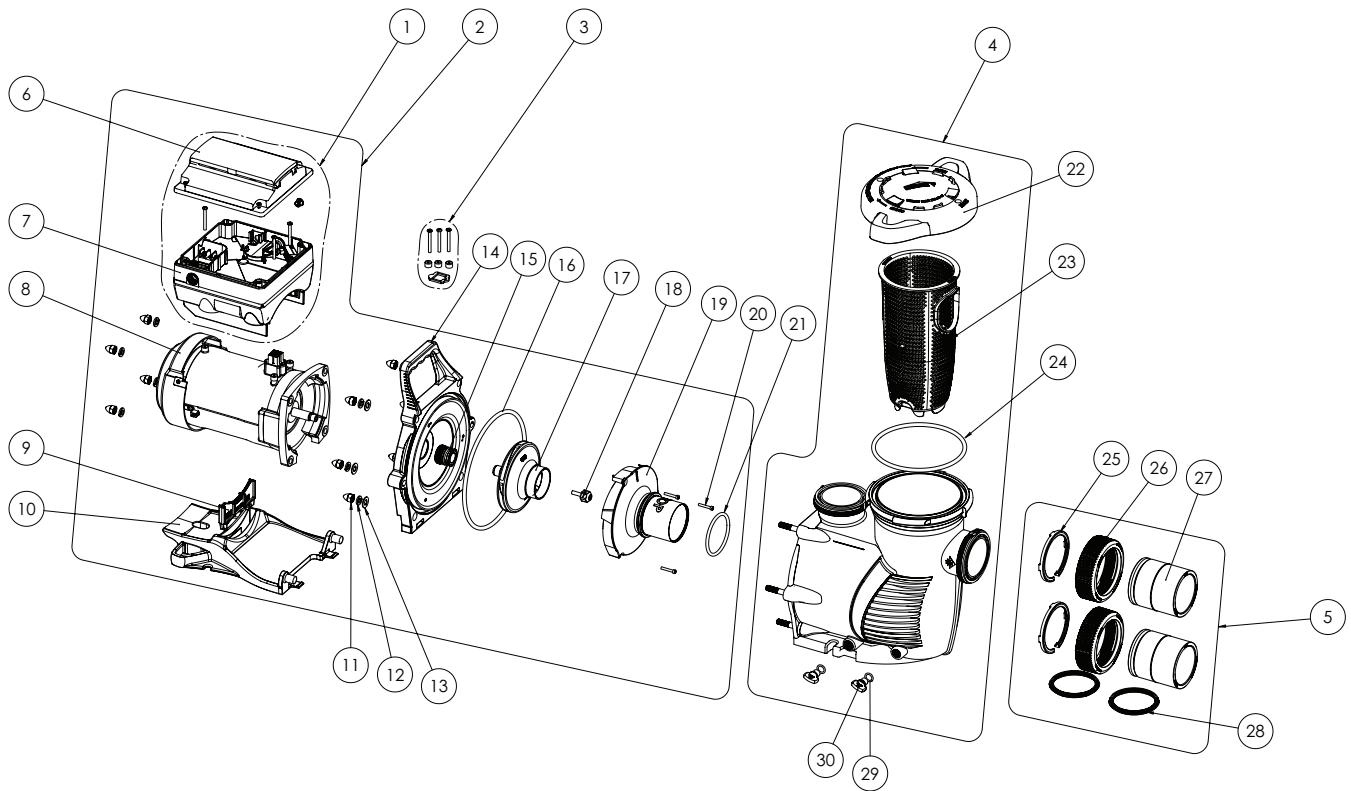
IntelliFloXF® (Almond) and IntelliProXF® (Black) VSF Variable Speed and Flow Pump Replacement Parts

Item No.	Description	IntelliFloXF Part #	IntelliProXF Part #
1	Drive Kit	357521Z	352032Z
2	Power End Kit	400655Z	401655Z
3	Drive Hardware Kit	355685	
4	Wet End Assembly	400000	401000
5	Union Kit w/o Tap	410020	
6	Keypad Assembly Kit	357527Z	358527Z
7	Drive	356896Z	356898Z
8	Motor	350305S	350306S
9	Motor Support Insert	070929	357160
10	Motor Base	400004Z	401004Z
11	Acorn Nut (Qty. 10)	071413	
12	Lock Washer (Qty. 10)	U43-12SS	
13	Flat Washer (Qty. 6)	072184	
14	Seal Plate	400002	401002
15	Mechanical Seal	17351-0101S	
16	Seal Plate O-Ring	351446	
17	Impeller	400015	
18	Impeller Set Screw	37337-6080	

Item No.	Description	IntelliFloXF Part #	IntelliProXF Part #
19	Diffuser	400010	
20	Diffuser Screws	353323	
21	Diffuser O-Ring	350336	
22	Lid/Locking Ring Assembly	400006	401006
23	Strainer Basket	400007Z	
24	Lid/Locking Ring O-Ring	35505-1440	
25	2.5" C-Clip Locking Ring (Qty. 2)	410001	
26	2.5" Union Nut (Qty. 2)	411000	
27	2.5" Union Adapter w/o Tap (Qty. 2)	410002	
28	2.5" Diamond Seal Kit (Qty. 2)	410016Z	
29	Drain Plug O-Ring (Qty. 2)	192115	
30	Drain Plug (Qty. 2)	071131	357161
-	Keypad Relocation Kit	356904Z	356905Z
-	Seal Plate Kit w/ Mechanical Seal	400031Z	400032Z
-	50 Ft. Communication Cable	350122	

(-) Not Shown

TECHNICAL DATA

Pump Dimensions

[298] 11.7

[358] 14.1

[633] 24.9

[288] 11.4

[232] 9.1

[328] 12.9

[258] -10.2-

[263] -10.4-

[166] 6.5

[168] 6.6

[276] 10.9
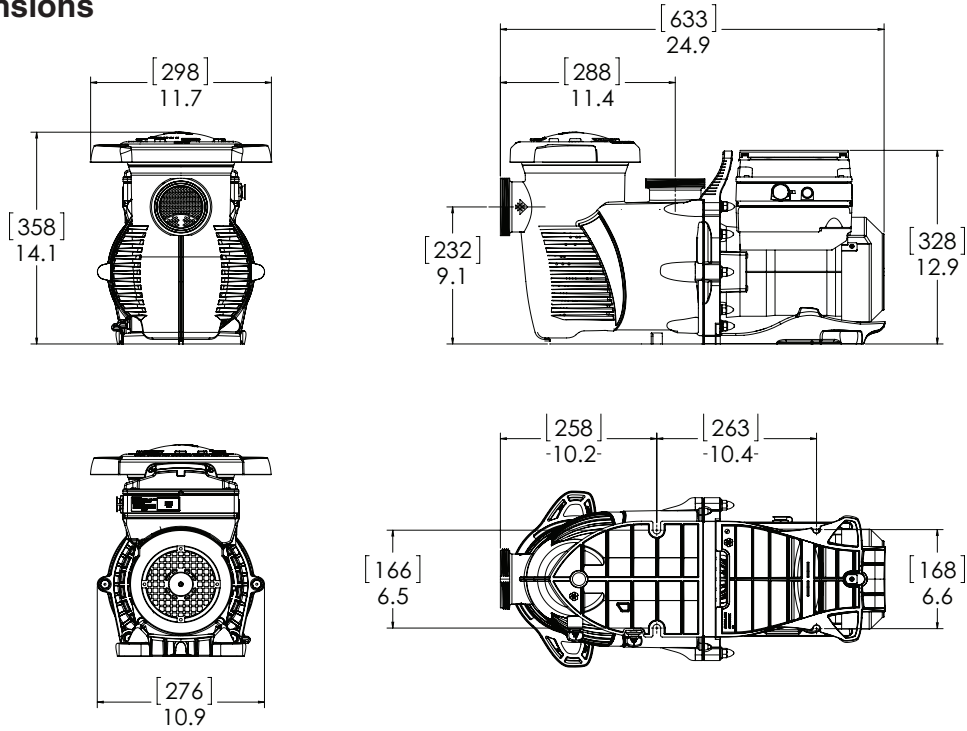
Pump Performance Curves

OPERATING RANGE FOR FLOW CONTROL

Total Dynamic Head in Ft of H2O

Max. Speed
@3450 rpm

Speed 3
@2350 rpm

Speed 2
@1500 rpm

Speed 1
@750 rpm

Speed 4
@3110 rpm

Volumetric Flow Rate in GPM

Operator Control Panel: Pump Menu Quick Reference Guide

MENU Press MENU button to access menus

SETTINGS
(pages 10-13)

Date and Time
- Date
  - Months (1-12)
  - Days (1-31)
  - Years (2010-2100 Plus)
- Time
  - Hours (24hr Mode: 0-23) (12hr Mode: 1-12 AM & PM)
  - Minutes (0-60)
- Hour Format
  - AM/PM - Default: AM/PM
  - 24 Hour

Min/Max
- Set Min Speed (450-1700 RPM) - Default: 450 RPM
- Set Max Speed (1900-3450 RPM) - Default: 3450 RPM
- Set Min Flow (20-70 GPM) - Default: 20 GPM
- Set Max Flow (80-140 GPM) - Default: 140 GPM
- Flow Limit Speed (Disabled / Enabled) - Default: Disabled
- Max Pressure (1-50 PSI) - Default: 30 PSI
- Pressure Limit Speed (Disabled / Enabled) - Default: Disabled

Device
- Pump Address (1-16) - Default: 1
- Contrast Level (1-5) - Default: 3
- Language
  - English - Default: English
  - Português
  - Deutsch
  - Italiano
  - Nederlands
  - Español
  - Français
- Temperature Unit
  - Fahrenheit - Default: F°
  - Celsius C°
- Flow Unit
  - GPM - Default: GPM
  - LPM
- Pressure Unit
  - PSI - Default: PSI
  - BAR
- Password
  - Disabled - Default: Disabled
  - Enabled
    - Password Timeout (1 min. to 6 hrs.) - Default: 1 hour
    - Set Password (0000 - 9999) - Default: 1234
- Ramping
  - Ramp Up
    - Fast - Default: Fast
    - Medium
    - Slow
  - Ramp Down
    - Fast - Default: Fast
    - Medium
    - Slow
- Firmware Version

Alarm Log (1-10)

PROGRAM 1-8
(pages 14-15)

Program 1-4
- Manual
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM) - Default Program 1-2: Manual
- Schedule
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM)
  - Start Time
  - Stop Time
- Egg Timer
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM) - Default Program 3-4: Egg Timer
  - Duration

Program 5-8
- Disabled
  - Default: Disabled
- Schedule
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM)
  - Start Time
  - Stop Time

MENU TREE
CONTINUES TO
NEXT PAGE

Operator Control Panel: Pump Menu Quick Reference Guide (cont.)

EXT CONTROL
(page 16)

- Program 1
  - Enabled - Default
    - Type (Speed / Flow) Default: Speed
    - Set Speed or Flow - Default: 750 RPM
    - Stop Delay (0 min. to 10 min.) Default: 0 Minutes
  - Pump Off
- Program 2
  - Enabled - Default
    - Type (Speed / Flow) Default: Speed
    - Set Speed or Flow - Default: 1500 RPM
    - Stop Delay (0 min. to 10 min.) Default: 0 Minutes
  - Pump Off
- Program 3
  - Enabled - Default
    - Type (Speed / Flow) Default: Speed
    - Set Speed or Flow - Default: 2350 RPM
    - Stop Delay (0 min. to 10 min.) Default: 0 Minutes
  - Pump Off
- Program 4
  - Enabled - Default
    - Type (Speed / Flow) Default: Speed
    - Set Speed or Flow - Default: 3110 RPM
    - Stop Delay (0 min. to 10 min.) Default: 0 Minutes
  - Pump Off

FEATURES
(page 17)

- Time Out
  - Time Out Duration (1 min. to 10 hrs.) Default: 3 hours
- Quick Clean
  - Type (Speed / Flow)
  - Set Speed or Flow (450-3450 RPM or 20-140 GPM)
  - Quick Clean Duration (1 min. to 10 hrs.) Default: 10 minutes

PRIMING
(pages 17-19)

- Disabled/Enabled — Disabled / Enabled - Default: Enabled
- Priming Speed — Set Speed (2400-3450 RPM) Default: 3450 RPM
- Max Priming Duration — (1 min. to 30 min.) Default: 11 minutes
- Priming Range — (1 - 10) Default: 5
- Priming Delay — (1 sec. to 10 min.) Default: 20 seconds
- Loss of Prime — Enabled / Disabled - Default: Enabled

THERMAL MODE
(page 20)

- Disabled/Enabled — Disabled / Enabled - Default: Enabled
- Set Type
  - Speed - Default: Speed
  - Flow
- Set Speed/Flow
  - Set Speed (450-3450 RPM) Default 1000 RPM
  - Set Flow (20-140 GPM) Default: 40 GPM
- Pump Temperature — 40° F - 50° F (4.4° C through 10° C) Default: 40° F (4.4° C)

PENTAIR