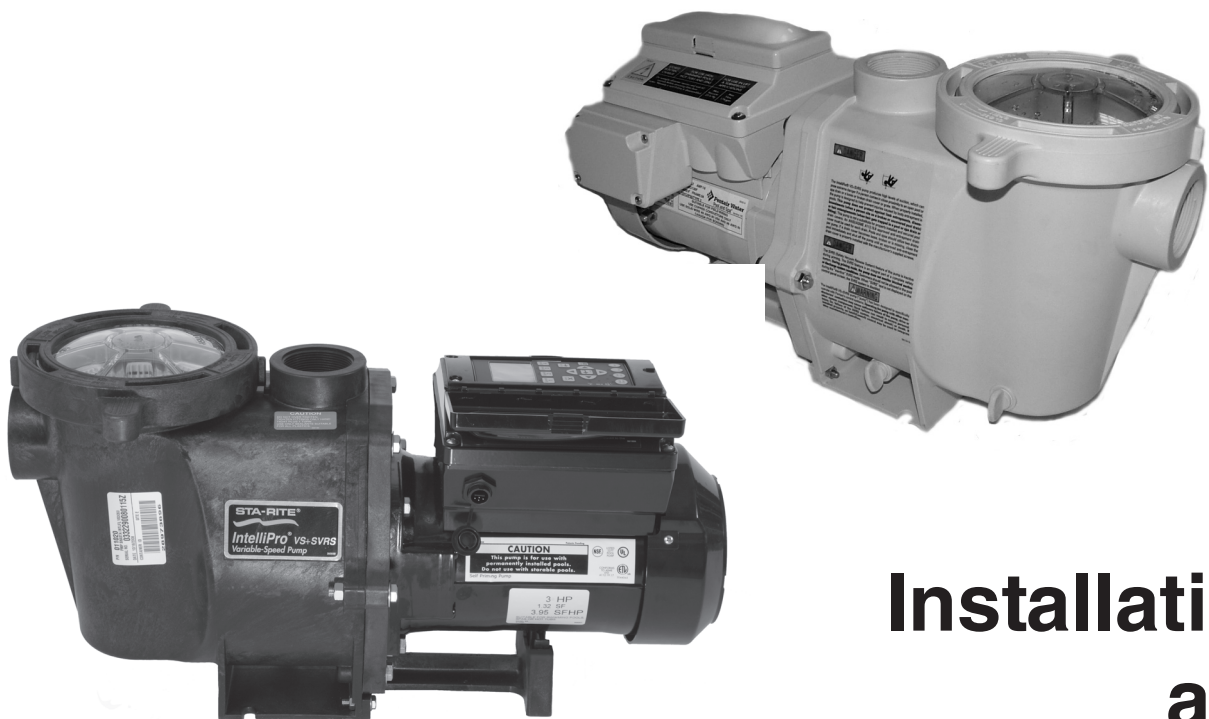**Pentair Water**
Pool and Spa®

IntelliFlo® VS+ SVRS
and
IntelliPro® VS+ SVRS

Variable Speed Programmable Pump
with Safety Vacuum Release System (SVRS) Protection

(Compatible with IntelliComm® communication center,
EasyTouch®, IntelliTouch® and SunTouch® control systems)

Installation
and
User's Guide

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

Eco Select™
Efficiency • Conservation
Pentair Water
Pool and Spa®

Technical Support

Sanford, North Carolina (8 A.M. to 5 P.M. ET)

Moorpark, California (8 A.M. to 5 P.M. PT)

Phone: (800) 831-7133

Fax (800) 284-4151

Web sites: visit www.pentairpool.com and staritepool.com

Protected by U.S. Patents Pending

Contents

Contents

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

Important Notice:

Attention Installer: This manual 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.

Please refer to **www.pentair.com** for all warnings and instructions related to the IntelliFlo® VS+SVRS and IntelliPro® VS+SVRS pump.

⚠ WARNING

Before installing this product, read and follow all warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage. Call (800) 831-7133 for additional free copies of these instructions. It is absolutely critical that the suction plumbing be installed in accordance with the latest national and local codes for swimming pools.

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.
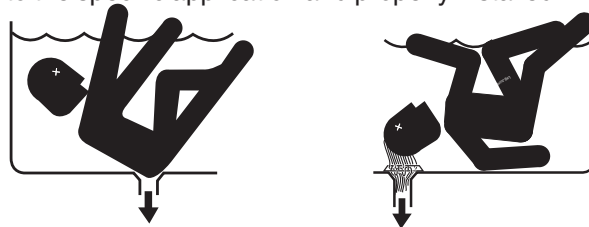
⚠ DANGER

This pump produces high levels of suction, which can pose extreme danger if a person comes in close proximity to an open pool or spa drain or a loose or broken drain cover or grate. The pump, when installed according to the manufacturer's instructions, is designed to help prevent injuries caused by body entrapment in pools. This pump does not, however, protect against limb entrapments, disembowelments (when a person sits on a broken or uncovered pool drain) or hair entanglements.

⚠ DANGER

This pump is not a substitute for properly installed and secured pool drain covers. An ANSI/ASME A112.19.8 approved anti-entrapment drain cover must be used for each drain. Pools and spas should utilize two drains per pump. If a drain cover becomes loose, broken or is missing, close the pool or spa immediately and shut off the pump until an approved anti-entrapment drain cover is properly installed with the manufacturer's supplied screws.

⚠ DANGER

The SVRS (Safety Vacuum Release System) feature of this pump is inactive during priming. The SVRS feature is an integral part of a complete safety system. During priming mode, the pump does not monitor blocked suction or discharge system conditions. Swimmers should not be allowed in the pool during the "inactive" SVRS mode. When "SVRS" text is not displayed on the control panel screen, the SVRS system is disabled.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

⚠ DANGER

Entrapment Avoidance Notice:

The covers used on suction outlets should be approved and listed as conforming to the currently published edition of ANSI/ASME A112.19.8 Standard. These covers should be inspected regularly and replaced if cracked, broken or older than the design lifetime indicated on them by the manufacturer. The maximum possible flow rate of this pump should be less than or equal to the maximum approved flow rate indicated on the suction outlet cover by the manufacturer. 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, EVISCERATION AND DEATH.

NOTE: VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT

The Virginia Graeme Baker Pool and Spa Safety Act raises certain new requirements on owners and operators of swimming pools and spas.

Pools or spas constructed on or after December 20, 2008, shall utilize:

(A) No submerged suction outlets, a gravity drainage system with ASME/ANSI cover(s), one or more unblockable outlets; or

(B) A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8 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.

Pools and spas construction prior to December 20, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets ASME/ANSI A112.19.8 and either:

(A) A multiple main drain system without isolation capability, or

(B) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or

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

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

(E) Disabled submerged outlets, or

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

For more information about the Act, contact the Consumer Product Safety Commission at 301 504 7908 or visit www.cpsc.gov.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

⚠ DANGER

Risk of electrical shock or electrocution:

This pool pump must be installed by a licensed or certified electrician or a qualified pool serviceman 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 pool users, installers, or others due to electrical shock, and may also cause damage to property.

Always disconnect power to the pool pump at the circuit breaker and remove the RS-485 communication cable from the pump 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.

⚠ DANGER

Water temperature in excess of 100° Fahrenheit may be hazardous to your health. Prolonged immersion in hot water may induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6° F. (37° C.).

⚠ DANGER

The effects of hyperthermia include: 1) Unawareness of impending danger. 2) Failure to perceive heat. 3) Failure to recognize the need to leave the spa. 4) Physical inability to exit the spa. 5) Fetal damage in pregnant women. 6) Unconsciousness resulting in danger of drowning.

⚠ WARNING

SVRS devices shall only be installed in conjunction with ASME A112.19.8 suction fitting, or a 12 in. x 12 in. (305 mm x 305 mm) drain grate or larger, or an approved channel drain system at each suction outlet or drain outlet.

⚠ WARNING

All SVRS devices shall be factory set or field adjusted to site-specific hydraulic conditions. Once installed, the system shall be tested by simulating an entrapment event.

⚠ WARNING

A ball, butterfly, or sliding gate valve shall be installed within 2 ft. (0.6m) upstream from the SVRS (between the SVRS and the protected suction outlet), or a test mat shall be used to cover the suction outlet to simulate an entrapment event. There shall be three simulated entrapment tests conducted to verify proper adjustment and operation of the device.

⚠ WARNING

SVRS (Safety Vacuum Release System) feature is DISABLED during priming. When "SVRS" text is not displayed on the control panel screen, the SVRS feature is disabled.

⚠ WARNING

The IntelliFlo® VS+SVRS and IntelliPro® VS+SVRS pump ("pump") has been designed to specifically operate with Pentair Water Pool and Spa control systems. Operating the pump with other manufacturers' controllers may cause software failure of the pump, drive or other system components. Such failure can result in severe personal injury (i.e., failure of the SVRS system, electrical shock) or death. If installed properly, an IntelliComm® controller may be used to integrate other manufacturer's controllers.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

⚠ WARNING **The presence of a hydrostatic valve in the suction piping has been shown to prolong the high vacuum present at the drain, even through the drain was protected by an SVRS device.**

- Check valves and hydrostatic valves **shall not be used** with this pump;

- Check valves should not be installed on the suction or discharge side of the system protected by an SVRS device.

⚠ WARNING Never open the inside or the drive motor enclosure. There is a capacitor bank that holds a 230 VAC charge even when there is no power to the unit.

⚠ WARNING The pump is capable of 174 GPM or 104 feet of head; use caution when installing and programming to limit pumps performance potential with old or questionable equipment.

⚠ 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 use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

⚠ WARNING To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

⚠ WARNING For units intended for use in other than single-family dwellings, a clearly labeled emergency switch shall be provided as part of the installation. The switch shall be readily accessible to the occupants and shall be installed at least 5 feet (1.52 m) away, adjacent to, and within sight of, the unit.

⚠ WARNING When setting up pool water turnovers or flow rates the operator must consider local codes governing turnover as well as disinfectant feed ratios.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

⚠CAUTION Install the pump a minimum of five (5) feet from the inside wall of the pool and spa. Canadian installations require a minimum of three (3) meters from pool water.

⚠CAUTION A No. 8 AWG or larger conductor must be wired to the motor bonding lug.

⚠CAUTION This pump is for use with permanently installed 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 may be readily disassembled for storage and reassembled to its original integrity and has a maximum dimension of 18 feet (5.49m) and a maximum wall height of 42 inches (1.07m).

⚠CAUTION For hot tubs and spa pumps, do not install within an outer enclosure or beneath the skirt of a hot tub or spa unless so marked.

⚠CAUTION IntelliFlo VS+ SVRS is capable of generating systems pressures up to 50 psi. Installers must ensure that all system components are rated to withstand at least 50 psi. Over pressurizing the system can result in catastrophic component failure or property damage.

Two Speed Pump Controls Notice (Title 20 Compliance)

Please read the following important Safety Instructions (See page 6 for pump speed setup). When using two-speed pumps manufactured on or after January 1, 2008, the pump's default circulation speed MUST be set to the LOWEST SPEED, with a high speed override capability being for a temporary period not to exceed one normal cycle, or two hours, whichever is less.

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Section 1
IntelliFlo® VS+ SVRS and IntelliPro® VS+ SVRS pump overview

The IntelliFlo VS+ SVRS and IntelliPro VS+ SVRS variable speed pump with the safety vacuum release system (SVRS) protection feature is well suited for all of your pool, spa, waterfall and other applications. The functionality of the IntelliFlo VS+ SVRS and IntelliPro VS+ SVRS pump is identical except for the pump's external color. The IntelliFlo VS+ SVRS pump's exterior case is almond color and the IntelliPro VS+ SVRS exterior case is black. The pump can use up to eight (8) speeds which can be adjusted to run at specific speeds and time intervals. The IntelliPro VS+ SVRS pump out performs all conventional pumps in its class. Advanced energy conservation features ensure that your filtration system is operating at peak efficiency.

The pump operates at a maximum system flow rate of up to 174 gallons per minute (GPM). System setup for the SVRS requires that the suction vacuum level be adjusted to 25" of mercury (Hg) or less at the pump strainer housing connection.

The pump can operate from 1100 RPM to 3450 RPM with preset speeds of 1100, 1500, 2350 and 3110 RPM. The pump can be adjusted from the control panel to run at any speed between 1100 RPM to 3450 RPM for different applications. The pump control panel alarm LED and error messages warn the user against under and over voltage, high temperature, over current, suction blockage and freeze protection with user defined minimum and maximum speed presets.

This pump is intended to be used as part of a complete pool safety system. It complies with the ASME/ANSI A112.19.17-2002 SVRS standard which defines how fast the pump must stop on a suction blockage event. This pump may not protect individuals from hair entrapment, limb entrapment or evisceration. The operator must ensure that all suction and return fittings are clean and unobstructed whenever the pump is started. **Because SVRS protection is not enabled during priming mode, never allow anyone in the pool during priming mode.**

If SVRS auto restart is enabled and an SVRS event occurs, the pump is allowed to restart automatically after the preset time period. **The operator must insure that any SVRS blockage event is quickly evaluated to confirm that all suction and return fittings are clean and unobstructed.** When the pump restarts after a high vacuum event it will slowly ramp up to speed. If the pump senses a blockage it will shut down. The pump will attempt to soft prime 10 times before attempting a full prime.

Remote Control

The pump can communicate with an IntelliTouch®, EasyTouch®, or SunTouch® control system or the IntelliComm® communication center via a two-wire RS-485 cable provided with the pump. EasyTouch and IntelliComm can remotely control the pump's four preset speeds. The IntelliTouch system can be configured to control a total of eight speeds. The pump's address and other pump functions are accessed from the pump's control panel.

Features

- ■ Adjusts to various pool sizes
- ■ Prevents thermal overload
- ■ Detects and prevents damage from under and over voltage conditions
- ■ Protects against freezing
- ■ Communicates with a Pentair EasyTouch, IntelliTouch or SunTouch control system or IntelliComm communication center via a two-wire RS-485 cable connection
- ■ Easy to use operator control panel
- ■ Operator control panel buttons for speed control
- ■ Built-in strainer pot and volute
- ■ Ultra energy-efficient TEFC Square Flange Motor
- ■ Compatibility with most cleaning systems, filters, and jet action spas
- ■ Motor assembly features permanent magnet synchronous motor
- ■ Heavy-duty, durable construction designed for long life
- ■ UL, ETL and NSF approval
- ■ 12 Programmable Speeds
  - ■ Eight Set speeds
  - ■ Schedule
  - ■ Duration
  - ■ Manual
  - ■ Four IntelliComm speed modes
- ■ Priming Feature (SVRS does not function in this mode)
  - ■ Load Sensing
  - ■ Enable or Disable
- ■ Lock out protection
  - ■ Four Digit password
  - ■ Enable or Disable
- ■ LCD Display
  - ■ Power and Speed
  - ■ Text Alerts
- ■ Antifreeze Protection
  - ■ Adjustable speed
  - ■ Adjustable Temperatures
  - ■ Enable and Disable in stand alone
- ■ Additional Features
  - ■ Clock and Timer
  - ■ Maximum and Minimum Speed Limits
  - ■ Quick Clean Mode
  - ■ Address up to 16 pumps
  - ■ Service Features
  - ■ Timeout Mode
- ■ ASME A112.19.17 SVRS compliant and certified by ETL
- ■ SVRS feature accommodates flooded and elevated suction for pump with suction levels at pump strainer at 25" mercury (Hg)
- ■ SVRS feature requires no special plumbing or electrical connections

Motor Assembly

The pump's three-phase six-pole motor operates from 3450 RPM to 1100 RPM. The drive assembly is continually cooled by an external fan. Dual seals on the motor drive shaft and at the fan shaft assembly seal the entire motor and bearings from any dirt and moisture entering the motor assembly. For added protection, a slinger located in front of the main motor shaft seal assists in slinging water away from the shaft opening in the flange.

Motor fan cover

Motor assembly

Drive assembly and electronics enclosure

Control panel cover

Communication port for connection to EasyTouch, IntelliTouch or SunTouch control system or IntelliComm communication center via two-wire RS-485 cable
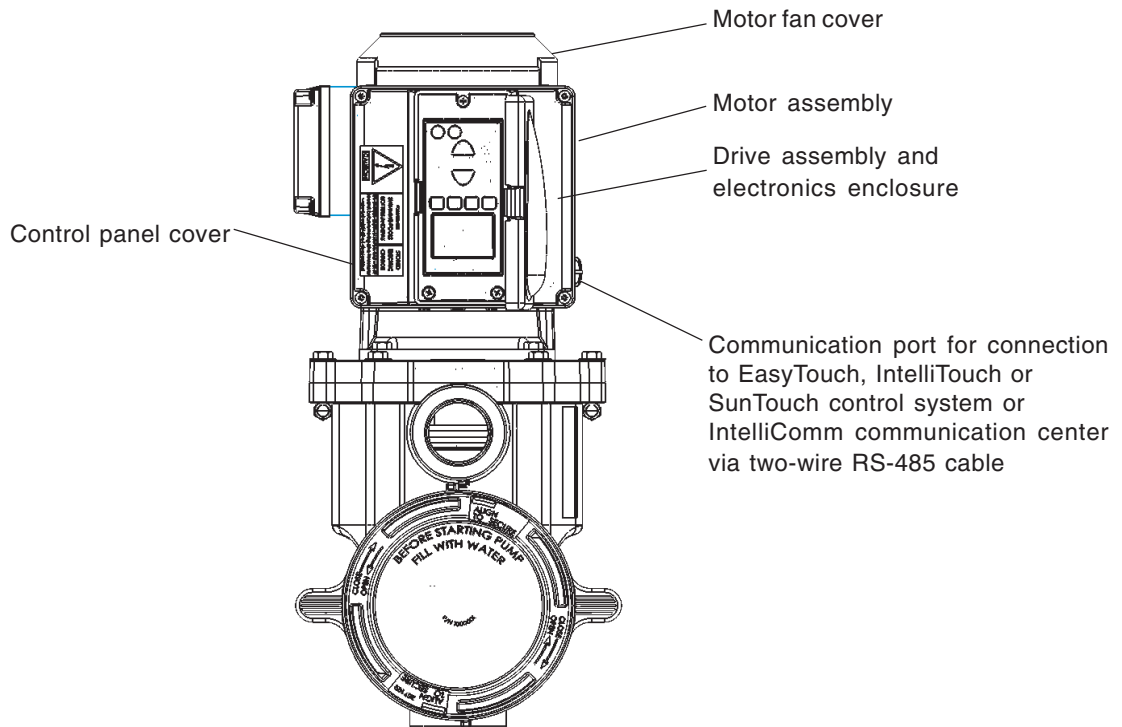
Motor Assembly

Drive Assembly and Control Panel

The pump's drive assembly consists of an operator control panel and the system electronics that drive the motor. The drive microprocessor controls the motor by changing the frequency of the current it receives together with changing the voltage to control the rotational speed.

Operator Control Panel, buttons and LED (see page 5)

AC power connection compartment (see page 32)

Motor stand

Vacuum gauge installation locations (see page 35)

Pump Drive Assembly
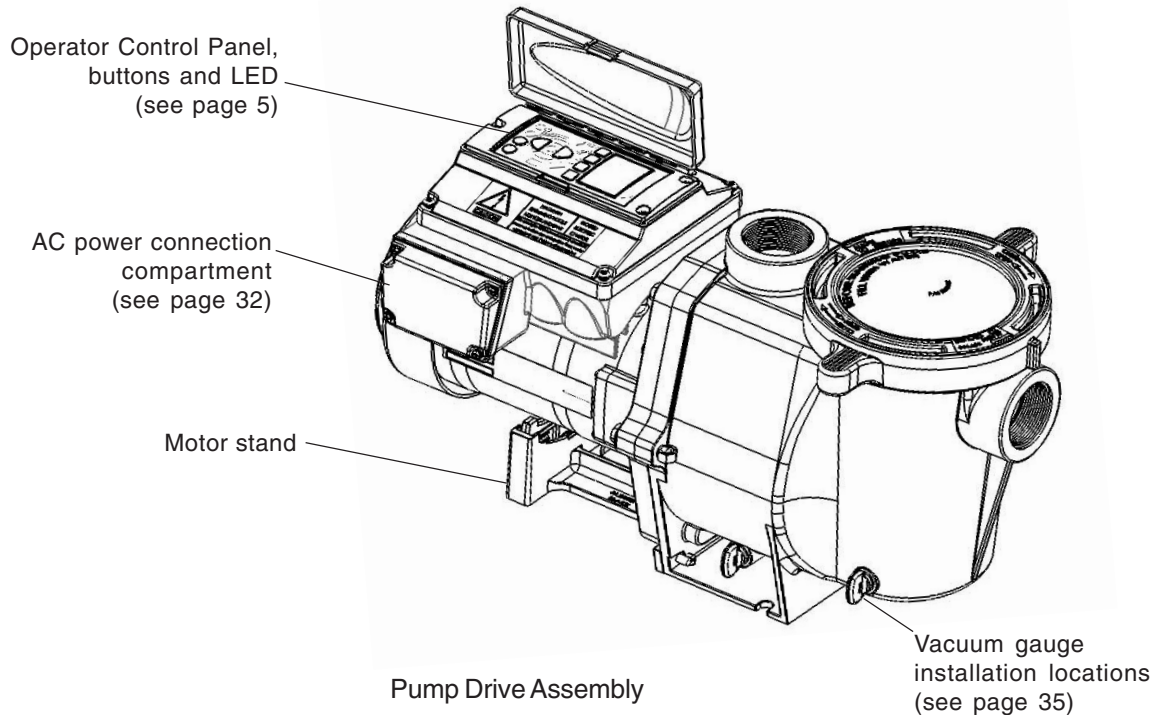
Motor Features

- Permanent Magnet Synchronous Motor (PMSM)
- High efficiency
- Superior speed control
- Operates at lower temperatures due to high efficiency
- Same technology as deployed in hybrid electric vehicles
- Designed to withstand outdoor environment
- Totally enclosed fan cooled
- Three-phase motor
- 56 Square Flange
- Six-Pole
- Low noise

Section 2
Operator Control Panel

This section describes the pump's operator controls and LEDs.

Operator Control Panel

SVRS ENABLED when displayed (see page 13)

Key Lockout Icon

Count down Time

Current Time

Current Speed

Current Power usage

Current feature running

SVRS   12:15

1100 RPM

T 0.00   150 WATTS
Running Speed 1

Speed 1   Speed 2   Speed 3   Speed 4

Select

Escape

Menu

Enter

Quick Clean   Time Out   Start Stop   Reset
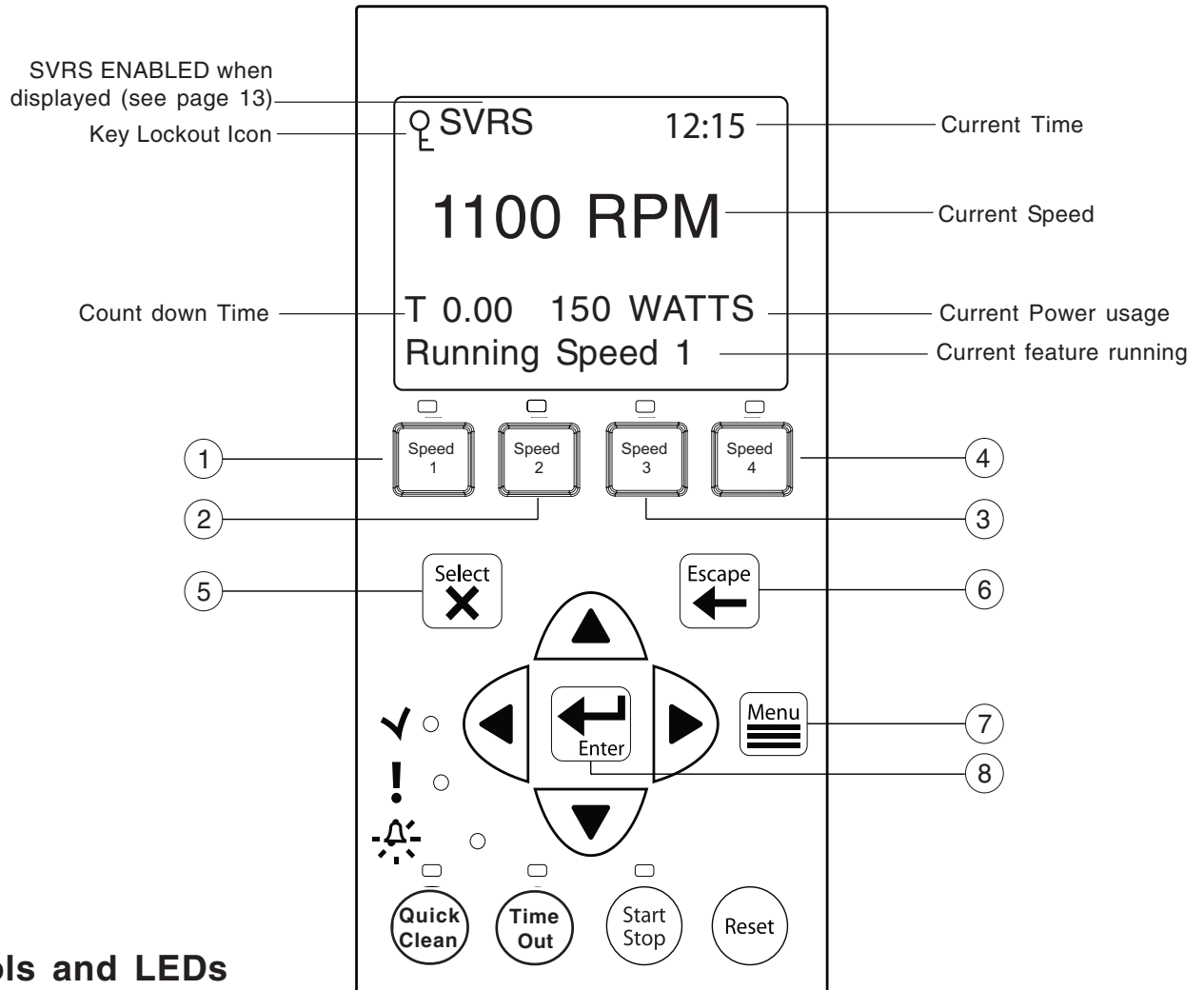
Controls and LEDs

① **Speed 1 button/LED:** Press button to select Speed 1 (1100 RPM). LED on indicates Speed 1 is active.

② **Speed 2 button/LED:** Press button to select Speed 2 (1500 RPM). LED on indicates Speed 2 is active.

③ **Speed 3 button/LED:** Press button to select Speed 3 (2350 RPM). LED on indicates Speed 3 is active.

④ **Speed 4 button/LED:** Press button to select Speed 4 (3110 RPM). LED on indicates Speed 4 is active.

⑤ **Select button:** Displays available menu items or enters edit mode for changing a value on line two of the display.

⑥ **Escape button:** Moves to next level up in the menu structure, and/or stops editing the current setting.

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

⑧ **Enter button:** Saves current menu item setting. Press this button to acknowledge alarms and warning alerts.

Controls and LEDs (Continued)

Line 1

Line 2

15

Line 3

Line 4

SVRS   12:15

1100 RPM

T 0.00   150 WATTS
Running Speed 1

Speed 1   Speed 2   Speed 3   Speed 4

Select   Escape

14

Enter   Menu

9

10   Quick Clean   Time Out   Start Stop   Reset   13

11   12
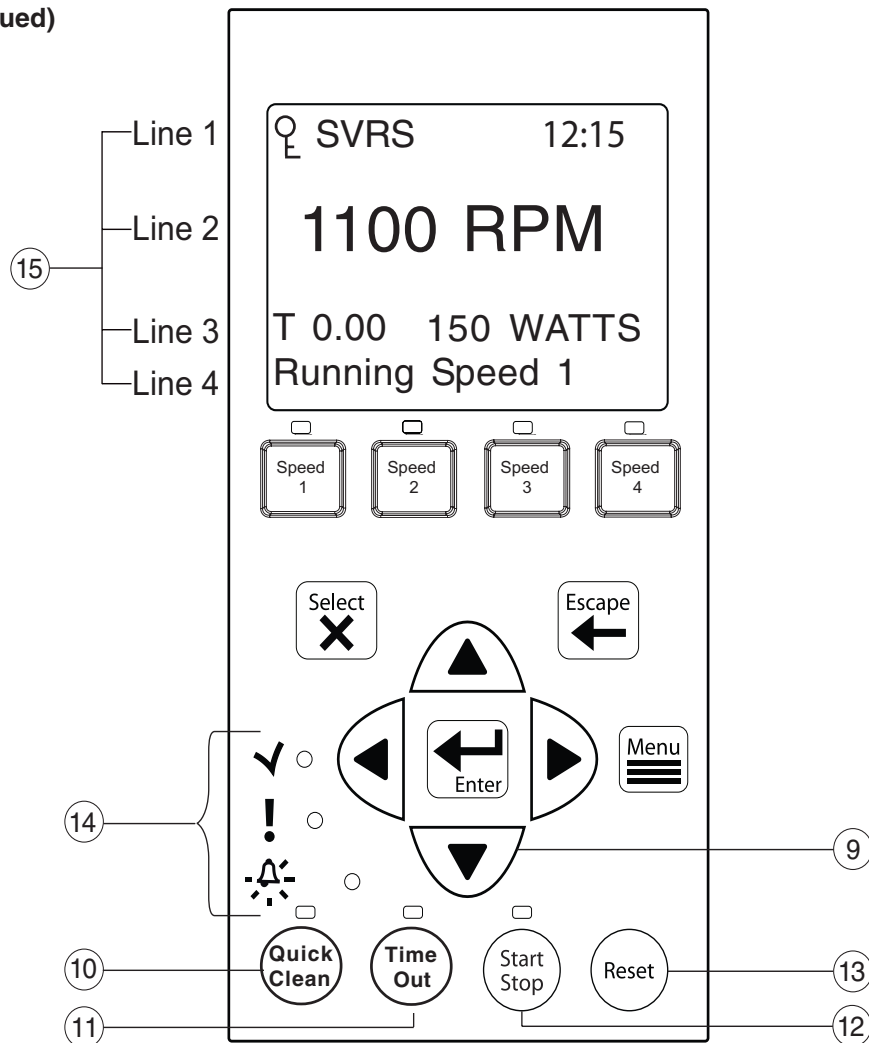
(9)   Arrow buttons:
- **Up arrow:** Move one level up in the menu tree or increase a digit when editing a setting.
- **Down arrow:** Move one level down in the menu tree or decrease a digit when editing a setting.
- **Left arrow:** Move cursor left one digit when editing a setting.
- **Right arrow:** Move cursor right one digit when editing a setting.

(10)   Quick Clean: Duration and speed (RPM) can be preset to save energy. The LED is on when active.

(11)   Time Out: When active (LED on), at the end of a "Time Out" preset time, the pump will run a schedule.

(12)   Start/Stop button: Start or Stop the pump. When the LED is on, the pump is currently running or in a mode to start automatically.

(13)   Reset button: Reset alarm or alert.

(14) LEDs

✓   **On**: This green, power LED is on when pump is powered on.

!   **Warning:** LED is on if a warning condition is present.

Alarm: The green LED is on if an alarm condition occurs. See "Alerts and Warning" on page 39.

(15)   Control Panel LCD:
- **Line 1** - Key icon indicates password protect mode is active. If password protect is not enabled, no key icon is displayed. SVRS indicates pump is in SVRS protect mode. If SVRS is not displayed, SVRS is not active. System time is displayed on the right side of top line.
- **Line 2** - Displays the current pump speed (RPM).
- **Line 3** - Count down time and Watts
- **Line 4** - Current pump status.

Section 3
Operating the Pump

This section describes how to operate the pump using the control panel buttons and menu features.

Starting the pump

To start the pump

1. Be sure the pump is powered on and the green power LED is on.
2. Select one of the speed buttons, then press the **Start** button (LED on) to start the pump.

Stopping the pump

To stop the pump

- Press the **Stop** button to stop the pump.

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

Servicing Equipment (Disconnect Power to Pump)

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

Operating the pump at preset speeds

The pump is programmed with four default speeds of **1100**, **1500, 2350** and **3110** RPM. A **Speed** button is assigned to each of the preset speeds as shown.

To operate the pump at one of the four preset speeds

1. Be sure the pump is powered on and the green power LED is on.
2. Press the **Speed** button (**1**- **4**) corresponding to the desired preset speed, and release quickly. The LED above the **Speed** button will come on as shown.
3. Press the **Start** button. The pump will ramp to the selected preset speed.

LED lit

Speed 1   Speed 2   Speed 3   Speed 4
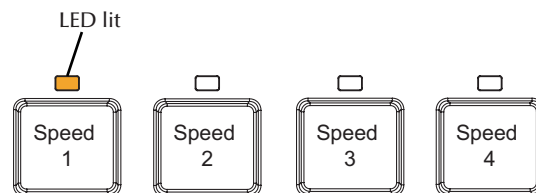
Adjusting the pump speed

1. While the pump is running, press the **Up Arrow** to increase speed setting.
2. Press the **Down Arrow** to decrease speed Setting.
3. Press and hold down a **Speed Button** for three (3) seconds to save speed to the button or press the **Enter** button to save the speed.

Pump Operating Modes

The pump can be programmed three ways:

1. **Manual Operation:** Speed buttons 1-4 can be programmed for Manual operation. This means the speed button is pressed and then the start button and the pump runs a programmed speed. Speeds 5-8 can not be programmed for Manual operation because there are no buttons associated with them.

   To operate the pump in Manual Mode, press one of the four speed buttons, and press the Start/Stop button to run the assigned speed for that button. When the pump is running a Manual Speed Setting (speed 1, 2, 3 or 4 button pressed manually) and a scheduled speed is set to run, the scheduled speed will take priority regardless of speed number of RPM. When the Scheduled Speed's time is over, it will not revert back to the manually pressed speed. If the pump is running a schedule and a speed button is pressed manually, the pump will run the manually selected speed until the next scheduled speed program.

2. **Egg Timer (Duration):** Speeds 1-4 can be programmed to run for a duration of time once pressed. This means that the Speed button is pressed and then the start button and the pump runs a programmed speed and the speed will turn off at the end of a preprogrammed amount of time. Speeds 5-8 have no direct pump speed buttons and therefore cannot be programmed with an Egg-Timer.

3. **Schedule:** The speed button can be programmed to turn on and off at a certain time. The LED above the Start/Stop button must be lit for the pump to run schedules. When a speed is set to run in Schedule mode it can still be operated manually. When a speed is programmed to run 23 hours and 59 minutes per day it will not turn off. For example, for the pump to run 24 hours per day, program the pump to start at 8:00 AM and stop at 7:59 AM.

Programming the Pump

When the pump is running a manual speed and password time out is activated the pump can be turned off but it cannot be turned back on. Pressing the Start/Stop button places it in the Running Schedule mode. Therefore, it will only run Speeds that are Scheduled to come on at their scheduled Start Time.

Menus

SETTINGS (page 10)

- Pump Address — (1-16) Default: ADDRESS 1
- Set Time — (hr:mm) Default: 12:00 AM
- Set AM/PM — AM/PM / 24 hr.
- Temperature Unit — Fahrenheit - Default: F° / C° Celsius
- Screen Contrast — (1-5) Default 3
- Language — English - Default: English
- Set Min Speed — (1100 RPM - 1700 RPM) - Default: 1100 RPM
- Set Max Speed — (1900 RPM - 3450 RPM) - Default: 3450 RPM
- SVRS Auto Restart — Disabled/Enabled - Default: Enabled / SVRS Restart Time (30 sec. - 5 mins.) Default 2 minutes
- PASSWORD — Disabled/Enabled - Default: Disabled / Password Time Out (1 min. - 6 hours) Default:10 minutes / Enter Password (xxxx) Default: 1234
- RAMP SPEED — (5 RPM - 400 RPM) Defualt: 200 RPM

SPEED 1-8 (page 12)

- Speed 1 (1-4)
  - Manual — Set Speed - Default: MANUAL
  - Schedule — Set Speed / Set Start Time / Set Stop Time
  - Egg Timer — Set Speed / Time
- Speed 5 (5-8)
  - Disabled — Default: Disabled
  - Schedule — Set Speed / Set Start Time / Set Stop Time

EXT CONTROL (page 17)

- Program 1 — Speed - Default: 1100 RPM
- Program 2 — Speed - Default: 1500 RPM
- Program 3 — Speed - Default: 2350 RPM
- Program 4 — Speed - Default: 3110 RPM

FEATURES (page 17)

- Time Out — Time Out Duration (1 min. to 10 hrs.) Default: 3 hours
- Quick Clean — Set Speed (1100 -3450 RPM) Default: 3450 RPM / Time (1 min. to 10 hrs.) Default: 10 minutes

PRIMING (page 19)

- DISABLED/ENABLED — Default: Enabled
- MAX PRIMING TIME — (1 min. to 30 min. hrs.) Default: 11 minutes
- PRIMED SENSITIVITY — (1 - 100%) Default: 1
- PRIMING DELAY — (1 second - 10 minutes) Default: 20 seconds

ANTI FREEZE (page 21)

- DISABLED/ENABLED — Disabled / Enabled - Default: Enabled
- SET SPEED — Set Speed (1100 RPM - 3450 RPM) Default 1100 RPM
- PUMP TEMPERATURE — 40° F - 50° F (4.4° C - 10° C) Default: 40° F (4.4° C)

Menus

The menu descriptions are as follows:

Settings: Pump Address

The pump address needs to be changed when there is more than one pump on an automation system. Addressing the pump allows the automation system to know which pump to send a command to. The "Pump Address" setting is used when the pump is connected via the RS-485 COM port to an IntelliTouch®, EasyTouch®, SunTouch® or IntelliComm® system. The default pump address is #1. When connected to EasyTouch®, SunTouch® or IntelliComm® the pump only communicates with address #1. The pump address can be set from 1-16. However, IntelliTouch can communicate to four (1-4) pumps. **Note: IntelliFlo VS+ SVRS or IntelliPro VS+ SVRS pumps cannot be connected in series with other pumps.**

To access the Settings menu:

1. Be sure the green power LED is on and the pump is stopped.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed. The Factory default setting is address "1."
4. To change the pump address, press the **Select** button. The first digit "1" selected.
5. Press **Up** or **Down** arrow button to change the address number from 1-16.
6. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
7. Press the **Escape** button to exit.

Settings: Set Time

Use "Set Time" to set the pump's system time. The pump's system clock controls all scheduled start and stop times, functions, and programmed cycles. The system clock can store the correct time for up to 96 hours after power is shut off. The pump will retain the time memory for 96 hours before a reset is needed.

To access the Set Time menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Set Time"
5. Press the **Select** button. The cursor will appear in the Minutes column.
6. Press **Up** or **Down** arrow button to set the time.
7. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Set AM/PM or 24 Clock

This setting is for changing the pump's time clock from regular time (AM/PM) to a 24 hour clock. For example, Midnight (12:00 AM) is 0000 hr., 8:00 AM is 0800 hr., and 11:00 PM is 2300 hr.

To access the AM/PM or 24 hr. menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "AM/PM."
5. Press the **Select** button to change the setting.
6. Press **Up** or **Down** arrow button to choose between 24 hr and AM/PM.
7. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Set Temperature Unit

Use this setting to set the temperature unit to Celsius (°C), or Fahrenheit (°F). The pump's Anti Freeze protection feature (see page 17) can be set to either Fahrenheit or Celsius.

To access the Temperature Units menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Temperature Units" menu item. The Factory default setting is "F" (Fahrenheit).
5. Press the **Select** button. "F" is displayed.
6. Press **Up** or **Down** arrow button to choose between Celsius (°C), or Fahrenheit (°F).
7. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Screen Contrast Level

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

To access the Temperature Units menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the Up or Down arrow to scroll to "Contrast level.
5. Press the Select button. Screen will show current contrast setting number. The default is "3".
6. Press the Select button to change the setting. Number will highlight.
7. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Language

To access the language menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Language".
5. Press the **Select** button to access the language menu.
6. Press **Select** to highlight current Language in use.
7. Press the **Enter** button to select the desired language for the control panel. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Set Minimum Speed (RPM)

The minimum pump speed can be set from 1100 RPM to 1700 RPM. The default setting is 1100 RPM.

To access the Set Minimum Speed menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Set Min Speed".
5. Press the **Select** button to change the setting. The cursor will appear in the first number column (ones)
6. Press **Up** or **Down** arrow button to change the pump's minimum speed setting from 1100 to 1700 RPM.
7. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
8. Press the **Escape** button to exit.

Settings: Set Maximum Speed (RPM)

The maximum speed can be set from 1900 RPM to 3450 RPM. The default setting is 3450. This setting is used to set the maximum running speed of the pump. When the pump is set to Priming "Enabled" the pump will ramp up to and run at the Maximum Speed setting to attain the prime. A Service Professional must set the Maximum Speed of the pump to not exceed the maximum flow rate of the system on which it will operate.

CAUTION: The Maximum Flow rate setting should be set so the system never operates at or above a 25" vacuum.

To access the Set Maximum Speed menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Set Max Speed".
5. Press the **Select** button to change the setting. The cursor will appear in the first number column (ones)
6. Press **Up** or **Down** arrow button to change the pump's maximum speed setting from 1900 to 3450 RPM.
7. Press the **Enter** button to save the setting. Press the **Escape** button to exit. To cancel any changes, press the **Escape** button to exit edit mode without saving.

Settings: SVRS Auto Restart

The SVRS Auto Restart means that after the pump shuts down due to blockage alarm, it will restart automatically after two (2) minutes. The default setting is two (2) minutes. When the setting is enabled it can be set from 30 seconds to five (5) minutes or to "Manual Restart". Manual Restart does not disable this feature, it requires you to manually reset the pump after a blockage alert. Check your local codes and ordinance before changing this feature.

> **IMPORTANT NOTE: If SVRS Auto Restart is enabled. After a SVRS alarm the pump will attempt to soft prime after the amount of time set in the SVRS Restart Time. During the soft prime the pump starts at the Minimum RPM setting of the pump and slowly ramps up to the desired speed setting. If it senses a blockage it will shut off and soft prime again. It will do this ten (10) times before attempting a full prime at which time the SVRS will be off and a blockage will go undetected.**

> **IMPORTANT NOTE: Disabling this setting does not mean that the SVRS suction blockage feature is being disabled. When this setting is Disabled" it means that when the pump shuts down for a blockage alarm it will not automatically restart. The pump will have to be manually restarted by pressing the RESET button, and the START/STOP button.**

To access the SVRS Auto Restart menu:

1. Check that the green power LED is on.

2. Press the **Menu** button. "Settings" is displayed.

3. Press the **Select** button. "Pump Address" is displayed.

4. Use the **Up** or **Down** arrow button to scroll to "SVRS".

5. Press the Select button. "Enabled Auto Restart" is displayed.
   *To Disable the setting, press the **Select** button to highlight "Enabled" and press the Down arrow button to change the setting to "Disabled," then press the Enter, and Escape button.*

6. Press the **Down arrow** button to display "SVRS Restart Time." This is the duration of time that "SVRS Auto Restart" is set to.

6. Press the **Select** button to change the setting. The cursor will appear in the time column.

7. Press **Up** or **Down** arrow button to change the auto restart time from 30 seconds to 5 minutes.

8. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.

9. Press the **Escape** button to exit.

> **CAUTION: The VS+ SVRS pump can be sensitive to air in the circulation system and cause it to give a false SVRS alarm, a blockage alarm when there is no blockage present. It is always recommended to bleed the air off of the filter when starting the pump. Suction side air leaks in the system can contribute to false SVRS alarms.**

Settings: Password

When the Password feature is enabled, the pump will enter into password protection mode for a preprogrammed amount of time after the last button is pressed. The entered password is any combination of four (4) digits.
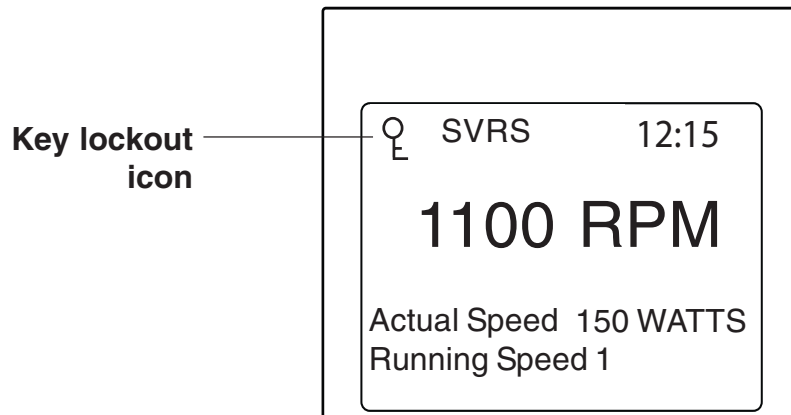
To access the Password menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the **Up** or **Down** arrow button to scroll to "Password".
5. Press the **Select** button. The default setting is "Disabled".
6. Press the **Select** button to change the setting.
7. Press **Up** or **Down** arrow button to change the setting to Enabled".
8. Press the **Enter** button to save the setting.
9. Press **Down** arrow button. "Password Timeout" is displayed.
    Factory default time is 10 minutes, this means the pump will go into Password Protection mode 10 minutes after the last control panel key press.
10. Press **Select** to change time setting from 1 minute to 6 hours.
11. Press the **Enter** button to save the setting.
12. Press **Down** arrow button. "Enter Password" is displayed.
13. Press **Select** to change the setting.
14. Press **Left** or **Right** arrow button to move cursor and press up and down arrow to change password number to desired setting.
15. Press the **Enter** button to save the setting. To cancel any changes, press the **Escape** button to exit edit mode without saving.
16. Press the **Escape** button to exit.

Password Protection

Password: The default for this setting is disabled, which means the pump does not have password protection. When this feature is enabled, for a preset amount of time after the last button is pressed, the pump's display will prompt for the password before allowing access to the pump's control panel and buttons The password must be a four (4) numeric digit password. Write down the password and keep in a secure place.

• When the pump is password protected the pump can always be turned off by pressing the **Start/ Stop** button.

• When running the pump in manual mode it can not be turned back on with the press of the **Start/ Stop** button.

• Pressing the **Start/Stop** button when the pump is off will return it back to the **Running Cycles Mode** and will 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.

• If any button other than the **Start/Stop** button is pressed, the screen reads Enter Password.

• When Password Protection is enabled there is a key icon displayed in the upper left side of the LCD.

```
                    ┌─────────────────────────────┐
                    │   ┌───────────────────────┐ │
Key lockout ────────┼── │ ⚲  SVRS       12:15   │ │
icon                │   │                       │ │
                    │   │   1100 RPM            │ │
                    │   │                       │ │
                    │   │ Actual Speed  150 WATTS│ │
                    │   │ Running Speed 1       │ │
                    │   └───────────────────────┘ │
                    └─────────────────────────────┘
```

Entering Password

- When Password Protection is enabled the press of any button other than the speed button will cause the Screen to ask for a Password.

- 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 the Enter button to confirm.

Settings: Ramp Speed

The Ramp Speed can be set from 5 RPM to 400 RPM. The default setting is 200 RPM. This means when the pump changes speeds it will ramp at 200 RPM increments. For example, when the pump changes speeds from 1500 RPM to 2350 RPM it will ramp to 1700 RPM wait approximately 5 seconds then move to 1900 RPM, wait 5 seconds and then move to 2300 RPM wait five (5) seconds then move to 2350 RPM. This adjustment is made available to the user to help minimize the occurrence of a false tripping SVRS alarm when switching speeds. *Note: Using the five (5) RPM setting would cause the pump to take a long time to switch between speeds. Using the 400 RPM setting may cause false tripping of the SVRS function when switching speeds.*

To access the Ramp Speed menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Press the **Select** button. "Pump Address" is displayed.
4. Use the Up or Down arrow button to scroll to "Ramp Speed".
5. Press the **Select** button. The Default setting is 200 RPM.
6. Press the Left or Right arrow button to move cursor and press up and down arrow to change the setting.
7. Press **Enter** to save the setting.

Speed 1-8 (Schedule a Time to Run the Pump)

By setting a start time and a stop time, Speeds 1-8 can be programmed to run a certain speed at a certain time of day. To run a scheduled pump speed, press the Start button (LED on). The LCD screen will display "Running Schedules" when it is ready to run a scheduled speed. If the start button is pressed during a scheduled speed time the screen will read Running Speed X and will run speed X. (If priming is enabled it will prime first at the maximum RPM setting of the pump before running speed X.)

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

To set a schedule to run the pump:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Use the **Up** or **Down** arrow button to scroll to "Speed 1-8".
4. Press the **Select** button. "Speed 1" is displayed.
5. Use the **Up** or **Down** arrow button to choose the speed you wish to program.
6. Press the **Select** button. Select **Manual**, **Schedule**, or **Egg Timer** for speeds 1-4. "Disabled" or "Schedule" for speed 5-8 is displayed.
    Speeds 1-4 default setting is MANUAL. To create a schedule for speed 1-4 Press Select to highlight manual.
    Speeds 5-8 default setting is DISABLED. To create a schedule for speed 5-8, Press Select to highlight Disabled.
7. Use the **Up** or **Down** arrow button to scroll to "Schedule".
8. Press the **Enter** button.
9. Press the **Down** arrow button. Set speed will be displayed.
10. Press the **Select** button to change the speed. The first digit will highlight (ones digit).
11. Use the **Up** or **Down** arrow button to change the speed.
12. Press the **Enter** button to save the setting.
13. Press the **Down** arrow button. "Set Start Time" is displayed.
14. Press the **Select** button to change the start time. The cursor will highlight the minute column.
15. Use the **Left** arrow button to move the cursor to the hour column if desired.
16. Press the **Enter** button to save the setting.
17. Press **Down** arrow. "Set Stop Time" is displayed
18. Press the **Select** button to change the stop time.
19. Press the **Enter** button to save the setting.
20. Press the Start/Stop button. The LED above the button will light up and the pump will start if within a scheduled time or "Running Schedule" is displayed.

When the pump is running a scheduled speed or a duration speed (egg timer) the countdown time (T 00:01) showing the hours and minutes is displayed on the screen.

Note: Speeds 5-8 can be programmed to operate in Schedule mode only. The pump can run eight (8) different speeds at eight (8) programmed start and stop times per day.

Note: When two speeds are scheduled during the same run time the pump will run the higher RPM Speed regardless of Speed # in use.

Programming for Constant Run

When programming a schedule for a Speed it can not be programmed with the same start and stop times. However, it will run without stopping if it is programmed with the Start time set one minute after the stop time. Example: A single speed will run non stop if programmed with a Start Time of 8:00 AM and a Stop time of 7:59 AM.

External Control

This function is for programming speeds that will run when the IntelliComm power center controller sends it a command. For example, Terminal 3 and 4 in IntelliComm will correspond to External Control Program #1. (5 and 6 to Ext Ctrl #2). Use the External Control feature to program the IntelliComm power center.

To access the Ext. Ctrl. menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Use the **Up** or **Down** arrow button to scroll to "Ext. Ctrl.".
5. Press the **Select** button. "Program 1" is displayed.
6. Press the **Select** button. "1100 RPM' is displayed.
7. Press the **Select** button. The "RPM" number will highlight.
8. Press **Up** or **Down** arrow button to change the RPM setting.
9. Press the **Enter** button to save the setting. Note: To cancel any changes, press the **Escape** button to exit without saving.
10. Press the **Escape** button.
11. Use the **Up** or **Down** arrow button to scroll to "Program 2".
12. Repeat Step 5 through 9 to set Program 2, 3, and 4.12 Programmable Speeds.

Features: Quick Clean

This feature can be used to ramp the pump up to a higher RPM for vacuuming, cleaning, adding chemicals, after a storm for extra skimming capability. Press the Quick Clean button (LED on) and then the Start/Stop button (LED on) to start the pump at preset RPM and duration of time. When the Quick Clean cycle is over it will resume regular schedules, it will be in the "Running Schedule" mode. 0

Quick Clean (Continued)

To access the Quick Clean menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Use the **Down** arrow button to scroll to "Features".
5. Press the **Select** button. "Timeout" is displayed.
6. Press the **Down arrow** button. "QuickClean" is displayed.
7. Press the **Select** button. "Set Speed" is displayed.
8. Press the **Select** button. The "RPM" first (ones) column will highlight.
9. Use the **Up** or **Down** arrow button to change the speed.
10. Press the **Enter** button to save the setting.
11. Press the **Down arrow** button. "Time Duration" is displayed.
12. Press the **Select** button. The cursor will appear in the minutes column.
13. Use the **Up** or **Down** arrow button to change the time from 1 minute to 10 hours.
14. Press the **Enter** button to save the setting. Note: To cancel any changes, press the **Escape** button to exit without saving.
15. Press the **Escape** button to exit.

Features: Time Out

This feature keeps the pump from running for a programmable amount of time. This feature can be used to allow newly glued pipe joints time to dry before circulation of the pool water is resumed. This feature keeps the pump from running for a programmable amount of time. When this feature's time is up the pump will be in the "Running Schedule" mode, 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 the **Menu** button. "Settings" is displayed.
3. Use the **Down** arrow button to scroll to "Features".
5. Press the **Select** button. "Timeout" is displayed.
6. Press the **Select** button. "Timeout Duration" is displayed.
7. Press the **Select** button. The "Minutes" column will highlight.
8. Press the **Left** arrow button to scroll to the hours setting. Time out can be set from 1 minute to 10 hours.
9. Press the **Enter** button to save the setting. Note: To cancel any changes, press the **Escape** button to exit without saving.
10. Press the **Escape** button to exit.

Priming

> ⚠ **CAUTION: During Priming mode the SVRS function is turned off. This can be noticed by the absence of the SVRS letters in the top left corner of the LCD screen. NOBODY should be allowed in the pool when the pump is priming because during this time a blockage would go undetected.**

The Default setting for Priming is disabled. Enabling this feature allows the pump to use its "Flow Technology" to make sure the pump is primed when it starts. This feature will not override the "Max Speed" setting. The priming feature ramps the pump 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 flow in the pump basket is not sufficient, the pump will ramp to the "Max Speed" setting and stay there for the priming delay time, which is defaulted at 20 seconds. If there is sufficient water flow in the pump basket at this time, it will go out of priming mode and ramp to the commanded speed. If there is still insufficient flow in the pump basket, the pump will try to prime at the "Maximum Speed" for the amount of time set up in the "Maximum Priming Time" menu.

Maximum Priming Time: The Maximum Priming Time can be set from 1 minute to 30 minutes. The default setting is 11 minutes. This is the maximum amount of time the pump will try to prime before giving an error. However if the pump does not see a sufficient amount of water in the pump basket this can cause the pump to report a Dry Priming Alarm within seconds of the beginning of the priming cycle.

Priming Dry Alarm: An insufficient amount of water in the basket during priming will cause the pump to report a Priming Dry Alarm. The basket should be filled with water and the pump restarted when this alarm occurs.

Note: When a Priming Dry Alarm takes place it will try to restart after 10 minutes, unlike a pump which will not restart after a Priming Dry Alarm.

Primed Sensitivity: The primed sensitivity can be set from 1% to 100%. The factory default setting is 1% meaning that the pump is at its most sensitive setting in regards to determining if the pump has attained a prime or not. Increasing this number will decrease the amount of flow needed for the pump to sense that it is primed. Making this number too high could cause the pump to think it has attained a prime and evacuated the air from the system when it has not. If the system is such, that the pump has trouble coming out of the priming mode and it is evident that the pump basket is full of water and flowing then the Primed Sensitivity number can be increased.

Priming Delay: The priming delay can be set from 1 second to 10 minutes. The default setting is 20 seconds. This means the pump will ramp to 1800 RPM and stay there for three (3) seconds which it will always do in the hard Priming Mode. If there is sufficient flow in the pump basket, the pump will then go out of priming mode and ramp to its commanded speed. If there is insufficient water flow in the pump basket the pump will ramp to the Max Speed Setting and stay there for the default time of 20 seconds. It may be necessary to increase the prime delay to allow the system to stabilize before the pump goes into running mode. If the pump errors out immediately after priming, then increasing the Priming Delay time may correct the issue.

> ⚠ **CAUTION: Increasing the Priming Delay causes the pump to stay in the priming mode longer thus increasing the amount of time the pump operates with the SVRS off. This number should be kept as low as possible.**

When the pump is connected to an automation system and the "Maximum Prime Time" feature is enabled, it will remain active. To access the Priming menu:
1. Check that the green power LED is on and press the **Menu** button. "Settings" is displayed.
2. Use the **Down** arrow button to scroll to "Priming" *(continue on next page)*

Priming (Continued)

4. Press the **Select** button. The factory default is set to priming "Enabled".
5. To disable priming, press the **Select** button.
6. Use the **Up** arrow button. "Disabled" is displayed.
7. Press the **Enter** button.
8. Press the Down Arrow button. Screen will read "Max Priming Time". Factory default is set to 11 minutes.
9. Press the **Select** button to change the setting. The cursor will highlight the minutes column.
10. Use the Up or Down arrow button to change the time from 1 minute to 30 minutes..
11. Press the **Enter** button to save the setting.
12. Press the **Down arrow** button. The screen will read "Primed Sensitivity". The default for this setting being "1".
13. Press the **Select** button to change the setting. The cursor will highlight the number.
14. Use the up or **Down arrow** button to change the time from 1% to 100%. Increasing the number makes the Priming less sensitive.
15. Press **Enter** to save.
16. Press the **Down arrow** button. Screen will read "Priming Delay". The default for this setting is 20 seconds.
17. Press the **Select** button to change the Setting.
18. Use the **Up or Down arrow** button to change the setting from 1 second to 10 minutes. Caution: Increasing the Priming Delay causes the pump to stay in the priming mode longer thus increasing the amount of time the pump operates with the SVRS off.
19. Press the **Enter** button to save the setting. *Note: To cancel a change, press the Escape button instead of the **Enter** button to exit without saving.*
20. Press the **Escape** button to exit.

AntiFreeze

This feature allows you to set a speed (1100 RPM -3450 RPM) that will run when the pump goes into anti freeze mode. The temperature level that you wish anti freeze mode to start can also be set.

IMPORTANT NOTE: This feature is for protection of the pump. It should not be depended upon 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 AntiFreeze menu:

1. Check that the green power LED is on.
2. Press the **Menu** button. "Settings" is displayed.
3. Use the **Down** arrow button to scroll to "AntiFreeze".
4. Press the **Select** button. The factory default is AntiFreeze "Enabled".
5. To disable AntiFreeze. Press the **Select** button, "Enabled" will highlight.
6. Use the **Up** arrow button. "Disabled" is displayed.
7. Press the **Enter** button.
To program AntiFreeze when enabled:
8. Press the **Down** arrow button. "Set Speed" is displayed. The factory default is 1100 RPM.
9. Press the **Select** button to change the setting. The cursor will highlight the first column (ones).
10. Use the **Up or Down** arrow button to select 1100 - 3450 RPM.
11. Press the **Enter** button to save the setting.
12. Press the **Down** arrow button. "Pump Temperature" is displayed. This is the temperature the pump will activate AntiFreeze. The factory default is 40° F (4.4° C).
13. Press the **Select** button to change the setting. The cursor will highlight the first column (ones). This setting can be changed from 40° F to 50° F (4.4° C - 10° C).
14. Press the **Enter** button to save the setting. Note: To cancel any changes, press the **Escape** button to exit without saving.
15. Press the **Escape** button to exit.

Priming the pump for the first time, or after service

Before starting the pump for the first time, it must be primed. To prime a pump means filling the pump and suction pipe with water. This process evacuates the air from all the suction lines and the pump. It may take several minutes to prime depending on the depth of water, pipe size and length. It is easier to prime a pump if you allow all the air to escape from the pump and pipes. The water cannot enter unless the air can escape. Pumps do not hold prime, the pool piping system has that task.

⚠ **CAUTION -** To avoid permanent damage to the pump, before starting the pump, fill the pump's housing strainer with water so that the pump will prime correctly. If there is no water in the strainer the pump will not prime.

- NEVER run the pump dry! Running the pump dry may damage the seals, causing leakage and flooding!
- 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.
- Open gate valves before starting system.
- Be sure to release all air from filter and piping system.
- The pump 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 - Before starting this procedure, first read the following:**

Before removing the pump lid:

1. **Press the Stop button** if the pump is running before proceeding.
2. **Disconnect the communication cable from the pump.**
3. **Disconnect main power supply**
4. **Close the gate valves** in suction and discharge pipes.
5. **Release all pressure** from pump and piping system.
6. **Never tighten or loosen** the clamp while the pump is operating.
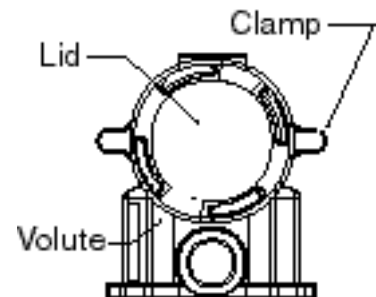
⚠ **WARNING!** If the pump is being pressure tested, release all pressure before removing the trap cover. Do not block the pump suction while the pump is running. If a body part blocks the pump suction it may cause severe or fatal injury. Small children using the pool must ALWAYS have close adult supervision.

⚠ **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 trying to work on it. The pump provides an automatic internal cutoff switch to protect the motor from heat damage during operation.

Priming the pump for the first time, or after service (Continued)

Priming the Pump

NOTICE: If you replace the o-ring with a non-lubricated o-ring, you may need to apply a silicone based lubricant.

- Clean and inspect o-ring; reinstall on trap cover.
- Replace trap cover on trap; turn clockwise to tighten cover.

NOTICE: Tighten the pump lid by hand only (no wrenches)!

Priming time will depend on vertical length of suction lift and horizontal length of suction piping. If pump does not prime, make sure that all valves are open, suction pipe end is under water, pump suction is below water level, and that there are no leaks in suction pipe.

To prime the pump:

Top view

1. Turn the pump clamp and lid in a counterclockwise direction until it stops and remove them.

2. Fill the pump strainer pot with water.

3. Check the system and ensure water has an open path for free system flow.

4. Reinstall the pump clamp and lid onto the strainer pot. The pump is now ready to prime.

5. Make sure all electrical connections are clean and tight.

6. Open the air release valve on the filter, and stand clear of the filter.

7. Switch the pump on at the circuit breaker. Ensure that the green power light is on.

8. Press the **Speed 1** button to select the pump speed of 1100 RPM.

9. Press the **Start** button to start the pump. Use the **Up/Down** button to increase the speed as necessary to prime the pump.

10. When water comes out of the air release valve, close the valve. The system should now be circulating water back to the pool without air bubbles showing in either the hair and lint pot or at the pool return fittings.

11. Use the **Up/Down** button to adjust the operating speed as desired.
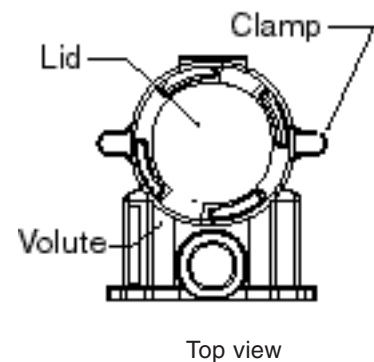
External Control with IntelliComm Communication Center

The pump can be remotely controlled by the Pentair Water Pool and Spa® IntelliComm Communication Center using an optional RS-485 communications cable (P/N 350122). The IntelliComm provides four pairs of input terminal connections. These inputs are actuated by either
15 - 240 VAC or 15 - 100 VDC. Using the device's inputs, the programmed pump speeds can be controlled.

Note: For the pump to accept commands from IntelliComm, the pump must be in the "Running Schedules" mode (LED above the Start/Stop button lit).

If more than one input is active the highest number will be communicated to the pump. The IntelliComm will always communicate to pump using ADDRESS #1.

Program number priority is as follows: Example: If programs 1 and 2 are activated, program 2 will run, regardless of the assigned speed (RPM). The higher program number (2 being higher) will always take priority. The following table shows the wiring terminal descriptions for IntelliComm.

External Control

IntelliComm Communication Center

| Terminal number	Terminal name	Voltage	Maximum current	Phase type	Frequency
1-2	Power supply	100 - 240 VAC	100 mA	1 Input	50/60 Hz
3-4	Program 1	15 -240 VAC or 15 - 100 VDC	1 mA*	1 Input	50/60 Hz
5-6	Program 2	15 -240 VAC or 15 - 100 VDC	1 mA*	1 Input	50/60 Hz
7-8	Program 3	15 -240 VAC or 15 - 100 VDC	1 mA*	1 Input	50/60 Hz
9-10	Program 4	15 -240 VAC or 15 - 100 VDC	1 mA*	1 Input	50/60 Hz
11 12	RS-485 + Data: Yellow - Data: Green	-5 to +5 VDC	5 mA	1 Output	N/A
⏚	Ground				

Connecting to an EasyTouch System

The pump can be controlled by an EasyTouch system via the RS-485 communication cable (P/N 350122). In this configuration, EasyTouch starts, stops and controls the speed of the pump. When the EasyTouch does this, it rewrites the pump's memory, which can take several seconds. This causes a delay after a command is given on the EasyTouch control panel until the pump physically responds.

The pump's control panel is disabled when communicating with the EasyTouch system. Note that EasyTouch will not start communicating with the pump until the pump is assigned to a circuit. The pump's default pump address is one (1) which is the only address that works with EasyTouch. See page 10 for details about how to check the pump address and change if necessary. For more information, refer to the EasyTouch User's Guide (P/N 520584).

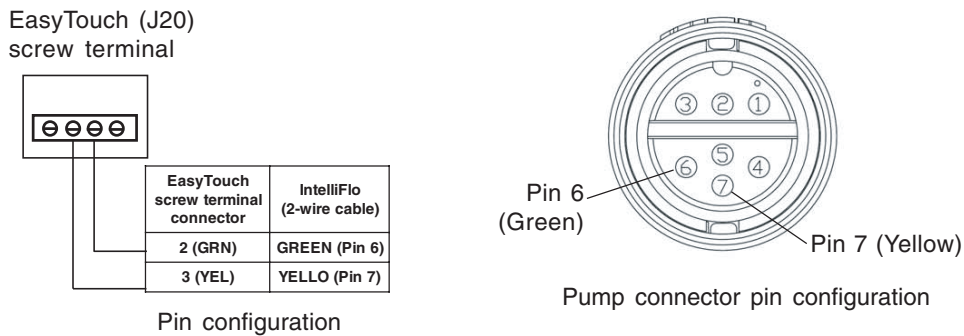To connect the pump's communication cable to EasyTouch load center:

1. ⚠ CAUTION - **Switch the main power off to the EasyTouch load center.**

2. Unlatch the two enclosure door spring latches, and open the door.

3. Remove the two retaining screws securing the high voltage cover panel, and remove it from the enclosure.

4. Loosen the two access screws securing the control panel.

Control panel access screw

Control panel access screw

Retaining screw

High voltage cover panel
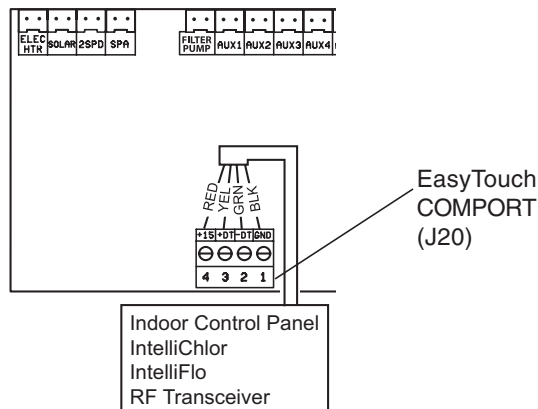
EasyTouch Load Center (front view)
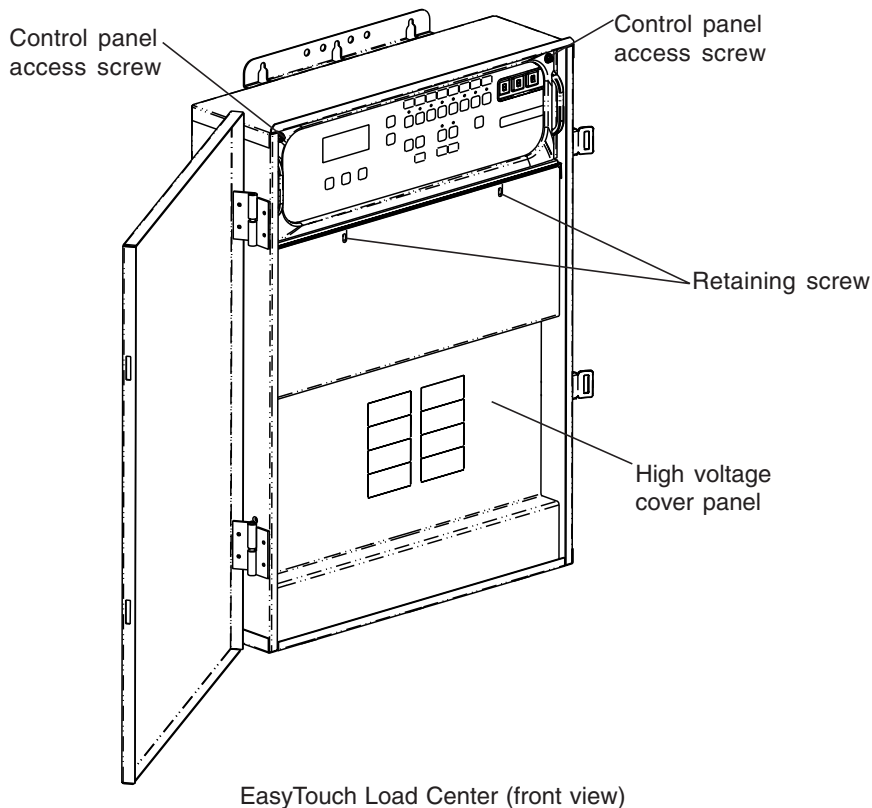
5. Lower down the hinged control panel to access the EasyTouch motherboard.

6. Route the communication cable into the lower plastic grommet, up through the low voltage raceway to the EasyTouch load center motherboard.

Control panel motherboard

Low voltage Raceway
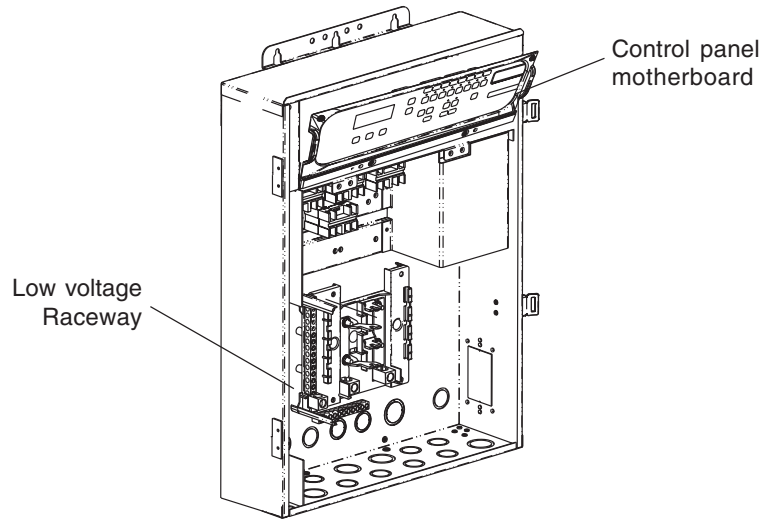
7. Strip back the cable conductors ¼ inch. Insert the two wires into the screw terminals on the board. Secure the wires with the screws.

8. **EasyTouch to pump pin configuration:**
   • Pump: Connect pin 6 (green) to EasyTouch screw terminal pin 2 (green)
   • Pump: Connect pin 7 (yellow) to EasyTouch screw terminal pin 3 (yellow)

EasyTouch (J20) screw terminal

EasyTouch screw terminal connector	IntelliFlo (2-wire cable)
2 (GRN)	GREEN (Pin 6)
3 (YEL)	YELLO (Pin 7)

Pin configuration

Pin 6 (Green)

Pin 7 (Yellow)

Pump connector pin configuration

9. Insert the screw terminal onto the EasyTouch **COMPORT (J20)** board connector. *Note: Multiple wires may be inserted into a single screw terminal.*

EasyTouch COMPORT (J20)

Indoor Control Panel
IntelliChlor
IntelliFlo
RF Transceiver

10. Close the control panel into its original position and secure it with the two access screws.

11. Install the high voltage cover panel and secure it with the two retaining screws.

12. Close the EasyTouch load center front door. Fasten the two spring latches.

13. Switch the power on to the EasyTouch load center.

Control panel
access screw

Control panel
access screw

Retaining screw

High voltage
cover panel

EasyTouch Load Center (front view)
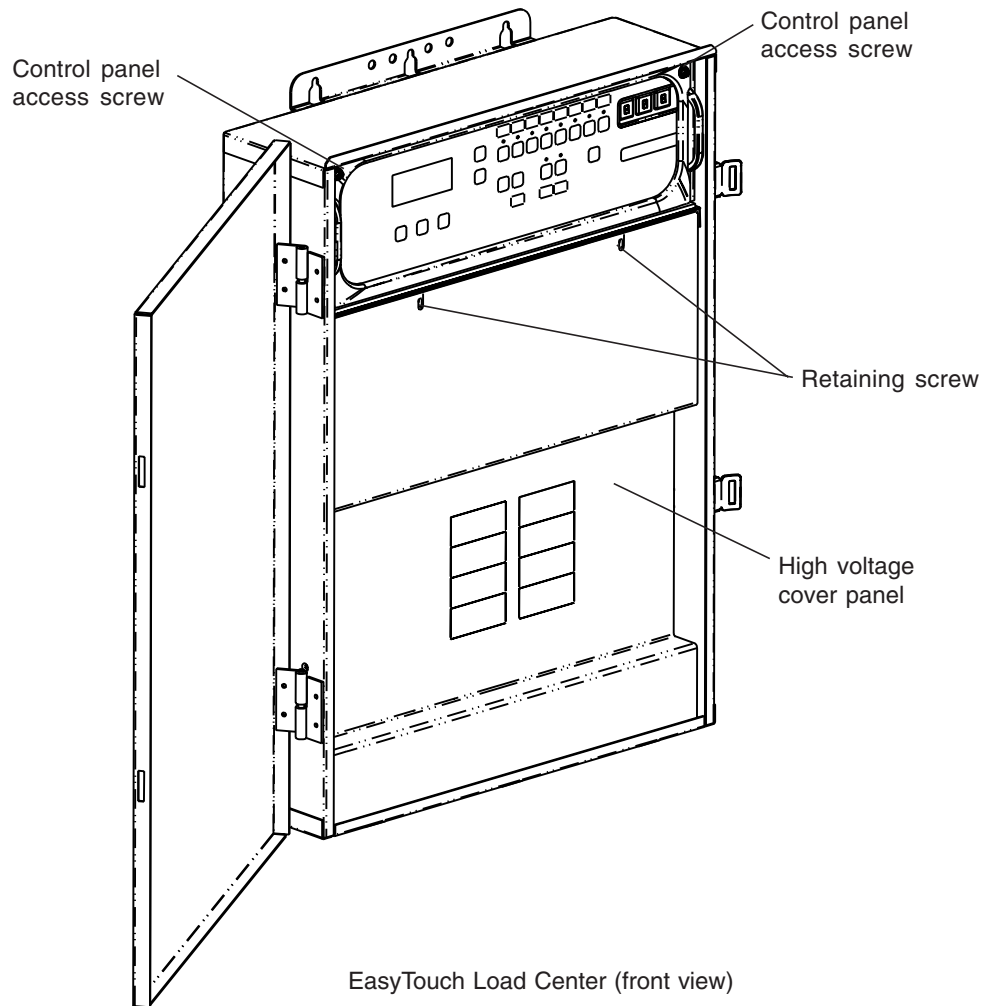
Connecting to an IntelliTouch System

The pump can be controlled by an IntelliTouch system via the RS-485 communication cable (P/N 350122). In this configuration, IntelliTouch starts, stops and controls the speed of the pump. When the IntelliTouch does this, it rewrites the pump's memory, which can take several seconds. This causes a delay after a command is given on the IntelliTouch control panel until the pump physically responds.

The pump's control panel is disabled when communicating with the IntelliTouch system. Note that IntelliTouch will not start communicating with the pump until the appropriate pump address is assigned to a circuit. The pump's default pump address is one. See page 10 for details about how to check the pump address and change if necessary. For more information, refer to the IntelliTouch User's Guide (P/N 520102).

To connect the pump's communication cable to IntelliTouch load center:

1. ⚠ **CAUTION - Switch the main power off to the IntelliTouch load center.**

2. Unlatch the IntelliTouch load center front door spring latches, and open the front door.

3. Remove the cover-panel screws securing the high voltage cover-panel, and remove it from the enclosure.

4. Loosen the two control panel access screws and fold down the outdoor control panel.

5. Insert the two-wire cable into plastic grommet on the bottom of the enclosure and route the wire up through the low voltage raceway to the Personality board.

Personality Board

Low voltage raceway

Plastic grommet

Access screw

Cover-panel screw (Cover-panel not shown)
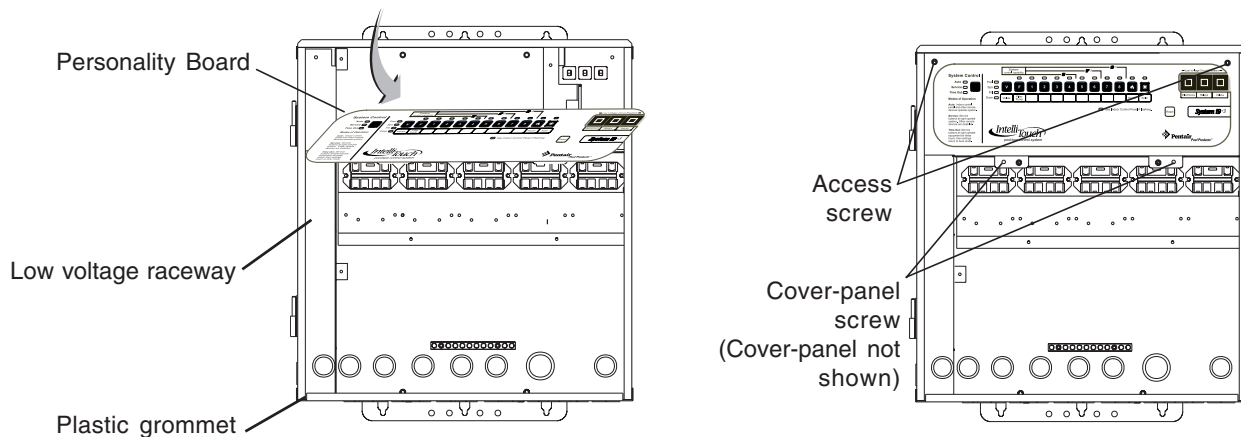
IntelliTouch Load Center

6. Strip back the cable conductors ¼". Insert the wires into the either of the **COM PORTS (J7 and J8)** screw terminals located on the left side of the Personality board. Secure the wires with the screws. For wiring details, refer to "Pin Configuration" shown below. *Note: Multiple wires may be inserted into a single screw terminal. Strip back the cable conductors ¼ inch. Insert the two wires into the screw terminals on the board. Secure the wires with the screws.*
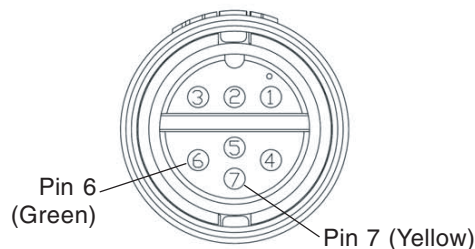
.
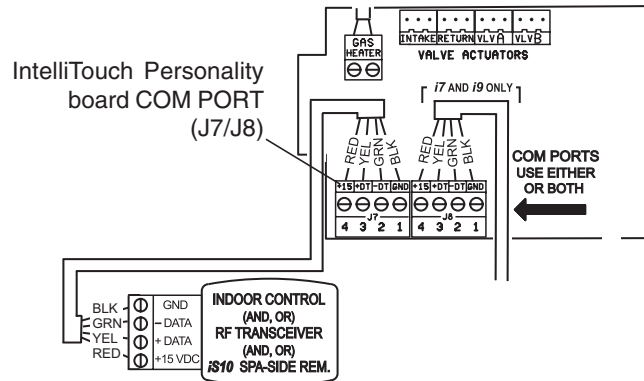
Pin Configuration Pump to IntelliTouch pin configuration:

- Pump: Connect pin 6 (green) to IntelliTouch screw terminal pin 2 (green)
- Pump: Connect pin 7 (yellow) to IntelliTouch screw terminal pin 3 (yellow)

IntelliTouch screw terminal connector	IntelliFlo (2-wire cable)
2 (GRN)	GREEN (Pin 6)
3 (YEL)	YELLO (Pin 7)
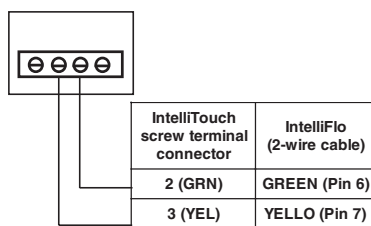
Pin configuration

Pump connector pin configuration

7. Close the control panel into its original position and secure it with the two access screws.

8. Install the high voltage cover panel and secure it with the two retaining screws.

9. Close the load center front door. Fasten the two spring latches.

10. Switch the power on to the load center.

Connecting to a SunTouch System

The pump can be controlled by a SunTouch system via the RS-485 communication cable (P/N 350122). To connect the two wire RS-485 cable from the pump's drive assembly to the motherboard located in the SunTouch Power Center:

> ⚠ **WARNING** - Switch OFF main system power to the SunTouch Power Center before making any connections.

To access the SunTouch Power Center electronics compartment:

1. Unlatch the front door of the SunTouch Power Center, and open the door.

2. Loosen the retaining screw on front panel. Open the hinged front panel to access the electronics compartment.

3. Route the two conductor cable up through the Power Center grommet opening located on the left side, and up through the low voltage raceway to the motherboard.

4. Strip back the cable conductors ¼ in. Insert the wires into the screw terminals (provided in the kit). Secure the wires with the screws. Make sure to match the color coding of the wires; Yellow = +DT, Green = -DT.

5. Insert the connector on the **COMPORT (J11)** screw terminal on the motherboard.

6. When the connection is completed, close the control panel and secure it with the retaining screw.

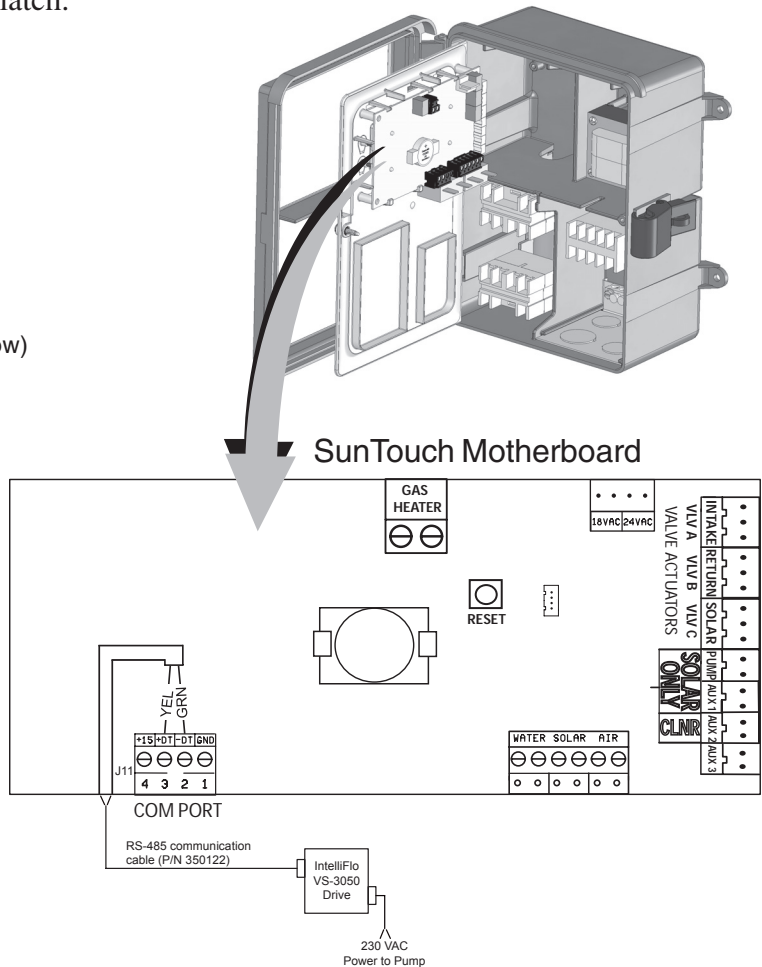7. Close the front door. Fasten the spring latch.

Pin 6 (Green)

Pin 7 (Yellow)

Pump cable pin configuration

SunTouch Motherboard
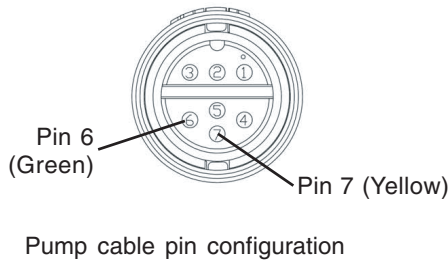
SunTouch
COM PORT (J11)
screw terminal
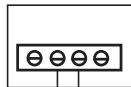
SunTouch screw terminal connector	IntelliFlo (2-wire cable)
2 (GRN)	GREEN (Pin 6)
3 (YEL)	YELLOW (Pin 7)

Pin configuration

COM PORT

RS-485 communication cable (P/N 350122)

IntelliFlo VS-3050 Drive

230 VAC Power to Pump

Section 4
User Maintenance

The following information describes how to service and maintain the pump.

Pump Strainer Basket

The strainer, sometimes referred to as the "Hair and Lint Pot," is in front of the of the pump. Inside there is a basket which must be kept clean of leaves and debris at all times. View the basket through the top see through lid to inspect for leaves and debris.

Regardless of the length of time between filter cleaning, it is most important to visually inspect the hair and lint pot basket at least once a week. A dirty basket will reduce the efficiency of the filter and possibly the heater.

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

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

Pump Strainer Basket Service

If the pump is installed below the water level of the pool, close the return and suction lines before opening the hair and lint pot on the pump.

1. Press the Stop button to stop the pump and switch off the pump at the circuit breaker.
2. Disconnect the communication cable from the pump.
3. Relieve pressure in the system.
4. Turn the clamp and lid in a counterclockwise direction until it stops.
5. Remove the clamp and lid.
6. Remove the basket and put the debris into the trash and rinse out the basket. If the basket is cracked, replace the basket.
7. Replace the basket and fill the pump pot and volute with water up to the inlet port.
8. Clean the cover, o-ring, and sealing surface of the pump pot. Grease the o-ring with Teflon® or silicone lubricant.
9. Reinstall the lid by placing the clamp and the lid on the pot.

Pump Strainer Basket Service (Continued)

10. Ensure that the lid o-ring is properly placed. Seat the clamp and lid then turn clockwise until the handles are horizontal as shown.

11. Reconnect the communication cable to the pump if required.

12. Switch the power ON at the circuit breaker. Reset the pool time clock to the correct time.

> ⚠ **WARNING —** FILTER 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 BLOW OFF WHICH CAN RESULT IN SEVERE INJURY, DEATH, OR PROPERTY DAMAGE. TO AVOID THIS POTENTIAL HAZARD, FOLLOW THESE INSTRUCTIONS.

13. Open the manual air relief valve on top of the filter.
14. Stand clear of the filter. Press the Start button on the pump.
15. Bleed air from the filter until a steady stream of water comes out.
16. Close the manual air relief valve.

Motor Service

1. **Protect from heat:**
   - Shade the motor and controller from the sun.
   - Any enclosure must be well ventilated to prevent overheating. Particular attention should be paid to the motor fan cover and the cooling fins between the drive and the motor.
   - Provide ample cross ventilation.

2. **Protect against dirt:**
   - Protect from any foreign matter or splashing water.
   - Do not store (or spill) pool chemicals near the motor.
   - Avoid sweeping or stirring up dust near the motor while it is operating.
   - If a motor has been damaged by dirt it voids the motor warranty.

3. **Protect against moisture:**
   - Protect from splashing pool water.
   - Protect from the weather.
   - Protect from lawn sprinklers.
   - If a motor has become wet - let it dry before operating. Do not allow the pump to operate if it has been flooded.
   - If a motor has been damaged by water it voids the motor warranty.

Note: DO NOT wrap motor and controller with plastic or other air tight materials. The motor and controller may be covered, but not wrapped in plastic, during a storm, for winter storage, etc., but never when operating, or expecting operation.

Winterizing

To protect the pump electronics from damage due to freezing conditions, the pump will switch it self on to generate internal heat when the air temperature drops below 40° F. The pump's "Anti Freeze" feature is not intended to protect the system plumbing from freezing. The Anti Freeze temperature feature is adjustable and can be changed from 40° F - 50° F (4.4° C - 10° C). See page 11 for more information.

1. If the air temperature drops below 40° F the water in the pump can freeze and cause damage. Freeze damage is not warrantable.

2. To prevent freeze damage follow the procedures listed below.
   - Shut off electrical power for the pump at the circuit breaker.
   - Drain the water out of the pump by removing the two thumb-twist drain plugs located at the bottom of the volute. Store the plugs in the pump basket.
   - Cover the motor to protect it from severe rain, snow and ice.
   - Do not wrap the motor in plastic. It will cause condensation and rust on the inside of the motor.

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

Priming the pump after service

Before a system start-up, the pump and system must be manually primed. Make sure to reopen valves before operating. To prime the pump, the strainer pot must be filled with water.

> ⚠️ **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. Continued operation in this manner could cause a loss of pressure, resulting in damage to the pump case, impeller and seal.

For instructions about how to prime the pump, refer to "Priming the pump for the first time or after servicing," on page 22.

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Section 5
Installation and Removal

The following information describes how to install the IntelliFlo VS+ SVRS or IntelliPro VS+ SVRS pump.

> **Note: Before installing this product, read and follow all warning notices and instructions on page iii- vi.**

Kit Contents

- Pump, RS-485 communication cable, FWC cover, gasket, screws, vacuum gauge, and Installation and User's Guide (this manual).

Installing the Pump

Only a qualified service person should install the pump. Refer to "IMPORTANT SAFETY PRECAUTIONS" on pages iii to vi for additional installation guidance.

Location

1. Install the pump as close to the pool or spa as possible. To reduce friction loss and improve efficiency, use short and direct suction and piping returns.

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

3. Install the pump a minimum of two (2) feet from the heater outlet.

4. Do not install the pump more than (8) feet above the water level or three (3) feet below water level.

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

6. For hot tubs and spas, do not install within an outer enclosure or beneath the skirt of a hot tub or spa.

7. Install the pump with a rear clearance of at least 6 inches so that the motor can be removed easily for maintenance and repair.

Piping

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.

Do not install 90° elbows directly into pump inlet or outlet. 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 (i.e., two (2) inch pipe requires a ten (10) inch straight run in front of the suction inlet of the pump). This will help the pump prime faster and last longer.

Flooded suction systems should have gate valves installed on suction and discharge pipes for maintenance, however, the suction gate valve should be no closer than five (5) times the suction pipe diameter as described above.

Check Valve

Check valves must **not** be installed on the suction or discharge side of the pump. Also, the pump cannot be used in series with other pumps.

Wiring the Pump

To connect the pump to an AC power source:

1. Make sure all electrical breakers and switches are turned off before wiring motor.
2. Make sure that the wiring voltage is 230 VAC ± 10%.
3. Use #12 AWG for wire runs up to 100 feet and #10 AWG for lengths longer than 100 feet. When in doubt use a heavier gauge (larger diameter) wire. Heavier gauge will allow the motor to run cooler and more efficient.
4. Make 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. Permanently ground the motor using the green ground wire, as shown below. Use the correct wire size and type specified by National Electrical Code. Make sure the ground wire is connected to an electrical service ground.
7. Bond the motor to the pool structure in accordance with the National Electrical Code. Use a solid No. 8 AWG or larger copper conductor (No. 6 or larger in Canada). Run a wire from the external bonding lug to the pool bonding structure, as shown below.
8. The pump should be permanently connected to either a **circuit breaker**, **2-pole timer** or **2-pole relay**. If AC power is supplied by a GFCI circuit breaker, use a dedicated circuit breaker that has no other electrical loads.
9. **IMPORTANT: When connecting the pump to an automation system (IntelliTouch, EasyTouch, SunTouch and IntelliComm), 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.**

> **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.**

GROUND WIRE
CONNECTION

BONDING LUG
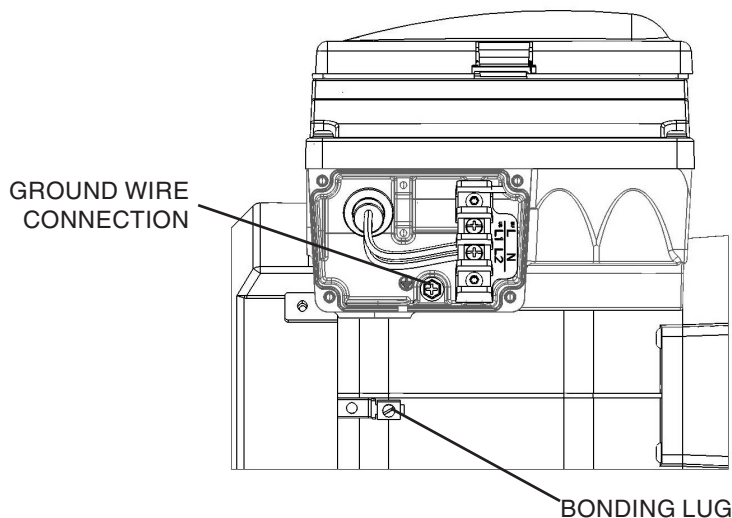
Initial SVRS Setup and Operational Check

The following initial SVRS setup steps describe how to determine the maximum intended flow (GPM) and pump speed (RPM) for the system, and to perform a simulated entrapment event.

1. The SVRS system should be initially setup for operation at maximum flow (see page 12).
2. If the system includes a filter, the filter must be in a clean condition prior to setting up the maximum flow condition.
3. Remove the drain plug from the pump strainer housing and install the vacuum gage into the 1/4" NPT housing opening.

4. The pump should be started and operated at the maximum intended flow or speed for the system. An external flow meter may be required.

5. At the maximum flow condition, check the vacuum reading on the vacuum gage. If the reading is greater than 25 inches of mercury (Hg) then the speed will need to be reduced to limit vacuum to 25 " Hg.

6. If the system requires speed limitations, it's recommended that the pump maximum speed be adjusted, see "Maximum Speed," page 12 for details. The pump should also be password protected (see "Setting Password" page 14 and 15) ,

7. After the system setup, a check should be performed that simulates an entrapment event, refer to "Suction Blockage" page 43 for a description of two potential checking methods.

Pump Disassembly

⚠ **WARNING** — Always disconnect power to the pool 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.

Read all servicing instructions before working on the pump.

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

⚠ **CAUTION** — Be sure not to scratch or mar the polished shaft seal faces; seal will leak if faces are damaged.

All moving parts are located in the rear subassembly of the pump.

Tools required:

*   3/32 inch Allen head wrench.
*   ½ inch open end wrench.
*   9/16 inch open end wrench.
*   Flat blade and phillips head screwdriver

To remove and repair the pump mechanical seal, perform the following procedures:

1. Switch off the pump circuit breaker at the main panel.

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

3. Drain the pump by removing the drain plugs.

4. Remove the six bolts that hold the main pump body (strainer pot/volute) to the rear subassembly.

5. GENTLY pull the two pump halves apart, removing the rear subassembly.

6. Use a 3/32 inch Allen head wrench to loosen the two holding screws located on the diffuser.

7. Hold the impeller securely in place and remove the impeller lock screw by using a Phillips head screwdriver. The screw is a left-handed thread and loosens in a clockwise direction.

8. Use a flat blade screwdriver to hold the motor shaft. The motor shaft has a slot on the end which is accessible through the center of the fan cover.

Pump Disassembly (Continued)

9. To unscrew the impeller from the shaft, twist the impeller counterclockwise.

10. Remove the rotating portion of the mechanical seal from the impeller.

11. Remove the four bolts from the seal plate to the motor, using a 9/16 inch wrench.

12. Place the seal plate face down on a flat surface and tap out the carbon spring seat.

13. Clean the seal plate, seal housing, and the motor shaft.
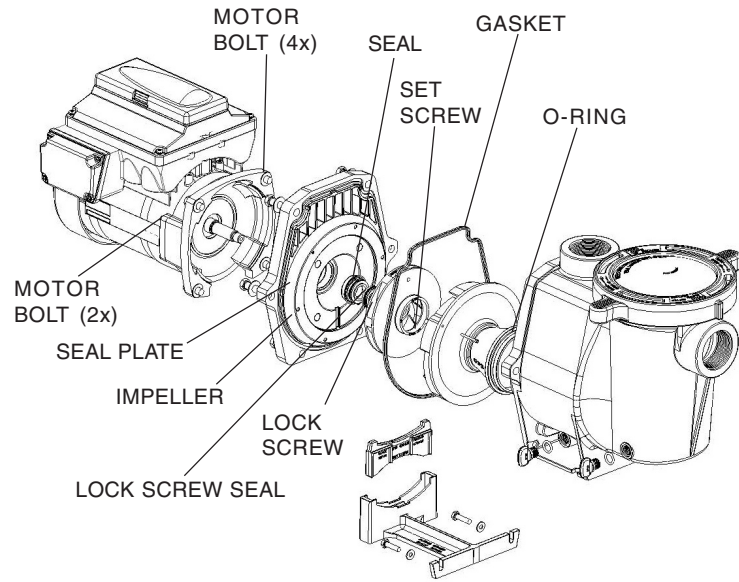
Pump Reassembly/Seal Replacement

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. Ensure that 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 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.

4. Grease the motor shaft thread and screw impeller onto the motor shaft.

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

6. Remount the diffuser onto the seal plate. Make sure the plastic pins and holding screw inserts are aligned.

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

8. Grease the bolt threads, assemble the motor subassembly to the strainer pot-pump body by using the two (2) through bolts for proper alignment. Do not tighten the through bolts until all six (6) bolts are in place and finger tightened.

9. Fill the pump with water.

10. Reinstall the pump lid and plastic clamp. See "Pump Strainer Basket Service" on page 27 for details

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

12. Prime the pump, see page 18.

Shaft Seal Replacement

The Shaft Seal consists primarily of two parts, a rotating member and a ceramic seal. The pump requires little or no service other than reasonable care, however, a 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.**

Drive Assembly Removal and Installation

To remove the pump's drive and control panel from the motor assembly:

1. Make sure all electrical breakers and switches are turned off before removing the drive.
2. Disconnect the RS-485 communication cable from the pump.
3. Open the control panel cover.
4. Remove the three Phillips head screws securing the drive to the motor assembly as shown.

> **CAUTION: TO AVOID ELECTRICAL HAZARD, DO NOT REMOVE THE FOUR TAMPER PROOF BITS FROM THE MOTOR ASSEMBLY**

5. 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.

To install the pump's drive assembly onto the motor assembly:
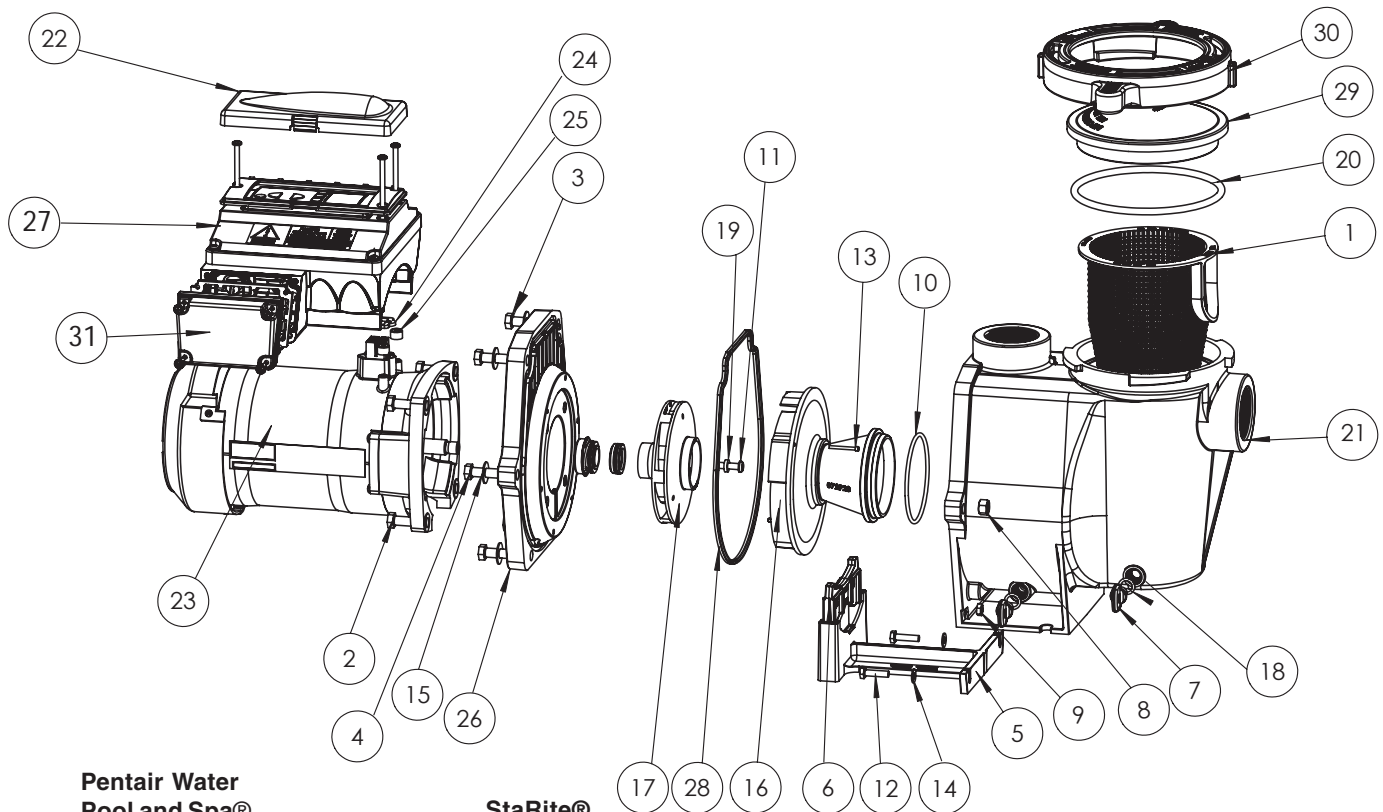
1. Make sure all electrical breakers and switches are turned off before installing the drive.
2. Be sure that the gasket between the drive and motor is in place. It is critical in keeping moisture out of the drive and motor. Replace the gasket if damaged. Do not reassemble with a damaged or missing gasket.

   CAUTION: TO AVOID ELECTRICAL HAZARD, DO NOT TOUCH THE ELECTRICAL BLADES UNDER THE DRIVE

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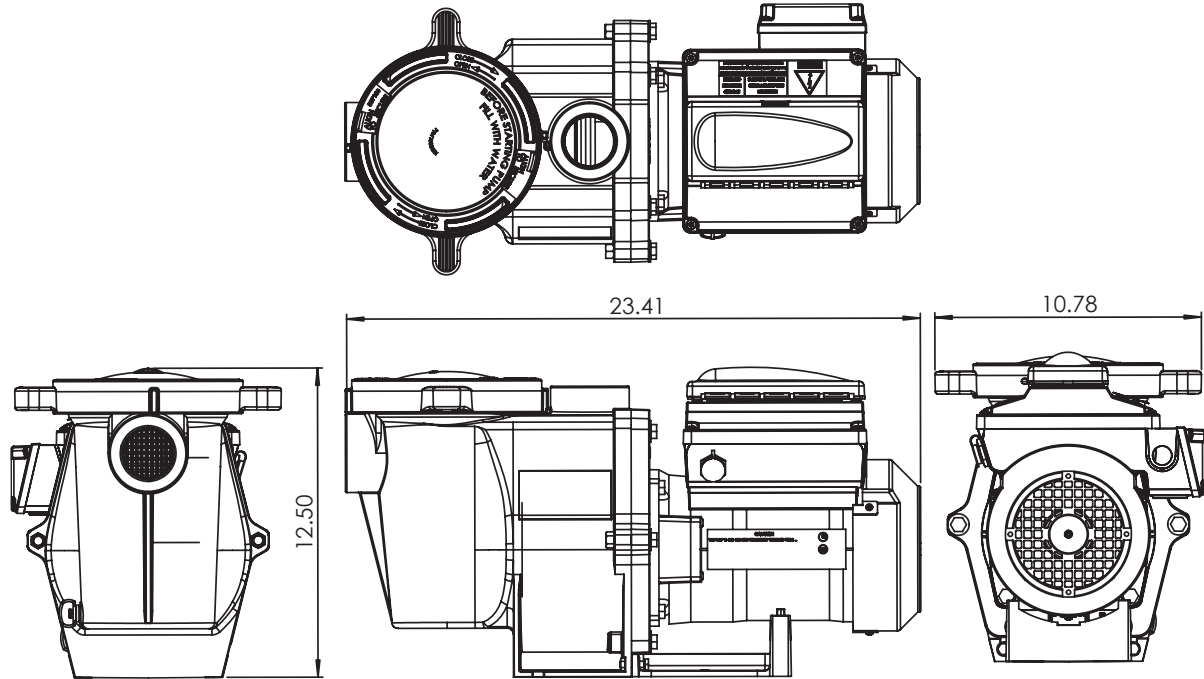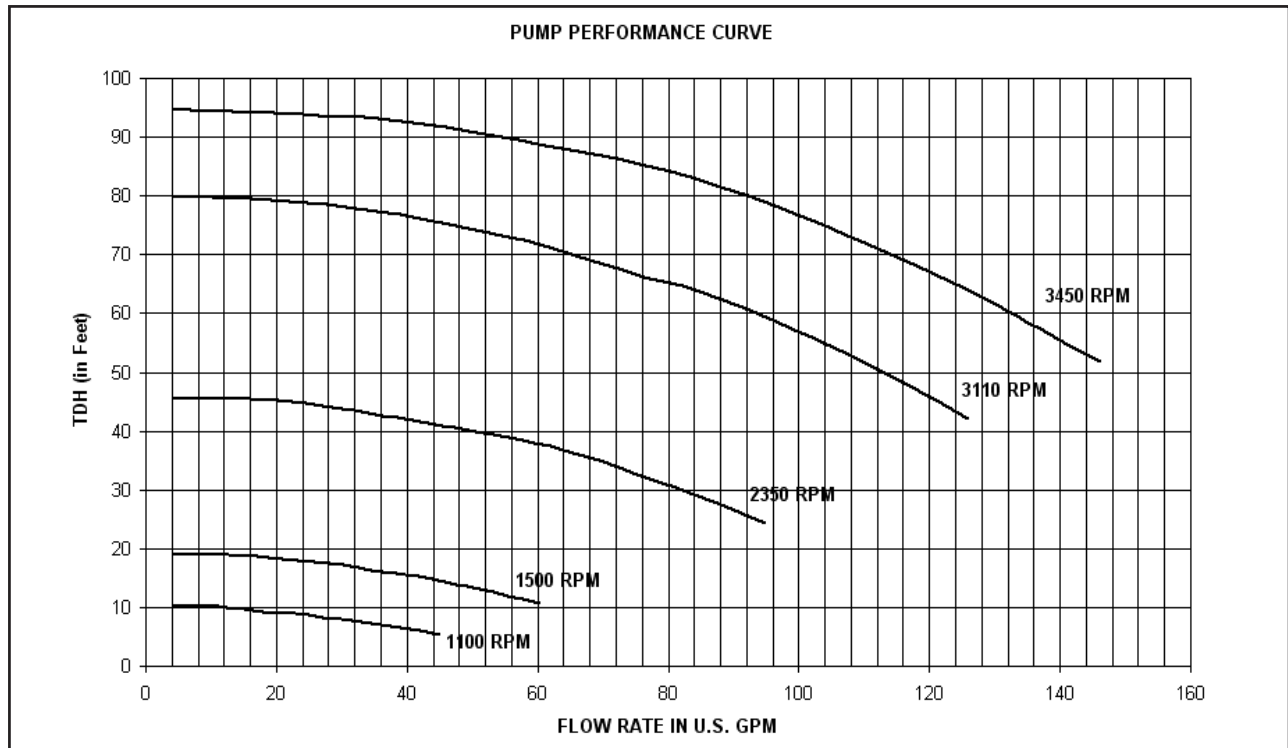5. Secure and tighten the drive assembly with the three Phillips head screws.

Phillips head screw

Phillips head screws

Note: Do not remove these screws

Adapter connector

Gasket

Orange motor post caps (QTY. 3)
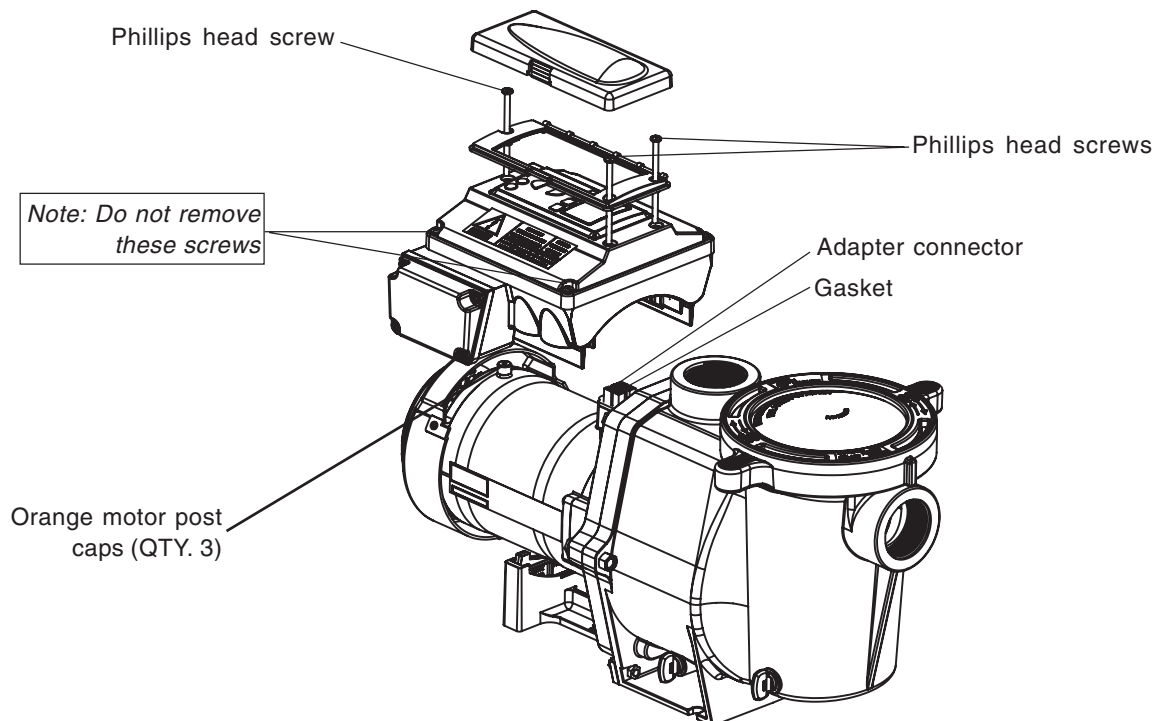
Illustrated Parts List

Item No.	Pentair Water Pool and Spa® (P/N11017) IntelliFlo® VS+SVRS	StaRite® P/N P6E6XS4H-209L IntelliPro® VS+SVRS	Description
1		70387	BASKET AQ & WF
2		70429	BOLT HEX HD, 3/8-16 x 7/8 S/S, (QTY4)
3		70430	BOLT 3/8-16X 1 1/4 HEX CAP 18-8 S/S (QTY4)
4		70431	BOLT 3/8-16X2 HEX CAP 18-8 S/S (QTY2)
5	70927 ALMD	357159 BLK	FOOT WF-PUMP MOTOR SUPPORT
6	70929 ALMD	357160 BLK	FOOT INSERT WF PUMP
7	71131 ALMD	357161 BLK	PLUG DRAIN WFE (QTY2)
8		71403	NUT 3/8-16 BRASS NICKEL PLATED (QTY 2)
9		71406	NUT 1/4-20 SS HEX (QTY 2)
10		71444	O-R1NG 2-238
11		71652	SCREW 1/4-20x1LH, PHILLIPS PAN MS 18-8 SS
12		71657	SCREW 1/4-20 X 1in HEX CAP 18-8 SS QTY2
13		71660	SCREW SET 4-40,1-1/8, WFE, SOC, CAP 8-8SS QTY2
14		72183	WASHER FLAT 1/4x5/8 20 GA THICK 18-8 SS QTY 2
15		72184	WASHER 3/8 IDX 7/8 OD .05 THICK 18-8 SS
16		72928	DIFFUSER ASSEMBLY, BLACK
17		73131	IMPELLER
18		192115	GASKET FLAT WASHER WFE DRN (QTY 2)
19		75713	WSHR RUBB WFE PMP
20		350013	O-RING -436 5.85x0.275 BUNA N60
21	350015 ALMD	357157 BLK	HOUSING WFE
22	350082 ALMD	357290 BLK	CONTR0L COVER ASSY
23	350105 ALMD	357294 BLK	VFD MOTOR
24		350108	DRIVE GASKET
25		350142	SPACER CAP (QTY3)
26	350201 ALMD	350101 BLK	SEAL PLATE ASSY WF
27	351700 ALMD	353070 BLK	DRIVE VS+ SVRS
28		357100	GASKET SANTOPRENE MOLDED(not servicable part)
29		357151	LID SEE THROUGH WF
30	357199 ALMD	357150 BLK	CLAMP CAM & RAMP WF
31	350621 ALMD	350310 BLK	COVER KIT INTELLIFLO FWC
32		355000	SVRS SUCTION GAUGE (Not shown)

Pump Dimensions

23.41   10.78

12.50

Flow and Power vs Flow Pump Curve

PUMP PERFORMANCE CURVE

TDH (in Feet)

3450 RPM
3110 RPM
2350 RPM
1500 RPM
1100 RPM

FLOW RATE IN U.S. GPM

Electrical Specifications

Circuit Protection: Two-pole 20 AMP device at the Electrical Panel.

Input: 230 VAC, 50/60 Hz, 3200 Watts

42

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Section 6
Troubleshooting

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

Alerts and Warnings

The pump displays all alarms and warnings on the control panel display. When an alarm or warning condition exists, the corresponding LED will be lit on the display. All control panel buttons are disabled until the alarm or warning is acknowledged with the **Enter** button. Press the **Reset** button to clear the alarm once the fault condition has been resolved. Note: The pump will not start if the impeller is rotating. The alerts and warnings are:

- **Power out failure:** The incoming supply voltage is less than 170 VAC. 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 error:** If the pump is not defined as primed within the "Max Priming Time" it will stop and generate a "Priming Alarm" for 10 minutes, then attempt to prime again. The "Max Priming Time" is set by the user on the priming menu as discussed on page 12. If the pump cannot prime within five attempts it will generate a permanent alarm that must be manually reset.
- **Overheat alert:** If the drive temperature gets above 130 degrees, the pump will slowly reduce speed until the over temperature condition clears.
- **Anti-freezing:** When active, the motor will run at the preset RPM until the drive temperature increases above the minimum. The pump's internal antifreeze protection is disabled when connected to an automation system. Freeze protection is provided by selecting YES at the ON WITH FREEZE portion of the IntelliTouch's appropriate circuit function menu. To re-enable the pump's internal antifreeze protection, the power to the drive must be cycled off then back on.
- **Blocked system:** Detects a blocked suction line. This alarm resets automatically after two (2) minutes and the pump restarts.
- **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.

Suction Blockage

When something blocks the suction or the pump fully it will shut off immediately (within 1 second). It will also shut off after a few seconds of dead heading with the same alert. The unit will come back on in two (2) minutes and ramp up slowly. This function should be tested with all new installations. When something fully blocks the suction of the pump it will shut off immediately. It will also shut off after a few seconds of dead heading with the same alert. The unit will reset after two (2) minutes and ramp up to speed slowly. This function should be tested on all new installations. The operation can be checked in one of two ways. The first method requires the system to have a fast closing ball, butterfly of sliding valve in the suction line. This valve should be quickly closed in less than one (1) second. The second test method requires the use of a test mat to quickly cover the suction outlet to simulate an entrapment event.

> ⚠ **SVRS Blockage:**
> **WARNING ! When the pump is in PRIMING MODE, the SVRS feature is DISABLED.**

General Troubleshooting Problems

Use the following general troubleshooting information to resolve possible problems with the pump.

Note: Turn off power to unit prior to attempting service or repair.

Problem	Possible Cause	Corrective Action
Pump failure. (For IntelliFlo alert display messages, refer to Alerts and Warning on page 41.	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 make sure lid gasket is in place. Check water level to make sure skimmer is not drawing air.
	Pump will not prime - Not enough water.	Ensure that the suction lines, pump, strainer, and pump volute are full of water.
	Pump does not come out of prime.	Adjust prime sensitivity to a higher setting (default setting is 1%)
	Pump strainer clogged.	Clean pump strainer pot.
	Pump strainer gasket defective.	Replace gasket.
Reduced capacity and /or head. (For IntelliFlo alert display messages, refer to Alerts and Warning on page 41).	Air pockets or leaks in suction line. PRIME ERROR may be displayed.	Check suction piping and valve glands on any suction gate valves.
		Turn off electrical power to the pump.
	Clogged impeller. PRIME ERROR may be displayed.	Remove the (6) bolts that holds the volute to the 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 left hand thread anti-spin bolt and O-ring. 3. Remove, clean and reinstall impeller. 4. Reinstall anti-spin bolt and O-ring.
		Reinstall diffuser, and O-ring.
		Reinstall motor and seal plate into volute.
		Reinstall (6) bolts around seal plate and volute and tighten securely.
	Pump strainer clogged. PRIME ERROR may be displayed.	Clean suction trap.
Pump trips and restarts constantly	Air in system	Bleed air from filter. Ensure that air bubbles are not visible coming into pump pot.
	Suction lift above design limits	Insert vacuum gauge into pump port connection port. Confirm vacuum level is 25 in. mercury (hg) or less.
	Blocked suction Blocked discharge	Stop pump and clear blockage.
	System flow too high. System changing flow too quickly. In floor cleaning system issues.	Reduce system flow. Change speed. Reduce water flow. In floor cleaning systems must be designed with balanced hydraulic losses on all legs.
	Priming not enabled.	Enable priming from the "PRIMING" menu.
	Issues related to other equipment, such as, Heat Pumps and Heaters with internal valves that vibrate.	Lowering ramp speed below 200 RPM may resolve the issue or addition of external manual valve controls, may resolve issue.

Troubleshooting Problems (Continued)

Problem	Possible Cause	Corrective Action
Inadequate circulation. (For IntelliFlo alert display messages, refer to Alerts and Warning on page 41).	Filter ot pump basket dirty.	Check trap basket; if plugged, turn pump off and clean basket. Suction/discharge piping is too small. Check and clean pool filter.
	Speed is set too slow for proper filtration cycle.	Increase filtration run time
Electrical problem. (For IntelliFlo alert display messages, refer to Alerts and Warning on page 41).	Could appear as a "Low Voltage" alarm. PRIME ERROR may be displayed.	Check voltage at motor terminals and at meter while pump is running. If low, see wiring instructions or consult power company. Check for loose connections.
	Could appear as "Over Heat" alert. PRIME ERROR may be displayed.	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 internal terminal overload protector is open. Motor runs too hot. Turn power to motor off. Check for proper voltage. Check for proper impeller or impeller rubbing.
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.
IntelliFlo does not respond to IntelliTouch, EasyTouch, SunTouch, IntelliCOM commands	Improper automation IntelliFlo setup.	1. Ensure that the communication cable is connected at both ends. 2. Check that the IntelliFlo local address matches with the address used in the IntelliTouch. 3. Check that the IntelliFlo has been assigned a circuit name on the IntelliTouch. 4. Ensure that the IntelliFlo 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.

General Warnings

- Never go inside the drive 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 174 GPM or 104 feet of head; use caution when installing and programming to limit pumps performance potential with old or questionable equipment

- Code requirements for the electrical connection differ from state to state. Install equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.

- There is no pressure limit in "Features" flow control

- The unit needs constant power it is built to turn itself on / off

- Always stop the unit before performing maintenance

SVRS Blockage:
⚠️ **WARNING ! When the pump is in PRIMING MODE, the SVRS feature is DISABLED.**

Electrical Cost Overview

To calculate a system's "Continuous Watts" use the following formula:

Amps X Volts X Power Factor = Continuous Watts

Examples:

- 1 HP E+ WhisperFlo = 7.4 amps X (230 Volt) X .90 PF = 1532 watts
- 1 HP Max – E – Pro = 8.0 amps X (230 Volt) X .87 PF = 1600 watts

Once watts are computed, convert watts to kilowatts (kilo is 1000) and multiply this number by kilowatt/hour cost.

1 watt = .01 Kilowatt
100 watts = .1 Kilowatt
1000 watts = 1 Kilowatt
1 HP E+ WhisperFlo 1532 watts or 1.532 Kilowatt x $.08 = $.122 per hour
1 HP Max-E-Pro 1600 watts or 1.600 Kilowatt x $.08 = $.128 per hour

The pump does not require calculation for continuous watts since it is displayed on the screen in all modes. Just simply take the watts published on the screen, convert to kilowatts, and multiply by the kilowatt hour. The formula is:

210 watts = .210 kilowatt X $.08 = $.016 per hour

Remember to also consider the amount of water moved for the cost incurred (Water to Wire Efficiency). The pump cannot be matched in today's industry for flow versus continuous watts at any speed by any other pump in pool. The Filter mode and flow control further assists in cost saving by always allowing the pump to do the least amount of work at all times.

How to make your pool more energy efficient

Swimming pools are great for relaxing, exercising or just having fun. But they also mean higher than average energy bills. The key to saving energy with your pool is to correctly manage the filter pump time, pool temperature and lighting. Consider the following when operating your swimming pool:

Using the pump

Your pool needs to be filtered every 24 hours. The time to filter the pool depends on:

- The size of your pool.
- The filtering equipment.
- How much you use your pool.
- Different environmental factors (such as how much sunlight hits the pool).

Typically, one complete turnover of water every 24 hours provides adequate filtering for a single-family pool. The more you use your pool, the more filtering it will need. It is generally recommended that you run your filter for four to six hours a day during the summer and two to four hours a day during the winter. If you're filtering more than this, try reducing your daily filtering time by 30 minutes. After a week, if the water clarity and chemical balance show adequate filtration is taking place, try reducing your filtering time by another 30 minutes. Continue this process until water clarity or chemical imbalance indicates more filtering is needed. In addition to chemical testing, a good way to check your water clarity is that the main drain cover should be clearly visible from the deck.

Automatic pool sweeps (booster pump style)

Usually, three to four hours of daily operation during summer and two to three hours daily in the winter are sufficient. Start the pool sweep one hour or more after the pool pump has started and stop the sweep one hour or more before the pool pump turns off. On unusually dusty days, increase cleaning time in half-hour increments until the pool is clean. Use a wall brush and leaf skimmer frequently to help the sweep along.

Filter during off-peak times

You can help everyone by filtering your pool during off-peak hours. Avoid operating your pool filter between the hours of noon and 6:00 P.M. This will help reduce the demand for electricity, conserve natural resources, and save money. Of course, if your pool has solar heating, you'll need to filter when the sun is correctly positioned for your solar panels. However, we recommend that you minimize filtration during the peak period of noon to 6:00 P.M. as much as possible.

Setting filtering time

A filter time clock is an easy way to manage pool filtering. Just be sure to check it once a month to make sure the trippers are secure. Check your clock's instruction manual for directions on setting the operation times. Remember to reset the time clock after power outages and for the fall and spring time change.

Preventive maintenance

Follow a regular program of preventive maintenance, including an annual inspection of the heat exchanger to help maintain heating efficiency.

Energy Efficient

When its time to replace your old motor and pump assembly, consider using a variable speed energy-efficient pump. It moves more water more efficiently, and can help you reduce your filter operating time by hours. Once these tasks are done, the pump automatically ramps down to low speed for your pool's daily filtration cycle, which can save energy and money for you.

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Pentair Water
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