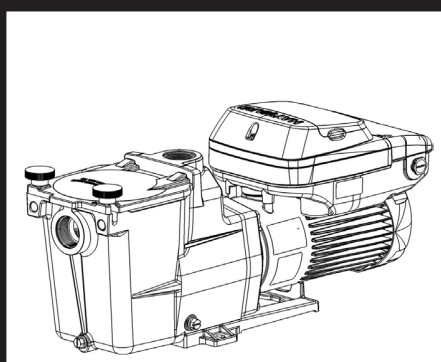
1011784 RevB

HAYWARD®

1.65 THP VS Pump Family

Owner's Manual



Contents

Safety Instructions.....1
Table of Contents.....5
Overview.....6
Installation.....7
Operation.....15
Maintenance.....22
Replacement Parts.....24
Troubleshooting.....25

SP2670020VSP

Hayward Industries
1415 Vantage Park Dr., Suite 400
Charlotte, NC 28203
Phone (908)-355-7995
www.hayward.com

IMPORTANT SAFETY INSTRUCTIONS

Basic safety precautions should always be followed, including the following: Failure to follow instructions can cause severe injury and/or death.

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

⚠ **WARNING** warns about hazards that could cause serious personal injury, death or major property damage and if ignored presents a potential hazard.

⚠ **CAUTION** warns about hazards that will or can cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.

The **NOTICE** label indicates special instructions that are important but not related to hazards.

⚠ **WARNING - Read and follow all instructions in this owner's manual and on the equipment. Failure to follow instructions can cause severe injury and/or death.**

⚠ **WARNING** – This product should be installed and serviced only by a qualified professional.

⚠ **CAUTION** – All electrical wiring MUST be in conformance with all applicable local codes, regulations, and the National Electric Code (NEC).

USE OF NON-HAYWARD REPLACEMENT PARTS VOIDS WARRANTY.

ATTENTION INSTALLER - THIS MANUAL CONTAINS IMPORTANT INFORMATION ABOUT THE INSTALLATION, OPERATION, AND SAFE USE OF THIS VARIABLE SPEED PUMP THAT MUST BE FURNISHED TO THE END USER OF THIS PRODUCT. FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS COULD RESULT IN SERIOUS INJURY.

⚠ **WARNING** – To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times. Components such as the filtration system, pumps, and heaters must be positioned to prevent children from using them as a means of access to the pool.

⚠ **CAUTION** – This pump is intended for use on permanently installed swimming pools and may also be used with hot tubs and spas if so marked. Do NOT use with storable pools. A permanently installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it is capable of being readily disassembled for storage and reassembled to its original integrity. Though this product is designed for outdoor use, it is strongly advised to protect the electrical components from the weather. Select a well-drained area, one that will not flood when it rains. It requires free circulation of air for cooling. Do not install in a damp or non-ventilated location. If installed within an outer enclosure or beneath the skirt of a hot tub or spa, adequate ventilation and free circulation of air must be provided to prevent overheating of the motor.

For warranty information, please go to www.hayward.com/warranty.

SAVE THESE INSTRUCTIONS

⚠ WARNING – Pool and spa components (seals, gaskets, etc.) have a finite life. All components should be inspected frequently and replaced at least every ten years, or if found to be damaged, broken, cracked, missing, or not securely attached.



⚠ WARNING – **Risk of Electric Shock.** All electrical wiring MUST be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on pump or motor, turn off power supply to the pump.

⚠ WARNING – To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent abuse from lawn mowers, hedge trimmers and other equipment.



⚠ WARNING – **Risk of Electric Shock.** In accordance with the National Electric Code (NEC), connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI. The unit must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test circuit button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the pump without the test button being pushed, a ground current is flowing, indicating the possibility of an electric shock. Do not use this pump. Disconnect the pump and have the problem corrected by a qualified service representative before using.

⚠ WARNING – Failure to bond pump to pool structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond pump. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.

Notes to electrician: Use a solid copper conductor, size 8 or larger. Run a continuous wire from external bonding lug to reinforcing rod or mesh. Connect a No. 8 AWG (8.4 mm2) [No. 6 AWG (13.3 mm2) for Canada] solid copper bonding wire to the pressure wire connector provided on the pump housing and to all metal parts of swimming pool, spa, or hot tub, and to all electrical equipment, metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub. IMPORTANT - Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and other general wiring procedures.

⚠ WARNING – **Suction Entrapment Hazard.** Suction in suction outlets and/or suction outlet covers, which are damaged, broken, cracked, missing, or unsecured cause severe injury and/or death due to the following entrapment hazards (symbols complements of APSP):



Hair Entrapment - Hair can become entangled in suction outlet cover.
Limb Entrapment - A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in a mechanical bind or swelling of the limb.



Body Suction Entrapment - A differential pressure applied to a large portion of the body or limbs can result in an entrapment.

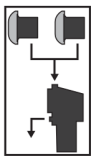


Evisceration/ Disembowelment - A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is damaged, broken, cracked, missing, or unsecured can result in evisceration/disembowelment.



Mechanical Entrapment - There is potential for jewelry, swimsuits, hair decorations, fingers, toes, or knuckles to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

⚠WARNING – To Reduce the risk of Entrapment Hazards:



- When outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [0.91 meter] apart, as measured from near point to near point.
- Dual suction fittings shall be placed in such locations and distances to avoid "dual blockage" by a user.
- Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas.
- The maximum system flow rate shall not exceed the values shown in the "Pipe Sizing Chart" found in section 4.3 below.
- Never use pool or spa if any suction outlet component is damaged, broken, cracked, missing, or not securely attached.
- Replace damaged, broken, cracked, missing, or not securely attached suction outlet components immediately.
- In addition to two or more suction outlets per pump installed in accordance with latest APSP standards and CPSC guidelines, follow all national, state, and local codes applicable.
- Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.



⚠WARNING – **Hazardous Pressure.** Pool and spa water circulation systems operate under hazardous pressure during start-up, normal operation, and after pump shut-off. Stand clear of circulation system equipment during pump start-up. Failure to follow safety and operation instructions could result in violent separation of the pump housing and cover due to pressure in the system, which could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control valve position while pump is running. Before starting pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water mix) is discharged from the valve. All suction and discharge valves MUST be OPEN when starting the circulation system. Failure to do so could result in severe personal injury and/or property damage.



⚠WARNING – **Separation Hazard.** Failure to follow safety and operation instructions could result in violent separation of pump components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing pool and spa circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter manual air relief valve body is in locked position in filter upper body. All suction and discharge valves MUST be OPEN when starting the circulation system. Failure to do so could result in severe personal injury and/or property damage.

⚠WARNING – Never operate the circulation system at more than 50 PSI maximum.

⚠WARNING – **Fire and burn hazard.** Motors operate at high temperatures and if they are not properly isolated from any flammable structures or foreign debris they can cause fires, which may cause severe personal injury or death. It is also necessary to allow the motor to cool for at least 20 minutes prior to maintenance to minimize the risk for burns.

⚠WARNING – Failure to install according to defined instructions may result in severe personal injury or death.

SAVE THESE INSTRUCTIONS

HAYWARD®

⚠WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours.**
- **KEEP** new and used batteries **OUT OF REACH or CHILDREN.**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.



⚠WARNING – Even used batteries may cause death or serious injury.

⚠WARNING – Call a local poison control center for treatment information.

⚠WARNING – Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.

⚠WARNING – This product contains non-rechargeable batteries. Do NOT force discharge, recharge, disassemble, heat above 85°C, or incinerate. Doing so may result in injury due to venting, leakage, or explosion resulting in chemical burns.

⚠WARNING – This product contains non-replaceable batteries. Do NOT under any circumstances attempt to remove or replace the factory-installed battery.

⚠WARNING – Non-rechargeable batteries are not to be recharged.

NOTICE – This product contains a Panasonic BR1225 coin-type lithium battery.

NOTICE – The nominal voltage of the battery contained within this product is 3V.

Certificate of Conformity

Product:	MaxFlo, SuperPump, TriStar, & LifeStar Series Variable Speed Pumps
CPSC Regulation:	Safety Standard for Button Cell or Coin Batteries and Consumer Products Containing Such Batteries Underwriters Laboratories UL 4200A-2023
Manufacturer:	Hayward Industries 1415 Vantage Park Drive, Suite 400, Charlotte, NC 28203 Technical Service Phone: (908) 355-7995
Manufacture Location:	Hayward Industries, One Hayward Industrial Drive, Clemmons, NC 27012
Date Manufactured:	The serial number is a 17 digit number Example serial number: 21122305456789001 The 5th - 8th digits are the “year & month” of the date of manufacture Example above is the 5th month of 2023
Tested By:	Hayward Industries, One Industrial Drive, Clemmons, NC 27012 Phone: (908) 355-7995 Test Report: March 2024

HAYWARD®

Table of Contents

Overview.....6
- Product Dimensions.....6

Installation.....7
- Pump Location.....7
- Pump Mounting.....7
- Plumbing.....8
- Electrical.....8
- Digital Control Interface Orientation.....9
- Interface Mounting.....9
- Installation Procedure.....11
- Wiring Diagrams.....11
  - Input Power Wiring (Required).....11
  - Hayward Automation Control Wiring.....11
  - External Relay Speed Control Wiring.....13
  - Wall Mounted Digital Control Interface Wiring.....14
  - Remote Stop Switch Wiring.....14

Operation.....15
- Prior to Start-Up.....15
- Starting/Priming the Pump.....15
- User Interface Summary.....16
- Menu Outline.....16
- Initial Startup.....17
- Configuration Menu.....17
- Timers Menu.....19
- Preset Speed Setup Menu.....20
- Diagnostic Menu.....21
- Stop/Resume.....21
- Quick Clean.....21
- Remote Stop.....22

Maintenance.....22
- Storage/Winterization.....22
- Shaft Seal Change Instructions.....23

Replacement Parts.....24

Troubleshooting.....25
- General Problems.....25
- Check System Messages.....26

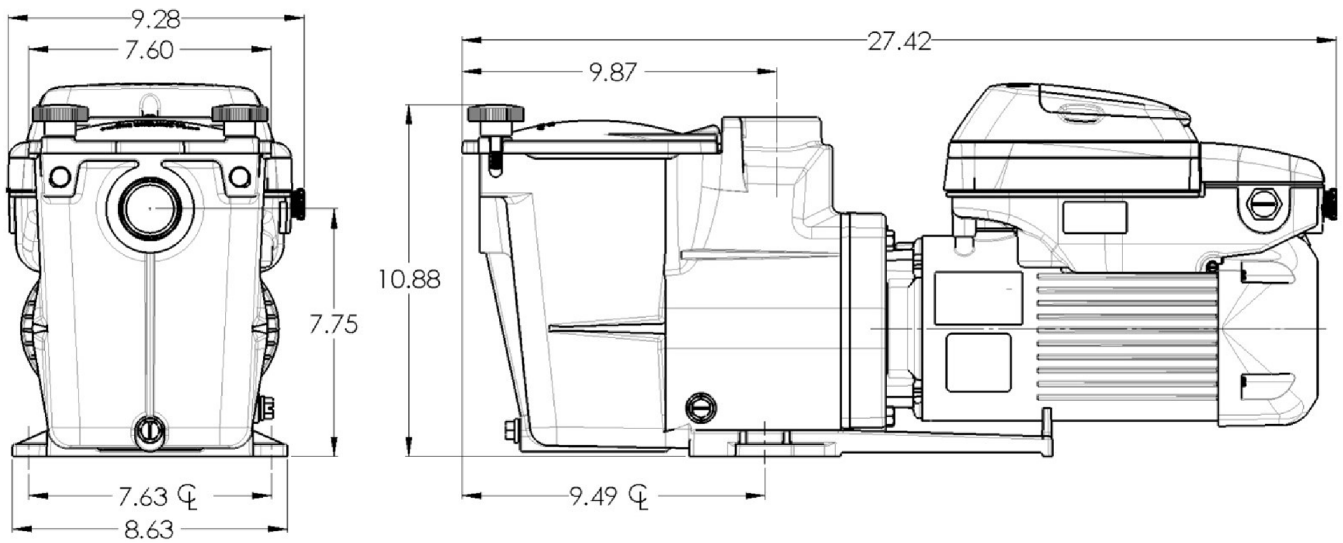
Overview

Hayward's 1.65 THP variable speed pump family delivers incredible energy savings via its advanced hydraulic design combined with a totally enclosed, permanent magnet motor. This pump is easily installed either as a programmable stand-alone pump or with a Hayward or third party controller and features an easy-to-use digital control interface that can be mounted in four different positions on the pump or removed and mounted on the wall for total user convenience.

Primary Features

- Totally enclosed, permanent magnet motor
- Advanced hydraulic design
- Fully programmable with a self-contained 24-hour clock and up to 8 custom speed and timer functions
- For enhanced pool management, can be controlled by Hayward or third party pool and spa control platforms, without the need for additional accessories
- Digital control interface that can be mounted in four different positions on the pump or removed and mounted on the wall
- Motor drive includes built-in protection for high temperatures and voltage fluctuations. Drive is also designed to withstand temperatures below freezing without issue

Product Dimensions



Energy Efficiency Overview

The energy consumed by a pool pump is measured in terms of Watts (W) or Kilowatts (kW). The 1.65 THP variable speed pump family displays power consumption in Watts. Given this information, you can determine the cost of operating the pump:

Power consumption of pump X Cost of electricity = Cost of Pump Operation per Hour

Example: Hayward variable speed pump operating at 300 W. Cost of electricity = $0.10 per kWh
Convert Watts to Kilowatts: 300 W = 0.3 kW
0.3 kW X $0.10/kWh = $0.03 per hour

Note the power consumption is greatly affected by the speed of the pump. Lowering the speed of the pump can drastically reduce the power that is consumed. On the following page are some of the major benefits of running the pump at lower speeds.

Benefits of running at low speeds:
- Save electricity and money
- Improved filtration – the filter can often remove smaller particles when the water moves slower
- Quiet operation
- Reduced Total Dynamic Head – less stress on equipment (e.g. filter) which can lengthen equipment life

When determining the speed(s) to operate your pump, you must also take into account the minimum requirements for proper sanitation and equipment/water feature functionality.

It is recommended you filter ("turnover") all the water in the pool at least once every 24 hours. Check with local requirements for the minimum turnover rate. Running the pump at a lower speed may require running the pump for a longer period of time in order to meet the turnover requirements for proper sanitation.

Equipment such as heaters, skimmers, and chlorinators require minimum flows to operate correctly. Refer to individual equipment manuals for specific flow requirements.

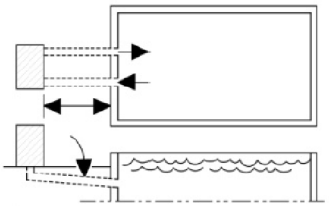
After setting the pump speed(s), it is recommended you check that all other equipment/water features are functioning as intended. For example, when running at a low speed for daily filtration, verify water is adequately flowing over the skimmer weirs. Operate the pump at higher speeds for the shorter periods of time needed to operate a heater, water feature, etc.

Installation

⚠ WARNING – This product should be installed and serviced only by a qualified professional.

Pump Location

Locate pump as close to pool as practical and run suction lines as direct as possible to reduce friction loss. Suction lines should have continuous slope upward from lowest point in line. Joints must be tight (but not over-tightened). Suction line diameter must equal or be larger than the discharge line diameter. Though the pump is designed for outdoor use, it is advised to place pump and filter in the shade to shield them from continuous direct heat. Select a well-drained area that will not flood when it rains. Do NOT install pump and filter in a damp or non-ventilated location. Keep motor clean. Pump motors require free circulation of air for cooling.

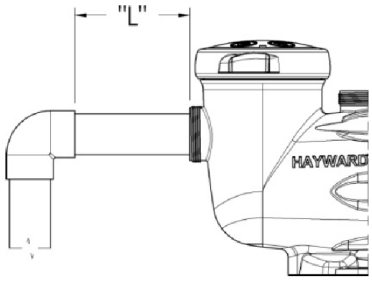


Pump Mounting

Install pump on a level concrete slab or other rigid base to meet all local and national codes. Secure pump to base with screws or bolts to further reduce vibration and stress on pipe or hose joints. The base must be level, rigid, and vibration free.

Pump mount must:
- Allow pump inlet height to be as close to water level as possible
- Allow use of short, direct suction pipe (to reduce friction losses)
- Allow for valves in suction and discharge piping
- Be protected from excess moisture and flooding
- Allow adequate access for servicing pump and piping

MAXIMUM RECOMMENDED SYSTEM FLOW RATE BY PIPE SIZE		
Pipe Size in. [mm]	**Maximum Flow Rate GPM [LPM]**	**Minimum Straight Pipe Length "L" in. [mm]***
1 ½" [50]	45 [170]	7 ½" [190]
2" [63]	80 [300]	10" [254]
2 ½" [75]	110 [415]	12 ½" [317]
3" [90]	160 [600]	15" [381]



NOTE: It is recommended that a minimum length of straight piping (shown as "L" in above diagram), equivalent to 5 pipe size diameters, be used between the pump suction inlet and any plumbing fittings (elbows, valves, etc.).

When installing the 1.65 THP VS pump family, care should be taken to ensure proper pipe and equipment sizing to handle the maximum flow required. It is recommended to set the maximum speed in order to not exceed the maximum flow rate.

⚠ WARNING – **Hazardous Pressure.** Pumps, filters, and other equipment/ components of a swimming pool filtration system operate under pressure. Incorrectly installed and/or improperly tested filtration equipment and/or components may fail resulting in severe personal injury or death.

Plumbing

1. Use PTFE tape to seal threaded connections on molded plastic components. All plastic fittings must be new or thoroughly cleaned before use. NOTE - Do NOT use Plumber's Pipe Dope as it may cause cracking of the plastic components. When applying PTFE tape to plastic threads, wrap the entire threaded portion of the male fitting with one to two layers of tape. Wind the tape clockwise as you face the open end of the fitting, beginning at the end of the fitting. The pump suction and outlet ports have molded-in thread stops. Do NOT attempt to force hose connector fitting past this stop. It is only necessary to tighten fittings enough to prevent leakage. Tighten fitting by hand and then use a tool to engage fitting an additional 1 ½ turns. Use care when using PTFE tape as friction is reduced considerably; do NOT over-tighten fitting or you may cause damage. If leaks occur, remove connector, clean off old PTFE tape, re-wrap with one to two additional layers of PTFE tape, and re-install connector.

2. Fittings (elbows, tees, valves, etc.) restrict flow. For better efficiency, use the fewest possible fittings. Avoid fittings that could cause an air trap. Pool and spa fittings MUST conform to the International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Electrical

⚠ WARNING – All electrical wiring MUST conform to local codes, regulations, and the National Electric Code (NEC).

⚠ WARNING – Ground and bond pump before connecting to electrical power supply. Failure to ground and bond pump can cause serious or fatal electrical shock hazard. Do NOT ground to a gas supply line. To avoid dangerous or fatal electrical shock, turn OFF power to pump before working on electrical connections. Fire Hazard - match supply voltage to pump nameplate voltage. Insure that the electrical supply available agrees with the pump's voltage, phase, and cycle, and that the wire size is adequate for the amps rating and distance from the power source. Use copper conductors only.

Electrical Specs

Refer to motor nameplate for voltage and current ratings. Use copper conductors only. For indoor & outdoor use. Connect pump to a 15 amp branch circuit in accordance with local codes, regulations, and the National Electric Code (NEC). A disconnecting means located at least 5 ft. from the inside wall of the pool, spa, or hot tub must be provided.

Voltage

Voltage at pump MUST NOT be more than 10% above or below nameplate rated voltage, or components may overheat, causing overload tripping and reduced component life. If voltage is less than 90% or more than 110% of rated voltage when pump is running at full load, consult the power company.

Grounding and Bonding

1. Install, ground, bond, and wire pump in accordance with local or national electrical code requirements.
2. Permanently ground pump. Use green ground terminal provided under access plate; use size and type wire required by code. Connect ground terminal to electrical service ground.
3. Bond pump to pool structure. Bonding will connect all metal parts within and around the pool with a continuous wire. Bonding reduces the risk of a current passing between bonded metal objects, which could potentially cause electrical shock if grounded or shorted. Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and general wiring procedures.
4. Use a solid copper conductor, size 8 or larger. Run wire from external bonding lug to reinforcing rod or mesh. Connect a No. 8 AWG (8.4 mm2) [No. 6 AWG (13.3 mm2) for Canada] solid copper bonding wire to the pressure wire connector provided on the motor housing and to all metal parts of swimming pool, spa, or hot tub, and to all electrical equipment, metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub.

Wiring

⚠ WARNING – All electrical wiring MUST conform to local codes, regulations, and National Electric Code (NEC)

1. Pump MUST be permanently connected to circuit. If other lights or appliances are also on the same circuit, be sure to add their amp loads before calculating wire and circuit breaker sizes. Use the circuit breaker as the master On-Off switch.
2. If this VS pump is being used to replace an existing pump that was controlled by a separate mechanical time clock, it should be connected directly to the line power supply, bypassing the time clock. The time clock can then be used to power other equipment (such as a heater, heat pump, or booster pump) that requires the filter pump to be operating when used. If the time clock is used in this manner, it should be set to power the equipment during a time cycle when the VS pump is operating at an appropriate flow rate to operate the other equipment, as defined by the timers set in the Timer Menu.

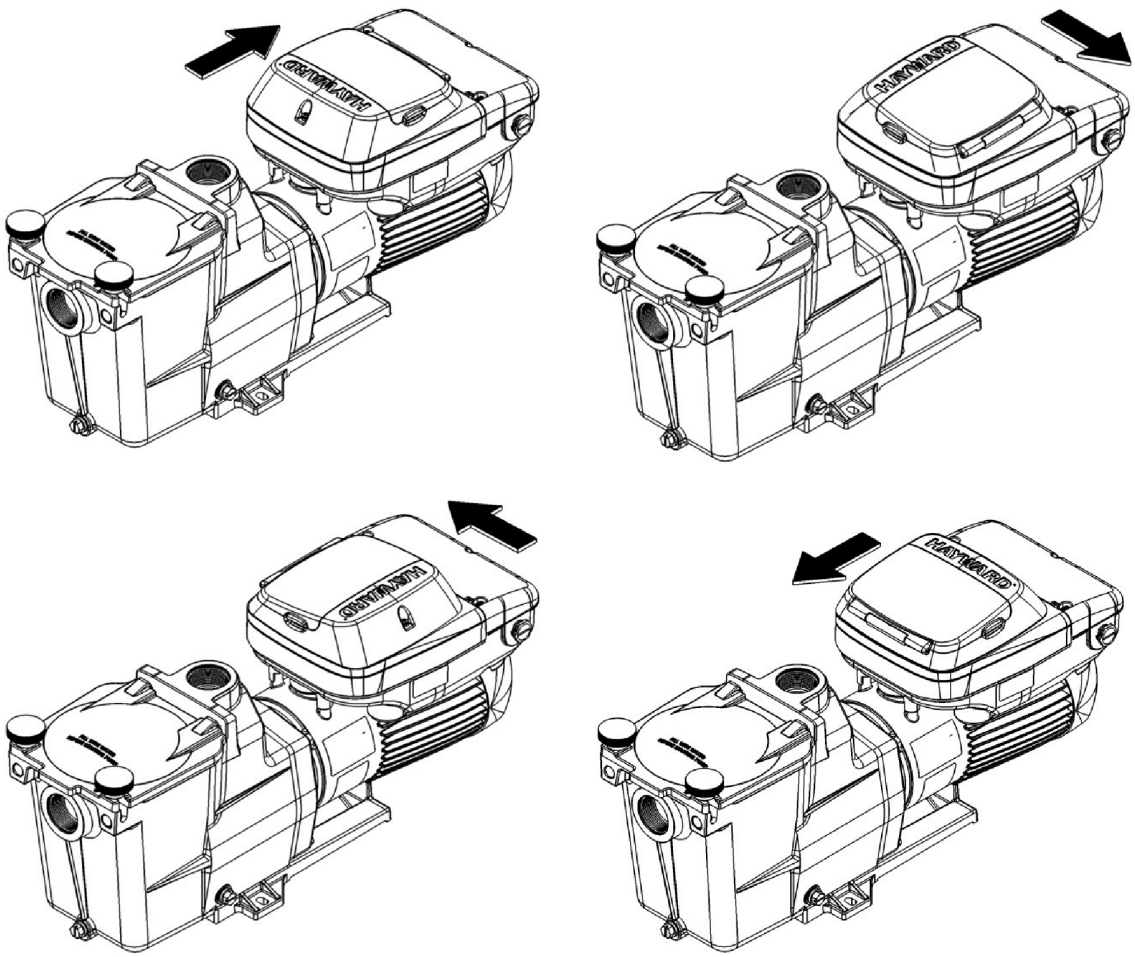
Remote Control Wiring/Operation

The 1.65 THP VS pump family can be controlled in a wide variety of ways as described below:

1. They can operate by themselves in Stand-Alone Mode using their built-in programmable timers.
2. They can also be controlled from third party controls (i.e. another manufacturer's control) and Hayward controls that are not software compatible using relay contacts. See page 13 for more information regarding connecting this pump and third party/non-software compatible Hayward controls.
3. They can communicate with and be controlled by Hayward pool and spa controls. See page 14 for more information regarding connecting this pump and Hayward pool and spa controls.

Digital Control Interface Orientation

The Digital Control Interface can be rotated to any of four desired positions after installation by loosening the two screws securing the user interface to the motor drive, lifting the user interface and rotating it to the desired position, and tightening the two screws in the new position.



Interface Wall Mounting

The interface can also be wall mounted using the parts supplied in the optional wall mount kit using the following procedure. Refer to diagram on Page 10.

1. TURN OFF THE ELECTRICAL POWER AT THE CIRCUIT BREAKER.
2. Loosen the two screws securing the user interface to the motor drive and remove the user interface. (Figure A)
3. Disconnect the short cable that extends out from the motor drive to the user interface. (Figure A)
4. Loosen the three screws securing the wiring compartment cover to the motor drive and remove the cover to gain access to the drive wiring compartment.
5. Unplug the short cable from the RS485 terminal block on the low voltage PCB.
6. Mount the wall mount plate, SP3200DR10, in the desired location. (Figure C)
7. Connect the interface cable as shown in the Wall Mounted Digital Control Interface Wiring diagram shown on page 14 to the second motor drive RS485 terminal block and user interface PCB. Use multi-conductor, jacketed cable suitable for the installation location. The cable must be routed through one of

the left side conduit openings on the motor drive and through the slot provided on the backside of the wall mount plate, SP3200DR10. Use a liquid tight cordgrip, appropriately sized for the cable being used, to seal the conduit opening. Cable used may be up to 500 feet in length. (Figure C)

8. Mount the user interface to the wall mount plate, SP3200DR10, using the two screws. (Figure C)
9. Reinstall the wiring compartment cover, taking care to make sure it is properly aligned with the motor drive, and tighten the three screws to secure.
10. Install the blank cover, SP3200DR9, on the motor drive in the desired orientation. This cover is important to protect internal electronics. (Figure B)
11. Apply power to the system and resume normal operation.

The following diagrams illustrate the interface wall mounting procedure:

Figure A

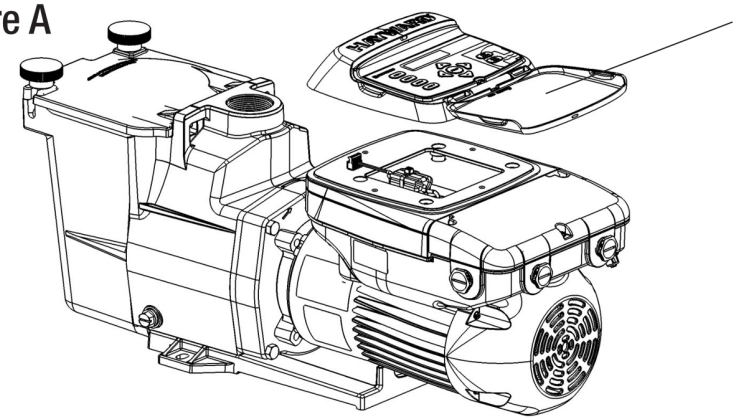


Figure B

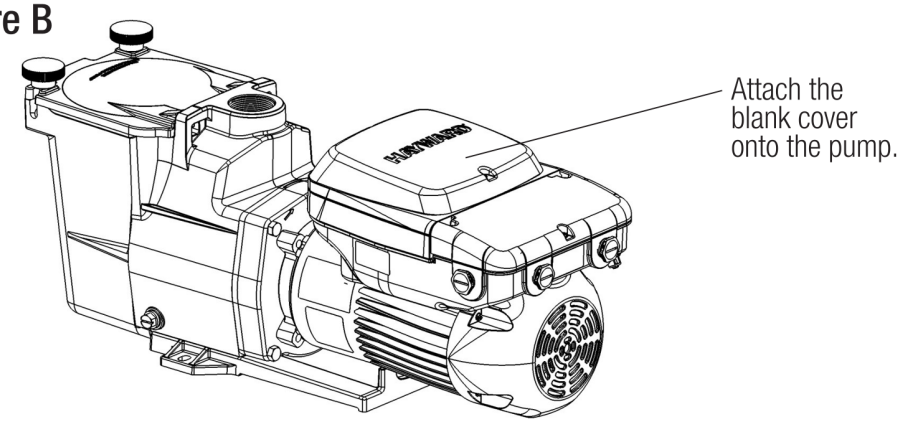
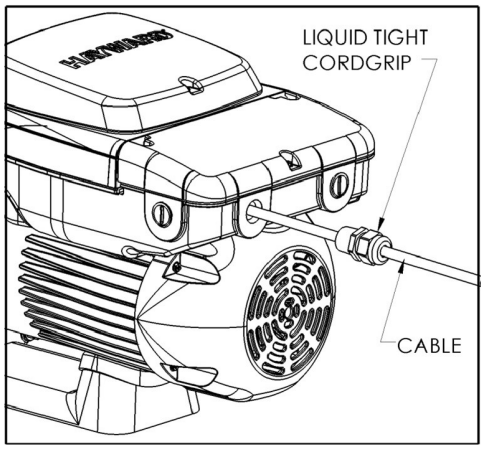
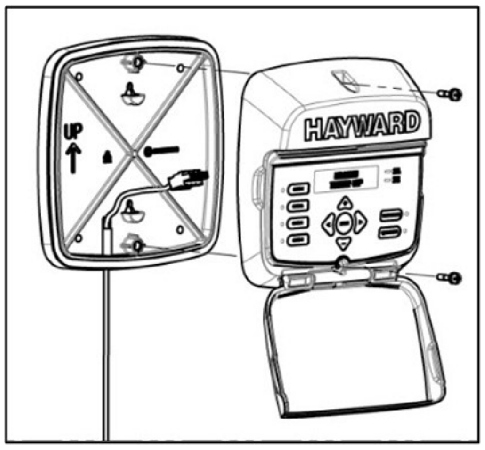


Figure C





Installation Procedure

Please review the sections above before continuing with this section.

1. TURN OFF THE ELECTRICAL POWER AT THE CIRCUIT BREAKER.
2. Loosen the three screws securing the wiring compartment cover and remove the cover to gain access to the drive wiring compartment.
3. Connect line power supply wiring to the terminals and ground screw as shown in the Input Power Wiring diagram. Wiring must be routed through one of the right side conduit openings. See Input Power Wiring section below for diagram.
4. If the pump will be controlled using a Hayward pool control, connect the provided three-conductor cable as shown in the Hayward Automation Control Wiring diagram. See Hayward Automation Control Wiring section below.
5. If the pump will be controlled using relay contacts from an external control, connect the digital input terminals to the relay contacts as shown in the External Relay Speed Control Wiring diagram. See page 13.
6. If the installation will use the remote stop feature of the drive, connect the digital input terminals to the remote stop switch as shown in the Remote Stop Wiring diagram. See page 14.
7. Wiring for remote control and/or remote stop functions must be routed through one of the left side conduit openings. Use a multi-conductor, jacketed cable suitable for the installation location. Use a liquid tight cordgrip, appropriately sized for the cable being used, to seal the conduit opening.
8. Connect the pump to the pool bonding system using 8AWG (6AWG for Canada) wire. A lug for bonding is provided on the outside of the drive enclosure.
9. After all electrical connections have been made, replace the wiring compartment cover, taking care to make sure it is properly aligned with the motor drive, and tighten the three screws to secure.

   NOTE: The wiring compartment cover must be installed properly to provide environmental protection for the wiring compartment.

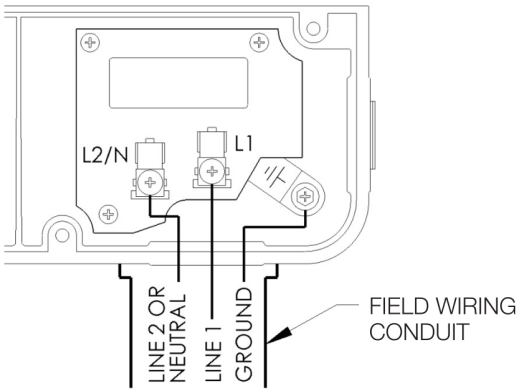
10. Apply power to the system, and proceed to “Configuration Menu”, page 17, or see below for details regarding Hayward automation control.

Wiring Diagrams

Input Power Wiring (Required)

ATTENTION: Route wiring directly from field conduit to terminal block as shown. Do not bundle excess wiring inside drive enclosure.

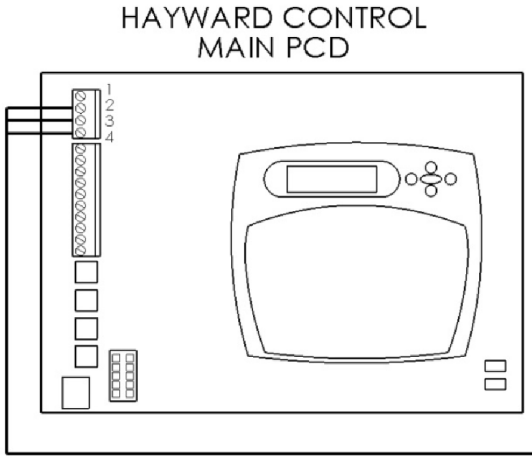
- Use copper conductors only
- Acceptable for field wiring
- Not suitable for use with rigid metal conduit
- REMOVE TEST LEADS PRIOR TO INSTALL

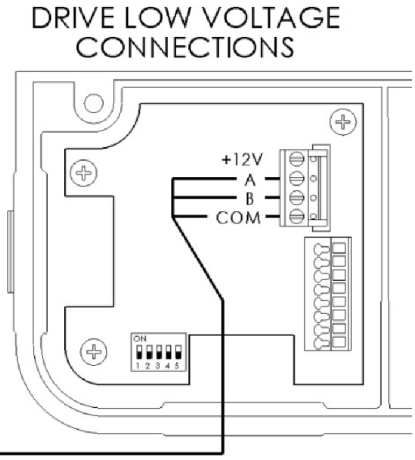


Hayward Automation Control Wiring (Optional, for remote control of pump speed)

NOTE: For software compatible Hayward controls only. Existing user interface wiring connection (if present) should be unplugged and second terminal block connector should be used to make wiring connections shown below. Refer to your control's manual for wiring information.

CONNECTIONS	
INTERFACE	RS485
2	A
3	B
4	COM





This pump can communicate with and be controlled by Hayward pool controls such as OmniLogic™, ProLogic®, ECommand® 4, OnCommand®, OmniHub, S3 Omni, and OmniPL. Minimum software revision requirements: OmniLogic R1.0.0, ProLogic 3.00, OnCommand 1.00, E-Command 2.65, E-Command 4 2.80, AquaLogic 2.65, and AquaPlus 2.65. To determine Hayward control software revision, consult the pool control installation manual or visit our website at: www.haywardpool.com. Connection wire must be rated for a minimum of 300V, and may be up to 500 feet in length. Use removable 4-position terminal block connector for wiring connection to motor drive PCB, taking care to note the wire colors and corresponding numbers next to the connectors. **Terminal block must be installed with screws facing up to ensure proper connection.**

ATTENTION – THIS PUMP CAN ALSO BE SET SO THAT IT WILL CONTINUE RUNNING IN THE EVENT OF COMMUNICATION LOSS. When inputs are activated via wire jumpers, the pump will respond to a communication loss (after a 4 minute delay) as follows:

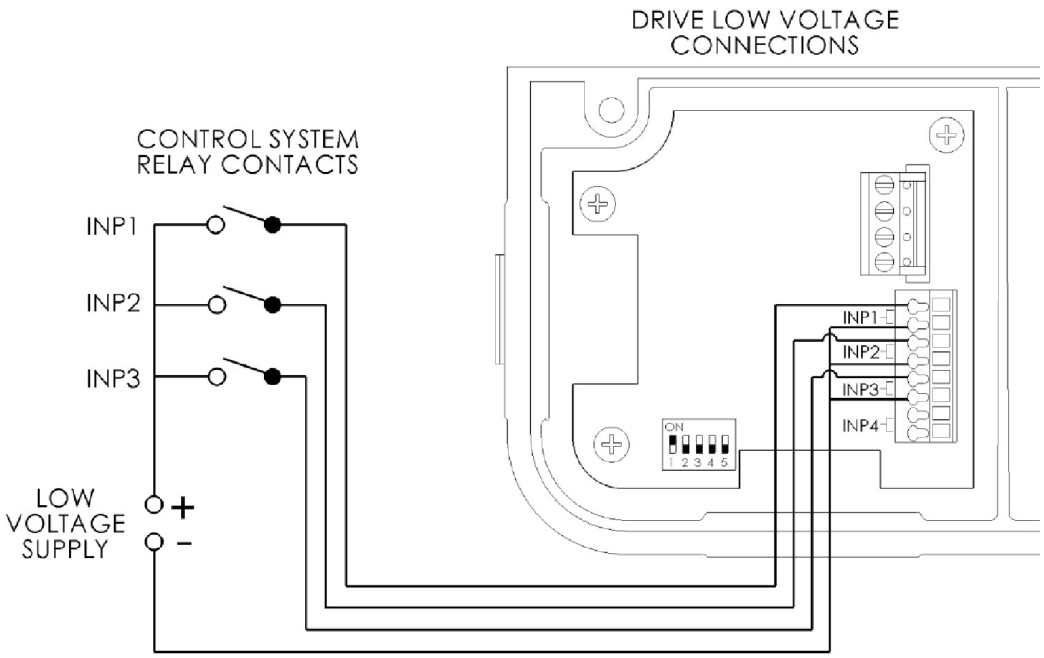
1. No inputs connected: pump remains stopped
2. INP1 connected: pump runs 3450 rpm for 8 minutes, then 1725 rpm
3. INP2 connected: pump runs 3450 rpm for 8 minutes, then 2600 rpm
4. INP3 connected: pump runs 3450 rpm

See page 14 for details regarding input connections (relays would not be used when connecting inputs to set comm loss behavior; use short jumpers in this case). Note: Prior to drive comm revision 10.10, pump response was as follows: no inputs connected – pump runs 3450 rpm for 8 minutes then 1725 rpm; INP1 connected – pump runs 3450 rpm for 8 minutes then 2600 rpm; INP2 connected – pump runs 3450; INP3 connected – pump remains stopped. Jumpers, if used to set desired behavior in the event of communication loss, need to be installed at initial pump installation.

When communicating with the Omni family of controls, the HUA (Hayward Unique Address) is used for communication. For all other Hayward controls, the pump address must be set using the DIP switches on the drive PCB. To determine which address should be used, consult the appropriate Hayward pool control installation manual, or visit our website at www.haywardpool.com. Pump addresses are set according to the table below.

DIS SWITCH STATUS					
PUMP ADDRESS	**#1**	**#2**	**#3**	**#4**	**#5**
Pool Filter	OFF	OFF	OFF	OFF	OFF
AUX 1 / Spa Filter	OFF	ON	OFF	OFF	OFF
AUX 2	OFF	OFF	ON	OFF	OFF
AUX 3	OFF	ON	ON	OFF	OFF
AUX 4	OFF	OFF	OFF	ON	OFF
AUX 5	OFF	ON	OFF	ON	OFF
AUX 6	OFF	OFF	ON	ON	OFF
AUX 7	OFF	ON	ON	ON	OFF
AUX 8	OFF	OFF	OFF	OFF	ON
AUX 9	OFF	ON	OFF	OFF	ON
AUX 10	OFF	OFF	ON	OFF	ON
AUX 11	OFF	ON	ON	OFF	ON
AUX 12	OFF	OFF	OFF	ON	ON
AUX 13	OFF	ON	OFF	ON	ON
AUX 14	OFF	OFF	ON	ON	ON
Lights Button	OFF	ON	ON	ON	ON

External Relay Speed Control Wiring (Optional, for remote selection of pump speed)
NOTE: For third party controls and Hayward controls that are NOT software compatible.



Connection wire must be rated for a minimum of 300V. Inputs are rated to accept a low voltage supply of 18-30 VAC, 9-30 VDC, 50/60 Hz. The "+12V" and "COM" terminals may be used as a low voltage supply, however, these terminals also supply power to the user interface, so care must be taken when connecting to these terminals to ensure proper operation of the user interface. DIP switch #1 must be "ON".

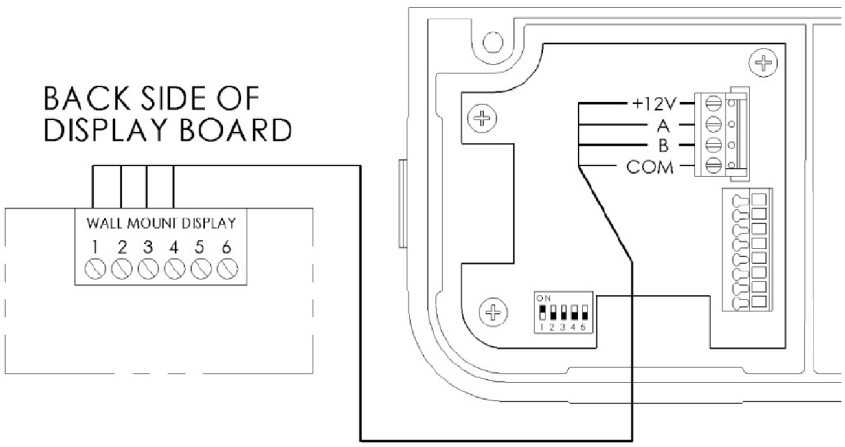
This pump can be controlled from third party pool controls as well as Hayward controls that are not software compatible using relay contacts to select the speeds set in the Timer Menu (see page 19). In addition to this section you may also consult the applicable pool control installation manual for electrical connection details. Once installed, Remote Control Mode must be set to Relay Control in the pump Configuration Menu (see page 17). Preset Speeds 1-4 and Quick Clean are disabled when the pump is remotely controlled. When inputs INP1-3 are activated via the pool control relay contacts, timer speeds 1-8 are selected according to the following table (see page 19):

Timer Speed	INP 1 Status	INP2 Status	INP3 Status
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON

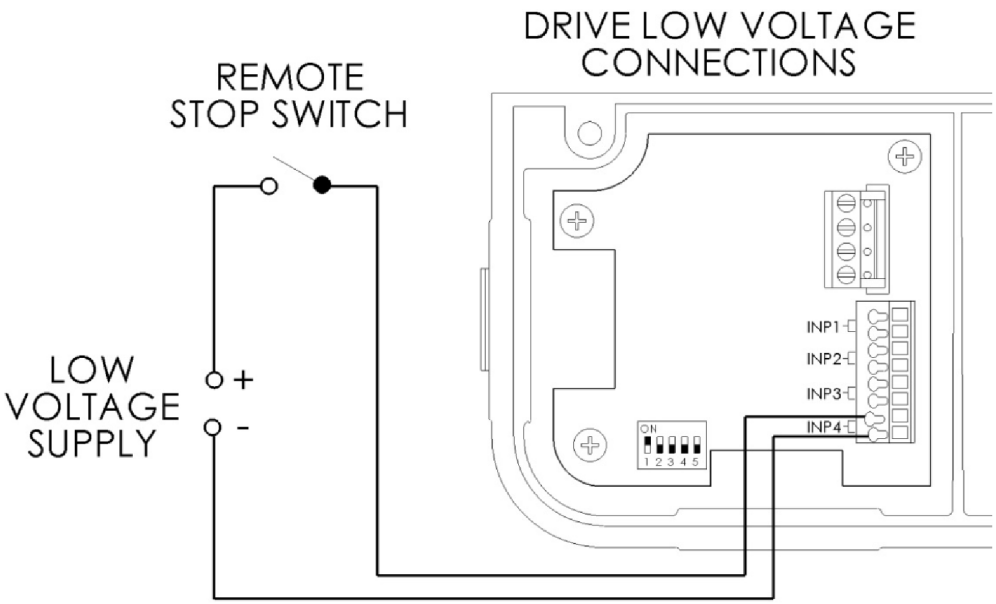
The number of speeds available depends on the number of auxiliary relays used as noted below:
1. Filter pump relay plus 1 auxiliary relay allows control of 2 speeds
2. Filter pump relay plus 2 auxiliary relays allows control of 4 speeds
3. Filter pump relay plus 3 auxiliary relays allows control of 8 speeds

Wall Mounted Digital Control Interface Wiring (Optional)
Connection wire must be rated for a minimum of 300V, and may be up to 500 feet in length. Use removable 4-position terminal block connectors for wiring connection to interface and motor drive PCB's taking care to note the wire colors and corresponding numbers next to the connectors. **Terminal block must be installed with screws facing up to ensure proper connection.** DIP switch #1 must be "ON".

CONNECTIONS	
INTERFACE	RS485
1	COM
2	A
3	B
4	+12V



Remote Stop Switch Wiring (Optional)
Connection wire must be rated for a minimum of 300V. Switch must be latching type; pump is stopped when circuit is closed. Inputs are rated to accept a low voltage supply of 18-30 VAC, 9-30 VDC, 50/60 Hz. The "+12V" and "COM" terminals may be used as a low voltage supply, however these terminals also supply power to the user interface , so care must be taken when connecting to these terminals to ensure proper operation of user interface. If the "+12V" and "COM" terminals are used, DIP switch #1 must be "ON".



Operation

Prior to Start-Up

If it is necessary to perform a water pressure test prior to initial use to ensure plumbing system is functioning properly, then the following criteria should be maintained for this test:

1. Have a professional perform this test.
2. Ensure all Hayward pump and system components are removed from system prior to performing test.

⚠ **WARNING** – If circulation equipment must remain in the plumbing system during water pressure test, do not apply more than 10 psi pressure to the system. Be sure water pressure has been released, using the filter manual air relief valve, before removing pump strainer cover.

⚠ **WARNING** – All suction and discharge valves MUST be OPEN, as well as filter air relief valve (if available) on filter, when starting the circulating pump system. Failure to do so could result in severe personal injury.

Starting/Priming the Pump

Refer to item #10 on page 18 for priming time selection. Fill strainer housing with water to suction pipe level. If water leakage occurs from anywhere on the pump or filter, DO NOT start the pump. If no leakage occurs, stand at least 10 feet from pump and/or filter and proceed with starting the pump.

⚠ **WARNING** – Return to filter to close filter manual air relief valve when a steady stream of water (not air or air and water) is discharged from valve. Failure to do so could result in severe personal injury.

⚠ **ATTENTION** – NEVER OPERATE THE PUMP WITHOUT WATER. Water acts as a coolant and lubricant for the mechanical shaft seal. NEVER run pump dry. Running pump dry may damage seals, causing leakage, flooding, and voids warranty. Fill strainer housing with water before starting motor.

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

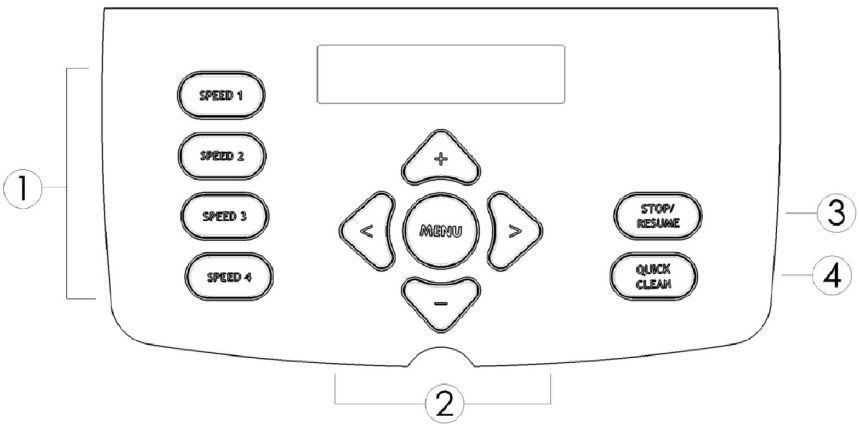
⚠ **ATTENTION** – Before removing strainer cover:

1. STOP PUMP before proceeding.
2. CLOSE VALVES in suction and outlet pipes.
3. RELEASE ALL PRESSURE from pump and piping system using filter manual air relief valve. See filter owner's manual for more details.
4. Remove strainer cover and fill strainer housing with water.
5. Clean and lubricate strainer cover O-ring with "Jack's 327" if necessary.
6. Replace strainer cover on strainer housing.
7. OPEN VALVES in suction and outlet pipes.

NOTE: Tighten strainer cover lock ring by hand only (no wrenches).

Turn on power and wait for pump to prime, which can take up to ten (10) minutes. Priming time will depend on vertical length of suction lift and horizontal length of suction pipe. If pump does NOT prime within 10 minutes, stop motor and determine cause. Be sure all suction and discharge valves are open when pump is running. See Troubleshooting Guide.

User Interface Summary



1. **Preset Speeds:** Buttons labeled SPEED 1 thru SPEED 4 can be used to run the pump at a predetermined speed until the next programmed timer is scheduled to begin. Preset Speed settings can be quickly updated using the + and - arrow buttons to change the speed and then pressing the > button to save the new speed setting if desired.
   a. Default Speeds:
      - Speed 1: 1150 rpm
      - Speed 2: 1725 rpm
      - Speed 3: 2300 rpm
      - Speed 4: 2875 rpm

2. **Menu/navigation buttons:** The MENU button will scroll through the setup menus when pressed. The < and > arrow buttons are used to move between displays and to select parameters to edit, and the + and - arrow buttons are used to change parameters.

3. **Stop/Resume:** This button is used to stop the pump to allow strainer basket cleaning, etc. When this button is pressed, the pump will remain stopped until the button is pressed a second time to resume normal operation.

4. **Quick Clean:** QUICK CLEAN is a mode intended for use when the pool will be cleaned with a suction side vacuum.

Menu Outline

1. **Configuration Menu** (see page 17 for basic product configuration)
   a. Display Language
   b. Set Day and Time
   c. Speed Selection
   d. Max Allowed Speed
   e. Min Allowed Speed
   f. Prime Duration
   g. Remote Control Mode
   h. Low Temp Operation
   i. Low Temp Setting
   j. Password Protection
   k. Password Timeout
   l. Set Password

2. **Timer Menu** (see page 19 to program the 8 speeds with timer functions)
   a. Rename Timer “X” (where “X” equals 1 through 8)
   b. Pump Speed for Timer “X” (where “X” equals 1 through 8)
   c. Start/Stop Time for Timer “X” (where “X” equals 1 through 8)
   d. Choose Days for Timer “X” (where “X” equals 1 through 8)

3. **Preset Speed Setup Menu** (see page 20 to program the 4 preset speeds)
   a. Speed "X" Name (where "X" equals 1 through 4)
   b. Speed "X" Speed (where "X" equals 1 through 4)

4. **Diagnostics Menu** (see page 21 to view product diagnostic information)
   a. Display Firmware Revision
   b. Drive Serial Number
   c. Motor Drive Firmware Revisions
   d. Event Log (if applicable)

Initial startup

After plumbing and wiring are complete, the variable speed drive must be configured prior to use. When power is applied to the drive for the first time, the following informational screens are displayed.

	Screen
1.	Hayward Variable Speed Pump
2.	Thursday 1:27p 1725rpm 380 Watts
3.	Timer 1 timer will end at 11:45p

NOTE: Speeds can be selected at this time to temporarily run the pump, however, it is recommended that the drive configuration and timers be set according to individual installation site requirements (see page 19 for more details). At this point, pressing the MENU button will select the Configuration Menu.

Configuration Menu

	Screen	Buttons Used	Comments
1.	Configuration Menu Locked	‹ ›	Press and hold < and > buttons for several seconds to unlock the Configuration Menu.
2.	Configuration Menu press > to enter	‹ ›	Use the > button to enter the Configuration Menu.
3.	press +/- to change or > view next item		
4.	Display Language English	+ - ‹ ›	Select language for all displayed messages. Move to next menu item.
5.	Time: Th 1:27PM + change or > skip	+ - ‹ ›	Use + button to change clock setting. Use > if clock is correct.

	Screen	Buttons Used	Comments
6.	Set Day and Time Thursday 1:27p	+ - ‹ ›	Adjust day/time setting. Move to next selection, then move to next menu item.
7.	Speed Selection rpm	+ - ‹ ›	Select pump speed display: rpm (revolutions per minute) or % of full speed. Move to next menu item.
8.	Max allowed speed 3450 (600-3450rpm)	+ - ‹ ›	Set maximum running speed of pump. Move to next menu item.
9.	Min allowed speed 600 (600-3450rpm)	+ - ‹ ›	Set minimum running speed of pump. Move to next menu item.
10.	Prime Duration 8:00 minutes	+ - ‹ ›	Select pump prime duration. Move to next menu item.

NOTE: User may set the pump to prime at the maximum allowed speed for 0-15 minutes in 30 second increments.

11.	Remote Control Mode Stand Alone	+ - ‹ ›	Select Stand Alone or Relay Control. Move to next menu item.

NOTE: See page 13 for more detail.

12.	Low Temp Operation Disabled	+ - ‹ ›	Enable or Disable Low Temp Operation. Move to next menu item.
13.	Low Temp Setting 4°C (39.2°F)	+ - ‹ ›	Set temperature to activate Low Temp Operation. Move to next menu item.

NOTE: When the pump is stopped and the ambient temperature drops below the operation temperature set point, the pump will prime and then run at the Max allowed speed setting for 8 hours. Low temperature operation is not active when the pump is being remotely controlled. **Low temperature operation is NOT intended to protect the pump, system plumbing, or pool from freezing.** If Low Temp Operation is disabled, the temperature setting screen is not shown.

14.	Password Protection Disabled	+ - ‹ ›	Use to enable or disable password protection. Move to next menu item.
15.	Password Timeout 0:15	+ - ‹ ›	Use to set password timeout. Move to next menu item.

NOTE: This sets the amount of time from the last button activation after the system has been unlocked to the point where the system becomes locked again.

16.	System Password + change or > skip	+ - ‹ ›	Use to set password timeout. Move to next menu item.

	Screen	Buttons Used	Comments
17.	Set Password 0___	+ - ‹ ›	Use to set selected password character. Move to next password character/next menu item.
18.	Confirm Password 0___	+ - ‹ ›	Use to set selected password character. Move to next password character/next menu item.

NOTE: If the new password is not confirmed correctly, then the user will be prompted again to confirm the password. If a mistake is made when entering the password, pressing Stop/Resume will cancel the action.

After a password has been set, follow the procedure below to unlock the system from the Home screen.

19.	System Locked Password: 0___	+ - ‹ ›	Use to set selected password character. Move to next password character.

NOTE: When password protection is enabled and the timeout has elapsed, the user will be prompted to enter the password to unlock the display when any of the display buttons (other than Stop/Resume) are selected. The user may use Stop/Resume to stop the pump and resume normal operation without having to enter the password. The factory default password is 1234. If the password has been changed, it may be reset to factory default by pressing and holding the Speed 1 and Speed 4 buttons at the same time while powering on the drive, or by resetting all parameters in the Configuration Menu. If a mistake is made when entering the password, pressing Stop/Resume will cancel the action. If the pump is being controlled by a Hayward or third party pool control, the pump display can be locked by the password, however, the pump will respond to any and all commands being sent from the pool control.

20.	Reset all settings? + yes or - no	+ - ‹ ›	Use + button to reset to factory default settings. Use > button to skip reset.
21.	Are you sure? + yes or - no	+ - ‹ ›	Confirm reset of all parameters. Move to next menu item.
22.	Use Timers Menu to set daily timers		

Timers Menu

	Screen	Buttons Used	Comments
1.	Timer Menu Press > to enter	‹ ›	Use > button to enter Timer Menu.
2.	Press +/- to change or > to view next item		
3.	Timer 1 1725rpm 12:00a to 11:45p		
4.	Press + to change or > next timer	+ - ‹ ›	Use + button to change displayed timer. Use > button to skip to next timer.

	Screen	Buttons Used	Comments
5.	T1: Timer 1 +/- rename; speed >	+ - ‹ ›	Use + button to rename timer. Use > button to set motor speed for timer.
6.	Timer 1 1725rpm +/- adjust; times >	+ - ‹ ›	Use to set speed for timer. Use > button to set start/stop time.
7.	Timer 1 1725rpm 8:00a to 6:00p	+ - ‹ ›	Use to set start/stop time for timer. Use > to choose days of operation for timer.
8.	Choose Days 7D 7 days a week	+ - ‹ ›	Use to choose days of operation for timer. Move to next menu item.

NOTE: When start/stop times are set to be the same, the timer is deactivated. Each timer can be set to run on specific days of the week. Options are to run 7 days per week, 5 days per week (Monday thru Friday), or on a single day (Monday thru Sunday). Each timer is set up in this same manner. If the timers are set up such that their run times overlap, the timers will run in priority from Timer 1 to Timer 8. In other words, if Timer 1 is set to run from 8:00 am to 12:00 pm, and Timer 2 is set to run from 10:00 am to 2:00 pm, the pump will run Timer 1 from 8:00 am to 12:00 pm, and will then switch to run Timer 2 until 2:00 pm. Default setting for Timer 1 is to start at 12:00 am, and end at 11:45 pm. When Remote Control Mode is set to Relay Control, the speed for Timer 1 may be set to 0 rpm to allow the pump to be stopped without having to remove power.

Preset Speed Setup Menu

	Screen	Buttons Used	Comments
1.	Speeds Menu Press > to enter	‹ ›	Use > button to enter Speeds Menu.
2.	Press +/- to change or > view next item		
3.	Speed 1 1150rpm		
4.	Press + to change or > next speed	+ - ‹ ›	Use to change displayed speed. Move to next menu item.
5.	S1: Speed 1 +/- rename; > speed	+ - ‹ ›	Use to rename speed. Move to next menu item.
6.	Speed 1 1725rpm +/- adjust	+ - ‹ ›	Use to set motor speed for displayed speed. Move to next menu item.

NOTE: Preset Speed settings can also be quickly updated without entering the Speeds Menu using the + and - arrow buttons to change the speed and then pressing the > button to save the new speed setting.

Diagnostic Menu

	Screen	Buttons Used	Comments
1.	Diagnostic Menu Press > to enter	‹ ›	Use > button to enter Diagnostic Menu and toggle between displays.
2.	Press > to view next item		
3.	Display Revision 2.00		Displays firmware version of the display PCB.
4.	Drive Serial Number 3581200032		Displays motor drive serial number.
5.	Comm Rev: 10.10 Drv Rev: 2.00.65		Displays firmware revisions of the motor drive and drive interface PCBs.
6.	Event Log Press > to view	‹ ›	Use > button to view event log.

NOTE: For troubleshooting purposes, the Event Log will record the last twenty error/trip conditions and/or status messages, as well as the amount of time that has elapsed since the condition occurred. See page 26 for more detail.

Stop/Resume

	Screen
1.	Pump is stopped; press Stop/Resume
2.	again to resume normal operation

NOTE: When Stop/Resume is pressed at any time during normal operation, the above message will be displayed. The pump will stop within several seconds, and will remain stopped until Stop/Resume is pressed a second time, at which point the pump will resume normal operation.

Quick Clean

	Screen
1.	Quick Clean Quick Clean running
2.	Quick Clean 3450 rpm for 60 min;

3. Quick Clean
press Resume to end

NOTE: The above message will be displayed while Quick Clean is running. Quick Clean mode runs at the Max allowed speed and expires after 60 min, and it may be cancelled early by pressing the Stop/Resume button, at which time the pump would return to normal operation. Quick Clean can be extended up to 360 minutes with additional presses of the Quick Clean button.

Remote Stop

Screen

1. Remote Stop
is engaged

NOTE: The above message will be displayed when an installed remote stop switch is activated. The pump will remain stopped until the remote stop switch is deactivated. See page 14 for more detail.

Maintenance

- Clean strainer basket regularly. Do NOT strike basket. Inspect cover gasket regularly and replace as necessary.
- Hayward pumps have self-lubricating motor bearings and shaft seals. No lubrication is necessary.
- Keep motor clean. Keep motor air vents free of obstructions to avoid damage. Do NOT use water to hose off motor.
- Occasionally, shaft seals must be replaced, due to wear or damage. Replace with genuine Hayward seal assembly kit. See “Shaft Seal Change Instructions” in this manual.

Storage/Winterization

⚠ **WARNING** – **Separation Hazard.** Do not purge the system with compressed air. Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.

⚠ **ATTENTION** – Allowing the pump to freeze with water in it will void the warranty.

⚠ **ATTENTION** – Use ONLY propylene glycol as antifreeze in your pool/spa system. Propylene glycol is nontoxic and will not damage plastic system components; other anti-freezes are highly toxic and may damage plastic components in the system.

Drain all water from pump and piping when expecting freezing temperatures or when storing pump for a long time (see instructions below). Gravity drain system as far as possible.

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

Storing Pump for Winterization

⚠ **WARNING** – To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before draining pump. Failure to disconnect power may result in serious personal injury or death.

1. Drain water level below all inlets to the pool.
2. Remove drain plugs and strainer cover from strainer housing (see parts diagram on page 24 for pump component locations).
3. Disconnect pump from mounting pad, wiring (after power has been turned OFF), and piping.
4. Once the pump is fully drained of water, re-install the strainer cover and drain plugs. Store pump in a dry area.

Shaft Seal Change Instructions

When servicing electrical equipment, basic safety precautions should always be observed including the following. Failure to follow instructions may result in injury.

⚠ WARNING – To reduce risk of injury, do not permit children to use this product.

- Disconnect all electrical power service to pump before beginning shaft seal replacement.
- Only qualified personnel should attempt rotary seal replacement. Contact your local authorized Hayward Dealer or service center if you have any questions.
- Refer to page 24 for pump component locations.

Exercise extreme care in handling both the rotating and the stationary sections of the two-part replacement seal. Foreign matter or improper handling will easily scratch the graphite and ceramic sealing surfaces.

Removing the Motor Assembly

1. Remove the four (4) 3/8" x 2" hex head bolts, which hold the motor assembly to the pump/strainer housing, using a 9/16" wrench or socket.
2. Slide the motor assembly out of the pump/strainer housing, exposing the diffuser. Pull the diffuser off of the seal plate to expose the impeller.

Removing the Impeller

3. To prevent the motor shaft from turning, secure using a 5/16" hex wrench on the motor shaft through the fan shroud on the back of the pump.
4. Remove the impeller by rotating counterclockwise.

Removing the Ceramic Seat

5. Remove the spring seal assembly from the impeller and remove the seal plate from the motor.
6. Press the ceramic seat with rubber cup out of the seal plate. If tight, use a small screwdriver to tap seal out.

STOP - Clean all recesses & parts to be reassembled. Inspect gaskets & replace if necessary.

Seal Installation

7. Clean and lightly lubricate the motor shaft and seal recesses in the seal plate with a dilute solution of nongranulated liquid-type soap. Gently wipe the polished face of the ceramic seal with a soft cotton cloth. Lubricate the rubber cup on the ceramic seat and press it firmly into the recess of the seal plate, with the polished ceramic surface facing out.
8. Reassemble the motor to the seal plate.
9. Gently wipe the black, polished surface of the spring seal assembly with a soft cotton cloth.
10. Press the spring seal assembly onto the impeller shaft, with the black polished surface facing the ceramic seat.

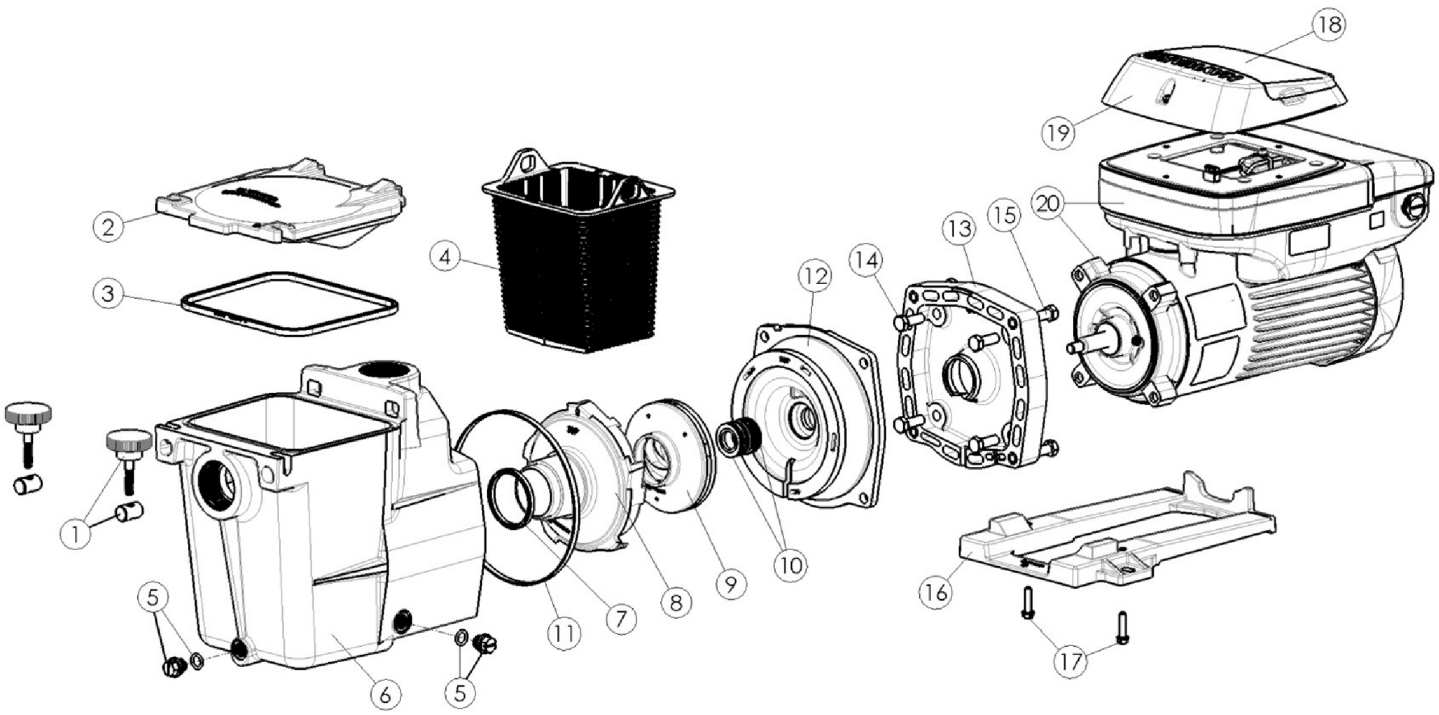
Replacing the Impeller and Diffuser

11. Screw the impeller onto the motor shaft in a clockwise direction. Tighten snugly by holding motor shaft with wrench as noted in step #3.
12. Place the diffuser over the impeller and onto the seal plate.

Replacing the Motor Assembly

13. Slide the motor assembly, with the diffuser in place, into pump/strainer housing, being careful not to disturb the diffuser gasket.
14. Fasten assembly to pump/strainer housing using the four (4) 3/8" x 2" bolts. (Be sure housing gasket is in place, and lubricated. Replace if damaged). Tighten bolts alternately and evenly to 80 inch-pounds. Looking at the back of the pump, start with the top right, move diagonal to the bottom left, then up to the top left and last across to the bottom right.

Replacement Parts



No.	Part Number	Description	Qty.	No.	Part Number	Description	Qty.
1	SPX1600PN	Swivel Nut & Hand Knob	2	13	SPX1600F5	Motor Mounting Plate	1
2	SPX1600D	Strainer Cover	1	14	SPX0125z44	Motor Cap Screws (Set of 4)	1
3	SPX1600S	Strainer Cover Gasket	1	15	SPX1600Z4	Housing Cap Screw	4
4	SPX1600M	Basket	1	16	SPX2600GV	Mounting Foot, VSP (Includes Screws)	1
5	SPX4000PG	Drain Plug with Gasket	2	17	SPX1600Z52	Mounting Foot Screws (Set of 2)	1
6	SPX1620AA	Pump Strainer Housing With Gasket	1	18	SPX3400DR4	Motor Drive Display Cover (Cover Only)	1
7	SPX1600R	Diffuser Gasket	1	19	SPX3200LCD	Digital Control Interface Assembly	1
8	SPX2600B	Diffuser	1	-	SPX3400DRKIT	Wall Mount Kit	1
9	SPX2610C	Impeller	1	-	SPX3200DRCC	Comm Cable Kit	1
10A	SPX1600Z2	Shaft Seal Assembly	1	-	SPXHKIT3	Quick Fix Kit (Includes #3, 7, 10A, 11 & Jack's Lube)	1
10B	SPX1600Z2VIT	Shaft Seal Assembly (Viton)	1		**POWER END**		
11	SPX1600T	Housing Gasket	1	20	SPX2603Z1VSPE	Power End Assembly (Includes #7-14, Motor & Drive)	1
12	SPX2600E5	Seal Plate	1				

Troubleshooting

General Problems

- **Motor Will NOT Start:**
  1. Make sure the terminal board connections agree with the wiring diagram on the pump data plate label.
  2. Be sure the pump is wired for the available field supply voltage.
  3. Check for and correct any improper or loose wiring connections; open switches or relays; tripped circuit breakers, or blown fuses.
  4. Manually check the rotation of the motor shaft for free movement and lack of obstruction. Correct if necessary.

- **Motor Shuts OFF:**
  1. Check for low voltage or power drop at the motor (frequently caused by undersized wiring). Contact a qualified professional to verify the electrical connections.

- **Motor Hums, But Does NOT Start:**
  1. Impeller jammed with debris. Have a qualified repair professional open the pump and remove the debris.

- **Pump Won't Prime:**
  1. Empty pump/strainer housing. Make sure the pump/strainer housing is filled with water and the cover oring is clean. Ensure the o-ring is properly seated in the cover o-ring groove. Ensure the o-ring sealing surface is lubricated with "Jack's 327" and that the strainer cover is locked firmly in position. Lubricant will help to create a tighter seal.
  2. Loose connections on the suction side. Tighten the pipe/union connections. NOTE: Any self-priming pump will not prime if there are suction air leaks. Leaks will result in bubbles emanating from the return fittings on the pool wall.
  3. Leaking O-ring or packing glands on valves. Tighten, repair, or replace the valves.
  4. Strainer basket or skimmer basket loaded with debris. Remove the strainer housing cover or the skimmer cover. Clean the basket, and refill the strainer housing with water. Tighten the cover.
  5. Suction side clogged. Contact a qualified repair professional. You should have 5" - 6" of vacuum at the strainer cover (your pool dealer can confirm this with a vacuum gauge). You may be able to check by removing the skimmer basket and holding an object over the bottom port with the skimmer full and the pump running. If no suction is felt, check for line blockage.
     a. If the pump develops a vacuum, check for a blocked suction line or a dirty strainer basket. An air leak in the suction piping may be the cause.
     b. If the pump does not develop a vacuum and the pump has sufficient "priming water":
        i. Re-check the strainer housing cover and all threaded connections for suction leaks. Check if all system hose clamps are tight.
        ii. Check voltage to ensure that the motor is rotating at full rpm's.
        iii. Open the housing cover and check for clogging or obstruction in suction. Check the impeller for debris.
        iv. Remove and replace the shaft seal only if it is leaking.

- **Low Flow – Generally:**
  1. Clogged or restricted strainer or suction line. Contact a qualified repair professional.
  2. Undersized pool piping. Correct the piping size.
  3. Plugged or restricted discharge line of filter, valve partially closed (high gauge reading). Sand filters – backwash as per manufacturer's instructions; D.E. filters – backwash as per manufacturer's instructions; Cartridge filters – clean or replace the cartridge.
  4. Air leak in suction (bubbles issuing from return fittings). Re-tighten the suction and discharge connections using PTFE tape. Inspect other plumbing connections, and tighten as required.
  5. Plugged, restricted, or damaged impeller. Replace the impeller including a new seal assembly.

- **Noisy Pump:**
  1. Air leak in suction piping, cavitations caused by restricted or undersized suction line or leak at any joint, low water level in pool, and unrestricted discharge return lines. Correct the suction condition or throttle return lines, if practical. Holding your hand over the return fitting will sometimes prove this, or by putting in a smaller eyeball fitting.
  2. Vibration due to improper mounting, etc. Mount the pump on a level surface and secure the pump to the equipment pad.
  3. Foreign matter in the pump housing. Loose stones/debris hitting the impeller could be the cause. Clean the pump housing.
  4. Motor bearings noisy from normal wear, rust, overheating, or concentration of chemicals causing seal damage, which will allow chlorinated water to seep into bearings wiping out the grease causing bearing to whine. All seal leaks should be replaced at once.

- **Interference With Home Automation/Power Line Communication Equipment:**
  1. Make sure the terminal board connections agree with the wiring diagram on the pump data plate label.
  2. Check for and correct any improper or loose wiring connections.
  3. Install noise filter (from home automation/power line communication equipment vendor) to prevent equipment interference.

Check System Messages

Code	Troubleshooting
Check System DC voltage too high	Indicates that the internal DC bus voltage is too high. Verify that line voltage is within 10% of pump rated voltage at the terminal block.
Check System DC voltage too low	Indicates that the internal DC bus voltage is too low. Verify that line voltage is within 10% of pump rated voltage at the terminal block. Also, verify that power supply connections are properly made at the circuit breaker as well as at the terminal block.
Check System Drive is overheated	Indicates that the internal components of the drive have become overheated. Motor airflow path should be checked for obstructions and cleared if present. Check ambient temperature and verify against motor nameplate (50°C/122°F).
Check System Drive overload	Indicates that motor current is too high. Check impeller, diffuser, shaft seal, and motor for any issues or binding.
Check System Pump has stalled	Indicates that the drive has lost control over motor shaft rotation. Check impeller, diffuser, shaft seal, and motor for any issues or binding.
Check System Pump failed to start	Indicates that the drive was not able to start the motor. Check impeller, diffuser, shaft seal, and motor for any issues or binding.
Check System Motor phase lost	Indicates that one of the motor phases is open and that the motor/drive may need to be replaced. Contact Hayward Technical Service for additional assistance.
Check System Processor failed	Indicates that there is a problem with the processor in the motor/drive, and that the motor/drive may need to be replaced. Contact Hayward Technical Service for additional assistance.
Check System Communication failed	Indicates that there are communication problems between the user interface and motor/drive. Connections between the user interface and motor/drive should be verified.
Check System Memory failed	Indicates that the drive memory has been damaged or corrupted, and that the motor/drive may need to be replaced. Contact Hayward Technical Service for additional assistance.
Check System Drive comm failed	Indicates that there are communication problems inside the motor/drive, and that the motor/drive may need to be replaced. Contact Hayward Technical Service for additional assistance.
Check System Error code XX	Indicates that the user interface is receiving an error from the motor/drive that it does not understand. Contact Hayward Technical Service for additional assistance.

NOTE: All errors can be manually reset by pressing Stop/Resume when the error message is shown, or by cycling power applied to the pump after the error has occurred. Under certain circumstances, the “Drive overload” error can only be reset by cycling power applied to the pump. If the troubleshooting steps listed above do not help to resolve the error condition, then the problem may be internal to the motor/drive. Contact Hayward Technical Service at (908) 355-7995 for additional assistance.

FCC Compliance Statement:

This device complies with part 15 of the FCC rules. Operation is subjected to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for additional suggestions.

For further information or consumer
technical support, visit our website at
www.hayward.com
US: 908-355-7995

HAYWARD®

Hayward is a registered trademark
of Hayward Industries, Inc. © 2024 Hayward Industries, Inc.

All other trademarks not owned by Hayward are the property of their respective owners. Hayward is not in any way affiliated with or endorsed by those third parties. For patent information, refer to www.hayward.com/patents.

HAYWARD®

ProSeries™

High Rate Sand Filters

Owner's Manual



Contents

Safety Instructions.....1
Introduction.....5
Installation.....5
Operation.....8
Winterization.....9
Replacement Parts.....9
Maintenance.....11
Troubleshooting.....13
Warranty.....14

S244T

Hayward Industries
1415 Vantage Park Dr., Suite 400
Charlotte, NC 28203
Phone: (908) 355-7995
www.hayward.com

IMPORTANT SAFETY INSTRUCTIONS

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

⚠ **WARNING** – warns about hazards that could cause serious personal injury, death or major property damage and if ignored presents a potential hazard.

⚠ **CAUTION** – warns about hazards that will or can cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.

NOTICE – indicates special instructions that are important but not related to hazards.



READ AND FOLLOW ALL INSTRUCTIONS

⚠ **WARNING** – Read and follow all instructions in this owner's manual and on the equipment. Failure to follow instructions can cause severe injury and/or death.

⚠ **WARNING** – **Suction Entrapment Hazard.** Suction in suction outlets and/or suction outlet covers which are, damaged, broken, cracked, missing, or unsecured can cause severe injury and/or death due to the following entrapment hazards:



Hair Entrapment: Hair can become entangled in suction outlet cover.



Limb Entrapment: A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in a mechanical bind or swelling of the limb.

Body Suction Entrapment: A negative pressure applied to a large portion of the body or limbs can result in an entrapment.

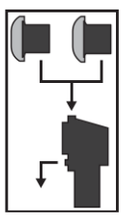


Evisceration/ Disembowelment: A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is, damaged, broken, cracked, missing, or unsecured can result in evisceration/disembowelment.



Mechanical Entrapment: There is potential for jewelry, swimsuit, hair decorations, finger, toe or knuckle to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

⚠ **WARNING** – **To Reduce the risk of Entrapment Hazards:**



- When outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [1 meter] apart, as measured from near point to near point.
- Dual suction fittings shall be placed in such locations and distances to avoid "dual blockage" by a user.

- Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas.
- The maximum system flow rate shall not exceed the listed flow rating.
- Never use Pool or Spa if any suction outlet component is damaged, broken, cracked, missing, or not securely attached.
- Replace damaged, broken, cracked, missing, or not securely attached suction outlet components immediately.
- Install suction outlets in accordance with latest ASME, APSP Standards and CPSC guidelines. Follow all applicable National, State, and Local codes.
- Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.

⚠ **WARNING** – Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in an increase potential for suction entrapment as described above.

⚠ **WARNING** – Failure to keep suction outlet components clear of debris, such as leaves, dirt, hair, paper and other material can result in an increase potential for suction entrapment as described above.

⚠ **WARNING** – Suction outlet components have a finite life, the cover/grate should be inspected frequently and replaced at least every ten years or if found to be damaged, broken, cracked, missing, or not securely attached.

⚠ **CAUTION** – Components such as the filtration system, pumps and heater must be positioned so as to prevent their being used as means of access to the pool by young children.

⚠ **WARNING** – Never operate or test the circulation system at more than 50 PSI.

⚠ **WARNING** – Never change the filter control valve position while the pump is running.

⚠ **WARNING** – To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times. Components such as the filtration system, pumps, and heaters must be positioned to prevent children from using them as a means of access to the pool.



⚠ **WARNING** – **Hazardous Pressure.** Pool and spa water circulation systems operate under hazardous pressure during start up, normal operation, and after pump shut off. Stand clear of circulation system equipment during pump start up. Failure to follow safety and operation instructions could result in violent separation of the pump housing and cover, and/or filter housing and clamp due to pressure in the system, which could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting system pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control

valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water) is discharged.



⚠ **WARNING** – **Separation Hazard.** Failure to follow safety and operation instructions could result in violent separation of pump and/or filter components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing pool and spa circulation system, filters manual air relief valve must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter manual air relief valve body is in locked position in filter upper body. **Never operate or test the circulation system at more than 50 PSI. Do not purge the system with compressed air.** Purging the system with compressed air can cause components to explode, with risk of sever injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.



⚠ **WARNING** – **Risk of Electric Shock.** All electrical wiring MUST be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on any electrical equipment, turn off power supply to the equipment. To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent abuse from lawn mowers, hedge trimmers and other equipment. Do NOT ground to a gas supply line.



⚠ **WARNING** – **Risk of Electric Shock.** Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard. Electrical ground all electrical equipment before connecting to electrical power supply.



⚠ **WARNING** – **Risk of Electric Shock.** Failure to bond all electrical equipment to pool structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.

Notes to electrician: Use a solid copper conductor, size 8 or larger. Run a continuous wire from external bonding lug to reinforcing rod or mesh. Connect a No. 8 AWG [8.4 mm^2] (No. 6 AWG [13.3 mm^2] for Canada) solid copper bonding wire to the pressure wire connector provided on the electrical equipment and to all metal parts of swimming pool, spa, or hot tub, and metal piping (except gas piping), and conduit within 5 ft. [1.5 m] of inside walls of swimming pool, spa, or hot tub. **IMPORTANT** - Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and other general wiring procedures.



⚠ **WARNING** – **Risk of Electric Shock.** The electrical equipment must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a GFCI should be provided by the installer and should be tested on a routine basis. To test

the GFCI, push the test button. The GFCI should interrupt power. Push reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the electrical equipment without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use this electrical equipment. Disconnect the electrical equipment and have the problem corrected by a qualified service representative before using.

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

⚠ **WARNING** – **Risk of Hyperthermia.** To avoid hyperthermia the following "Safety Rules for Hot Tubs" are recommended by the U.S. Consumer Product Safety Commission.

1. Spa or hot tub water temperatures should never exceed 104°F [40°C]. A temperature of 100°F [38°C] is considered safe for a healthy adult. Special caution is suggested for young children. Prolonged immersion in hot water can induce hyperthermia.
2. Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness, which could lead to unconsciousness and subsequently result in drowning.
3. Pregnant women beware! Soaking in water above 100°F [38°C] can cause fetal damage during the first three months of pregnancy (resulting in the birth of a brain-damaged or deformed child). Pregnant women should adhere to the 100°F [38°C] maximum rule.
4. Before entering the spa or hot tub, users should check the water temperature with an accurate thermometer; spa or hot tub thermostats may err in regulating water temperatures by as much as 4°F [2.2°C].
5. Persons taking medications, which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants, should not use spas or hot tubs.
6. If the pool/spa is used for therapy, it should be done with the advice of a physician. Always stir pool/ spa water before entering to mix in any hot surface layer of water that might exceed healthful temperature limits and cause injury. Do not tamper with controls, because scalding can result if safety controls are not in proper working order.
7. Persons with a medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain a physician's advice before using spas or hot tubs.
8. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6°F [37°C]. The symptoms of Hyperthermia include: drowsiness, lethargy, dizziness, fainting, and an increase in the internal temperature of the body.

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.

Introduction

Your Hayward Pro Series™ high-rate sand filter is a high performance, totally corrosion-proof filter that blends superior flow characteristics and features with ease of operation. It represents the very latest in high-rate sand filter technology. It is virtually foolproof in design and operation and when installed, operated and maintained according to instructions, your filter will produce clear, sparkling water with only minimal attention and care.

How It Works

Your filter uses special filter sand to remove dirt particles from pool water. Filter sand is loaded into the filter tank and functions as the dirt removing media. The pool water, which contains suspended dirt particles, is pumped through your piping system and is automatically directed by the filter control valve to the top of the filter tank. As the pool water is pumped through the filter sand, dirt particles are trapped by the sand bed, and filtered out. The cleaned pool water is returned from the bottom of the filter tank, through the control valve and back to the pool through the piping system. This entire sequence is continuous and automatic and provides recirculation of pool water through your filter and piping system.

After a period of time, the accumulated dirt in the filter causes a resistance to flow, and the flow diminishes. This means it is time to clean (backwash) your filter. With the control valve in the backwash position, the water flow is automatically reversed through the filter so that it is directed to the bottom of the tank, up through the sand, flushing the previously trapped dirt and debris out the waste line. Once the filter is backwashed (cleaned) of dirt, the control valve is manually re-sequenced to Rinse, and then Filter, to resume normal filtering.

Installation

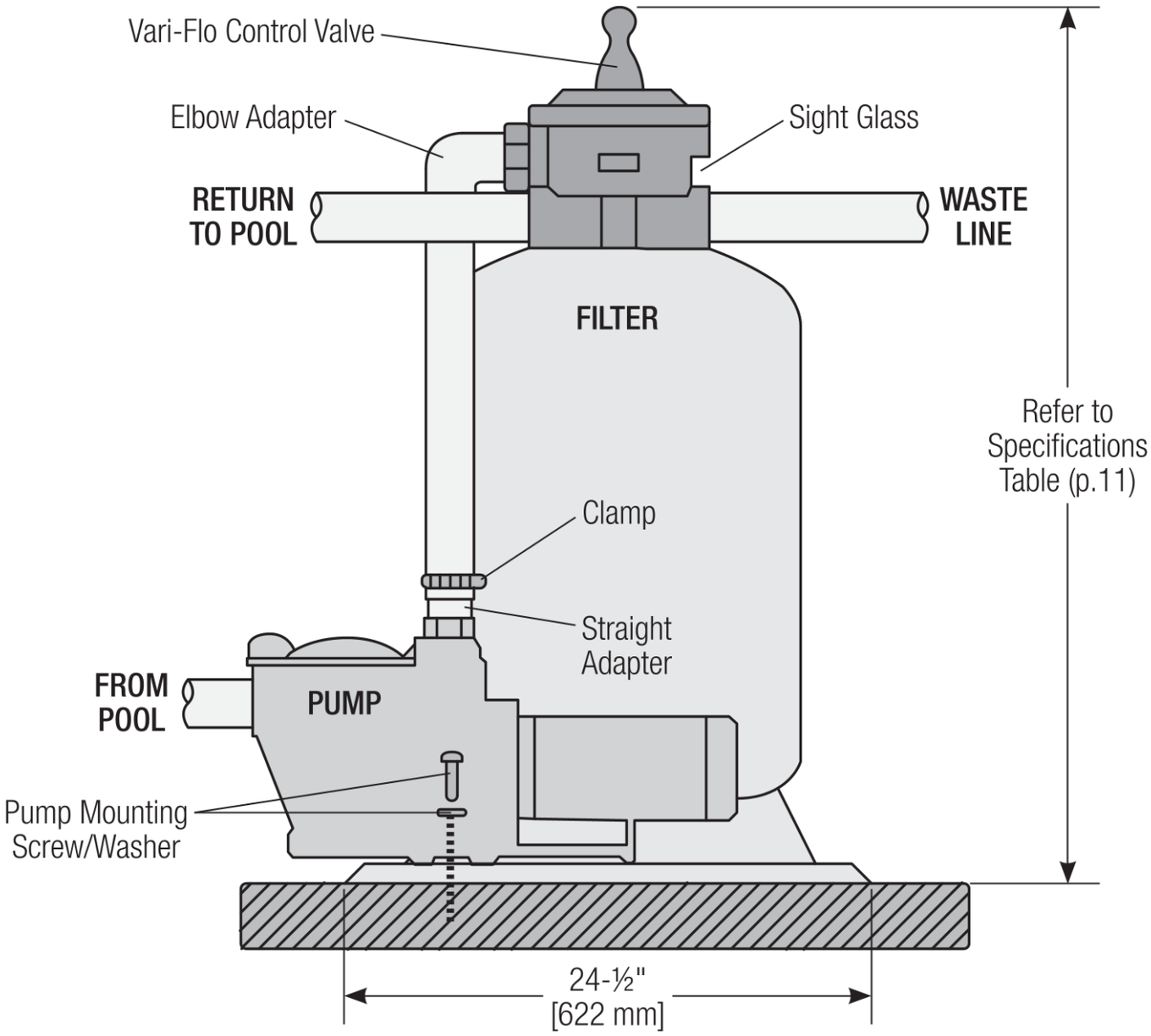
Only simple tools (screwdriver and wrenches), plus pipe sealant for plastic adapters, are required to install and/or service the filter.

Installation Steps

1. The filter system should be installed, not more than 6 feet above pool water level, on a level concrete slab, very firm ground, or equivalent, as recommended by your pool dealer. Position the filter so that the piping connections, control valve and winter drain is accessible for operation, service and winterizing.

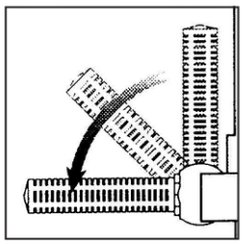
2. Assemble pump mounting base, (if supplied) to the filter according to instructions packed with the base.

   Refer to the image of the following page for typical installation.



3. Loading sand media. Filter sand media is loaded through the top opening of the filter.
   a. Loosen flange clamp and remove Filter Control Valve (if previously installed). Cap internal pipe with sand shield to prevent sand from entering it. Be sure pipe is securely in place in bottom underdrain hub.
   b. We recommend filling tank approximately 1/2 way with water to provide a cushioning effect when the filter sand is poured in. This helps protect the underdrain laterals from excessive shock. (Be sure the winter drain cap is securely in place on drain pipe).

      NOTICE - Check to confirm all laterals are in the down position before loading with sand as shown to the right.



   c. Carefully pour in correct amount and grade of filter sand, as specified in the Specifications table on page 11. (Be sure center pipe remains centered in opening). Because filter sand is not all the same. THE LEVEL OF SAND MUST REMAIN A MINIMUM OF 10" FROM THE TOP. Remove sand shield from internal pipe.

4. Assemble Filter Control Valve to filter tank.
   a. Loosely pre-assemble both halves of the clamp with one screw and one nut, turning the nut 2 or 3 turns. Do not tighten. Wipe filter flange clean.
   b. Insert Filter Control Valve (with valve/flange O-ring in place) into the tank neck, taking care that the center pipe slips into the hole in the bottom of the valve. Install clamp around tank and valve flange and assemble second screw and nut. Tighten just enough so that the valve may be rotated on tank for final positioning.
   c. Wrap two turns of Teflon pipe sealant tape manufactured for plastic pipe on the ¼" NPT male end of gauge. Carefully screw pressure gauge, into 1/4"NPT tapped hole in valve body. Do not over tighten.
   d. Connect pump to control valve opening marked PUMP according to instructions. After connections are made, tighten valve flange clamp with screwdriver, tapping around clamp with screwdriver handle to help seat valve flange clamp.

5. Make return to pool pipe connection to control valve opening marked RETURN and complete other necessary plumbing connections, suction lines to pump, waste, etc.

6. Make electrical connections to pump per pump instructions.

7. To prevent water leakage, be sure winter drain cap is securely in place and all pipe connections are tight.

Initial Start-Up of Filter

1. Be sure correct amount of filter sand media is in tank and that all connections have been made and are secure.

2. Depress Vari-Flo control valve handle and rotate to BACKWASH position. (To prevent damage to control valve seal, always depress handle before turning.) **For new concrete or gunite pools, or where there is a large amount of plaster dust or debris—start filter in FILTER position (not BACKWASH) to prevent clogging of under drain laterals.**

3. Prime and start pump according to pump instructions (be sure all suction and return lines are open), allowing the filter tank to fill with water.



⚠ WARNING – Separation Hazard. All suction and discharge valves must be open when starting the system. Failure to do so could cause severe personal injury.

Once water flow is steady out the waste line, run the pump for at least 2 minutes. The initial back-washing of the filter is recommended to remove any impurities or fine sand particles in the sand media.

4. Turn pump off and set valve to RINSE position. Start pump and operate until water in sight glass is clear—about 1/2 to 1 minute. Turn pump off, set valve to FILTER position and restart pump. Your filter is now operating in the normal filter mode, filtering particles from the pool water.

5. Adjust pool suction and return valves to achieve desired flow. Check system and filter for water leaks and tighten connections, bolts, nuts, as required.

6. Note the initial pressure gauge reading when the filter is clean. (It will vary from pool to pool depending upon the pump and general piping system). As the filter removes dirt and impurities from the pool water, the accumulation in the filter will cause the pressure to rise and flow to diminish. When the pressure gauge reading is 8-10 PSI (0.55-0.69 BAR) higher than the initial "clean" pressure you noted, it is time to backwash (clean) the filter (see BACKWASH under Filter Control Valve Functions.)

   NOTICE - During initial clean-up of the pool water it may be necessary to backwash frequently due to the unusually heavy initial dirt load in the water.

IMPORTANT: To prevent unnecessary strain on piping system and valves, always shut off pump before switching Filter Control Valve positions.

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

Operation

Filter Control Valve Functions

FILTER: Set valve to FILTER for normal filtering. Also use for regular vacuuming.

BACKWASH: For cleaning filter. When filter pressure gauge rises 8-10 PSI (0.55-0.69 BAR) above start-up (clean pressure):

Stop the pump, set valve to BACKWASH. Start pump and backwash until water in sight glass is clear. Approximately 2 minutes or less depending on dirt accumulation. Proceed to RINSE.

RINSE: After backwashing, with pump off, set valve to RINSE. Start pump and operate for about 1/2 to 1 minute. This ensures that all dirty water from backwashing is rinsed out of the filter to waste, preventing possible return to the pool. Stop pump, set valve to FILTER, and start pump for normal filtering.

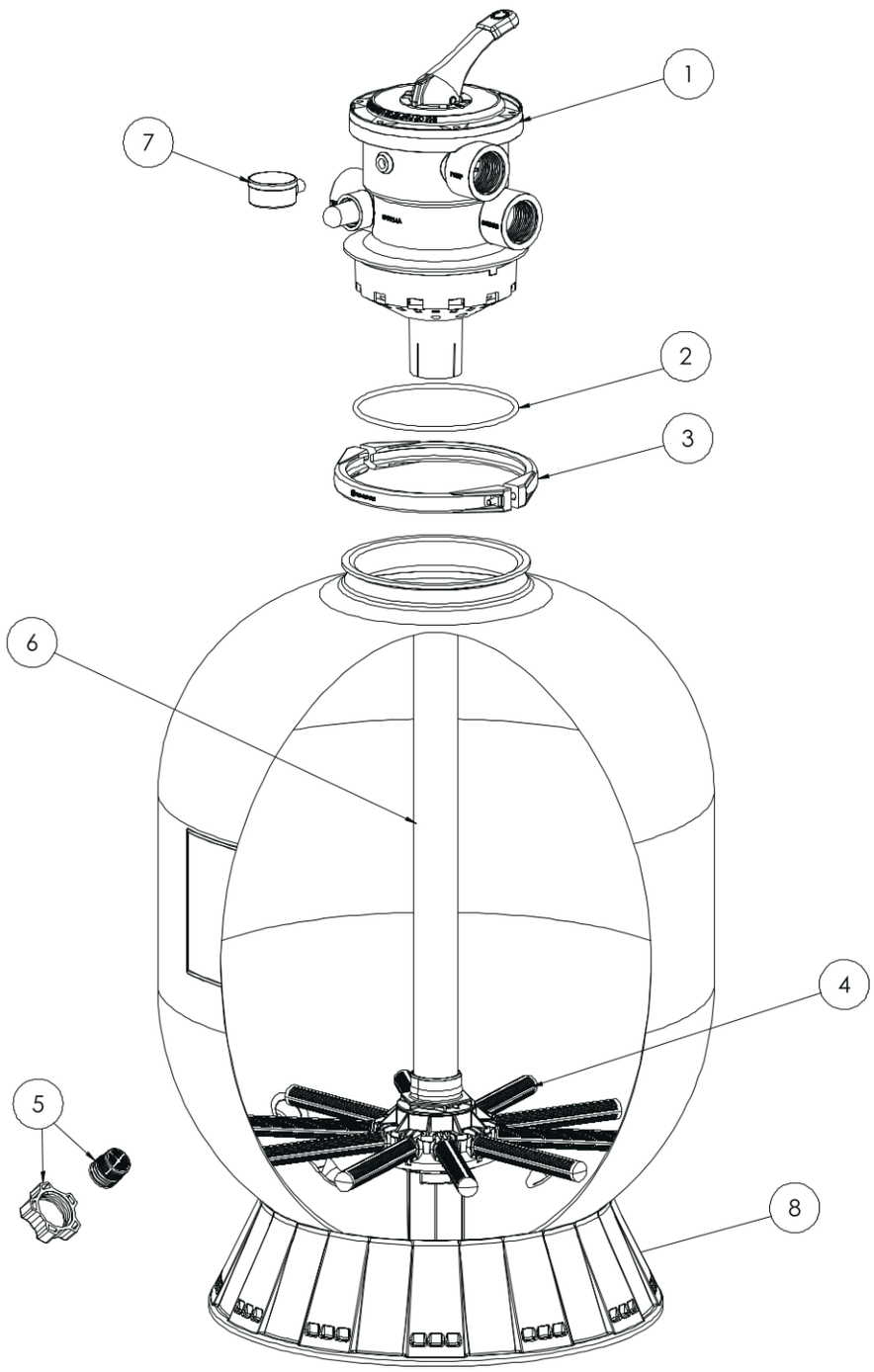
WASTE: To bypass filter for draining or lowering water level and for vacuuming heavy debris directly to waste. RECIRCULATE—Water is recirculated through the pool system, bypassing the filter.

CLOSED: Shuts off flow from pump to filter. VACUUMING—Vacuuming can be performed directly into the filter. When vacuuming heavy debris loads, set valve to WASTE position to bypass the filter and vacuum directly out to waste.

Winterization

1. Completely drain tank by unscrewing drain cap at base of filter tank. Leave cap off during winter.
2. Depress Vari-Flo control valve handle and rotate so as to set pointer on valve top between any two positions. This will allow water to drain from the valve. Leave valve in this "inactive" position.
3. Drain and winterize pump according to pump instructions.

Replacement Parts



Ref No	Part No	Description	Qty
1a	SP0714T	1.5" VariFlo XL Control Valve	1
1b	SP071620T	2" VariFlo XL Control Valve	1
2	GMX600F	Valve/Tank Oring	1
3a	GMX600NM	Flange Clamp (Plastic)	1
3b	SX310N	Flange Clamp (Stainless Steel)	1
4a	SX200QNRPAK10	16", 18", 21", 22" Lateral ribbed (10)	1
4b	SX240DNRPAK10	24", 27" lateral ribbed end (10)	1
4c	SX310HNRPAK10	30", 36" lateral ribbed end (10)	1
5a	SX180HG	Drain Cap Kit (Round)	1
5b	SX180LA	Drain Cap Assy	1
6a	SX164DAS	Folding Lateral Assembly 16" with standpipe	1
6b	SX180DAS	Folding Lateral Assembly 18" with standpipe	1
6c	SX210DAS	Folding Lateral Assembly 21" with standpipe	1
6d	SX210DA2S	Folding lateral assembly 21" T2 with 2"standpipe	1
6e	SX220DAS	Folding Lateral Assembly 22" with standpipe	1
6f	SX220DA2S	Folding lateral assembly 22" T2 with 2" standpipe	1
6g	SX244DAS	Folding Lateral Assembly 24", with standpipe	1
6h	SX244DA2XS	Folding Lateral Assembly 24" T2 with 2" standpipe	1
6j	SX270DA2S	Folding lateral Assembly 27" with standpipe	1
6k	SX270DA2XS	Folding Lateral Assembly 27" T2 with 2" standpipe	1
6m	SX310DA2S	Folding Lateral Assembly 31" with standpipe	1
6n	SX360DAS	Folding Lateral Assembly 36" with standpipe	1
7	ECX270861	Pressure Gauge	1
8a	SX164B	14" and 16" Filter Base	1
8b	SX200J	18"-27" Filter Base	1
8c	SX310J	30"&36" Filter Base	1
9a	SX164C	14" and 16" Pump Base	1
9b	SX180J	System base 18", 21", 23"	1
10	ECX1108A	Pump mounting screw kit	1
11a	SX160Z4KIT	26" Hose Kit (14", 16" system)	1
11b	SX201Z1KIT	33" Hose Kit (18", 21", 23" System)	1

Maintenance

Consult your local authorized Hayward dealer or service center. No returns may be made directly to the factory without the expressed authorization of Hayward Pool Products, Inc.

Performance

Pure, clear swimming pool water is a combination of two factors—adequate filtration and proper water chemistry balance. One without the other will not give the clean water you desire.

Your filter system is designed for continuous operation. However, this is not necessary for most swimming pools. You can determine your filter operation schedule based on your pool size and usage. Be sure to operate your filtration system long enough each day to obtain at least one complete turnover of your pool water.

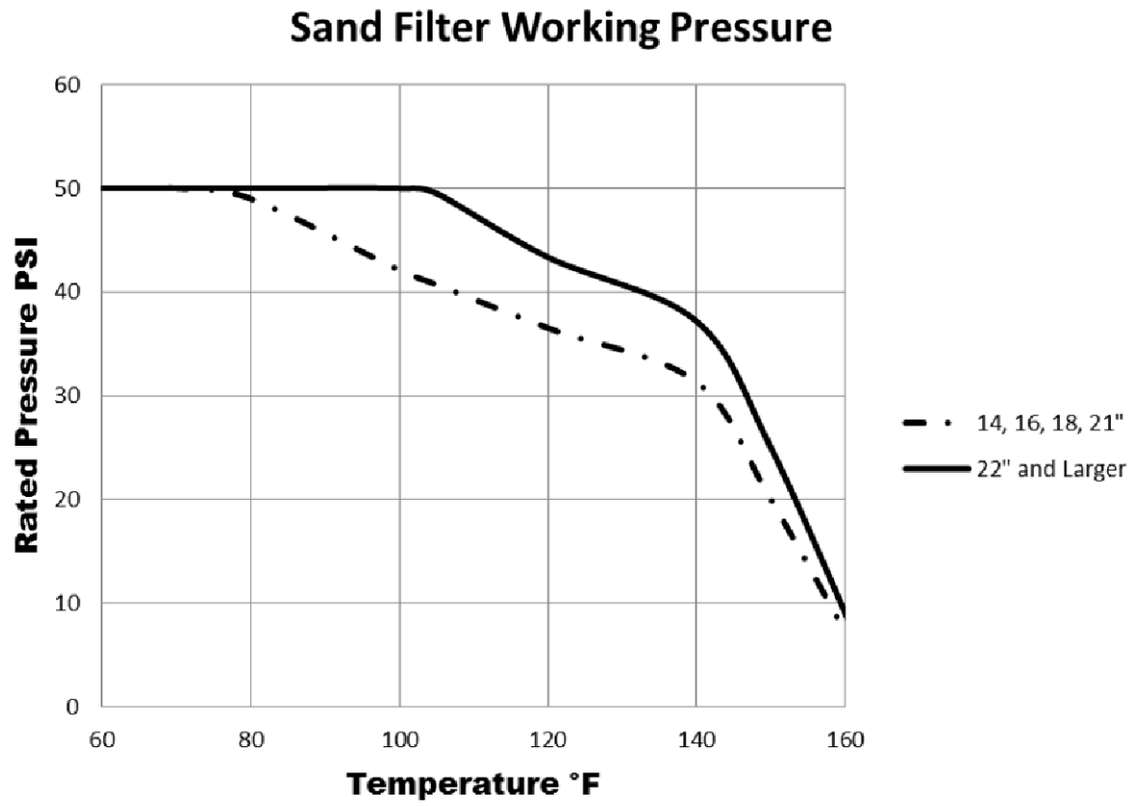
To properly sanitize your pool, maintain a free chlorine level of 1 to 3 ppm and a pH range of 7.2 to 7.6. Insufficient chlorine or an out of balance pH level will permit algae and bacteria to grow in your pool and make it difficult for your filter to properly clean the pool water.

Specifications													
Model No.	Effective Filtration Area		Maximum Working Pressure		Required Clearance				Media Capacity			Installed Height	
					Side		Above		Type	Amount			
	ft^2	m^2	PSI	BAR	in.	mm	in.	mm	Filter Sand*	lbs	kg	in.	mm
S144T	1.1	.10	50	3.45	18	460	18	460	0.45 - 0.55 mm	50	22	32	815
S166T	1.4	.13	50	3.45	18	460	18	460	0.45 - 0.55 mm	100	45	33	840
S180T	1.8	.17	50	3.45	18	460	18	460	0.45 - 0.55 mm	150	68	35	890
S210T	2.2	.20	50	3.45	18	460	18	460	0.45 - 0.55 mm	200	90	38	965
S210T2	2.2	.20	50	3.45	18	460	18	460	0.45 - 0.55 mm	200	90	38	965
S220T	2.6	.25	50	3.45	18	460	18	460	0.45 - 0.55 mm	250	115	41	1040
S220T2	2.6	.25	50	3.45	18	460	18	460	0.45 - 0.55 mm	250	115	41	1040
S244T	3.1	.29	50	3.45	18	460	18	460	0.45 - 0.55 mm	300	135	42	1070
S244T2	3.1	.29	50	3.45	18	460	18	460	0.45 - 0.55 mm	300	135	42	1070
S270T	3.7	.34	50	3.45	18	460	18	460	0.45 - 0.55 mm	350	160	43	1090
S270T2	3.7	.34	50	3.45	18	460	18	460	0.45 - 0.55 mm	350	160	43	1090
S310T2	4.9	.46	50	3.45	18	460	18	460	0.45 - 0.55 mm	500	225	48	1220
S360T2	7.1	.66	50	3.45	18	460	18	460	0.45 - 0.55 mm	700	315	53	1350

*Also known as No. 20 Silica Pool

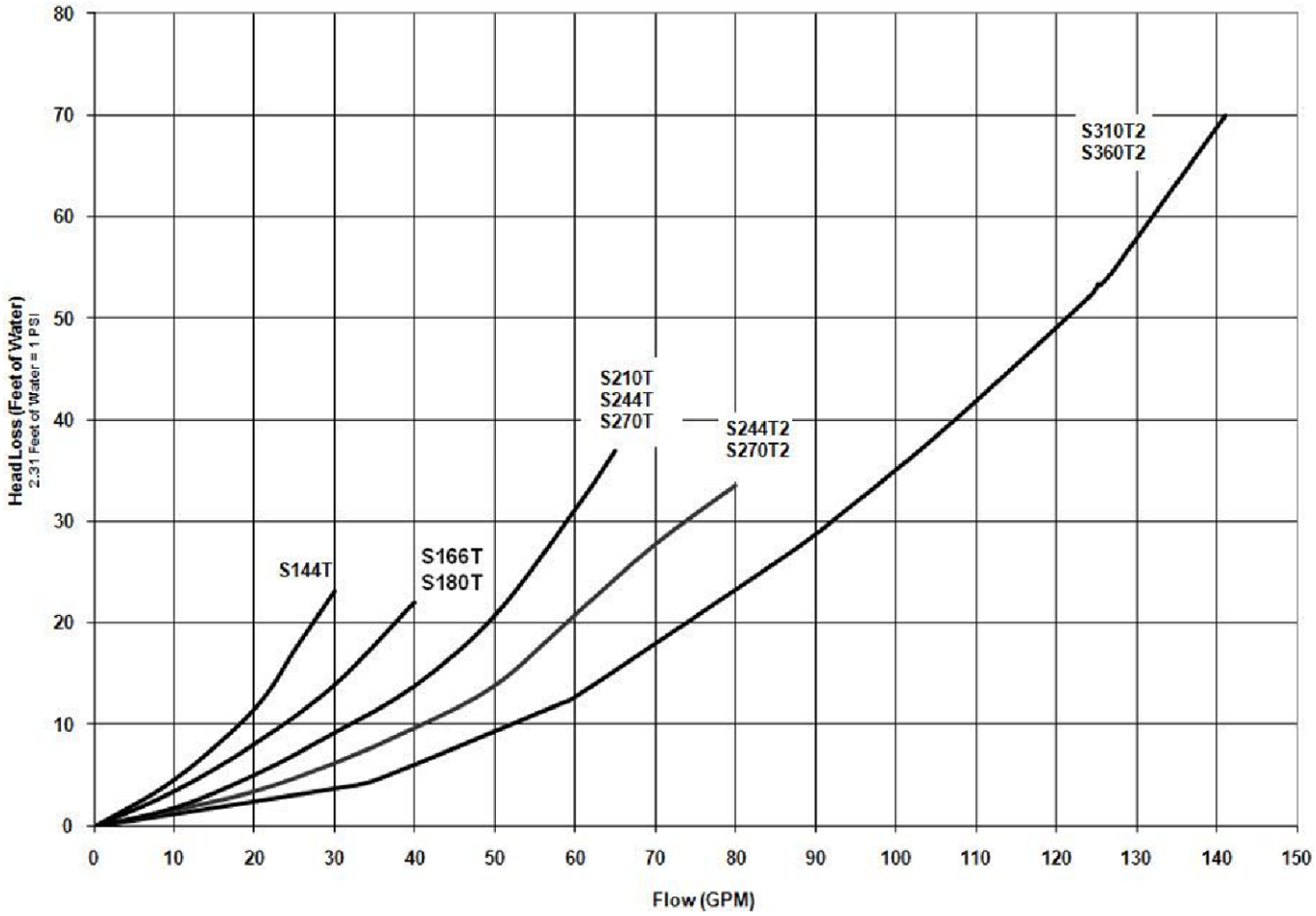
Maximum Recommended System Flow Rate By Pipe Size					
Pipe Size in. [mm]	Flow Rate GPM [LPM]	Pipe Size in. [mm]	Flow Rate GPM [LPM]	Pipe Size in. [mm]	Flow Rate GPM [LPM]
1 [32]	20 [75]	1-½ [50]	45 [170]	2-½ [75]	110 [415]
1-¼ [40]	30 [110]	2 [63]	80 [300]	3 [90]	160 [600]

Suggested Pool Chemistry	
pH	7.2 to 7.6
Total Alkalinity	80 to 120 ppm
Calcium Hardness	200 to 400 ppm
Combined Chlorine	0.2 ppm Maximum
Chlorine (Stabilized)	1.0 to 3.0 ppm
Stabilizer (Cyanuric Acid)	60 to 80 ppm



HAYWARD®

HEAD LOSS CURVES



Troubleshooting

Problem Solving List			
Problem	Low Water Flow	Short Filter Cycles	Pool Water Won't Clear Up
Remedy	• Check skimmer and pump strainer baskets for debris. • Check for restrictions in intake and discharge lines. • Check for air leak in intake line (indicated by bubbles returning to pool). • Backwash filter.	• Check for algae in pool and superchlorinate as required. • Be sure chlorine and pH levels are in proper range (adjust as required). • Check surface of filter sand for crusting or caking (remove 1 " of sand if necessary).	• Check chlorine, pH and total alkalinity levels and adjust as required. • Be sure flow rate through filter is sufficient. • Operate filter for longer periods. • Be sure Vari-Flo valve is set on "Filter" position.

HAYWARD® Pool Products Limited Warranty

Hayward Pool Products, Inc., warrants the components of this product to be free from defects in materials and workmanship during the warranty period. Please visit https://hayward.com/support/resources/warranty for product warranty details.

The limited warranty excludes damage from freezing, negligence, improper installation, improper use or care, Acts of God or as specified in installation and operations manual. Parts that fail or become defective during the warranty period shall be repaired or replaced, at our option.

Proof of purchase is required for warranty service. In the event proof of purchase is not available, the manufacturing date of the product will be the sole determination of the purchase date.

To obtain warranty service, please contact the place of purchase or the nearest Hayward Authorized Service Center. For assistance on your nearest Hayward Authorized Service Center, please visit us at https://hayward.com/dealerlocator.

Hayward shall not be responsible for cartage, removal, repair or installation labor or any other such costs incurred in obtaining warranty replacements or repair.

The Hayward Pool products warranty does not apply to components manufactured by others. For such products, the warranty established by the respective manufacturer will apply.

The express limited warranty above constitutes the entire warranty of Hayward Pool Products with respect to its pool products and is in lieu of all other warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose. In no event shall Hayward Pool products be responsible for any consequential, special or incidental damages of any nature.

Some states do not allow a limitation on how long an implied warranty lasts, or the exclusion of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Hayward Industries, 1415 Vantage Park Dr., Suite 400, Charlotte, NC 28203

***Supersedes all previous publications**

Register your product at https://hayward.com/support/resources/warranty/product-registration

For further information or consumer technical support, visit our website at www.hayward.com

HAYWARD®

Hayward is a registered trademark
of Hayward Industries, Inc. © 2024 Hayward Industries, Inc.

All other trademarks not owned by Hayward are the property of their respective owners. Hayward is not in any way affiliated with or endorsed by those third parties. For patent information, refer to www.hayward.com/patents.