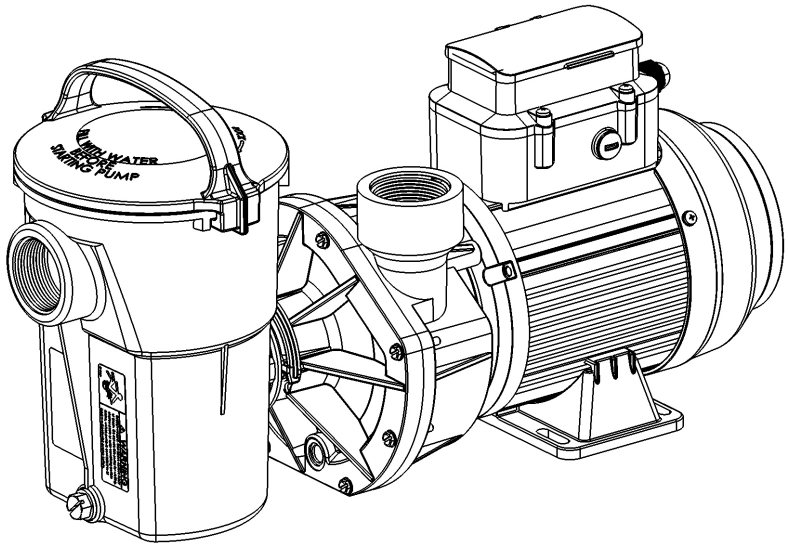
IS1580X15VSP Rev-A

PowerFlo VS™ 300

Owner's Manual



Model SP1580X15VSP
PowerFlo VS 300 Variable Speed Pump

Note: To prevent potential injury and to avoid unnecessary service calls, read this manual carefully and completely.

SAVE THIS INSTRUCTION MANUAL

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HAYWARD®

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1. IMPORTANT SAFETY INSTRUCTIONS

Before installing or servicing this electrical equipment, turn power supply OFF.

Basic safety precautions should always be followed, including the following: Failure to follow instructions may result in injury.

⚠ This is the safety-alert symbol. When you see this symbol on your pump 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.

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

⚠ WARNING – Do NOT ground to a gas supply line.

⚠ WARNING – To avoid dangerous or fatal electrical shock, **TURN OFF POWER** to all electrical equipment before working.

⚠ 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 mm^2) [No. 6 AWG (13.3 mm^2) 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.

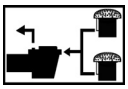
Limb Entrapment - A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in a mechanical bind or swelling of the limb.

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 flow rating as listed on the suction outlet cover.
- Never use pool or spa if any suction outlet 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 personal injury and/or property damage.

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 – Never operate the circulation system at more than 30 PSI maximum.

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

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

USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

2. General Information

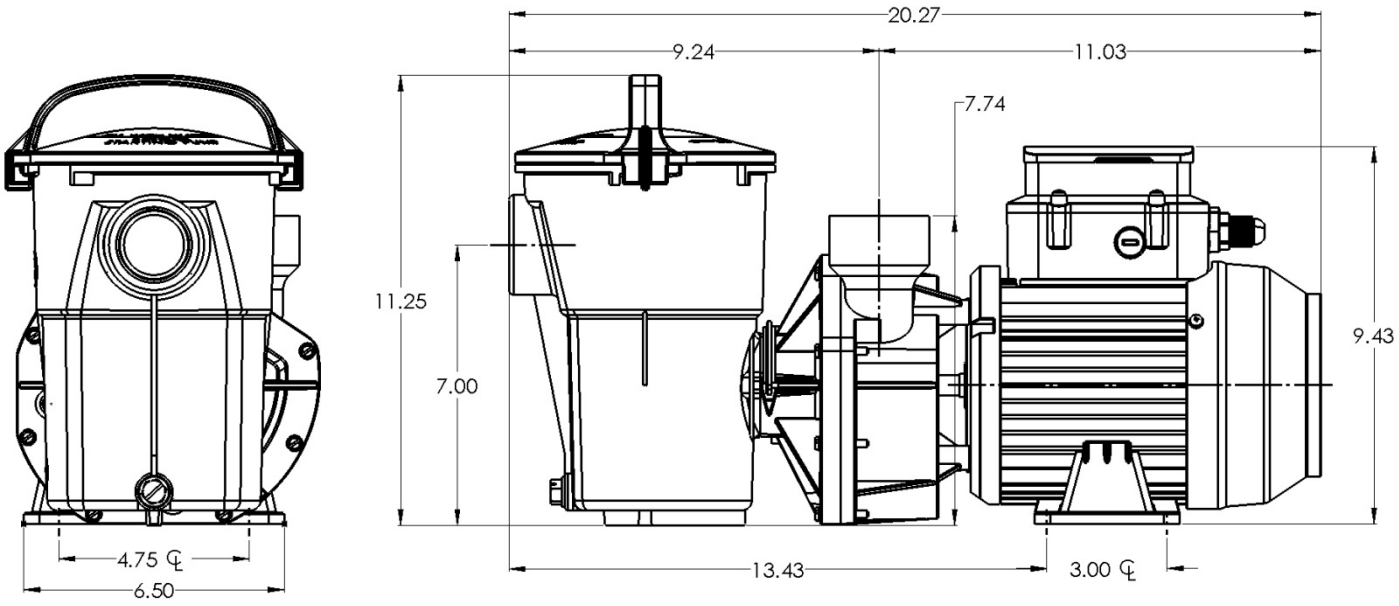
2.1. Introduction

This manual contains information for the proper installation and operation of the Hayward PowerFlo VS 300 Variable Speed Pump. The instructions in this manual MUST be followed precisely.

2.2. Primary Features

- Totally enclosed, permanent magnet motor
- Advanced hydraulic design
- Programmable with up to 3 custom speeds
- For enhanced pool management, can be controlled by Hayward or third party pool and spa control platforms, without the need for additional accessories
- Motor drive includes built-in protection for high temperatures and voltage fluctuations.

2.3. Product Dimensions



3. Installation and Wiring

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

Note: For FCC part 15 compliance, use flexible metallic conduit or a shielded power supply cable when installing this device.

3.1. Pump Location

The PowerFlo VS 300 pump MUST be installed below the pool water line (see Figure to right).

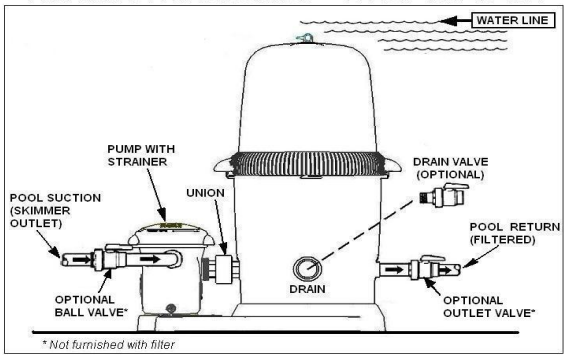
Install pump on a firm, level base or pad to meet all local and national codes. The field supplied base or pad must be level and vibration-free.

Pump motors require free circulation of air for cooling.

Do NOT install pump in a damp or non-ventilated location.

Though the pump 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.

PREFERRED FILTER LOCATION — **BELOW** WATER LINE



NOTE: ANSI/NSPI-4 Article V, standard for above-ground and on-ground pools, advises that components such as the filtration system, pumps and heater be positioned so as to prevent their being used as a means of access to the pool by young children.

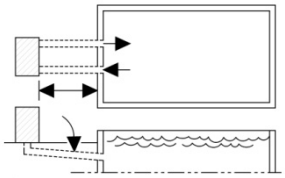
3.2. Pump Mounting

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 below water level.
- 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.

3.3. 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. **Piping - Flexible Hose, PVC, or Reinforced Hose are all acceptable piping methods.**
3. For pump outlet use 1-1/2" PVC pipe or reinforced hose. For pump suction on ALL models, use 1-1/2" reinforced hose. Increase size if a long run is needed. For pipe larger than port, use reducing fitting in strainer port.
4. To avoid pump strain, support suction and outlet independently. Place supports near pump. To avoid strain left by a gap at last connection, start all piping at pump and run pipe AWAY from pump.
5. NEVER use suction pipe SMALLER than pump suction connections. Suction pipe inlet must be lower than pump inlet port.
6. 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.



3.4. 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.

3.5. Electrical Specs

1. Voltage: 115VAC, 60Hz, Single Phase
2. Speed Range: 0 - 3400 rpm

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.

3.6. 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% (104 VAC) or more than 110% (126 VAC) of rated voltage (115 VAC) when pump is running at full load, consult the power company.

3.7. 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 mm^2) [No. 6 AWG (13.3 mm^2) 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.

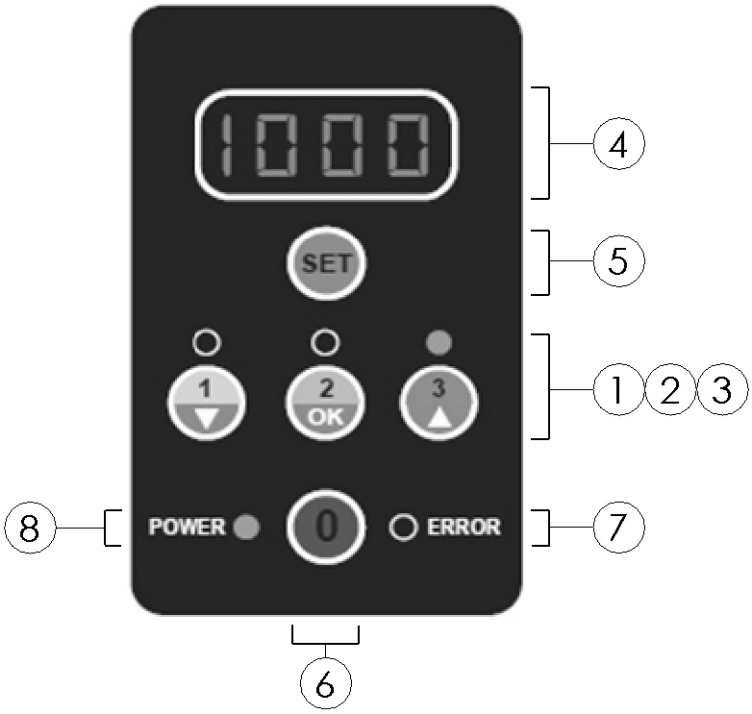
3.8. Wiring

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.

3.9. User Interface Summary

Figure 3.9-1



1. **Button "1/▼":** used to select the fixed LOW speed or to decrease speed while in the programming mode.
2. **Button "2/OK":** used to select the fixed MEDIUM speed or to confirm/save parameters while in the programming mode.
3. **Button "3/▲":** used to select the fixed HIGH speed or to increase speed while in the programming mode.
4. **LED display window:** displays the current speed of the motor, or error code message.
5. **"SET" button:** used to enter the programming mode or to reset the control.
6. **Button "O":** used to STOP the motor.
7. **Error light:** illuminates when there is a fault detected.
8. **Power light:** illuminates when power turns on.

3.10. Starting the pump

To start the pump press the button "1", "2" or "3" to select the preset fixed speed. If the pump starts from standby mode, it starts up and subsequently runs with the selected fixed speed.

The default speed settings are as follows.

Speed 1 = 1600 rpm

Speed 2 = 2600 rpm

Speed 3 = 3400 rpm

The pump will automatically change from selected speed "3" to speed "1" after 2 hours of run time.

The pump will automatically change from selected speed "2" to speed "1" after 24 hours of run time.

3.11. Display Power Saving Mode

The LED display turns off after three minutes if there is no action detected from the keypad.

3.12. Stopping the Pump

If the pump is stopped normally by pressing the Button "O", the "POWER" LED flashes and the LED display window shows "OFF". If the pump is stopped by a detected fault, the "POWER" LED flashes and the LED display window will show an error code number. Refer to the error code chart for the error code number shown and its description of the fault detected.

3.13. To Change the Default Preset Speed Settings

Press the button "1", "2" or "3" for the fixed speed which is to be changed. The LED window displays the current speed, then press and hold the "SET" button for at least three (3) seconds until the speed displayed in the LED window begins to flash. The speed can then be changed using the " ▼" or " ▲" buttons. The speed decreases or increases by 50 rpm. The upper limit of the speed is 3400 rpm and the lower limit is 1000 rpm. To save the set speed, confirm with the "OK" button. To cancel and return to the original speed press the "SET" button.

3.14. Lockout Keypad Programming

The keypad programming can be locked out for security to avoid unauthorized changes. The lock out function is initialized by pressing the "O" and "SET" buttons simultaneously. Once the lock out security function is activated, a "." (period) mark will be displayed at the right side of the LED display window. To unlock the security lockout function, just repeat the same operation as above.

3.15. Recover Factory Default Speed Settings

The motor can be reset to the factory default speed settings by pressing the "SET" button for at least 15 seconds then releasing it. The three LED's for the fixed speeds and the "POWER" LED turn on.

3.16. Fault Errors

In case of a fault error occurs, the "ERROR" light turns on and the LED display window displays an error code. The message will not be cleared until the reason for the fault error is corrected. Refer to the error code chart for the error code number shown and it's description of the fault detected.

To view the error records history, while in standby mode press the "O" button first and then press the "SET" button within 1 second. Press the " ▲" button to go to the next error code. Press the " ▼" button to delete the current error record. To delete all error records, press the " ▼" button for at least 3 seconds. Pressing the "SET" button or doing nothing within 30 seconds will exit the error code view mode.

3.17. Fault Error Code and Troubleshooting Chart

Code	Troubleshooting
01	DC – link over voltage
02	DC – link under voltage
03	DC – link voltage is too low
04	IPM over-current software protection
05	IPM over-current hardware protection
07	AC input over-voltage
08	AC input under-voltage
10	Electric thermal protection for pump over-load
11	Motor over speed
13	IPM over temperature
16	Motor out of step
17	PFC output DC low voltage
20	Earth short circuit
21	Motor Phase short circuit
22	Output phase missing
31	Communication error with master
41	Current sensor circuit error
42	Inrush current preventing relay error
43	Voltage sensor error, AC voltage and DC voltage do not match
51	IPM temperature sensor circuit error
60	Motor rotor lock
61	DSP ROM error
62	DSP RAM error
63	DSP watchdog error
66	Communication error with driver

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.

4. Maintenance

- Clean strainer basket regularly. Do NOT strike basket to clean. Inspect strainer cover gasket regularly and replace as necessary.
- Hayward pumps have self-lubricating motor bearings and shaft seals. No lubrication is necessary.
- Keep motor clean. Insure motor air vents are free from obstruction 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.

5. 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 non-toxic 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.

5.1. 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" in section 7.1 of this manual 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.

6. Shaft Seal Change Instructions

IMPORTANT SAFETY INSTRUCTIONS
PLEASE READ AND FOLLOW ALL 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.
- The National Electrical Code requires either a three (3) foot maximum twist-lock cord set with a GFCI protected receptacle or hard wire (conduit) connection for swimming pool pump installation. Do not use extension cords.
- Refer to **Figure 7.1-1** 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.

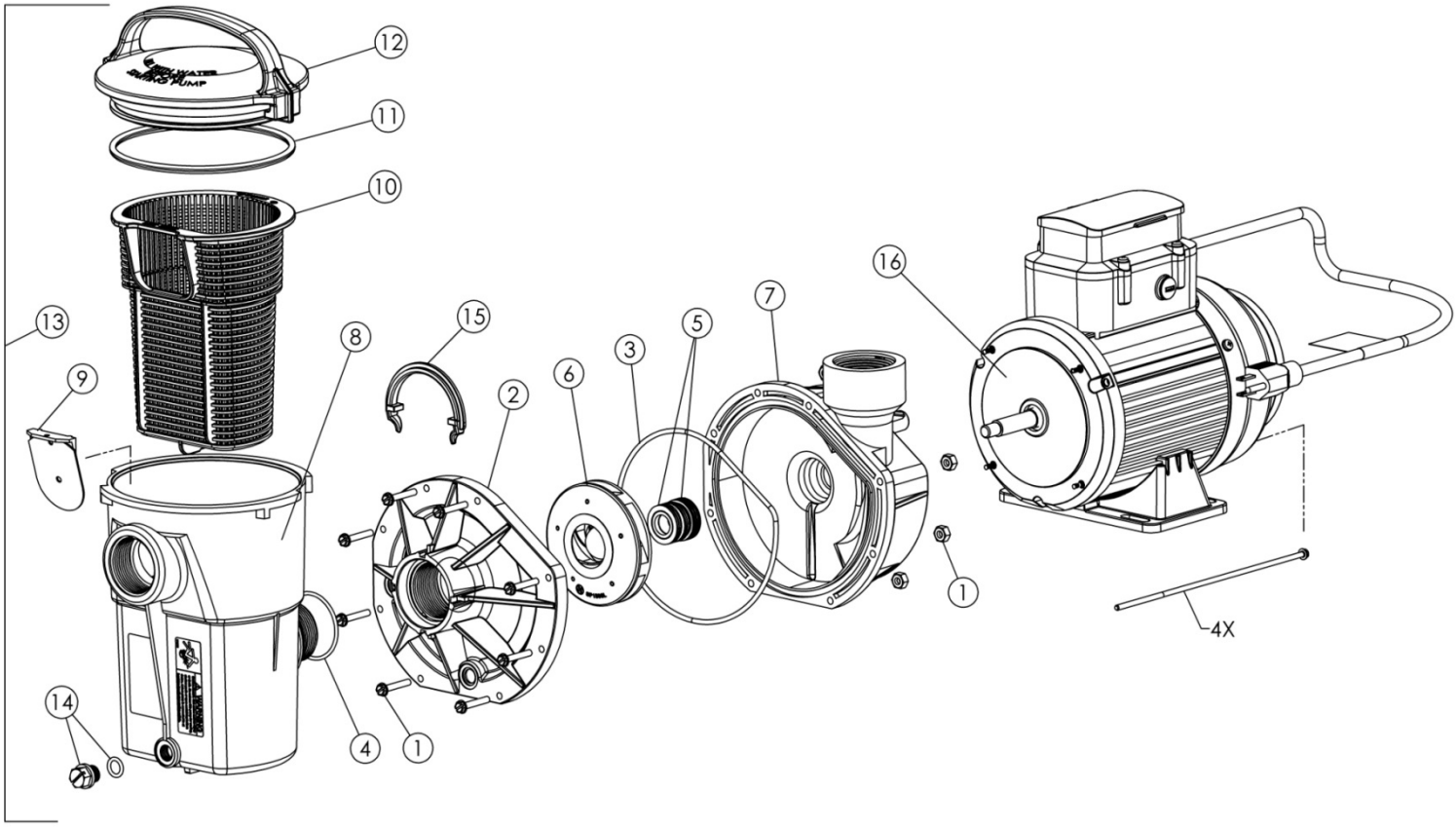
6.1. Shaft Seal Change Procedure

1. Shut off water flow to pump by closing appropriate valves or by plugging both the skimmer outlet port and return port to pool. Disconnect piping or hoses from the motor/pump assembly.
2. Remove the strainer by disengaging and removing the strainer cover. Remove the basket. Lift up on strainer 'C' clip and remove. Finally, slide strainer housing forward and remove.
3. Unscrew eight (8) screws and remove pump cover, exposing the impeller.
4. Remove the canopy or the shaft cover plate from the end of motor opposite the impeller.
5. Hold the motor shaft securely by either inserting a screwdriver in slot at end of shaft or by using an open-end wrench to engage the flat surfaces provided near end of motor shaft. Rotate the impeller in a counterclockwise direction and remove it from the motor shaft.
6. Note how the steel spring section of the old seal is positioned on impeller hub and remove it by pulling from the impeller.
7. Remove motor fan cover then loosen four (4) motor through bolts from the back of motor and remove pump housing/shroud from the front of the motor.
8. Remove the ceramic stationary portion of the old seal by pressing the white ceramic seat out of the pump housing recess. If assembly is tight, tap lightly from the "motor" side.
9. Clean and lubricate the impeller stem and the pump housing recess with a dilute solution of non-granulated liquid-type soap. Do not use petroleum or silicone lubricants as these can contribute to seal leakage.
10. Press the new rotating portion of the seal assembly onto the impeller stem with the polished black graphite surface facing away from the impeller.
11. Carefully press the stationary ceramic portion of the seal into the recess of the pump housing/shroud, with the polished flat surface facing out.
12. Carefully insert the motor shaft through the pump housing/shroud and align with white ceramic stationary seal assembly in place and secure the motor to pump housing/shroud with four (4) motor through bolts removed in step #7. Be sure motor base and pump discharge port are positioned properly. Alternately tighten the motor through bolts until the pump housing is secure. Make certain motor shaft turns freely before proceeding then re-attach motor fan cover.
13. Screw the impeller (clockwise) with the rotating portion of seal in place onto the motor shaft. Hand-tighten the impeller in place.
14. Clean (replace if necessary) the O-ring and replace on pump cover. Assemble the pump cover to the pump housing/ shroud with the eight (8) screws removed in step #3. Tighten screws alternately and evenly.
15. Re-assemble strainer by sliding strainer housing onto pump cover. Install strainer 'C' clip by pushing clip down onto grooved pump cover coupling. Insert basket and fasten strainer cover.
16. Reconnect pump to the piping or hoses provided. Open all valves and make sure that the pump strainer housing is full of water before restarting the pump.

7. Replacement Parts

7.1. Parts Diagram

Figure 7.1-1



7.2. Parts Listing

Ref. No.	Part No.	Description	Qty.
1	SPX1500NY	Housing Bolt and Nut (1 each)	8
2	SPX1580BP	Housing Cover	1
3	SPX1580Z1	Housing O-Ring	1
4	SPX1500W	Strainer Housing O-Ring	1
5	SPX1500KA	Seal Assembly	1
6	SPX1500F	Impeller	1
7	SPX1580AAP	Pump Housing	1
8	SPX1500CAP	Strainer Housing with Basket	1
9	SPX1500RA	Check Valve Assembly (Optional)	1
10	SPX1500LX	Strainer Basket	1
11	SPX1500P	Strainer Cover O-Ring	1
12	SPX1500D2A	Strainer Cover with O-Ring	1
13	SP1516	Complete Strainer Assembly	1
14	SPX1700FG	Drain Plug with O-Ring	1
15	SPX1515C	C-Clip	1
16	SPX1510Z1ECPMV	Motor 1.0 HP, VS	1

8.Troubleshooting

8.1. General Problems

- **Motor Will NOT Start:**
  1. Check for and correct any improper or loose wiring connections; open switches or relays; tripped circuit breakers, or blown fuses.
  2. 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.

- **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 causing rumbling in pump.
  2. Cavitation due to restricted or undersized suction line or leak at any joint, low water level in pool, and unrestricted discharge return lines. Correct suction condition or throttle return lines, if practical. Holding hand over return fitting will sometimes prove this point or putting in a smaller eyeball fitting.
  3. Vibration due to improper mounting, etc. Put a rubber pad under metal mounting feet.
  4. Foreign matter in pump housing. Loose stones/debris hitting impeller could be cause, remove any of the above.
  5. 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.
  6. Equipment base vibrating.

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9.Product Registration

DATE OF INSTALLATION _____

INITIAL PRESSURE GAUGE READING (CLEAN FILTER) _____

PUMP MODEL _____

***Retain this Warranty Certificate in a safe and convenient location for your records**

10. Warranty

HAYWARD® LIMITED WARRANTY

To Buyer, as original purchaser of this equipment, Hayward Pool Products, 620 Division Street, Elizabeth, New Jersey, warrants its products free from defects in materials and workmanship for a period of **ONE (1)** year from the date of purchase.

Parts which fail or become defective during the warranty period, except as a result of freezing, negligence, improper installation, use, or care, shall be repaired or replaced, at our option, without charge, within 90 days of the receipt of defective product, barring unforeseen delays.

To obtain warranty replacements or repair, defective components or parts should be returned, transportation paid, to the place of purchase, or to the nearest authorized Hayward service center. For further Hayward dealer or service center information, contact Hayward customer service department. No returns may be made directly to the factory without the express written authorization of Hayward Pool Products.

To original purchasers of this equipment, Hayward Pool Products warrants its products to be free from defects in materials and workmanship for a period of **ONE (1)** year from the date of purchase.

Filters which become defective during the warranty period, except as a result of freezing, negligence, improper installation, use or care, shall be repaired or replaced, at our option, without charge.

All other conditions and terms of the standard warranty apply.

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

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.

Some states do not allow a limitation on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion 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 Pool Products
620 Division Street
Elizabeth, NJ 07207

*** Supersedes all previous publications.**

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.

DETACH HERE: Fill out bottom portion completely and mail within 10 days of purchase/installation or register online.

PowerFlo VS™ 300 Variable Speed Pump

Warranty Card Registration

Please Print Clearly:

First Name_____ **Last Name**_____

Street Address_____

City_____ **State**_____ **Zip**_____

Phone Number_____ **Purchase Date**_____

E-Mail Address_____

Serial Number																

(10-17 digit number)

Model Number_____

Pool Capacity_____(U.S. Gallons)

☐Please include me on all e-mail communications regarding Hayward Equipment or promotions.

Mail to: Hayward Pool Products, 620 Division Street, Elizabeth, NJ 07207
Attn: Warranty Dept
OR REGISTER YOUR WARRANTY ON-LINE AT WWW.HAYWARD.COM

Years Pool has been in service

☐ < 1 year ☐ 1-3 ☐ 4-5 ☐ 6-10 ☐ 11-15 ☐ >15

Purchased from_____

☐Builder ☐Retailer ☐Pool Service ☐Internet/Catalog

Company Name_____

Address_____

City_____ State_____ Zip_____

Phone_____

Type of Pool:
☐ Concrete/Gunite ☐ Vinyl ☐ Fiberglass
☐ Other_____

☐ New Installation ☐ Replacement

Installation for:
☐ In Ground ☐ Spa