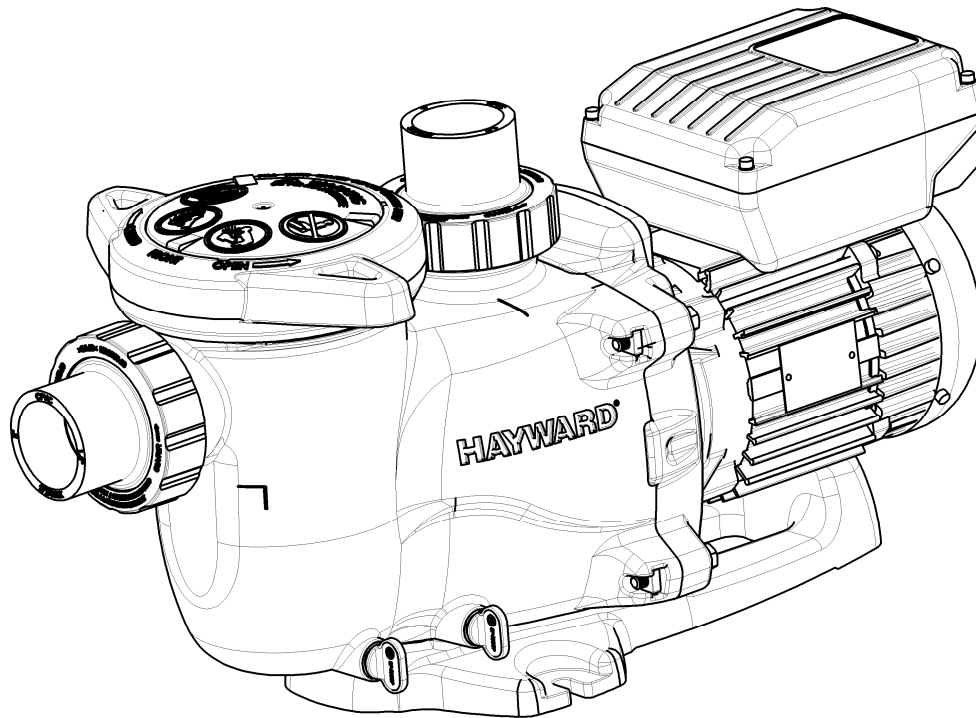




**HAYWARD® 2300 SERIES SELF-PRIMING**

# Max-Flo™ VS

## Owner's Manual



### Model SP2300VS

### Max-Flo Variable Speed Pump

The Hayward Max-Flo Variable Speed Pump is specifically engineered for the demanding requirements of today's in-ground/above-ground swimming pool/spa that is equipped with large capacity filters, heaters, and pool cleaning equipment. The variable speed, totally enclosed permanent magnet motor, combined with its advanced hydraulic design provides unparalleled energy savings.

Max-Flo VS is designed for pools of all types and sizes, featuring 40mm or 50mm union connection tails to match a variety of plumbing configurations, and a cam and ramp strainer cover that seals with less than a quarter turn. The Max-Flo VS is an ideal choice for both new construction or as a replacement pump on existing pools and spas.

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

### **SAVE THIS INSTRUCTION MANUAL**

#### Hayward Pool Products (Australia) Pty Ltd.

Melbourne-Sydney-Brisbane-Perth

Email: [sales@hayward-pool.com.au](mailto:sales@hayward-pool.com.au) Website: [www.hayward-pool.com.au](http://www.hayward-pool.com.au)

HEAD OFFICE: 163-165 Greens Road, Dandenong South, Vic. 3175

P.O. Box 4384, Dandenong South, Vic. 3164

ABN 66 083 413 414

Sales Ph 1300POOLS1 Fx 1300POOLS2



## IMPORTANT SAFETY INSTRUCTIONS

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



**⚠ 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 performed by a qualified electrical contractor, and must conform to local electrical regulations and AS/NZS 3000 Wiring Rules.

**Use of non-Hayward replacement parts voids warranty.**

**ATTENTION INSTALLER – THIS MANUAL CONTAINS IMPORTANT INFORMATION ABOUT THE INSTALLATION, OPERATION, AND SAFE USE OF THIS 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** – This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

**⚠ 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 out door 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 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 performed by a qualified electrical contractor, and must conform to electrical regulations and AS/NZS3000 Wiring Rules. All electrical circuits must be supplied through a Residual Current Device - RCD (Safety Switch), with a residual operating current of 30mA. 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 the electricity supply.

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

**⚠ WARNING** – Never operate the circulation system at more than (50PSI) 344kPa maximum.

**⚠ WARNING – Automatic restart.** The pump motor is automatically protected from overload and overheating. If such an error occurs the controller will automatically try to restart the pump. If a power failure occurs while the pump is running, it will automatically restart once the power has been restored.

**USE ONLY HAYWARD GENUINE REPLACEMENT PARTS**

**Max-Flo Variable Speed Pump**

## IMPORTANT SAFETY INSTRUCTIONS

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



**⚠ 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 the off position and the filter manual air relief valve must be in the open position. Before starting the system pump, all valves must be set in a position to allow system water to return back to the pool. Do not change the filter control valve position while the system pump is running. Before starting the system pump, fully open the filter manual air relief valve. Do not close the filter manual air relief valve until all the air is expelled and a steady stream of water 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 system components are not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter 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 - 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.



**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.



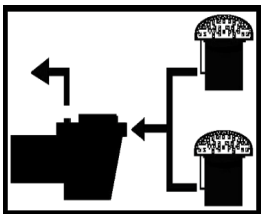
**Body Suction Entrapment** - A differential pressure applied to a large portion of the body or limbs can result in an entrapment.



**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 0.91 metre or three feet (3') apart, as measured from near point to near point 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.

- 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 installing two or more suction outlets per pump, follow all national, state and local codes applicable.
- Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.

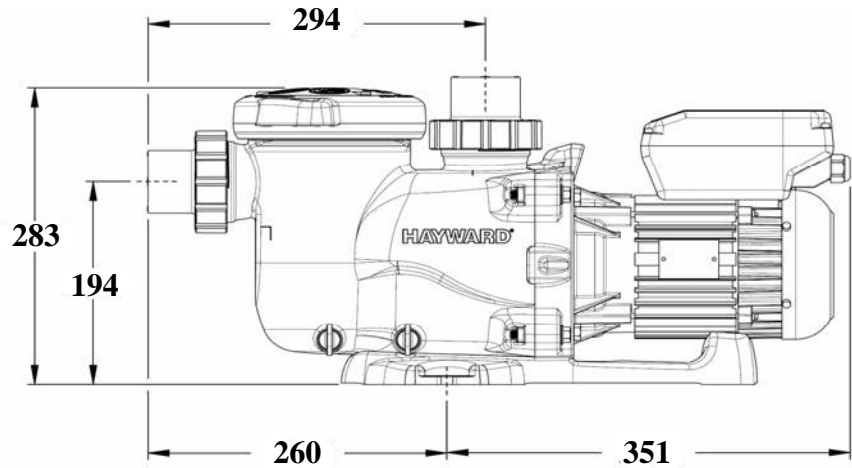
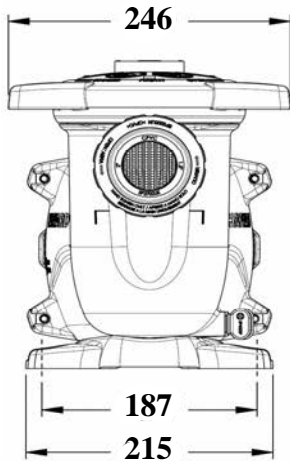
USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

**Max-Flo Variable Speed Pump**

## Introduction

This manual contains information for the proper installation and operation of the Hayward Max-Flo Variable Speed Pump. The instructions in this manual **MUST** be followed precisely. Failure to install according to defined instructions will void warranty.

## Product Dimensions

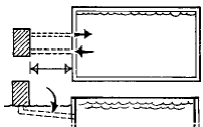


\*Note: All dimensions in millimetres

## Installation Instructions

**⚠ 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 must not be less than 40mm in diameter and must be equal to or larger in diameter 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.

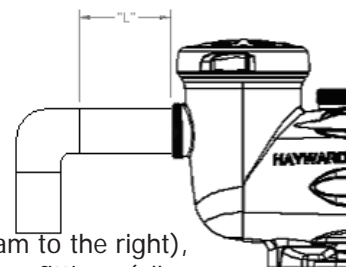
### Pump Mounting

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 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.

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



**USE ONLY HAYWARD GENUINE REPLACEMENT PARTS**

**Max-Flo Variable Speed Pump**

## Plumbing

Only use Teflon tape or an elastomeric thread sealant suitable for plastic, to seal threaded connections on moulded plastic components. All plastic fittings must be new or thoroughly cleaned before use.

**Note** - Do Not use Plumbers Pipe Dope or or Plumbers Putty as it may cause cracking of the plastic components. The pump suction and outlet ports have moulded in-thread stops. Do NOT attempt to force threaded 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 the fitting an additional 1½ turns. Do NOT over-tighten fitting or you may cause damage. If a leak occurs, remove the fitting and remove all traces of the sealing compound from thread. Re apply fresh sealing compound and re-install the threaded fitting.

Fittings (elbows, tees, valves, ect.) restrict flow. For better efficiency use the fewest possible fittings. Avoid fittings that could cause an air trap.

**⚠ WARNING** - If circulation equipment must remain in the plumbing system during water pressure test, do not apply more than 68 Kpa (10psi) pressure to the system. Be sure water pressure has been released, using the filter manual air relief valve, before removing the pump strainer cover.

## Electrical

**⚠ WARNING – Risk of Electric Shock.** All electrical wiring must be performed by a qualified electrical contractor, and must conform to electrical regulations and AS/NZS 3000 Wiring Rules. All electrical circuits must be supplied through a Residual Current Device - RCD (Safety Switch), with a residual operating current of 30mA. 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 the electricity supply, or if the supply cord is damaged, it must be replaced by the manufacture, its service agent or similarly qualified persons in order to avoid a hazard.

## Bonding

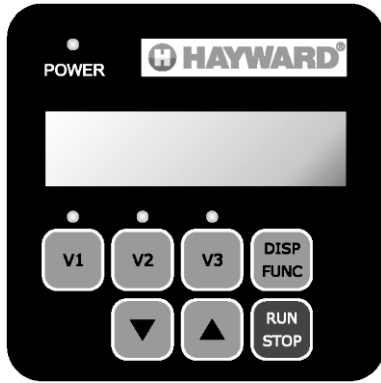
All conductive parts within and around the pool shall be connected together by equipotential bonding conductors and connected to the protective earthing conductor of the electrical equipment as stated in AS/NZS 3000.

## Electrical - specifications

The Variable Speed Drive is fully electronic. Consisting of an integrated power module (IPM) and controller, hard and software with a digital signal processor (DSP). The mains inputs are supplied with a power factor correction (PFC) and EMC filters. The Variable Speed Drive controls a Totally Enclosed, Fan Cooled, Permanent Magnet Motor.

- Voltage: 220 - 240 VAC ± 10% of the mean rated voltage while running, 50Hz Single Phase
- Current: 5.9 amps
- Power (output): 1,100 W
- Speed Range: 600-3000 rpm
- Ambient temperature: 0 to 40°C
- Protection class: IP X5

## User Interface Guide



The User Interface is equipped with a membrane keyboard and a digital display with five 7-segment digits.

### 1. RUN / STOP mode



Use this key for changing the operation mode. While the motor is running, the display shows the current speed. When the motor is switched off, the display shows "0".

### 2. Priming function

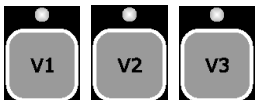
If the priming function is activated, the drive will start at a fixed speed of 3000 rpm before setting the speed according to the set-point value of the last selected speed.

This operation is required for proper priming of the filtration system. While the motor is running in the priming function the first digit of the display is showing a rotating circle.

Note, that the priming time can be skipped by pressing the RUN/STOP key while the VSD is performing the priming function.

The default value for the priming function is 60 seconds. To deactivate the priming function, decrease the priming time until the display shows "OFF".

### 3. Selecting and changing the speed



When delivered, the Variable Speed Drive is set to three factory speed settings that are adjustable to suit individual installations and requirements:

- V1: low speed 1450 rpm
- V2: mid speed 2400 rpm
- V3: high speed 3000 rpm

After pressing one of the speed keys, the VSD will set the speed to the predefined speed. The LED above the key shows the selected speed.

The predefined speeds can be changed by pressing the "UP and DOWN" keys. When changing the speed, the LED will light off. The display shows the set speed and is blinking for 3 seconds. Note that the changed speed will not be stored automatically.

To store the changed speed for future selections, press the according speed key, i.e. V1. As long as the LED is lit again the new value is now stored in the internal memory and available permanently.



## User Interface Guide (continued)

### 4. Keys “UP and Down”



These keys are for changing the set-point speed. Once either of the keys is pressed, the speed can be adjusted. Note that the value can be increased or decreased in steps of 10 rpm from a minimum of 600 rpm to a maximum of 3000 rpm. To change the speed more quickly hold down either key.

### 5. Showing the current power consumption



In normal mode, the display shows the set-point speed.

After pressing the DISP/FUNC key, the display will show the current power consumption in Watts ( $\pm 10\%$ ), prefixed by a “P” for Power.

### 6. Operation hours counter



By pressing the DISP/FUNC key again, the operating hours are shown, prefixed by the letter “h”. It counts the hours while the VSD is running. When the counter exceeded 10,000 hours, the letter “h” and the display shows the counter value alternately.

The operation hours counter will overflow when exceeding 99,999 hours (11 ½ years)

### 7. Priming time adjustment



The priming time can be adjusted by pressing the “DISP/FUNC” key until the letters “Pr” are shown on the display’s left side. Using the “UP or DOWN” keys it is possible to change the priming time from 0 seconds or “OFF”, up to 240 seconds in steps of one second. The new value is stored permanently after pressing the “DISP/FUNC” key again.

### 8. Software version



Press the “DISP/FUNC” key until “Id” is displayed on the left side of the display. The number on the right of the display is the software version, i.e. “100” is software version 1.00.

### 9. Power module temperature



Press the “DISP/FUNC” key until “t” is displayed on the left side of the display. On the right side of the display the power module temperature will be shown in C°.

## Startup & Operation

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

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

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

## Priming the pump

Make sure to release all the pressure from the pump and the piping system using the filter manual air relief valve (if available). Close the valves in the suction and discharge lines and remove the strainer cover. Fill the 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 re-install the strainer cover and ensure the suction, discharge, and filter air relief valves are open. Stand at least 2.5 metres from the pump and/or filter and proceed with starting the pump.

**⚠ ATTENTION** - **Never operate the pump without water.** Water acts as a coolant and lubricant for the mechanical shaft seal. Never run the pump dry. Running the pump dry may damage seals, causing leakage, flooding, and voids warranty.

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

## Starting the pump

To start the pump, make sure all the suction and discharge valves are open, and the manual air relief valve on the filter is fully open (if filter has one). Turn the power on at the power point and then press the "Run/Stop" button on the motor interface. Stand back while the pump primes. Due to system variances like suction lift, and the length of the suction line, five minutes is not an unreasonable length of time for priming. Only close the filter manual air relief valve once a steady stream of water (not air or air mixed with water) is discharging from the valve.

To adjust the speed of the pump please refer to the "User Interface Guide" on pages five (5) and six (6).

If the pump will not start or prime please refer to the trouble shooting section on page twelve (12)

## Selecting the correct speed setting

To maximise efficiency and performance it is important to select the appropriate speed setting for your specific requirements. As shown on page six (6) in the user interface guide, speed V1, V2, and V3 can be easily adjusted and set at any speed from 600 rpm to 3000 rpm. Please consult a pool professional for correct sizing, model selection, speed adjustment/setting, and installation advice to suit your pool.

This table shows the approximate flow rate in litres per minute at the factory speed settings.

Note: All flow rates in this table are based on maximum speed at 8m Total Dynamic Head.

Model	Speed V1	Speed V2	Speed V3	Maximum total head
SP2300VS	120	264	330	16.0 m

## Recommended minimum speed for filtration

This table shows what the minimum speed setting is that we recommend to set the VSD to for filtration purposes and is the speed used to achieve the Star Rating and Energy Efficiency as shown on the Energy Rating Label.

Model	Speed V1 RPM	Flow L/min	Total Head Dynamic	Noise dBA	Star Rating
SP2300VS	1450	121.46	2.66 m	52.7	8

This pump has been independently tested to AS 5102.

USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

**Max-Flo Variable Speed Pump**





**Filter (V1 Low Speed)** - This speed will meet the daily requirements for most private use pools up to 50,000 litres depending on the RPM it is adjusted too, and will turnover the entire pool volume in an average operation time of 8 to 10 hours.

**Boost (V2 Med Speed)** - This speed can be used for the operation of Automatic Pool Cleaners, or to increase the flow for the operation of pool accessories, or at times of heavy bather load.

**Turbo (V3 High Speed)** - Use this speed for backwashing and operation of accessories that may require extra flow for specific functions, such as Spa Jets and Water Features.

## Energy Usage Overview

The energy consumed by a pool pump is measured in Watts (W) or kilowatts (kW). The Max-Flo Variable Speed Pump displays on the motor interface the power consumption in Watts. Given this information it is very easy to determine the cost of operating the pump:

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

Example: Max-Flo Variable Speed Pump operating at 200 W. Cost of electricity = \$0.22 per kWh

200W = 0.2 kW

0.2 kW X \$0.22/kWh = \$0.04 per hour

**\*NOTE:** The power consumption is greatly affected by the speed of which the pump operates. Lowering the speed of the pump can dramatically reduce the power that is consumed. Below are some of the major benefits of running the pump at lower speeds.

## Benefits of operating at low speeds

- Save electricity and money. A reduction in Pump Speed of 50% will reduce power consumption by up to 75%
- Better filtration - the filter can often remove smaller particles when the water moves slower
- Quiet operation, so therefore it is very unlikely to be intrusive to your neighbours
- Reduced Total Dynamic Head - less stress on equipment (e.g. filter) which can extend 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 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 the individual equipment manuals for specific requirements for low flow operation.

After setting the pump speed(s), it is recommended you check all other equipment/water features are functioning as intended. For example, when running at low speed for daily filtration, verify that the 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, times of increased bather load, ect.

## Maintenance

- Clean strainer basket regularly. Do NOT strike the basket to clean it. Inspect the strainer cover gasket regularly and replace it as necessary.
- Hayward pumps have self-lubricating motor bearings and shaft seals. No lubrication is necessary.
- Keep the motor clean. Ensure the air vents and fan are free from obstruction to avoid damage. Do NOT use water to hose off the motor.
- Occasionally, shaft seals must be replaced due to wear or damage. Replace with genuine Hayward seal assembly kit.
- Do NOT use petroleum based lubricants on gaskets, o-rings, or plastic components. Use silicone based only.

**\*NOTE** - Tighten the strainer cover lock ring and the union nuts by hand only (**no wrenches**).

USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

**Max-Flo Variable Speed Pump**

## 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 the instructions may result in injury.

- Disconnect the pump motor power cord from the power outlet before beginning the shaft seal replacement.
- Only qualified personnel should attempt to replace the shaft seal. Contact your local authorized Hayward Dealer or service center if you have any questions.
- Exercise extreme care in handling both the rotating and stationary sections of the two-part replacement seal. Foreign matter or improper handling will easily scratch the graphite and ceramic sealing surfaces.
- See the "Parts Diagram" on page eleven (11) for the pump component locations.

#### **Removing the Motor Assembly**


1. Remove the four (4) 5/16" x 1.75" hex head bolts (Item #6), which hold the motor assembly to the pump/strainer housing (item #4), using a 1/2" AF spanner or socket.
2. Slide the motor assembly out of the pump/strainer housing (item 4), exposing the diffuser (item 9). Remove the three (3) diffuser screws (item #7), and pull the diffuser (item #9) off the seal plate (item #13) to expose the impeller (item #10).

#### **Removing the Impeller**

1. To prevent the motor shaft from turning, insert a 6mm Allen Key through the center hole in the fan cowling and into the socket on the end of the motor shaft.
2. Remove the impeller (item #10) by rotating it counterclockwise.

#### **Removing the Ceramic Seat**

1. Remove the spring seal assembly (item #12) and seal plate (item #13) from the motor by removing the four (4) 3/8" x 1" bolts (item #14) that secure it to the motor, using a 9/16" AF spanner or socket. Remove the motor support bracket (item #15) from the seal plate (item #13).
2. Press the ceramic seat with rubber cup out of the seal plate (item #13). If tight, use a small screwdriver to tap the seal out from the back side of the seal plate.

 **IMPORTANT** - Clean all recesses and parts to be reassembled. Inspect gaskets and replace if necessary.

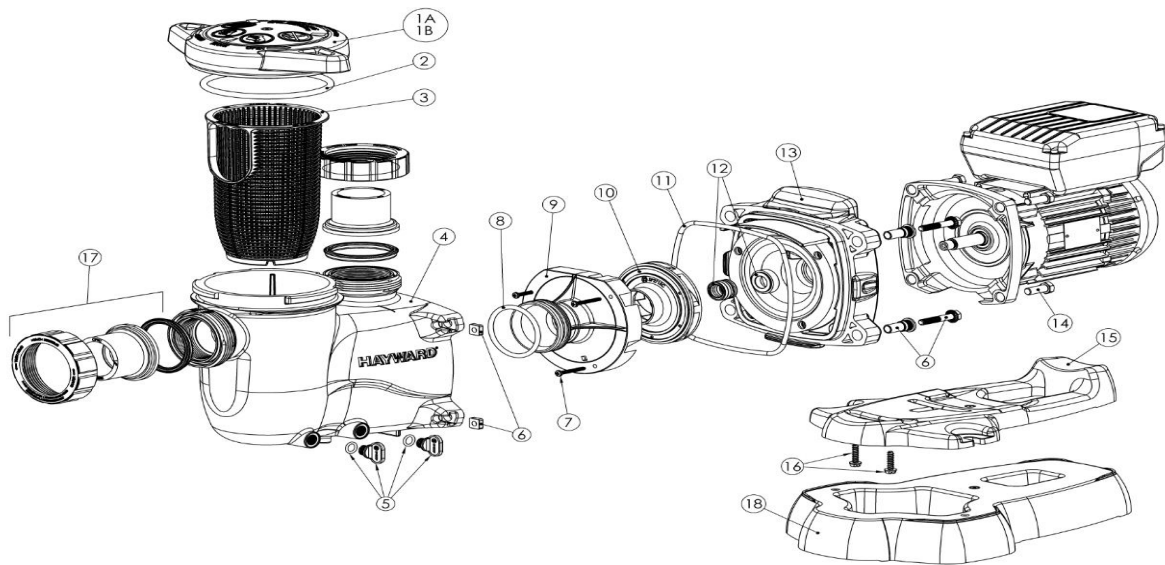
#### **Seal, Impeller, and Diffuser Installation**

1. Clean and lightly lubricate the motor shaft and seal recess in the seal plate (item #13) with a dilute solution of non granulated liquid type soap. Gently wipe the polished face of the ceramic seal with a soft, lint free cotten cloth. Lubricate the rubber cup on the ceramic seat and press it firmly into the recess of the seal plate (item #13), with the polished ceramic surface facing towards you.
2. Reassemble the motor to the seal plate (item #13) using the four (4) 3/8" x 1" bolts (item #14) by tightening them in a cross pattern and torque to 11.5 N-m. Ensure there is equal clearance between the motor shaft and ceramic seat. Re-attach the motor support (item #15) to the seal plate (item #13).
3. Gently wipe the black, polished surface of the carbon spring seal assembly (item #12) with a soft, lint free cotton cloth.
4. Press the carbon spring seal assembly (item #12) onto the motor shaft, with the black polished surface facing the ceramic seat.
5. Screw the impeller (item #10) onto the motor shaft in a clockwise direction and tightn snugly by holding the motor shaft with the 6mm Allen Key as explained earlier.
6. Place the diffuser (item #9) over the impeller (item #10) and onto the seal plate (item #13), aligning the three (3) pins on the diffuser (item #9) with the three (3) holes on the seal plate (item #13). Note: Flat side of diffuser rim will face up. Replace the three (3) diffuser screws (item #7) and torque to 2.3 N-m.
7. Replace the motor Assembly into the pump/strainer housing in the reverse order of the removal steps. Ensure the housing gasket (item #11) is lubricated and tighten the housing bolts (item #6) in a cross pattern evenly and to a torque of 21 Newton Meters.

USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

**Max-Flo Variable Speed Pump**

## Parts Diagram



## Parts Listing

Ref. No.	Part No.	Description	Qty. Req'd
1	SPX2300DLS	Strainer Cover Kit (Includes Strainer Cover, Lock-Ring, O-Ring)	1
2	SPX2300Z4	Strainer Cover O-Ring	1
3	SPX2300M	Strainer Basket	1
4	SPX2300AA	Pump Strainer Housing with Drain Plugs	1
5	SPX4000FG	Drain Plug with O-Ring	2
6	SPX2700ZPAK	Hardware Pack (Includes 4 Housing Bolts, Seal Plate Spacers & Square Nuts)	1
7	SPX2300Z3PAK3	Diffuser Screw (3Pack)	1
8	SX220Z2	Diffuser O-Ring	1
9	SPX2300B	Diffuser	1
10	SPX2300CVS	Impeller	1
11	GMX600F	Housing O-Ring	1
12	SPX2700SA	Shaft Seal Assembly	1
13	SPX2300E	Seal Plate	1
14	SPX3200Z5PAK4	Motor Bolt (4 Pack)	1
15	SPX2300G	Motor Support with Base Mount Screws	1
16	SPX1600Z52	Motor Support Base Mount Screws (2 Pack)	1
17	SPX2700UNKIT	Union Connector Kit suits 40mm PVC pipe (Inc'd 2 Nuts, Connectors, Gaskets)	1
	SPX3200UNKIT	Union Connector Kit suits 50mm PVC pipe (Inc'd 2 Nuts, Connectors, Gaskets)	1
18	SPX2300GR	Optional Riser Base	1
--	SPX3200UG	Union Gasket - Not shown	2
--	SPX2300VSM	Motor, suit SP2300VS	1

**USE ONLY HAYWARD GENUINE REPLACEMENT PARTS**

**Max-Flo Variable Speed Pump**

## Troubleshooting

### Motor Will Not Start

1. Ensure the power cord is plugged in and the power is switched on. If the pump still won't start check the availability of power by plugging in another appliance and seeing if it will start.
2. If the pump is controlled via a Chlorinator or Total System Controller, ensure that the controlling device is actually allowing the pump to start.
3. Check for open switches or relays, tripped circuit breakers or blown fuses.
4. Refer to an Authorised Service Agent or another qualified professional.

### Motor Cuts Out

Your Hayward pump motor is equipped with **Automatic Thermal Overload Protection**. The motor will automatically shut-off before heat damage buildup can occur due to abnormal operating conditions. The motor will auto-restart when a safe heat level is reached.

### Pump Will Not Prime

1. Ensure that the length of time that the 3000 rpm priming cycle runs for is sufficient. This time is factory set to 60 seconds but can be adjusted up to 240 seconds (see page six (6) for instructions how to change the length of time).
2. Make sure all the suction and discharge valves are open and unobstructed, that the filter manual air relief valve is open, and that the pool water level is above all suction openings.
3. Make sure the pump strainer basket is clean.
4. Fill the pump strainer/housing with water to the level of the pump inlet. Ensure that the strainer cover o-ring is clean, seated correctly, and lubricated. Tighten the strainer cover lockring by hand only.
5. Check for loose unions or damaged union o-rings on the suction side. Replace damaged o-rings and tighten the union nuts by hand only (**no wrenches**).

### Low Flow - Generally

1. Check for clogged or restricted strainer basket or suction line. If the suction line is blocked contact a qualified repair professional.
2. The pool piping is under size. Correct the piping size.
3. Check for a plugged or restricted discharge line of the 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 as per the manufacturer's instructions.
4. An air leak in the suction side plumbing (bubbles issuing from the return fittings). Re-tighten or re-seal threaded suction fittings with Teflon tape. Inspect other plumbing fittings and replace o-rings and tighten as required.
5. Plugged, restricted, or damaged impeller. Replace the impeller including a new shaft seal assembly.

### Noisy Pump

1. Cavitations caused by restricted or undersized suction line, an air leak at any joint, low water level in the pool, and unrestricted discharge return lines. Correct the suction condition or throttle the return lines, if practical. Holding your hand over the return fittings will sometimes prove this, or by putting in a smaller eyeball fitting.
2. Vibration due to improper mounting, ect. Mount the pump on a level surface and secure the pump to the equipment pad.
3. Foreign matter in the pump housing or fan cowling. Loose stones/debris hitting the impeller or the motor colling fan could be the cause. Clean the pump housing and the fan cowling.
4. Motor bearings noisy from normal wear, rust, overheating, or water ingress due to a worn or damaged shaft seal. Contact a qualified repair professional to rectify.

## Troubleshooting (continued)

### Variable Speed Drive Error Codes

In the case that an internal failure has been detected, the Variable Speed Drive will turn the motor off and display an error code listed below. If more than one error has been detected the screen will flash between the errors. The Variable Speed Drive is protected against overload and overheating. If such an error occurs, the VSD will automatically try to restart the motor three (3) times while the display will show the message "RSTRT". After failing the fourth (4) time to restart the display will show an error message "OLOAD". The cause of an error should be investigated and resolved before continuing normal operation of the pump. When the issue has been resolved, press the RUN/STOP key to clear the error message.

Code:	Indications:
1	Undervoltage on DC-Link
2	Overvoltage on DC-Link
4	Maximum temperature exceeded power modul
5	Over temperature motor
7	Maximum current exceed
10	Current Measurement Fails Permanently
20	Overload During Start Up Process
64	Short Circuit Failure
97	Multiple Errors at the Same Time, i.e. Under voltage and Overload
98	Communication Failure From controller



**Hayward Pool Products (Australia) Pty Ltd.**

Melbourne-Sydney-Brisbane-Perth

Email: [sales@hayward-pool.com.au](mailto:sales@hayward-pool.com.au) Website: [www.hayward-pool.com.au](http://www.hayward-pool.com.au)

HEAD OFFICE: 163-165 Greens Road, Dandenong South, Vic. 3175

P.O. Box 4384, Dandenong South, Vic. 3164

ABN 66 083 413 414

Sales Ph 1300POOLS1, Fx 1300 POOLS2



© 2013 Hayward Industries, Inc.