

## HAYWARD SELF-PRIMING MAX-FLO™ PUMP INSTALLATION AND OPERATING INSTRUCTIONS

Your Hayward self-priming centrifugal pump has been quality-built and engineered to give you many years of efficient, dependable, corrosion-free service. The advanced design reduces operation and maintenance has been reduced to simple, common-sense procedures.

### IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following: Failure to follow instructions may result in injury.

### READ AND FOLLOW ALL INSTRUCTIONS

1. **WARNING** - To reduce risk of injury, do not permit children to use this product unless they are closely supervised at all times.
2. **CAUTION** - This pump is U.L. listed for permanently installed pools and may also be used with hot tubs and spas if so marked. It is not U.L. listed for storable pools. A permanently installed pool is constructed in or on the ground and cannot be readily disassembled for storage. A storable pool is constructed so that it may be readily disassembled for storage and reassembled to its original integrity.
3. 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.
4. Use motor bonding lug to connect the motor with other bonding parts using a #8 AWG conductor as required by electrical codes. **NOTE:** If your pump is equipped with a 3 ft. (1 m) cord and twist lock plug, items 5 through 8 apply.
5. **WARNING** - Risk of Electric Shock. Connect only to a grounding-type receptacle protected by a ground fault circuit interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
6. Do not bury cord. Locate cord to minimize abuse from lawn mowers, hedge trimmers, and other equipment.
7. **WARNING** - To reduce the risk of electric shock, replace damaged cord immediately.
8. **WARNING** - To reduce the risk of electric shock, do not use extension cord to connect unit to electric supply; provide a properly located outlet.

### SAVE THESE INSTRUCTIONS

#### GENERAL TIPS ON PUMP INSTALLATION

Locate the pump as close to pool as practical and run suction line as direct as possible. This cuts down on friction loss through pipe and fittings.

Never overtighten pipe connections—use only pipe sealants formulated specifically for plastics, i.e., Teflon tape, Permatex No. 2, etc.

Suction line should have continuous slope from lowest point in line. Make sure suction joints are tight. Suction pipe should be as large or larger than discharge pipe.

Damp, non-ventilated locations should be avoided. Motors require free circulation of air to aid in cooling.

Insure that the electrical supply available agrees with the motor's voltage, phase and cycle, and that wire size is adequate for the HP (KW) rating and distance from power source. Motor must always be properly grounded. If cord connected, use only a properly grounded outlet. Electrical circuits must be protected by proper size ground fault circuit interrupter (GFCI) as required by applicable

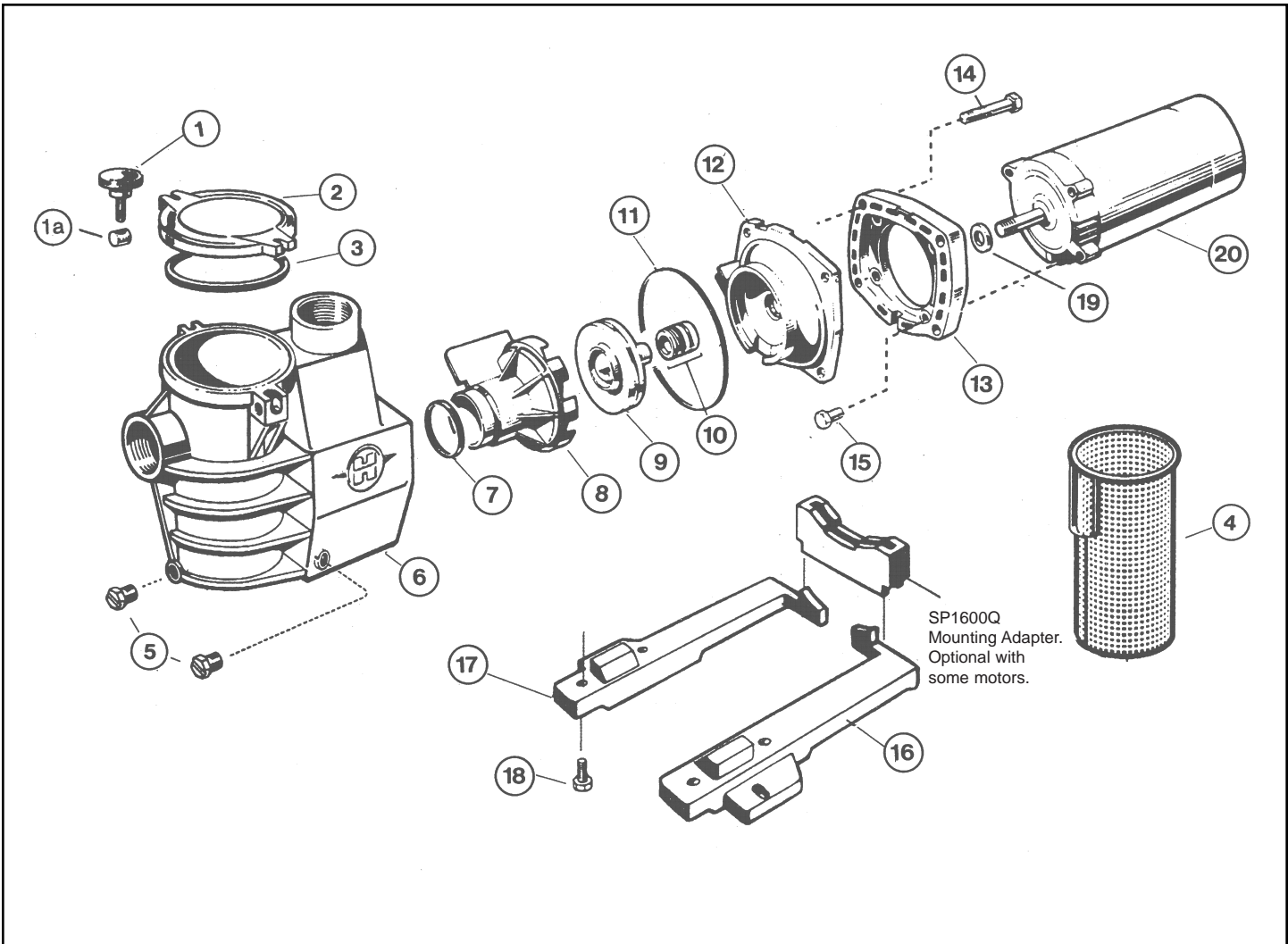
electrical codes. All electrical wiring must be performed by qualified personnel, and must conform to local codes and regulations.

#### STARTING AND PRIMING INSTRUCTIONS

Fill strainer housing with water to suction pipe level. Never operate the pump without water. Water acts as a coolant and lubricant for the mechanical shaft seal.

Open all suction and discharge lines and valves, as well as air bleed (if available) on filter. (The air that is to be displaced from the suction line must have some place to go.) **CAUTION: All suction and discharge valves must be open when starting the system. Failure to do so could cause severe personal injury and/or property damage.**

Turn on power and allow a reasonable time for priming. Five minutes is not unreasonable. (Priming time depends on suction lift and horizontal length of suction piping.) If the pump will not start, or will not prime, see TROUBLE SHOOTING GUIDE on back page.



REF. NO.	DESCRIPTION	NO. REQ'D.	PART NUMBER				
			MODEL SP2800X5	MODEL SP2805X7	MODEL SP2807X10	MODEL SP2810X15	MODEL SP2815X20
1	Hand Knob	2	SPX1600P	SPX1600P	SPX1600P	SPX1600P	SPX1600P
1a	Swivel Nut	2	SPX1600N	SPX1600N	SPX1600N	SPX1600N	SPX1600N
2	Strainer Cover	1	SPX1250L	SPX1250L	SPX1250L	SPX1250L	SPX1250L
3	Strainer Cover Gasket	1	SPX125T	SPX125T	SPX125T	SPX125T	SPX125T
4	Basket	1	SPX2800M	SPX2800M	SPX2800M	SPX2800M	SPX2800M
5	Drain Plug w/Gasket	2	SPX1700FG	SPX1700FG	SPX1700FG	SPX1700FG	SPX1700FG
6	Pump/Strainer Housing	1	SPX2800AA	SPX2800AA	SPX2800AA	SPX2800AA	SPX2800AA
7	Diffuser Gasket	1	SPX1600R	SPX1600R	SPX1600R	SPX1600R	SPX1600R
8	Diffuser	1	SPX2800B	SPX2800B	SPX2800B	SPX2800B	SPX2800B
9	Impeller	1	SPX2600C	SPX2605C	SPX2607C	SPX2610C	SPX2615C
10	Seal Assembly	1	SPX1600Z2	SPX1600Z2	SPX1600Z2	SPX1600Z2	SPX1600Z2
11	Housing Gasket	1	SPX1600T	SPX1600T	SPX1600T	SPX1600T	SPX1600T
12	Seal Plate	1	SPX2600E	SPX2600E	SPX2600E	SPX2600E	SPX2600E
13	Motor Mounting Plate	1	SPX1600F	SPX1600F	SPX1600F	SPX1600F	SPX1600F
14	Housing Cap Screw	4	SPX1600Z4	SPX1600Z4	SPX1600Z4	SPX1600Z4	SPX1600Z4
15	Motor Cap Screw	4	SPX125Z4	SPX125Z4	SPX125Z4	SPX125Z4	SPX125Z4
16	Mounting Foot (Left)	1	SPX1600G	SPX1600G	SPX1600G	SPX1600G	SPX1600G
17	Mounting Foot (Right)	1	SPX1600J	SPX1600J	SPX1600J	SPX1600J	SPX1600J
18	Mounting Foot Cap Screw	2	SPX1600Z5	SPX1600Z5	SPX1600Z5	SPX1600Z5	SPX1600Z5
19	Slinger	1	SPX125F	SPX125F	SPX125F	SPX125F	SPX125F
20	Motor - 60 Cycle Single Phase	1	SPX1600Z1M	SPX1605Z1M	SPX1607Z1M	SPX1610Z1M	SPX1615Z1M

### MAINTENANCE

1. Clean strainer basket regularly. Do not strike basket to clean. Inspect strainer cover gasket regularly and replace as necessary.
2. Hayward pumps have self-lubricating motor bearings and shaft seals. No lubrication is necessary.
3. Keep motor clean. Insure air vents are free from obstruction.
4. Occasionally, shaft seals become damaged or worn and must be replaced. See instructions.

### STORAGE/WINTERIZING

1. Drain pump by removing drain plug(s) and store in strainer basket.
2. Disconnect electrical wires and pipe connections, and store pump in dry, well-ventilated room. Or, as a minimum precaution:
3. Disconnect electrical wires. Remove four bolts holding bracket and motor assembly to strainer housing and store assembly in a dry, well-ventilated room. Protect remaining strainer housing assembly from the elements by covering.

*NOTE: Before reactivating pump, thoroughly clean and remove scale, dirt, etc.*

## SEAL CHANGE INSTRUCTIONS

### SP2800X SERIES — MAX-FLO™ GENERAL

*Exercise extreme care in handling and installing the new seal and ceramic seat assembly. The lapped and polished surfaces may easily be damaged by dirt or scratching.*

For safety, all service must be performed with **all power shut off**.

#### 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.
2. Slide the motor assembly out of the pump/strainer housing, exposing the diffuser. Pull the diffuser off of the seal plate, exposing the impeller. (The diffuser may remain in the pump/strainer housing. To remove, pull it straight out of the strainer housing.)

#### REMOVING THE IMPELLER

3. Remove the motor end cover by removing the two (2) screws.\*
4. For A.O.S. motor, hold motor shaft from turning. **Carefully** slide a 7/16" wrench between the capacitor and the protector switch, and rotate the impeller so the wrench fits over the 2 flats on the motor shaft. For magnetic motor, snap capacitor out of bracket and use 3/8" open end wrench on motor shaft flats.
5. Rotate the impeller counterclockwise and remove. The spring portion of the seal assembly is now exposed. Note carefully the position of the spring seal, and remove it.

NOTE: Replace motor cover to protect delicate motor parts.

#### REMOVING THE CERAMIC SEAT

6. Remove the seal plate. Note the notch on the top of the plate and the mating lug on the top of the motor mounting bracket.
7. Press the ceramic seat with O-ring out of the seal plate. If tight, use a small screwdriver to tap seat out.

STOP—Clean all recesses and parts to be reassembled. Inspect gaskets and replace if necessary.

#### SEAL INSTALLATION

8. Clean and lubricate the impeller hub shaft and pump housing seal recess with a dilute solution of non-granulated, liquid-type soap. The use of petroleum or silicone lubricants may contribute to seal leakage.
9. Gently wipe the black, polished surface of the spring seal assembly with a clean, soft cotton cloth. Press the spring seal assembly onto the impeller hub—black polished surface facing away from the impeller.
10. Gently wipe the polished face of the ceramic seat with a soft, cotton cloth. Lubricate the O-ring on the ceramic seat and press it firmly and evenly into the recess of the seal plate—polished side facing out.
11. Place the seal plate onto the motor mounting bracket aligning the positioning lug and guide.

#### REPLACING THE IMPELLER AND DIFFUSER

12. Screw the impeller onto the motor shaft in a clockwise direction. Tighten snugly by holding motor shaft with wrench.
13. Place the diffuser over the impeller onto the seal plate, fitting positioning lug between the two guides.

#### REPLACING THE MOTOR ASSEMBLY

14. Slide the motor assembly, with the diffuser in place, into pump/strainer housing, being careful not to dislodge the diffuser.
15. Fasten assembly to housing using the four (4) 3/8" x 2" bolts. (Be sure housing gasket is in place.) Tighten alternately and evenly.

*\*For motors without removable end cover - pry off cap at rear center of motor. Place large screwdriver in slot end of shaft to keep shaft from turning.*

## ELECTRICAL GUIDE - 60 CYCLE MOTORS - SINGLE PHASE

MOTOR		VOLTS	CIRCUIT BREAKER RATINGS-AMPS	BRANCH FUSE/ TRON RATINGS-AMPS	RECOMMENDED WIRE SIZE 0-50'
KW	HP				
.37	1/2	115	15	15	No. 14
.55	3/4	115 230	15 10	15 6.25	No. 14 No. 14
.75	1	115 230	20 10	20 9	No. 12 No. 14
1.10	1-1/2	115 230	15 10	30 15	No. 10 No. 14
1.55	2	115 230	30 15	30 12	No. 10 No. 14
1.88	2-1/2	230	20	20	No. 12

### TROUBLE SHOOTING GUIDE

#### A. MOTOR WON'T START

1. Check for improper or loose connections, open switches or relays, blown circuit breakers or fuses.
2. Manually check rotation of motor shaft for free movement and lack of obstruction.

#### B. MOTOR CUTS OUT—Check for:

1. Wiring, loose connections, etc.
2. Low voltage at motor (frequently caused by undersized wiring).
3. Binding and overload. (Amperage reading)

**NOTE:** *Your Hayward pump motor is equipped with Automatic Thermal Overload Protection. The motor will automatically shut off, under normal conditions, before heat damage build-up, due to an improper operating condition, can occur. The motor will auto-restart when safer heat level is reached.*

#### C. MOTOR HUMS, BUT DOES NOT START—

##### Check for:

1. Governor stuck in open position.
2. Open capacitor.

#### D. PUMP WON'T PRIME

1. Make sure pump/strainer housing is filled with water and that cover gasket is clean and properly seated. Tighten hand knob.
2. Make sure all suction and discharge valves are open and unobstructed, and that pool water level is above all suction openings.
3. Block off suction as close to pump as possible and determine if pump will develop a vacuum.
  - a. If pump does not develop a vacuum and pump has sufficient "priming water":
    1. Tighten all bolts and fittings.
    2. Check voltage to make sure pump is up to speed.
    3. Open pump and check for clogging or obstruction.
    4. Remove and replace shaft seal.
  - b. If pump develops a vacuum, check for blocked suction line or strainer, or air leak in suction piping.

#### E. LOW FLOW—Generally, check for:

1. Clogged or restricted strainer or suction line; undersized pool piping.
2. Plugged or restricted discharge line of filter (high discharge gauge reading).
3. Air leak in suction (bubbles issuing from return fittings).
4. Pump operating underspeed (low voltage).
5. Plugged or restricted impeller.

#### F. NOISY PUMP— Check for:

1. Air leak in suction causing rumbling in pump.
2. Cavitation due to restricted or undersized suction line and unrestricted discharge lines. Correct suction condition or throttle discharge lines, if practical.
3. Vibration due to improper mounting, etc.
4. Foreign matter in pump housing.
5. Motor bearings made unserviceable by wear, rust, or continual overheating.

#### SERVICE & REPAIRS

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



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