

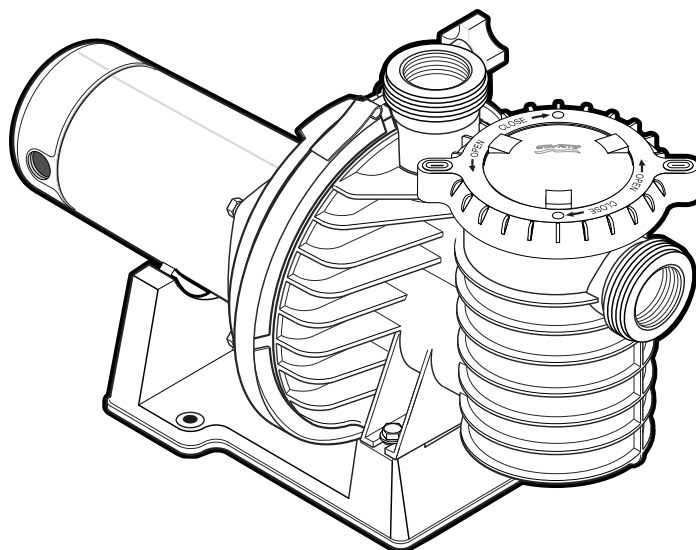


# MAX-E-PRO<sup>®</sup>

## POOL AND SPA PUMP

### INSTALLATION AND USER'S GUIDE

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#### 5P6R Series MODELS

HP	1 Phase	3 Phase
3/4	5P6R6D-209	5P6R6D3-209
1	5P6R6E-210	5P6R6E3-210
1-1/2	5P6R6F-211	5P6R6F3-211
2	5P6R6G-212	5P6R6G3-212
3	5P6R6H-213	5P6R6H3-213

This manual should be given to the owner of this pump.

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# IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS



## IMPORTANT NOTICE

This guide provides installation and operation instructions for this pump. Consult Pentair with any questions regarding this equipment.

**Attention Installer:** This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment after installation or left on or near the pump.

**Attention User:** This manual contains important information that will help you in operating and maintaining this product. Please retain it for future reference.

### READ AND FOLLOW ALL INSTRUCTIONS SAVE THESE INSTRUCTIONS



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

#### **⚠ DANGER**

Warns about hazards that can cause death, serious personal injury, or major property damage if ignored.

#### **⚠ WARNING**

Warns about hazards that may cause death, serious personal injury, or major property damage if ignored.

#### **⚠ CAUTION**

Warns about hazards that may or can cause minor personal injury or property damage if ignored.

#### **NOTE**

Indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

When installing and using this electrical equipment, basic safety precautions should always be followed, include the following:

#### **⚠ DANGER**

FAILURE TO FOLLOW ALL INSTRUCTIONS AND WARNINGS CAN RESULT IN SERIOUS BODILY INJURY OR DEATH. **THIS PUMP SHOULD BE INSTALLED AND SERVICED ONLY BY A QUALIFIED POOL SERVICE PROFESSIONAL. INSTALLERS, POOL OPERATORS AND OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS IN THE OWNER'S MANUAL BEFORE USING THIS PUMP. THESE WARNINGS AND THE OWNER'S MANUAL MUST BE LEFT WITH THE POOL OWNER.**

#### **⚠ WARNING**

Do not permit children to use this product.

#### **⚠ WARNING**

**RISK OF ELECTRICAL SHOCK.** 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.

#### **⚠ WARNING**

This 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 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.

#### **⚠ CAUTION**

This pump is for use with permanent 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.

## General Warnings

- Never open the inside of the drive motor enclosure. There is a capacitor bank that holds a 230 VAC charge even when there is no power to the unit.
- The pump is not submersible.
- The pump is capable of high flow rates; use caution when installing and programming to limit pumps performance potential with old or questionable equipment.
- Code requirements for electrical connection differ from country to country, state to state, as well as local municipalities. Install equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.
- Before servicing the pump; switch OFF power to the pump by disconnecting the main circuit to the pump.
- This appliance is not intended for use by persons (including children) of reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

#### **⚠ DANGER**

**SUCTION ENTRAPMENT HAZARD: STAY OFF THE MAIN DRAIN AND AWAY FROM ALL SUCTION OUTLETS! THIS PUMP IS NOT EQUIPPED WITH SAFETY VACUUM RELEASE SYSTEM (SVRS) PROTECTION AND DOES NOT PROTECT AGAINST BODY OR LIMB ENTRAPMENTS, DISEMBOWELMENTS (WHEN A PERSON SITS ON A BROKEN OR UNCOVERED POOL DRAIN) OR HAIR ENTANGLEMENTS.**



THIS PUMP PRODUCES HIGH LEVELS OF SUCTION AND CREATES A STRONG VACUUM AT THE MAIN DRAIN AT THE BOTTOM OF THE BODY OF WATER. THIS SUCTION IS SO STRONG THAT IT CAN TRAP ADULTS OR CHILDREN UNDER WATER IF THEY COME IN CLOSE PROXIMITY TO A DRAIN OR A LOOSE OR BROKEN DRAIN COVER OR GRATE.

THE USE OF UNAPPROVED COVERS OR ALLOWING USE OF THE POOL OR SPA WHEN COVERS ARE MISSING, CRACKED OR BROKEN CAN RESULT IN BODY OR LIMB ENTRAPMENT, HAIR ENTANGLEMENT, BODY ENTRAPMENT, EVISCERATION AND/OR DEATH.

#### The suction at a drain or outlet can cause:

**Limb Entrapment:** When a limb is sucked or inserted into an opening resulting in a mechanical bind or swelling. This hazard is present when a drain cover is missing, broken, loose, cracked or not properly secured.

**Hair Entanglement:** When the hair tangles or knots in the drain cover, trapping the swimmer underwater. This hazard is present when the flow rating of the cover is too small for the pump or pumps.

**Body Entrapment:** When a portion of the body is held against the drain cover trapping the swimmer underwater. This hazard is present when the drain cover is missing, broken or the cover flow rating is not high enough for the pump or pumps.

**Evisceration/Disembowelment:** When a person sits on an open pool (particularly a child wading pool) or spa outlet and suction is applied directly to the intestines, causing severe intestinal damage. This hazard is present when the drain cover is missing, loose, cracked, or not properly secured.

**Mechanical Entrapment:** When jewelry, swimsuit, hair decorations, finger, toe or knuckle is caught in an opening of an outlet or drain cover. This hazard is present when the drain cover is missing, broken, loose, cracked, or not properly secured.

**NOTE: ALL SUCTION PLUMBING MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL AND LOCAL CODES, STANDARDS AND GUIDELINES.**

# IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

## **⚠ WARNING** TO MINIMIZE THE RISK OF INJURY DUE TO SUCTION ENTRAPMENT HAZARD:

- A properly installed and secured ANSI/ASME A112.19.8 approved anti-entrapment suction cover must be used for each drain.
- Each suction cover must be installed at least three (3') feet apart, as measured from the nearest point to nearest point.
- Regularly inspect all covers for cracks, damage and advanced weathering.
- If a cover becomes loose, cracked, damaged, broken or is missing, replace with an appropriate certified cover.
- Replace drain covers as necessary. Drain covers deteriorate over time due to exposure to sunlight and weather.
- Avoid getting hair, limbs or body in close proximity to any suction cover, pool drain or outlet.
- Disable suction outlets or reconfigure into return inlets.

**⚠ WARNING** The pump can produce high levels of suction within the suction side of the plumbing system. These high levels of suction can pose a risk if a person comes within the close proximity of the suction openings. A person can be seriously injured by this high level of vacuum or may become trapped and drown. It is absolutely critical that the suction plumbing be installed in accordance with the latest national and local codes for swimming pools.

**⚠ WARNING** A clearly labeled emergency shut-off switch for the pump must be in an easily accessible, obvious place. Make sure users know where it is and how to use it in case of emergency.

**The Virginia Graeme Baker (VGB) Pool and Spa Safety Act** creates new requirements for owners and operators of commercial swimming pools and spas.

Commercial pools or spas constructed on or after December 19, 2008, shall utilize:

(A) A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8a Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs and either:

- (i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming pools, Spas and Hot Tubs or
- (ii) A properly designed and tested suction-limiting vent system or
- (iii) An automatic pump shut-off system.

Commercial pools and spas constructed prior to December 19, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets ASME/ANSI A112.19.8a and either:

- (A) A SVRS meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or
- (B) A properly designed and tested suction-limiting vent system, or
- (C) An automatic pump shut-off system, or
- (D) Disabled submerged outlets, or
- (E) Suction outlets shall be reconfigured into return inlets.

## **⚠ CAUTION** For Installation of Electrical Controls at Equipment Pad (ON/OFF Switches, Timers and Automation Load Center)



Install all electrical controls at equipment pad, such as on/off switches, timers, and control systems, etc. to allow the operation (startup, shut-down, or servicing) of any pump or filter so the user does not place any portion of his/her body over or near the pump strainer lid, filter lid or valve closures. This installation should allow the user enough space to stand clear of the filter and pump during system start-up, shut down or servicing of the system filter.

## **⚠ DANGER** HAZARDOUS PRESSURE: STAND CLEAR OF PUMP AND FILTER DURING START UP.



Circulation systems operate under high pressure. When any part of the circulating system (i.e. locking ring, pump, filter, valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the pump housing cover, filter lid, and valves to violently separate which can result in severe personal injury or death. Filter tank lid and strainer cover must be properly secured to prevent violent separation. Stand clear of all circulation system equipment when turning on or starting up pump. Before servicing equipment, make note of the filter pressure. Be sure that all controls are set to ensure the system cannot inadvertently start during service. Turn off all power to the pump. **IMPORTANT: Place filter manual air relief valve in the open position and wait for all pressure in the system to be relieved.**

Before starting the system, fully open the manual air relief valve and place all system valves in the "open" position to allow water to flow freely from the tank and back to the tank. Stand clear of all equipment and start the pump.

**IMPORTANT: Do not close filter manual air relief valve until all pressure has been discharged from the valve and a steady stream of water appears.** Observe filter pressure gauge and be sure it is not higher than the pre-service condition.

### General Installation Information

- All work must be performed by a qualified service professional, and must conform to all national, state, and local codes.
- Install to provide drainage of compartment for electrical components.
- These instructions contain information for a variety of pump models and therefore some instructions may not apply to a specific model. All models are intended for use in swimming pool applications. The pump will function correctly only if it is properly sized to the specific application and properly installed.

**⚠ WARNING** Pumps improperly sized or installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may include but not be limited to electric shock, fire, flooding, suction entrapment or severe injury or property damage caused by a structural failure of the pump or other system component.

**Pumps and replacement motors that are single speed and one (1) Total HP or greater cannot be sold, offered for sale, or installed in a residential pool for filtration use in California, Title 20 CCR sections 1601-1609.**

# '5P6R' SERIES II PUMP WITH TRAP

To avoid unneeded service calls, prevent possible injuries, and get the most out of your pump, READ THIS MANUAL CAREFULLY!


The Sta-Rite '5P6R' Max-E-Pro® Self-priming Centrifugal pumps:


- Are designed for use with swimming pools or as centrifugal pumps.
- Are excellent performers; durable, reliable.


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
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## READ AND FOLLOW SAFETY INSTRUCTIONS!

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

 **DANGER** warns about hazards that will cause death, serious personal injury, or major property damage if ignored.

 **WARNING** warns about hazards that can cause death, serious personal injury, or major property damage if ignored.


 **CAUTION** warns about hazards that will or can cause minor personal injury or property damage if ignored.


**NOTICE** indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.


## IMPORTANT SAFETY INSTRUCTIONS

Always follow basic safety precautions with this equipment, including the following.

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

 **CAUTION** This pump is for use with permanently installed pools and may also be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it may be readily disassembled for storage and reassembled to its original integrity.

### SAVE THESE INSTRUCTIONS

 **WARNING** Incorrectly installed or tested equipment may fail, causing severe injury or property damage.

Read and follow instructions in owner's manual when installing and operating equipment. Have a trained pool professional perform all pressure tests.

1. Do not connect system to a high pressure or city water system.
2. Use equipment only in a pool or spa installation.
3. Install pump with at least 2 hydraulically balanced main drains equipped with correctly installed, screw-fastened, anti-entrapment certified covers. See Page 4.
4. Trapped air in system can cause explosion. BE SURE all air is out of system before operating or testing equipment.

Before pressure testing, make the following safety checks:

- Check all clamps, bolts, lids, and system accessories before testing.

- Release all air in system before testing.
- Water pressure for test must be less than 25 PSI (7.5 kg/cm<sup>2</sup>).
- Water Temperature for test must be less than 100° F (38° C).
- Limit test to 24 hours. After test, visually check system to be sure it is ready for operation. Remove trap lid and retighten hand tight only.

NOTICE: These parameters apply to Sta-Rite equipment only. For non-Sta-Rite equipment, consult manufacturer.

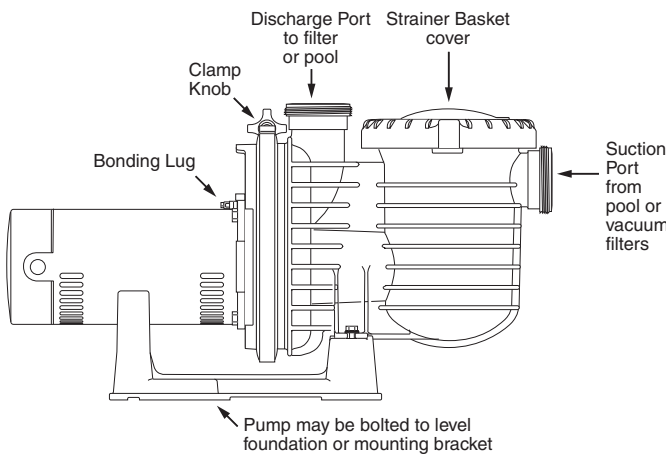


Figure 1

## INSTALLATION

Only qualified, licensed personnel should install pump and wiring.

Pump mount must:

Be located away from corrosive or flammable chemicals.

Have enough ventilation to maintain air temperature at less than the maximum ambient temperature rating (Max. Amb.) listed on the motor model plate. If this pump is installed in an enclosure/pump house, the enclosure must have adequate ventilation and air circulation to keep the temperature in the enclosure at or below the motor's rated ambient temperature whenever the pump is running.

Be solid - Level - Rigid - Vibration free. (To reduce vibration and pipe stress, bolt pump to mount.)

Allow pump suction inlet height to be as close to water level as possible.

Allow use of short, direct suction pipe (To reduce friction losses).

Allow for gate valves in suction and discharge piping.

Have adequate floor drainage to prevent flooding.

Be protected from excess moisture.

Allow adequate access for servicing pump and piping.

NOTICE: Use thread seal tape for making all threaded connections to the pump. Do not use pipe dope; pipe dope will cause stress cracking in the pump.

NOTICE: Pump suction and discharge connections have molded in thread stops. DO NOT try to screw pipe in beyond these stops.

**▲ WARNING** Fire and burn hazard. Modern motors run at high temperatures. To reduce the risk of fire, do not allow leaves, debris, or foreign matter to collect around the pump motor. To avoid burns when handling the motor, let it cool for 20 minutes before trying to work on it.

### Taping Instructions:

Use only new or clean PVC pipe fittings.

Wrap male pipe threads with one to two layers of thread seal tape. Cover entire threaded portion of pipe.

Do not overtighten or tighten past thread stop in pump port!

If leaks occur, remove pipe, clean off old tape, rewrap with one to two additional layers of tape and remake the connection.

NOTICE: Support all piping connected with pump!

## Piping:

Use at least 2" IPS PVC (51mm) pipe. Increase size if a long run is needed.

To avoid strains on the pump, support both suction and discharge pipes independently. Place these supports near the pump.

To avoid a strain left by a gap at the last connection, start all piping at the pump and run pipe away from the pump.

Never use a suction pipe smaller than pump suction connection.

To avoid airlocking, slope suction pipe slightly upward toward the pump.

**NOTICE:** To prevent flooding when removing pump for service, all flooded suction systems must have gate valves in suction and discharge pipes.

For most installations Pentair recommends installing a valve on both the pump suction and return lines so that the pump can be isolated during routine maintenance. However, we also recommend a valve, elbow or tee installed in the suction line should be no closer to the front of the pump than five (5) times the suction line diameter.

**Example:** A 2 inch pipe requires a 10 inch (25.4 cm) straight run in front of the suction inlet of the pump.

## Fittings:

Fittings restrict flow; for best efficiency use fewest possible fittings.

Avoid fittings which could cause an air trap.

Pool fittings must conform to International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Use only non-entrapping suction fitting or double suction.

## POOL PUMP SUCTION REQUIREMENTS

**▲ WARNING** Pump suction is hazardous and can trap and drown or disembowel bathers. Do not use or operate swimming pools, spas, or hot tubs if a suction outlet cover is missing, broken, or loose. Follow the guidelines below for a pump installation which minimizes risk to users of pools, spas, and hot tubs.

### Entrapment Protection

The pump suction system must provide protection against the hazard of suction entrapment or hair entrapment/entanglement.

### Suction Outlet Covers

All suction outlet covers must be maintained. They must be replaced if cracked, broken, or missing.

See below for outlet cover certification requirements.

All suction outlets must have correctly installed, screw-fastened covers in place.

### Testing and Certification

Suction outlet covers must have been tested by a nationally recognized testing laboratory and found to comply with the latest ASME/ANSI Specification for Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications.

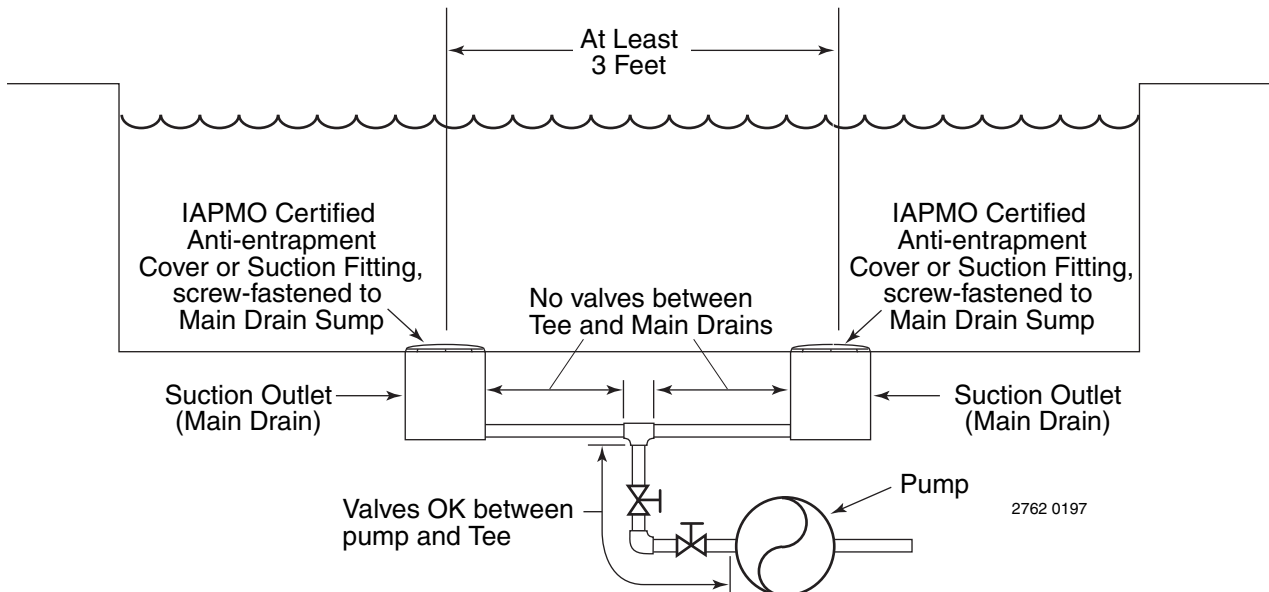


Figure 2 – Recommended pump suction layout.



## Outlets Per Pump

Provide at least two hydraulically balanced main drains, with covers (see below), for each swimming pool pump suction line. The centers of the main drains (suction fittings) must be at least three feet apart.

The system must be built so that it cannot operate with the pump drawing water from only one main drain (that is, there must be at least two main drains connected to the pump whenever it is running). (See Figure 2). However, if two main drains run into a single suction line, the single

suction line may be equipped with a valve which will shutoff both main drains from the pump (see Figure 2).

More than one pump can be connected to a single suction line as long as the requirements above are met.

## Water Velocity

The maximum water velocity through any suction outlet must be 1.5 feet (46cm) per second unless the outlet complies with the latest ASME/SNSI Specification for Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications. In any case, do not exceed the suction fittings maximum designed flow rate.

If 100% of the pump's flow comes from the main drain system, the maximum water velocity in the pump suction hydraulic system must be 6 feet (183cm) per second or less even if one main drain (suction fitting) is completely blocked. The flow through the remaining main drain(s) must comply with the latest ASME/ANSI Specification for Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications.

# ELECTRICAL INSTALLATION

**▲ WARNING** RISK OF ELECTRIC SHOCK OR ELECTROCUTION. This pump must be installed by a licensed or certified electrician or a qualified service professional in accordance with the National Electrical Code (NEC) and all other applicable national or local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to users, installers, or others due to electrical shock, and may also cause damage to property.

Always disconnect power to the pump at the circuit breaker before servicing the pump. Failure to do so could result in death or serious injury to service people, users or others due to electric shock.

Read all servicing instructions before working on the pump.

## Wiring

1. Be sure all electrical breakers, switches and automatic controls are turned off before wiring motor.

**▲ WARNING** STORED CHARGE - Wait at least sixty (60) seconds before servicing.

2. Become familiar with the wiring diagram, volts, hertz, amps and phase of your particular pump motor. All of this information is provided on the motor nameplate label found on the side of the motor.
3. Become familiar with the wiring diagram, volts, hertz, amps and phase of your particular pump motor. All of this information is provided on the motor nameplate label found on the side of the motor.
4. Be sure that the supply voltage meets the requirements listed on the motor nameplate. If these requirements are not met, permanent motor damage may occur.
5. 3-Phase motors require external overload protection. An initial inspection is needed to ensure proper rotation of the pump. Once installed, momentarily cycle the power on and then off. Note the rotation of the motor fan or shaft as it comes to a stop. If wired correctly the motor shaft and/or fan will match the rotation arrow noted on the pump.
6. Use a strain relief and be sure all electrical connections are clean and tight.
7. Cut the wires to the appropriate length so they do not overlap or touch when connected.

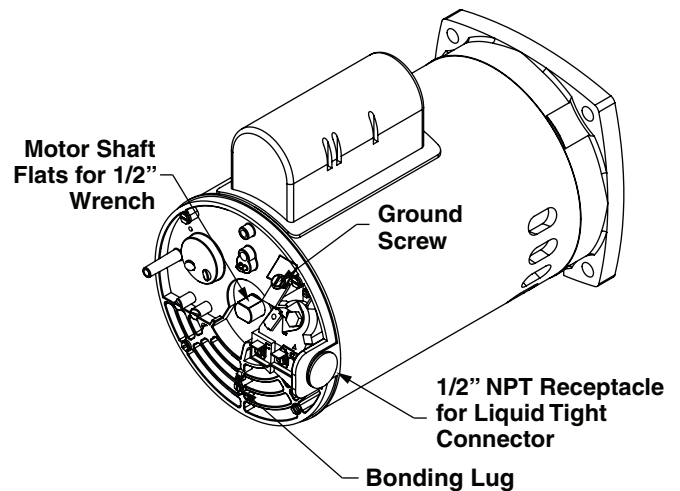
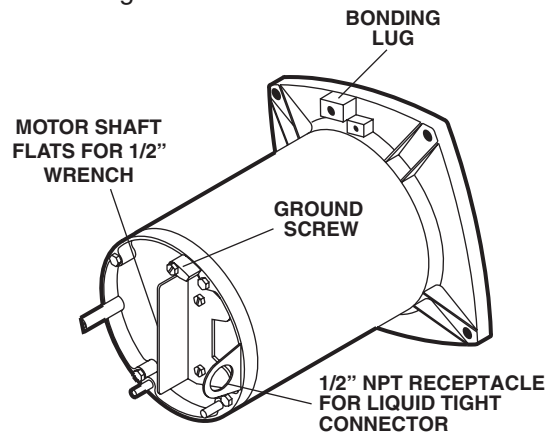
## Grounding

1. Permanently ground the motor using the green ground screw, as shown below. Use the correct wire size and type specified by National Electrical Code. Be sure the ground wire is connected to an electrical service ground.
2. The pump should be permanently connected to either a circuit breaker, 2-pole timer or 2-pole relay.

**Note:** If AC power is supplied by a GFCI circuit breaker, the pump should be wired on its own independent circuit unless the pump is operated in tandem with a Pentair salt chlorine generator.

## Bonding

1. Bond the motor to the structure in accordance with the National Electrical Code and all other applicable national or local codes. Use a solid copper bonding conductor not smaller than 8 AWG. For Canadian installations, a 6 AWG or larger solid copper bonding conductor is required. Run a wire from the external bonding screw or lug to the bonding structure.
2. Connect the wire from the accessible bonding lug on the motor to all metal parts of the swimming pool, spa, or hot tub structure and to all electrical equipment, metal conduit, and metal piping within 5 feet (1.52 meters) of the inside walls of the swimming pool, spa, or hot tub. Run a wire from the external bonding screw or lug to the bonding structure.



**▲ WARNING** Before establishing or restoring power to the pump, be sure all electrical connections are tight and all electrical and wiring compartment covers are properly installed.

**Note:** When the pump is started and stopped by removing power with a relay or timer, a two-pole device should be used to apply and remove power to both POWER LINE TERMINALS.

Pentair offers GFCI breakers which offer appropriate personal protection while meeting 2008 to current NEC Standards for Pool Pumps. See Pentair product catalog for details.



## OPERATION

**⚠** NEVER run pump dry. If the pump is run dry, the

### **⚠ WARNING**



**Hazardous voltage.  
Can shock, burn,  
or cause death.**

Disconnect power  
before working  
on pump or motor.

mechanical seal will be damaged and the pump will start leaking. If this occurs, the damaged seal must be replaced. ALWAYS maintain proper water level. If the water level falls below the suction port, the pump will draw air through the suction port, losing the prime and causing the pump to run dry, resulting in a damaged seal. Continued operation in this manner could cause a loss of pressure, resulting in damage to the pump case, impeller and seal and may cause property damage and personal injury.

Running pump dry may damage seals, causing leakage and flooding. Fill pump with water before starting motor.

**⚠ CAUTION** Before removing trap cover:

1. STOP PUMP before proceeding.
2. CLOSE GATE VALVES in suction and discharge pipes.
3. RELEASE ALL PRESSURE from pump and piping system.
4. **⚠ WARNING** To reduce risk of injury” before NEVER tighten or loosen clamp while pump is operating!

**⚠** If pump is being pressure tested, be sure pressure has been released before removing trap cover.

**⚠** Do not block pump suction. To do so with body may cause severe or fatal injury. Small children using pool must ALWAYS have close adult supervision.

**⚠ WARNING** Fire and burn hazard. Modern motors run at high temperatures. To reduce the risk of fire, do not allow leaves, debris, or foreign matter to collect around the pump motor. To avoid burns when handling the motor, let it cool for 20 minutes before trying to work on it. An automatic internal cutoff switch protects the motor from heat damage during operation.

NOTICE: Maximum ambient temperature for motor operation must not exceed maximum ambient temperature rating on motor model plate.

### Priming Pump

Release all pressure from filter, pump, and piping system; see the filter owner’s manual.

In a flooded suction system (water source higher than pump), pump will prime itself when suction and

discharge valves are opened.

If pump is not in a flooded suction system, remove trap cover handle ring and trap cover; fill trap and pump with water.

Do not lubricate the trap cover O-Ring. The original equipment O-Ring contains a permanent internal lubricant.

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

Clean and inspect O-Ring; reinstall on trap.

Replace trap cover and handle ring on trap; turn handle ring clockwise to tighten cover.

**⚠ WARNING** Do not use a wrench, this may damage the trap cover handle ring which can cause property damage or personal injury.

Pump should prime now. Priming time will depend on vertical length of suction lift and horizontal length of suction piping.

If pump does not prime, make sure that all valves are open, suction pipe end is under water, and that there are no leaks in suction pipe.

See Troubleshooting Guide, Page 10.

### Routine Maintenance

The only routine maintenance needed is inspection/cleaning of trap basket. Debris or trash that collects in basket will choke off water flow through the pump. Follow instructions below to clean trap:

1. Stop pump, close valves in suction and discharge, and release all pressure from system before proceeding.

2. Remove trap cover handle ring (turn

counterclockwise). If necessary, tap handles gently with a rubber mallet.

### **⚠ WARNING**



**Hazardous voltage.  
Can shock, burn,  
or cause death.**

Disconnect power  
before working  
on pump or motor.

3. Remove strainer basket and clean. Be sure all holes in basket are clear, flush basket with water and replace in trap with large opening at pipe connection port (between ribs provided). If basket is replaced backwards cover will not fit on trap body.

4. Clean and inspect lid O-Ring; reinstall on trap.

5. Clean O-Ring groove on trap body and replace cover and handle ring. To

help keep cover from sticking, tighten hand tight only.

6. Prime pump (see priming instructions).

## Draining Pump

1. Pump down water level below all inlets to the pool.

**⚠** To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before draining pump.

2. Remove trap cover and use low pressure air to blow accumulated water from the piping system. Lugs have been provided on the trap lid to use a rubber mallet if needed.
3. Cap inlet piping after draining to keep water out of the pipes.
4. To prevent pump from freezing, remove trap cover and drain the tank body through the drain plugs (Key No. 19, Pages 11-13). Clean pump and trap basket thoroughly; replace trap cover.

**⚠ WARNING** To reduce the risk of injury before “never tighten or loosen clamp while pump is operating. Use a rubber mallet only if necessary to remove cover! If pump is not anchored, use caution not to break attached piping!

5. Be sure motor is kept dry and covered.

## Storage/Winterizing:

**⚠ WARNING** Purging the system with compressed air can cause components to separate, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI, 35 kPa, or 0.34 Bar), high volume blower when air purging the pump, filter, or piping.

NOTICE: Allowing pump to freeze will damage pump and void warranty!

NOTICE: Do not use anti-freeze solutions (except propylene glycol) 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).

Keep motor dry and covered during storage.

To avoid condensation/corrosion problems, do not cover pump with plastic.

For outdoor/unprotected installations:

1. Gravity drain system as far as possible.
2. Protect areas which retain water with non-toxic propylene glycol antifreeze (“RV antifreeze”).
3. Enclose entire system in a weatherproof enclosure.
4. To avoid condensation/corrosion damage, allow ventilation; do not wrap system in plastic.
5. Use a 40% propylene glycol/60% water solution to protect pump to -50°F (-46°C).

## Startup For Winterized Equipment

1. Remove any temporary weather protection placed around system.

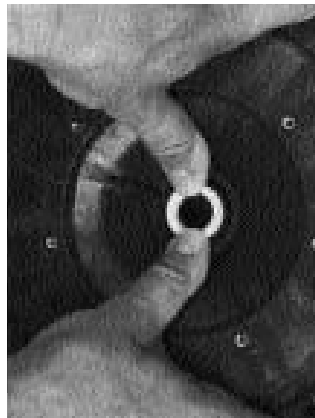


Figure 7: Press seal into heat sink in seal plate

2. Follow filter manufacturer’s instructions for reactivation of the filter.
3. Inspect all electrical wiring for damage or deterioration over the shutdown period. Have a qualified serviceman repair wiring as needed.
4. Inspect and tighten all watertight connections.
5. Open all valves in suction and return piping.
6. Remove any winterizing plugs in piping system.
7. Drain all antifreeze from system.
8. Close all drain valves and replace all drain plugs in piping system.
9. Prime pump according to instructions on Page 7.

## PUMP SERVICE

Pump should only be serviced by qualified personnel.

Be sure to prime pump (Page 7) before starting.

**⚠ CAUTION** Before removing clamp or trap cover:

1. STOP PUMP before proceeding.
2. CLOSE GATE VALVES in suction and discharge pipes.
3. RELEASE ALL PRESSURE from pump and piping system.
4. NEVER tighten or loosen clamp while pump is operating!

**⚠** To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before working on pump or motor.

No lubrication or regular maintenance is needed beyond reasonable care and periodic cleaning of strainer basket.

If shaft seal is worn or damaged, repair as follows:

### Pump Disassembly/Removing Old Seal

Disconnect power to pump motor.

- ⚠ Be sure gate valves on suction and return piping are closed before starting work.

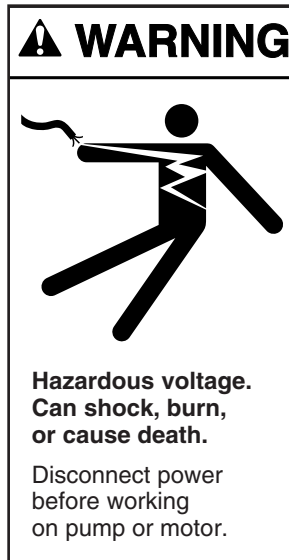
Release all pressure by opening all vents before starting work.

1. Drain pump by removing drain plugs on bottom of pump body and trap body.
2. Be sure there is no pressure in trap body; remove cover (unscrew by turning counterclockwise).
3. Remove clamp holding pump halves together. Motor and seal plate assembly can now be pulled away from pump body.
4. Remove five screws and washers holding diffuser to seal plate. Remove diffuser.
5. Remove motor canopy. Being careful not to touch capacitor terminals, loosen capacitor clamp and move capacitor to one side.
6. Hold shaft with 7/16" open-end wrench on motor shaft flats.
7. Unscrew impeller from shaft (turn counterclockwise when facing it).  
NOTICE: On models with impeller screw: Remove impeller screw (left hand thread - turn clockwise) and gasket before removing impeller. Inspect gasket for damage, cracks, etc. Replace if damaged.
8. Pull rotating member of seal off of impeller sleeve; clean sleeve.
9. Remove four screws holding seal plate to motor.
10. Place seal plate face down on flat surface and tap out ceramic seat.
11. Clean seal cavity in seal plate and clean motor shaft.

### Pump Reassembly/Installing New Seal

1. Ceramic seat must be clean and free of dirt, grease, dust, etc. Wet outer edge of rubber cup on ceramic seat with small amount of liquid detergent; press ceramic seat into seal plate firmly and squarely with finger pressure (Figure 7).
2. If ceramic seat will not locate properly, remove it, place face up on bench and reclean cavity. Ceramic seat should now locate.
3. If seat still will not locate properly, place a cardboard washer over the polished face and use a piece of 3/4" (19mm) standard pipe for pressing purposes.  
NOTICE: Be sure not to scratch or mar polished surface or seal will leak.

4. Remount seal plate on motor. Tighten bolts to 60-80 inch-lbs. (69-92 kg/cm) torque.



5. Apply a small amount of liquid detergent to inside diameter of rotating half of seal.
6. Slide rotating seal member, polished face last, over impeller sleeve until rubber drive ring hits shoulder.  
NOTICE: Be sure not to nick or scratch polished seal face; seal will leak if face is damaged.
7. Screw impeller onto shaft (clockwise); this will automatically locate

seal in seal plate.

NOTICE: On models with impeller screw: Install impeller gasket and lock screw (left-hand thread - turn counterclockwise). Torque lock screw to 50-55 inch-lbs. (57.6-63 kg/cm).

8. Mount diffuser on seal plate; tighten screws to 10-14 inch-lbs. (11.2-16.1 kg/cm) torque.
9. Assemble motor and seal plate to volute; be sure clamp is properly seated.

**⚠ WARNING** Clamp knob can be located in any position around volute; if it is moved after assembly, tighten knob while tapping around clamp to assist sealing. Do not move clamp while pump is full of water.

**⚠ WARNING** Hazardous pressure. Release all pressure from pump and piping system before working on pump or attempting to adjust or remove clamp. Clamp may separate violently off pump if adjusted under pressure and cause property damage or personal injury.

10. Prime pump according to instructions on Page 7.

## TROUBLESHOOTING GUIDE

**⚠** Read and understand safety and operating instructions in this manual before doing any work on pump!

**⚠** Only qualified personnel should electrically test pump motor!

### FAILURE TO PUMP; REDUCED CAPACITY OR DISCHARGE PRESSURE

#### Suction leaks/lost prime:

1. Pump must be primed; make sure that pump volute and trap are full of water. See priming instructions, Page 7.
2. Make sure there are no leaks in suction piping.
3. Make sure suction pipe inlet is well below the water level to prevent pump from sucking air.
4. Suction lift of 10 to 20 feet (3-6 M) will reduce performance. Suction lift of more than 20 feet (6 M) will prevent pumping and cause pump to lose prime. In either case, move pump closer (vertically) to water source. Make sure suction pipe is large enough.

#### Clogged pipe/trap/impeller, worn impeller:

5. Make sure suction trap is not clogged; if it is, clean trap and strainer.
6. Make sure impeller is not clogged (follow steps 1 through 7 under “Removing Old Seal”, Page 9; check impeller for clogging; follow steps 7 through 10 under “Installing New Seal”, Page 9, for reassembly).
7. Impeller and diffuser may be worn. If so, order replacement parts from Repair Parts List, Page 11-13.
8. Pump may be trying to push too high a column of water. If so, a “higher head” pump is needed.



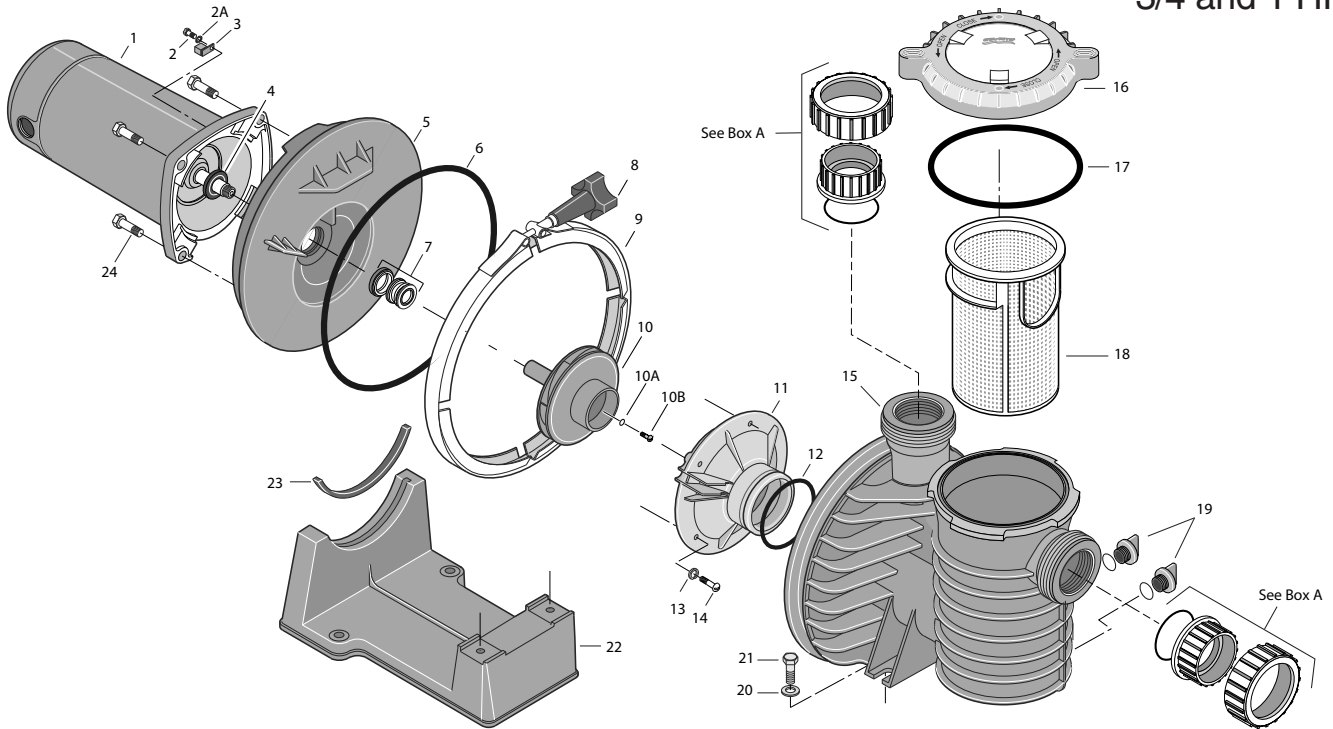
#### Electrical:

9. Pump may be running too slowly; check voltage at motor terminals and at meter while pump is running. If low, see wiring instructions or consult power company. Check for loose connections.
10. Pump may be too hot.
  - A. Check line voltage; if less than 90% or more than 110% of rated voltage consult a licensed electrician.
  - B. Increase ventilation.
  - C. Reduce ambient temperature.
  - D. Tighten any loose connections.

### MECHANICAL TROUBLES AND NOISE

1. If suction and discharge piping are not adequately supported, pump assembly will be strained. See “Installation”, Page 3.
2. Do not mount pump on a wooden platform! Securely mount on concrete platform for quietest performance.

5P6R SERIES  
50 Hz. MAX-E-PRO POOL PUMP  
3/4 and 1 HP



REPAIR PARTS LIST

Key No.	Part Description	Qty.	Part No.
1	Motor	1	Chart at Right
2	#10-32 x 1/2" Screw	1	U30-692SS
3	Bonding Lug	1	U17-568
4	Water Slinger	1	17351-0009
5	Seal Plate	1	C103-194P
6	O-Ring	1	U9-228A
7	Shaft Seal	1	17351-0101S
8	Clamp	1	C19-37A
9	Clamp Knob	1	WC36-22
10	Impeller	1	Chart at Right
10A	Impeller O-Ring*	1	35505-1426
10B	Impeller Screw*	1	37337-6081
11	Diffuser	1	C1-271P
12	Diffuser O-Ring	1	U9-374
12	Diffuser O-Ring (Blue Coating)	1	357098Z
13	#8 Lock Washer	5	U43-21SS
14	#8 - 32 x 1-1/8" Screw	5	U30-922SS
15	Tank Body (BSP Threads)	1	17307-0110W
16	Trap Cover**	1	17307-0111S
17	Trap O-Ring	1	35505-1440
18	Basket	1	C8-58P
19	1/4" NPT Drain Plug	2	U178-920P
20	Base Washer	2	U43-41SS
21	Base Screw	2	U30-918SS
22	Base	1	C4-78P
23	Motor Pad	1	C35-43
24	3/8-16 x 1" Hex Head Screw	4	U30-74SS
•	Tag, "CAUTION, WARNING (Bonding)		C63-12

• Not illustrated. \* Three phase only.  
\*\* Includes Trap Cover, Trap Ring and Trap Cover O-Ring.

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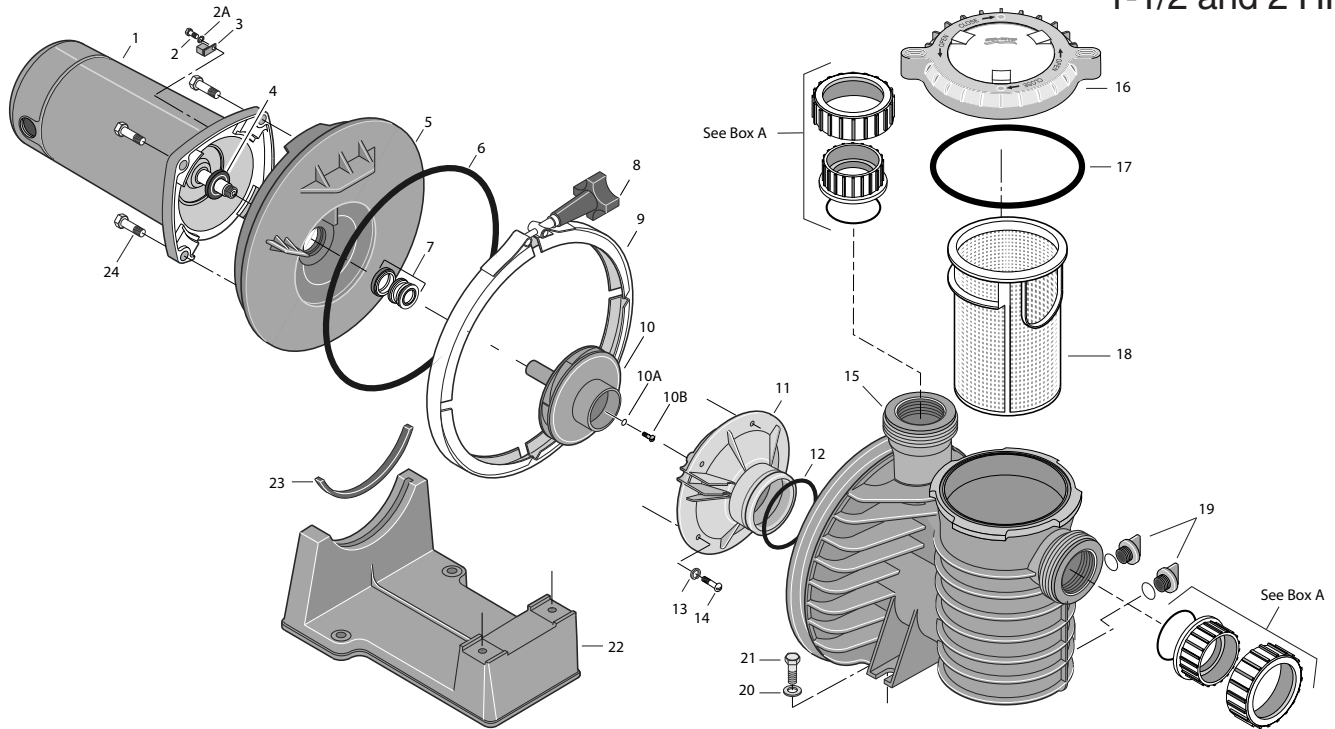
Box A

For quick disconnect pipe connections, purchase separately:  
Pkg. 188 2" Slip 1/2 Union Kit or  
Pkg. 189 2" NPT 1/2 Union Kit.  
  
Includes 2 each:  
U11-200PS Union Collar  
U9-362 O-Ring  
U11-196PS 2" Slip adapter or  
U11-199P 2" NPT adapter.

Parts are common to all models listed except as noted;  
Key Nos. 1, Motor; and 10, Impeller are listed below.

Model No.	HP	Motor No. (Key No. 1)	Impeller No. (Key No. 10)
115/230 Volt - 1 Phase			
5P6R6D-209	3/4	J218-574AC	C105-238PF
5P6R6E-210	1	J218-575AC	C105-238PG
220-240/380-415 Volt - 3 Phase			
5P6R6D3-209	3/4	J218-815AC	C105-238PFA

5P6R SERIES  
50 Hz. MAX-E-PRO POOL PUMP  
1-1/2 and 2 HP



REPAIR PARTS LIST

Key No.	Part Description	Qty.	Part No.
1	Motor	1	Chart at Right
2	#10-32 x 1/2" Screw	1	U30-692SS
3	Bonding Lug	1	U17-568
4	Water Slinger	1	17351-0009
5	Seal Plate	1	C103-194P
6	O-Ring	1	U9-228A
7	Shaft Seal	1	17351-0101S
8	Clamp	1	C19-37A
9	Clamp Knob	1	WC36-22
10	Impeller	1	Chart at Right
10A	Impeller O-Ring*	1	35505-1426
10B	Impeller Screw*	1	37337-6080
11	Diffuser	1	C1-271P
12	Diffuser O-Ring	1	U9-374
12	Diffuser O-Ring (Blue Coating)	1	357098Z
13	#8 Lock Washer	5	U43-21SS
14	#8 - 32 x 7/8" Screw	5	U30-542SS
15	Tank Body (BSP Threads)	1	17307-0110W
16	Trap Cover**	1	17307-0111S
17	Trap O-Ring	1	35505-1440
18	Basket	1	C8-58P
19	1/4" NPT Drain Plug	2	U178-920P
20	Base Washer	2	U43-41SS
21	Base Screw	2	U30-918SS
22	Base	1	C4-78P
23	Motor Pad	1	C35-43
24	3/8-16 x 1" Hex Head Screw	4	U30-74SS
•	Tag, "CAUTION, WARNING (Bonding)"		C63-12

Box A

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U9-362 O-Ring  
U11-196PS 2" Slip adapter or  
U11-199P 2" NPT adapter.

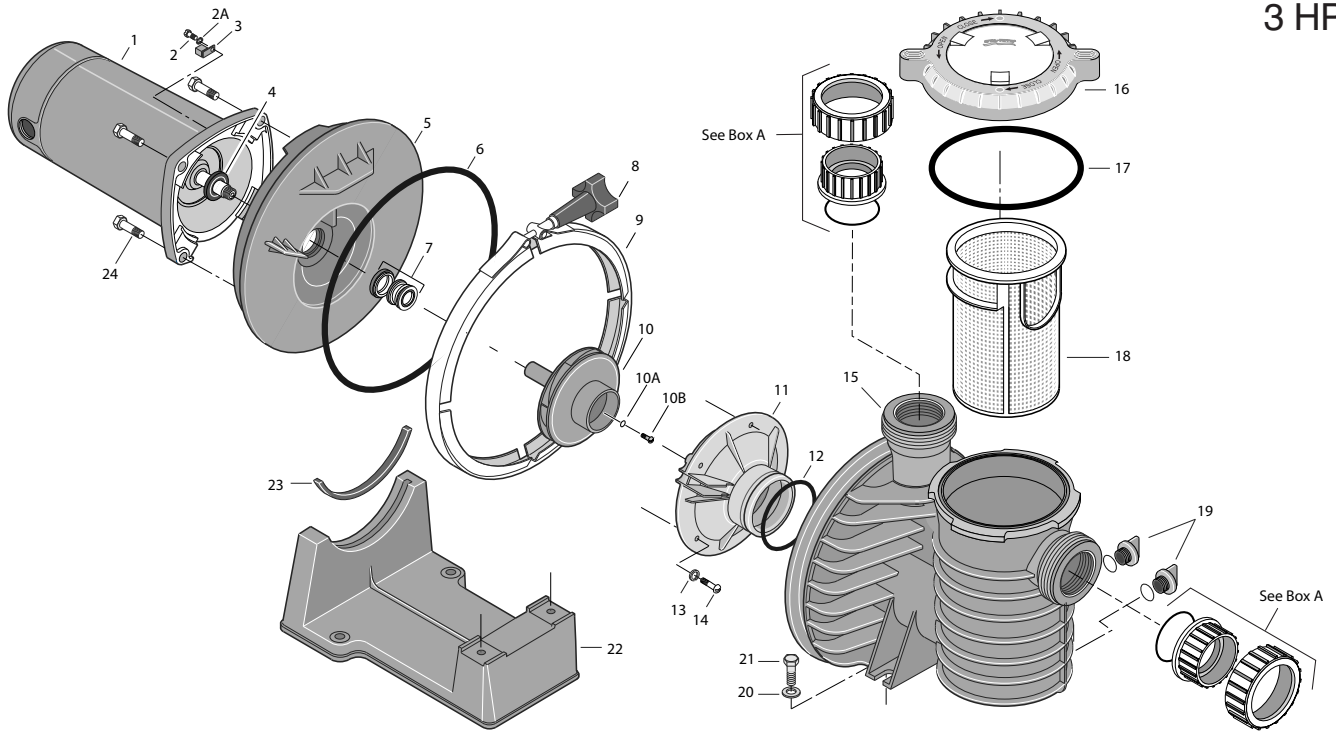
Parts are common to all models listed except as noted;  
Key Nos. 1, Motor; and 10, Impeller are listed below.

Model No.	HP	Motor No. (Key No. 1)	Impeller No. (Key No. 10)
115/230 Volt - 1 Phase			
5P6R6F-211	1-1/2	J218-864AC	C105-238PEC
230 Volt - 1 Phase			
5P6R6G-212	2	62003-2075	C105-238PLBA
220-240/380-415 Volt - 3 Phase			
5P6R6F3-211	1-1/2	J218-817AC	C105-238PECA

• Not illustrated. \* Not used by Model 5P6R6F-211.

\*\* Includes Trap Cover, Trap Ring and Trap Cover O-Ring.

Model 5P6R6H-213 and 5P6R6H3-213  
MAX-E-PRO POOL PUMP  
3 HP



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REPAIR PARTS LIST

Key No.	Part Description	Qty.	Part No.
1	Motor 230V/50H/1 Ph (5P4R6H)	1	62003-2077
1	Motor 220-240/380-415V/50H 3 Ph (5P4R6H3)	1	62003-2078
2	#10-32 x 1/2" Screw	1	U30-692SS
3	Bonding Lug	1	U17-568
4	Water Slinger	1	17351-0009
5	Seal Plate	1	C103-194P
6	"O" Ring	1	U9-228A
7	Shaft Seal	1	17351-0101S
8	Clamp	1	C19-37A
9	Clamp Knob	1	WC36-22
10	Impeller	1	C105-238PHA
10A	Impeller O-Ring	1	35505-1426
10B	Impeller Screw	1	37337-6081
11	Diffuser	1	C1-271P
12	Diffuser O-Ring	1	U9-374
12	Diffuser O-Ring (Blue Coating)	1	357098Z
13	#8 Lock Washer	5	U43-21SS
14	#8 - 32 x 1-1/8" Screw	5	U30-922SS
15	Tank Body (BSP Threads)	1	17307-0110W
16	Trap Cover**	1	17407-0111S
17	Trap O-Ring	1	35505-1440
18	Basket	1	C8-58P
19	1/4" NPT Drain Plug	2	U178-920P
20	Base Washer	2	U43-41SS
21	Base Screw	2	U30-918SS
22	Base w/Motor Pad	1	C104-79P
23	Motor Pad	1	C35-43
24	3/8-16 x 1" Socket Head Screw	4	U30-99SS
•	Motor Nameplate	1	32155-7117
•	Tag, "CAUTION"		61002-0002

Box A

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Pkg. 188 2" Slip 1/2 Union Kit or  
Pkg. 189 2" NPT 1/2 Union Kit.

Includes 2 each:  
U11-200PS Union Collar  
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U11-196PS 2" Slip adapter or  
U11-199P 2" NPT adapter.

• Not illustrated.

\*\* Includes Trap Cover, Trap Ring and Trap Cover O-Ring.



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