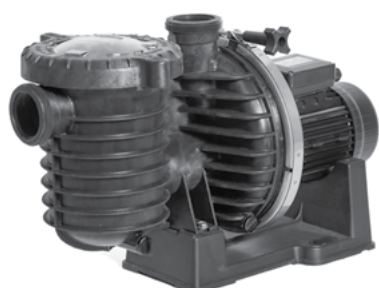


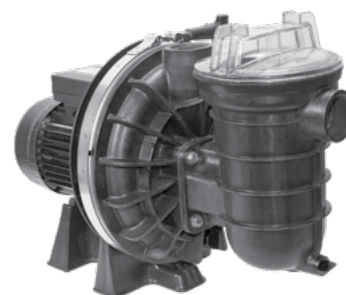


SINGLE SPEED PUMPS

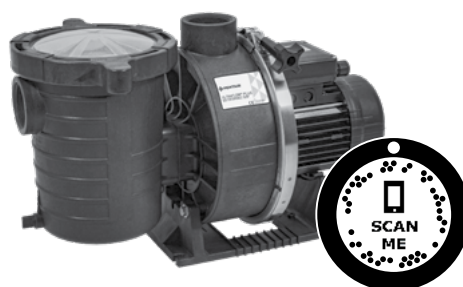
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INSTALLATION AND USER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS / SAVE THESE INSTRUCTIONS

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS



IMPORTANT NOTICE

This document is subject to change without notice.

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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/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.

Warnings and safety instructions for Pentair Aquatic Systems pumps and other related products are available at: www.pentairpooleurope.com



READ, FOLLOW AND 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.



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



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:



Children should not be allowed to play with the appliance.



RISK OF ELECTRICAL SHOCK

The pump must only be connected to sockets that have been installed properly in accordance with the regulations and are protected with a FI-safety switch (RCD, 30mA).



CONNECT TO SUPPLY CIRCUIT

This unit must be connected only to a supply circuit that is protected by a RCD. Such a RCD should be provided by the installer and should be tested on a routine basis. To test the RCD, push the test button. The RCD should interrupt power. Push the reset button. Powers should be restored. If the RCD fails to operate in this manner, the RCD is defective. If the RCD 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.



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/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 re-assembled to its original integrity.

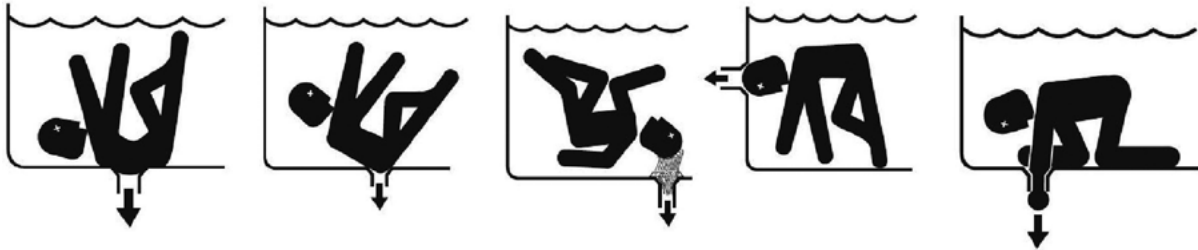
IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

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.
- 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 (incl. 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 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 MUST BE LEFT AT THE POOL OWNER.

⚠ DANGER SUCTION ENTRAPMENT HAZARD: Stay off the main drain and away from all suction outlets! This pump produces high levels of suction and creates a strong vacuum at the main drain.



⚠ DANGER RISK OF ELECTRICAL SHOCK OR ELECTROCUTION: PUMPS REQUIRE HIGH VOLTAGE WHICH CAN SHOCK, BURN OR CAUSE DEATH.



BEFORE WORKING ON THE PUMP, ALWAYS DISCONNECT POWER TO THE POOL PUMP AT THE CIRCUIT BREAKER FROM THE PUMP. FAILURE TO DO SO COULD RESULT IN DEATH OR SERIOUS INJURY TO THE SERVICING PERSON, POOL USERS OR OTHERS DUE TO ELECTRICAL SHOCK.

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, swimsuits, hairdecorations, fingers, toes or knuckles are 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.

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

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

⚠ WARNING

To minimize the risk of injury due to suction entrapment hazard:

- Each suction cover must be installed at least 1m 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

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.

⚠ WARNING

Pumps improperly sized, 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 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.

⚠ WARNING

The pump can produce high levels of suction within the suction side of the plumbing system. These high level 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.

For installation of electrical controls at equipment pad (ON/OFF Switches, Timers and Automation Load Center):

⚠ CAUTION



Install all electrical controls at equipment pad, such as ON/OFF switches, timers and control systems 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 of 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 the 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 of 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.

IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS

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 is properly sized to the specific application and properly installed;
- Installing a non-return valve after the pump on the installation will prevent the impeller from unwinding and is strongly recommended;
- Sufficient equipotential bonding (min. 4.5mm² recommended), in accordance with local regulation, is required on all metal components of the pool including the pool pump. It is required for electrical safety as well as to reduce the risk of corrosion.

SAVE THESE INSTRUCTIONS

PUMP INFORMATION

3.1 - GENERAL INFORMATION

Check carton for any evidence of damage due to rough handling in shipment. If carton or any pump components are damaged, notify the carrier immediately.

Failure to follow the safety instructions may result in serious adverse health effects, or even serious or fatal injury. Failure to follow the safety instructions will in all cases invalidate all guarantees and liability on the part of the manufacturer.

Avoid dry run of the pump, as long as the pump is not filled with water.

This pump is equipped with a mechanical seal.

Damage to shaft seal could be the cause by non-observance of instructions.

Please follow instructions for filling up the pump according to installation and instruction manual.

3.2 - APPLICATION

Only to be used to circulate swimming pool water.

3.3 - INSTALLATION

Only a qualified pump. Refer to "Important Pump Warning And Safety Instructions" for additional installation and safety information.

LOCATION

Note: Do not install this pump within an outer enclosure or beneath the skirt of a hot tub or spa unless marked accordingly.

Note: Ensure that the pump is mechanically secured to the equipment pad.

Be sure the pump location meets the following requirements:

1. Install the pump as close to the pool or spa as possible. To reduce friction loss and improve efficiency, use short, direct suction and return piping.
2. Install a minimum of 1.5 meters (5 feet) from the inside wall of the pool and spa.
3. Install the pump a minimum of 0.9 meters (3 feet) from the heater outlet.
4. Do not install the pump more than 2.5 meters above the water level.
5. Install the pump in a well ventilated location protected from excess moisture (i.e. rain gutter downspouts, sprinklers, etc.).
6. Install the pump with a rear clearance of at least 7.6 cm (3 inches) so that the motor can be removed easily for maintenance and repair. See Figure 1.

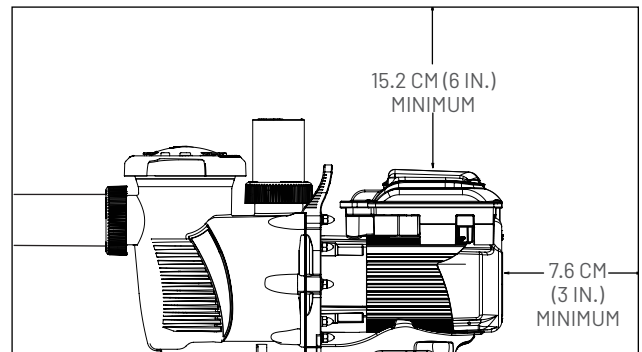


Figure 1: Pump Rear and Vertical Clearance

PIPING

1. For improved pool plumbing, it is recommended to use a larger pipe size.
2. Piping on the suction side of the pump should be the same or larger than the return line diameter.
3. Plumbing on the suction side of the pump should be as short as possible.
4. 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 that 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. independently support the pipe near the suction and discharge of the pump in order to reduce the strain on the pump. Avoid overtightening pipe connections. Use only pipe sealants formulated for plastics. Do not use petroleum based products. It is essential that the suction line is free of air leaks. The suction line should always be at least the same size as the suction inlet of the pump. See Figure 2.

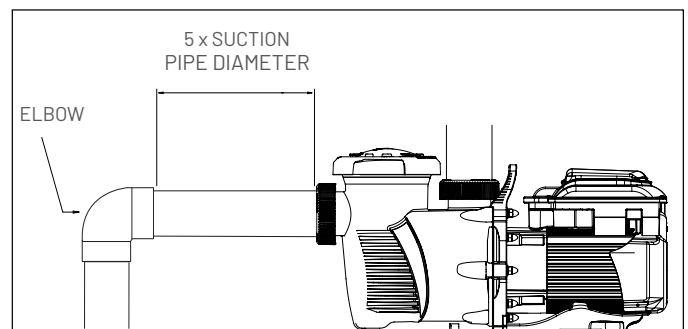


Figure 2: Recommended Piping

Example: A $\varnothing 50$ mm pipe requires a 250 mm straight run in front of the suction inlet of the pump. This will help the pump prime faster and last longer.

Note: DO NOT install 90° elbows directly into the pump inlet or outlet.

PUMP INFORMATION

FITTINGS AND VALVES

1. Do not install 90° elbows directly into pump inlet.
2. Flooded suction systems should have gate valves installed on suction and discharge pipes for maintenance, however, the suction gate valve should be no closer than five times the suction pipe diameter as described in this section.
3. Use a check valve (non-return valve) in the discharge line when using this pump for any application where there is significant height to the plumbing after the pump.
4. Be sure to install check valves when plumbing in parallel with another pump. This helps prevent reverse rotation of the impeller and motor.

3.4 - START / OPERATION

Starting the pump

- Fill pump strainer with water to suction pipe level.
- Lubricate the lid O-ring with lubricant each time it is removed.
- Make sure the strainer lid is properly closed before turning on the pump.
- Energize the motor, the pump will prime. The priming time depends on the suction lift and distance to

ELECTRICAL REQUIREMENTS

1. Install all equipment in accordance with the National Electrical code and all applicable local codes and ordinances. Sufficient equipotential bonding (min. 4.5mm² recommended), in accordance with local regulation, is required on all metal components of the pool including the pool pump. It is required for electrical safety as well as to reduce the risk of corrosion.
2. A means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
3. Do not mount electrical controls directly over pump.

the pool. Five minutes is a reasonable time.

- Pump will not lift more than 2,5 meter. If pump does not prime, see troubleshooting guide.
- Avoid damage on your pool products by installing water treatment products (chlorine/ph/pumps/...) behind other equipment.

Maintenance

The strainer basket should be weekly removed and cleaned. Never operate the pump without its strainer basket.

Component	Check	Interval	Remarks
Warning pictograms	Visual check	Monthly	Replace if necessary
Water supply	Check lines and connections	Monthly	Replace any damage immediately
Safety devices	Visual check	Monthly	Ensure correct installation / refitting
General condition of the pump	Visual check	Half-yearly	Look out for any corrosion or damage
Cooling ribs of electric motors	Clean the cooling ribs to maintain the cooling effect	Half-yearly	-
Electrical equipment	Check	Monthly	Rectify loose connections or singed cables immediately. Have all faults repaired by a qualified electrician
Preliminary filter housing	Check housing for dirt	Weekly	Remove all dirt thoroughly
O-Ring in preliminary filter cover	Visual check	Half-yearly	-

Winterizing

- Protect the pump from freezing.
- Remove all plugs and drain the pump and all piping.
- Store drains and plugs in the strainer basket.
- Remove the pump to a dry and warm room.
- Do not wrap the motor with plastic covering as condensation may damage the pump.
- In installations where the pump can not be drained, a 40% propyleneglycol, 60% water solution will protect to -46°C.
- Do not use other anti-freeze solutions, these are all highly toxic and will damage the pump.

PUMP INFORMATION

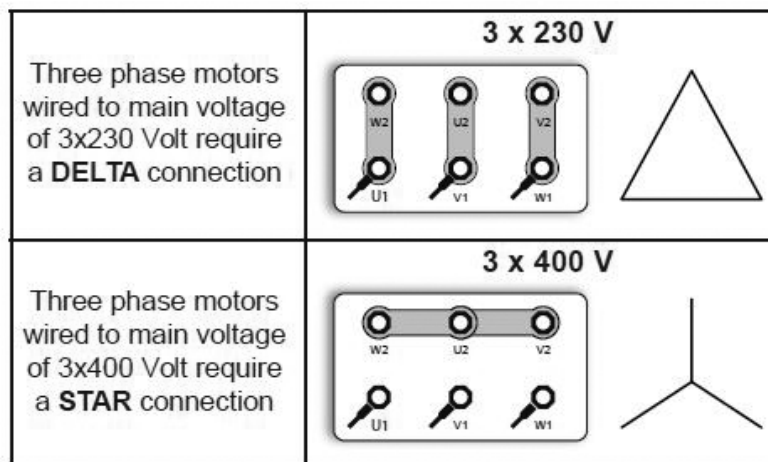
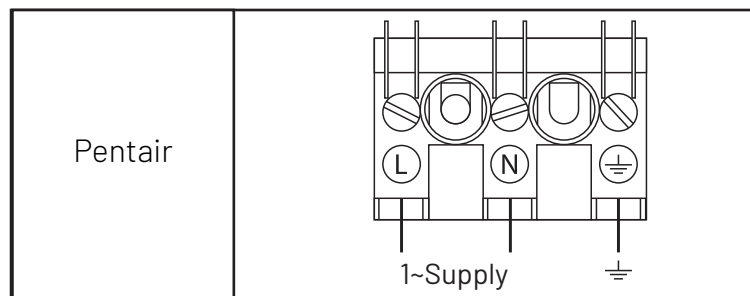
3.5 - ELECTRICAL CONNECTION

The electrical motor must be wired by a professional according to this installation instruction and all applicable local regulations. By introduction of the pump a motor security has to be foreseen by the installation. The security has to be tuned into the nominal power of the motor. The supply voltage should be within $\pm 5\%$ of the rated voltage, on the nameplate of the motor.

Single-phase motors should be connected at the two terminals as indicated below.

Single-phase and three-phase wiring diagram:

*** Below diagram must not take precedence over the electrical scheme on the motor itself.**



The electrical power line must be fitted with a short circuit protection device, and a residual current device RCD with high sensitivity (30mA), protected by means of a slow-acting fuse or a magnetothermic switch. Make sure that you interrupt the power supply to the cables when connecting the cables of the pump.

Please remove lead wires from terminals prior to installation !

Please check the turning direction of three-phase motors following each connection. If this does not correspond to the arrow on the pump, two phase connections in the junction box must be reversed. Every motor must be permanently grounded. **Connections which do not conform to the above mentioned safety instruction are not covered by the warranty.**

PUMP INFORMATION

3.6 - SERVICING

The pump is designed to operate for many years without servicing. **Always disconnect the power supply to the pump before servicing.** The replacement of the electrical motor must be done by a professional. Fill pump strainer with water to suction pipe level.

3.7 - TROUBLESHOOTING

Pump will not prime

1. No water in strainer pot
2. Strainer pot is not tight
3. Damage lid O-ring
4. Water level is below skimmer
5. Strainer basket or skimmer basket is clogged
6. Closed valve in piping system
7. Air leak in suction line

Motor does not turn

1. Power switch is off
2. Circuit breaker has tripped
3. Pump is off-mode of a timer controlled circuit
4. Motor terminal connections are incorrect
5. Motor shaft is locked
6. Impeller is locked by debris

Low flow/high filter pressure

1. Filter is dirty
2. Restriction in return line

Low flow/low filter pressure

1. Strainer basket or skimmer basket is clogged
2. Clogged impeller
3. Air leak in suction line
4. Restriction in suction line
5. Reverse rotation of motor (three phase only)

Noisy pump

1. Air leak in suction
2. Foreign matter in pump housing
3. Cavitation