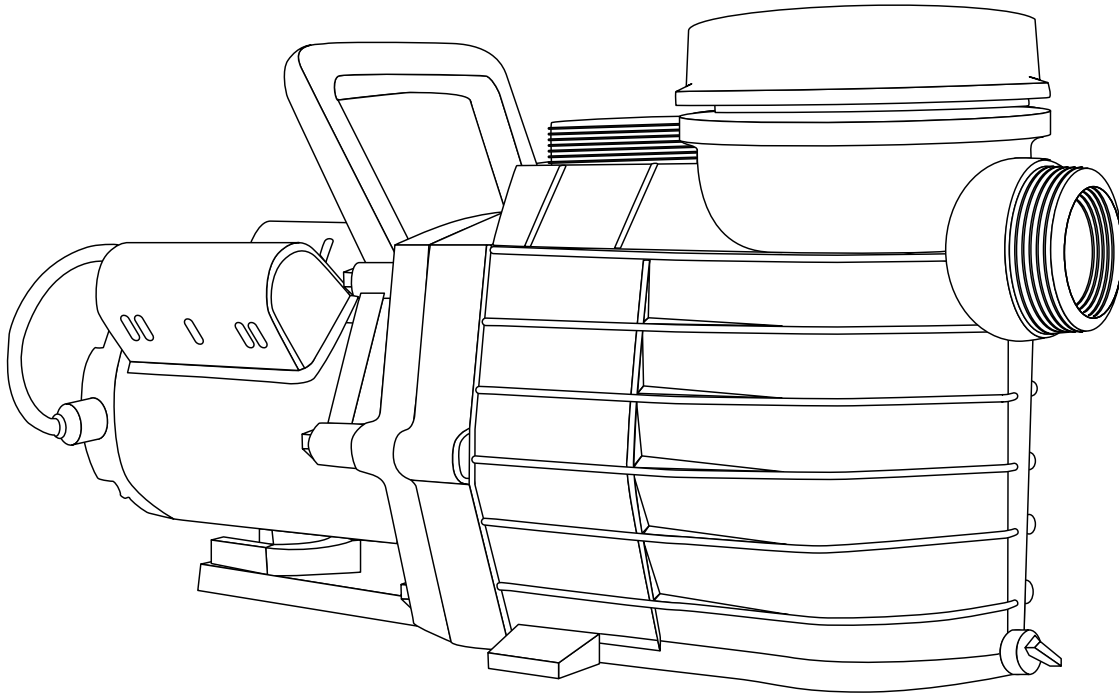




POOL PUMP

148014 1HP, 025191 1.65HP - SINGLE SPEED
DUAL VOLTAGE (115/230)

Español p. 17



ATTACH YOUR RECEIPT HERE

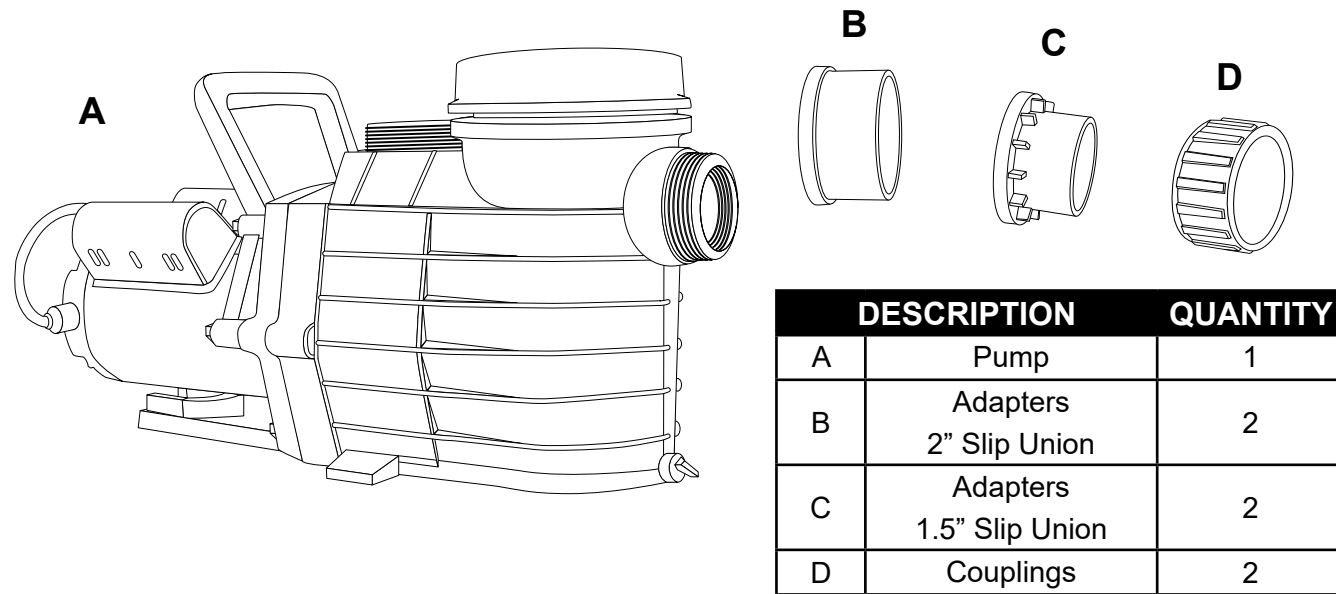
Serial Number _____ Purchase Date _____



Questions, problems, missing parts? Before returning to your retailer, call our customer service department at 1-800-742-5044, 7:30 a.m. - 5:00 p.m., EST, Monday - Friday.

SW1369 C

PACKAGE CONTENTS



⚠ IMPORTANT SAFETY INSTRUCTIONS

Basic safety precautions should always be followed, including the following. Failure to follow instructions can cause severe injury and/or death.

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

⚠ WARNING Warns about hazards that could cause serious personal injury, death or major property damage and if ignored presents a potential hazard.

⚠ CAUTION Warns about hazards that will or can cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.

The NOTICE label indicates special instructions that are important but not related to hazards.

⚠ WARNING **READ AND FOLLOW ALL INSTRUCTIONS in this owner's manual and on the equipment. Failure to follow instructions can cause severe injury and/or death.**

⚠ WARNING **SUCTION ENTRAPMENT HAZARD.** Suction inlets and outlets and/or suction outlet covers which are damaged, broken, cracked, missing, or unsecured can 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 negative 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, swimsuit, hair decorations, finger, toe or knuckle to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

⚠ WARNING To Reduce the risk of Entrapment Hazards:

- When outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [1 meter] apart, as measured from near point to near point.
- Dual suction fittings shall be placed in such locations and distances to avoid "dual blockage" by a user.
- Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas.
- The maximum system flow rate shall not exceed the flow rating as listed on Table 1.
- 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.
- Install two or more suction outlets per pump in accordance with latest ASME, APSP Standards and CPSC guidelines. Follow all applicable National, State, and Local codes.
- Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.

⚠ WARNING Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in an increase potential for suction entrapment as described above.

⚠ WARNING Failure to keep suction outlet components clear of debris, such as leaves, dirt, hair, paper and other material can result in an increased potential for suction entrapment as described above.

⚠ WARNING Suction outlet components have a finite life. The cover/grate should be inspected frequently and replaced at least every ten years or if found to be damaged, broken, cracked, missing, or not securely attached.

⚠ CAUTION Components such as the filtration system, pumps and heater must be positioned so as to prevent their being used as means of access to the pool by young children.

⚠ WARNING Never operate or test the circulation system at more than 50 PSI.

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

⚠ WARNING To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times.

⚠ 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, and/or filter housing and clamp due to pressure in the system, which could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting system pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water) is discharged.

⚠ WARNING **Separation Hazard.** Failure to follow safety and operation instructions could result in violent separation of pump and/or filter components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing pool and spa circulation system, filter manual air relief valve must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter manual air relief valve body is in locked position in filter upper body.

⚠ WARNING **Risk of Electric Shock.** All electrical wiring MUST be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on any electrical equipment, turn off power supply to the equipment.

⚠ WARNING To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent contact from lawn mowers, hedge trimmers and other equipment.

⚠ WARNING Ground all electrical equipment before connecting to electrical power supply. Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard.

⚠ WARNING Do NOT ground to a gas supply line.

⚠ WARNING To avoid dangerous or fatal electrical shock, turn OFF power to all electrical equipment before working on electrical connections.

⚠ WARNING Failure to bond all electrical equipment to pool structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.

Notes to electrician: Use a solid copper conductor, size 8 or larger. Run a continuous wire from external bonding lug to reinforcing rod or mesh. Connect a No. 8 AWG (8.4 mm²) [No. 6 AWG (13.3 mm²) for Canada] solid copper bonding wire to the pressure wire connector provided on the electrical equipment and to all metal parts of swimming pool, spa, or hot tub, and metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub.

⚠ CAUTION Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and other general wiring procedures.

⚠ WARNING **Risk of Electric 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 **Risk of Electric Shock.** The electrical equipment 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 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 electrical equipment without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use this electrical equipment. Disconnect the electrical equipment and have the problem corrected by a qualified service representative before using.

⚠ CAUTION This pump is intended for use with permanently-installed pools and may 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.

⚠ SAVE THESE INSTRUCTIONS.

MATERIALS NEEDED:

PVC Glue	Tape Measure
Hack Saw	Phillips Screwdriver
Flathead Screwdriver	PTFE Pipe Thread Sealant Tape
Tongue and Groove Pliers	Pipe Wrench
Round File or Sand Paper	2 in. Threaded Connections (2 in. Slip Union & 1 1/2 in. Slip Union Included)
Shut Off Valve	On/Off Timer

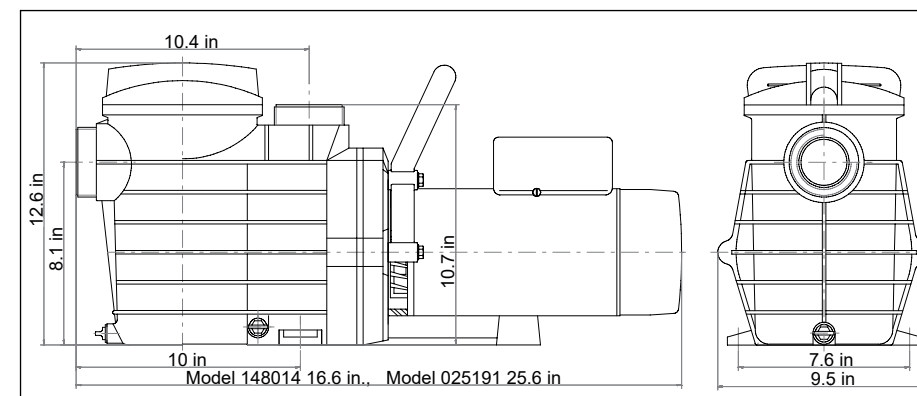
INTRODUCTION

This manual contains information for the proper installation and operation of the pool pump. The instructions in this manual MUST be followed precisely. Failure to install according to defined instructions will void warranty.

PRODUCT BENEFITS

- See-through strainer cover lets you see when the basket needs cleaning.
- Heavy-duty, high performance motor for quieter, cooler operation.
- Service-ease design gives simple access to all internal parts.
- Handle for easy carrying and moving.

PRODUCT SPECIFICATIONS



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

⚠ WARNING **PUMP LOCATION**

Locate pump as close to pool as practical and run suction lines as direct as possible to reduce friction loss. Suction line diameter must equal or be larger than the discharge line diameter. Suction lines should have continuous slope upward from lowest point in line. Joints must be tight (but not over-tightened).

Though the pump is designed for outdoor use, it is strongly advised to protect the electrical components from the weather. Select a well-drained area, one that will not flood when it rains. **Do NOT install pump 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 firm, level base or pad to meet all local and national codes. Fasten pump to base or pad with screws or bolts to further reduce vibration and stress on pipe or hose joints. The base MUST be solid, 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 gate valves in suction and discharge piping.
- Be protected from excess moisture and flooding.
- Allow adequate access for servicing pump and piping.
- Incorporate a straight portion of pipe prior to pump inlet no less than (5) pipe diameters in length.

⚠ WARNING **Hazardous Pressure.** Pumps, filters, and other equipment/components of a swimming pool filtration system operate under pressure. Incorrectly installed and/or improperly tested filtration equipment and/or components may fail resulting in injury and/or property damage.

PERFORMANCE

1. Find Your Pool Size

Use the formulas below to find the capacity of your pool.

- Rectangular Pools: Length (ft.) x Width (ft.) x Average Depth (ft.) x 7.5 = Total pool capacity in gallons
- Circular Pools: Diameter (ft.) x Diameter (ft.) x Average Depth (ft.) x 5.9 = Total pool capacity in gallons
- Oval Pools: Length (ft.) x Width (ft.) x Average Depth (ft.) x 6.7 = Total pool capacity in gallons

Example for Rectangular Pool: 40 ft. L x 20 ft. W x 6 ft. average depth x 7.5 = 36,000 gallon capacity pool

2. Calculate Flow Rate, Gallons Per Minute (GPM) and Turnover

Pools should typically turn water over once every 8 hours. Use this flow rate formula along with your pool capacity from step 1 to find the Gallons Per Minute (GPM) you need for your system:

$$\text{Pool Volume in Gallons} \div \text{Turnover Rate in Minutes} = \text{Flow Rate}$$

Example: If you have a 30,000-gallon pool and you want the water to turn over once every eight hours:

$$30,000 \div 480 (60 \text{ minutes} \times 8 \text{ hours}) = 62.5 \text{ GPM}$$

Your 30,000-gallon pool needs 62.5 gallons per minute to circulate the water once every eight hours.

3. Calculate Maximum Flow Rate

This number helps you match the pump with your pool filter. Your pool filter has a maximum flow rate, which is measured in GPM. The GPM rating of the pump should be less than the GPM rating of the pool filter. If the pump is rated higher than the filter, the filter is undersized and will not work properly.

The size of your pool pipes determines the maximum flow rate for your system.

Count the number of intake lines for your pool and reference the pipe sizes below:

- For each 1.5-inch intake line, the maximum flow rate is 42 GPM.
- For each 2-inch intake line, the maximum flow rate is 73 GPM.

Example: Two 1.5-inch intake lines = 84. The maximum flow rate is 84 GPM.

4. Calculate Resistance

Every piece of equipment in the pump system creates resistance to water flow. Pipe length and size, type of filter, heaters and pool cleaners all add to this resistance.

The easiest way to find resistance is to use a pressure meter and these formulas:

- Check the pressure of water flowing into the filter tank and multiply that number by 2.31.
- Check the vacuum reading on the pump suction line and multiply that by 1.13.
- Add the two numbers together to find is the resistance, or total dynamic head.

Example: If the water flowing into the filter tank is 15 PSI, and the vacuum reading on the pump suction line is 6 PSI:

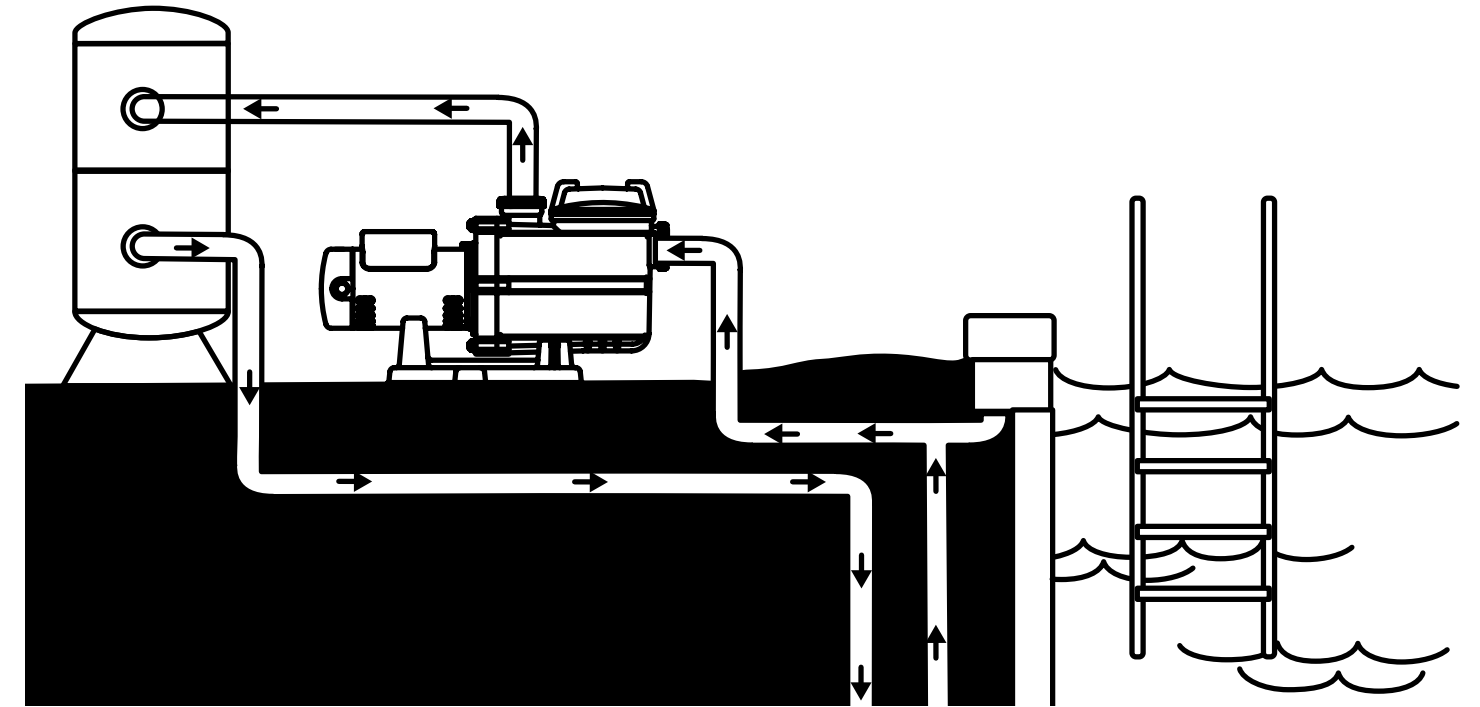
$$\text{Water flow into filter tank: } 15 \text{ PSI} \times 2.31 = 34.65$$

$$\text{Vacuum reading on pump suction line: } 6 \text{ PSI} \times 1.13 = 6.78$$

$$\text{Total} = 41.43 \text{ ft. of resistance or TDH}$$

Use the chart below to determine expected gallons per minute for your installation.

SPECIFICATIONS							
MODEL	HP	PERFORMANCE IN GALLONS PER MINUTE					
		20' TDH	30' TDH	40' TDH	50' TDH	60' TDH	70' TDH
148014	1	90	80	64	43	16	-
025191	1.65	110	100	90	79	62	47



MAXIMUM RECOMMENDED SYSTEM FLOW RATE BY PIPE SIZE - TABLE 1

PIPE SIZE		FLOW RATE		WATER VELOCITY		PIPE SIZE		FLOW RATE		WATER VELOCITY	
Inches	MM	GPM	Liter/Min	Ft/sec	Meters/sec	Inches	MM	GPM	Liter/Min	Ft/sec	Meters/sec
1-1/2	50	50.76	192	6	2.44	2.5"	75	119.40	452	8	2.44
2"	63	83.65	317	8	2.44	3"	90	184.32	698	8	2.44

NOTE – No system should allow any higher than 8-ft/sec (2.44 meters/sec) water velocity. It is recommended that a minimum length of piping, equivalent to 10 pipe diameters, be used between the pump suction inlet and any plumbing fittings.

PLUMBING

Use **Teflon tape** to seal threaded connections on molded plastic components. All plastic fittings must be new or thoroughly cleaned before use. **NOTE - Do NOT use Plumber's Pipe Dope as it may cause cracking of the plastic components.** When applying **Teflon tape** to plastic threads, wrap the entire threaded portion of the male fitting with one to two layers of tape. Wind the tape clockwise as you face the open end of the fitting, beginning at the end of the fitting. The pump suction and outlet ports have molded-in thread stops. **Do NOT attempt to force hose connector fitting past this stop.** It is only necessary to tighten fittings enough to prevent leakage. Tighten fitting by hand and then use a tool to engage fitting an additional 1-1/2 turns. Use care when using Teflon tape as friction is reduced considerably; **do NOT over-tighten fitting or you may cause damage.** If leaks occur, remove connector, clean off old Teflon tape, re-wrap with one to two additional layers of Teflon tape, and re-install connector.

FITTINGS

Fittings restrict flow. For better efficiency, use the fewest possible fittings (but at least two suction outlets). Avoid fittings that could cause an air trap. Pool and spa fittings **MUST** conform to the International Association of Plumbing and Mechanical Officials (IAPMO) standards. Use a non-entrapping suction fitting in pool (multiple drains) or double suction (skimmer and main drain).

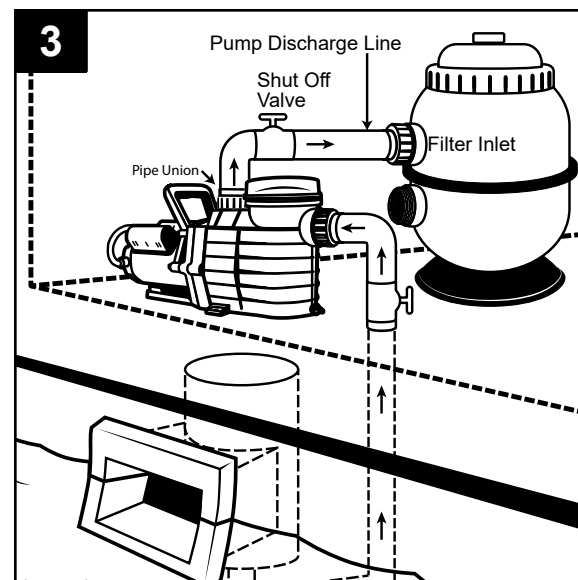
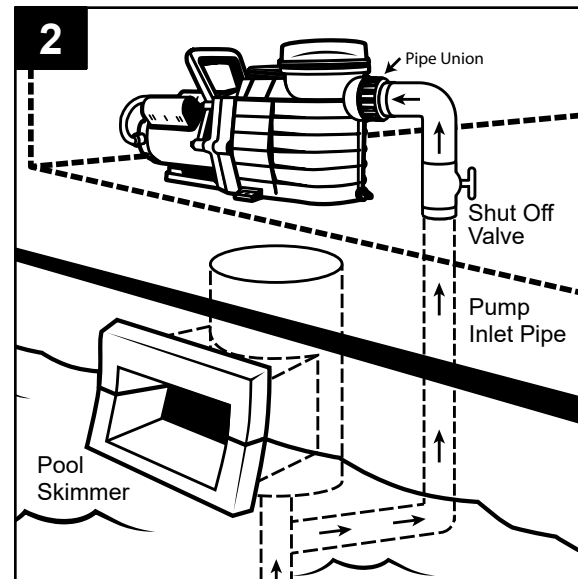
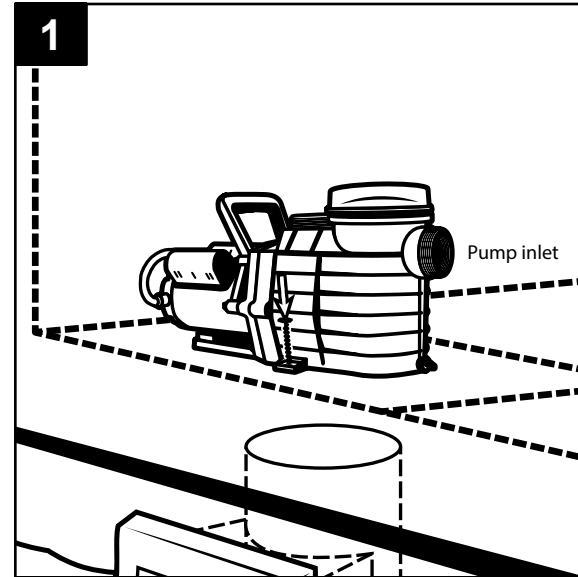
INSTALLATION:

NOTE: Before installing the pump check your voltage requirements. The pump is preset to 230V. If your power source is 115V see page 10 and follow instructions to change wiring according to the diagrams.

1. Install pump on a firm, level base or pad with screws or bolts. The base **MUST** be solid, level, rigid, vibration free and protected from both weather and pool splash. Make sure pump inlet height is as close to the water level as possible.

2. Attach discharge line from pump to filter inlet using a pipe union and attach shut-off valve. Use a short and direct suction pipe. Be sure to incorporate a straight portion of pipe that is at least 5 times longer than the diameter of the pump inlet pipe.

3. Use a pipe union to attach discharge line from pump to filter inlet and attach shut-off valve. Suction line pipe must be the same diameter or larger than the discharge line.



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INSTALLATION:

4. Connect return line from filter to swimming pool return inlet.

5. Make sure power is off and attach wiring.

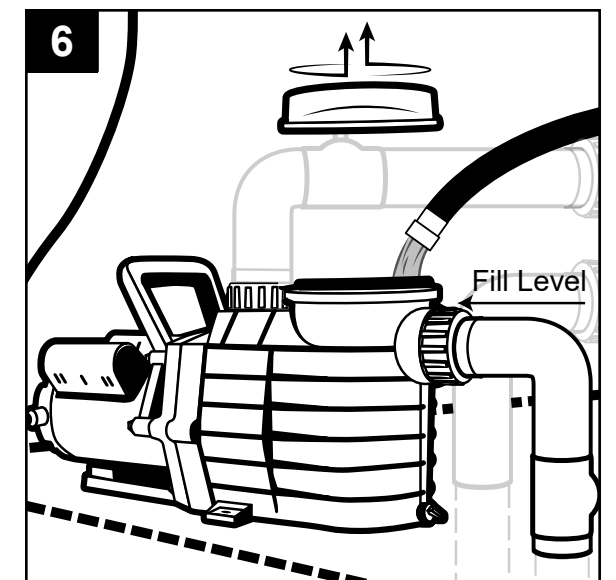
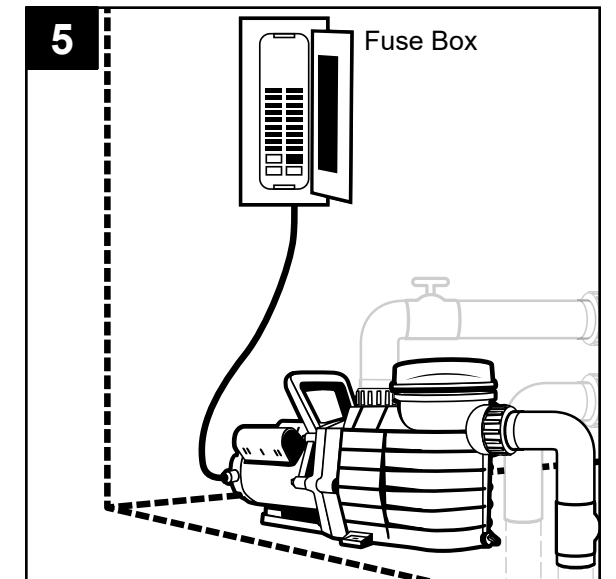
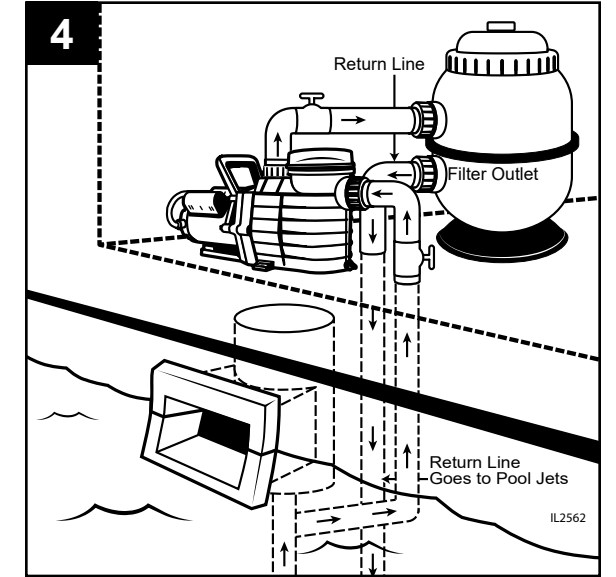


Always disconnect pump from electricity before performing any work on the motor. Refer to instructions for wiring connections.


6. Fill pump and trap with water, replace trap lid and check system for leaks. If no leaks, proceed with pump startup.

NOTE: DO NOT START PUMP if any leaks are present in the system.

After startup check again for leaks again at each connection.



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⚠ WARNING	Hazardous voltage. Can shock, burn, or cause death.
	BEFORE WORKING ON PUMP OR MOTOR: <i>Unplug pump motor.</i>

ELECTRICAL

⚠ WARNING All wiring must be done by a licensed electrician and must conform to all local and national codes and regulations.

⚠ WARNING Ground and bond motor before connecting to electrical power supply. Failure to ground and bond pump motor can cause serious or fatal electrical shock hazard.

⚠ WARNING Do NOT ground to a gas supply line.

⚠ WARNING To avoid dangerous or fatal electrical shock, turn OFF power to motor before working on electrical connections.

⚠ WARNING Ground Fault Circuit Interrupter (GFCI) tripping indicates electrical problem. If GFCI trips and won't reset, consult electrician to inspect and repair electrical system.

⚠ WARNING Fire Hazard. Match supply voltage to motor nameplate voltage.

Ensure that the electrical supply available agrees with the motor's voltage, phase, and cycle, and that the wire size is adequate for the HP (kW) rating and distance from the power source. **NOTE - All electrical wiring MUST be performed by a licensed electrician, and MUST conform to local codes and NEC regulations. Use copper conductors only.**

ELECTRICAL GUIDE - 60 CYCLE - 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
.75	1	115 230	20 10	20 9	No. 12 No. 14
1.1	1 1/2	115 230	30 15	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

VOLTAGE

Voltage at motor MUST NOT be more than 10% above or below motor name plate rated voltage, or motor may overheat, causing overload tripping and reduced component life. If voltage is less than 90% or more than 110% of rated voltage when motor is running at full load, consult power company.

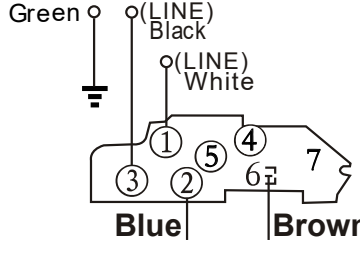
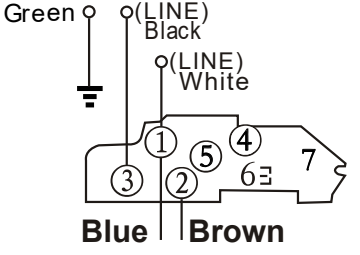
GROUNDING AND BONDING

- Install, ground, bond, and wire motor in accordance with local or national electrical code requirements.
- Permanently ground motor. Use green ground terminal provided under motor canopy or access plate; use size and type wire required by code. Connect motor ground terminal to electrical service ground.
- Bond motor to pool structure. Bonding will connect all metal parts within and around the pool with a continuous wire. Bonding reduces the risk of a current passing between bonded metal objects, which could potentially cause electrical shock if grounded or shorted. **Reference NEC codes for all wiring standards including, but not limited to, grounding, bonding and general wiring procedures.**
- Use a solid copper conductor, per code. Run wire from external bonding lug to reinforcing rod or mesh. Connect per code solid copper bonding wire to the pressure wire connector provided on the motor housing and to all metal parts of swimming pool, spa, or hot tub, and to all electrical equipment, metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub.

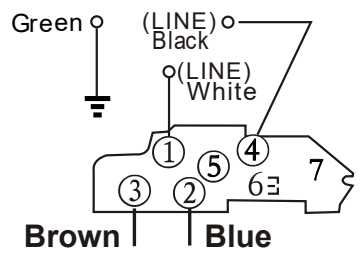
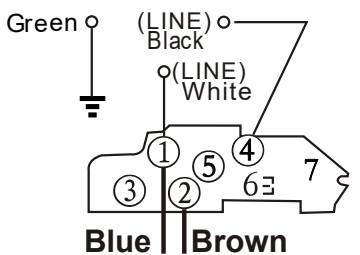
CHANGING THE VOLTAGE

- Pump is preset to 230V. If your power source is 115V you will need to change pump from 230V to 115V. Open the back of the motor housing. Use pliers to switch plugs following the steps below for your model.
- While set for 230V the brown wire may still have current. It must stay grounded in position 6 to avoid touching other contacts.

MODEL 025191 - 230V to 115V Motor Voltage Change

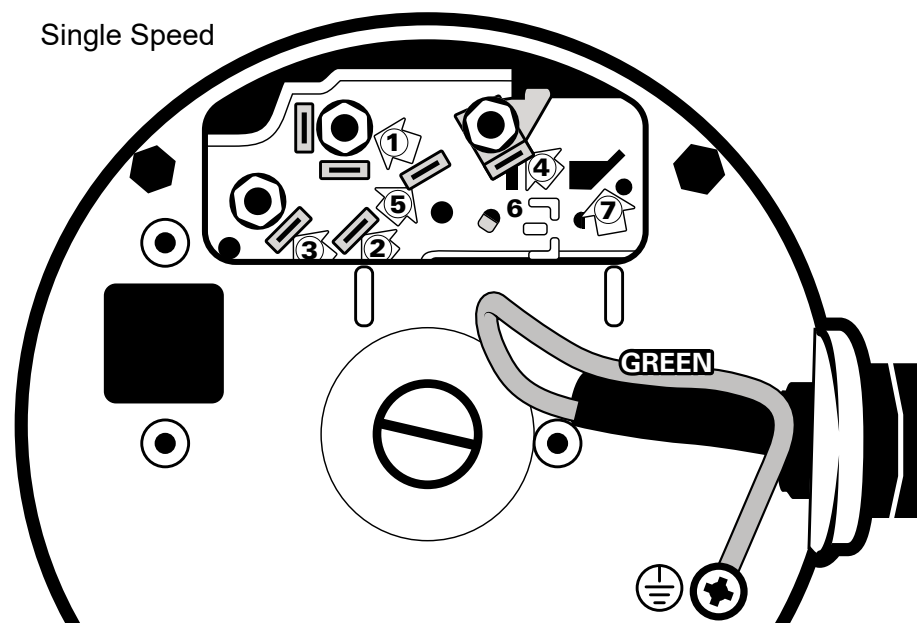
<p>STEP 1 Move blue wire from slot 2 to slot 1</p> <p>STEP 2 Move brown wire from position 6 to slot 2</p>	<p>230V HIGH VOLTAGE</p> 	<p>115V LOW VOLTAGE</p> 
--	---	--

MODEL 148014 - 230V to 115V Motor Voltage Change

<p>STEP 1 Move blue wire from slot 2 to slot 1</p> <p>STEP 2 Move brown wire from slot 3 to slot 2</p>	<p>230V HIGH VOLTAGE</p> 	<p>115V LOW VOLTAGE</p> 
--	---	--

CHANGING THE VOLTAGE - CONTINUED

Single Speed



WIRING

⚠ WARNING A licensed electrician must do all wiring.

Pump **MUST** be permanently connected to circuit. If other lights or appliances are also on the same circuit, be sure to add their amp loads before calculating wire and circuit breaker sizes. Use the load circuit breaker as the Master On-Off switch.

Install a Ground Fault Circuit Interrupter (GFCI) in circuit; it will sense a short-circuit to ground and disconnect power before it becomes dangerous to pool users. For size of GFCI required and test procedures for GFCI, see manufacturer's instructions. Pump **MUST** be permanently connected to GFCI. In case of a power outage, check GFCI for tripping, which will prevent normal pump operation. Reset if necessary.

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

STARTING/PRIMING THE PUMP:

Pumps with single speed motors are self priming to 10 ft. and pumps with 2 speed motors are self priming to 10 ft. on high speed only. Fill 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, stand at least 10 feet from pump and/or filter and proceed with starting the pump.

⚠ WARNING Return to filter to close filter manual air relief valve when a steady stream of water (not air or air and water) is discharged from valve. Failure to do so could result in severe personal injury.

⚠ CAUTION **NEVER OPERATE THE PUMP WITHOUT WATER.** Water acts as a coolant and lubricant for the mechanical shaft seal. **NEVER** run pump dry. Running pump dry may damage seals, causing leakage, flooding, and voids warranty. Fill strainer housing with water before starting motor.

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

⚠ CAUTION Before removing strainer cover:

1. **STOP PUMP** before proceeding.
2. **CLOSE VALVES** in suction and outlet pipes.
3. **RELEASE ALL PRESSURE** from pump and piping system using filter manual air relief valve. **See filter owner's manual for more details.**
4. If water source is higher than the pump, pump will prime itself when suction and outlet valves are opened. If water source is lower than the pump, unscrew and remove strainer cover; fill strainer housing with water.
5. Clean and lubricate strainer cover O-ring with silicone lubricant each time it is removed. Inspect O-ring and re-install on strainer cover.
6. Replace strainer cover on strainer housing; turn strainer cover clockwise to tighten cover.

Before re-starting pump, see "**Starting/Priming the Pump**" instructions.

⚠ CAUTION Wait five (5) seconds before re-starting pump. Failure to do so may cause reverse rotation of motor and consequent serious pump damage.

Turn on power and wait for pump to prime, which may take up to five (5) minutes. Priming time will depend on vertical length of suction lift and horizontal length of suction pipe. If pump does **NOT** prime within five minutes, stop motor and determine cause. Be sure all suction and discharge valves are open when pump is running. See Troubleshooting Guide.

MAINTENANCE

- Clean strainer basket regularly. Do **NOT** strike basket to clean. Inspect strainer cover gasket regularly and replace as necessary.
- Pump has self-lubricating motor bearings and shaft seals. No lubrication is necessary.
- Keep motor clean. Ensure air vents are free from obstruction to avoid damage. Do **NOT** use water to hose off motor.
- Occasionally, shaft seals must be replaced, due to wear or damage.

⚠ WARNING **Separation Hazard.** Do not purge the system with compressed air. Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.

⚠ CAUTION Allowing the pump to freeze will void the warranty.

⚠ CAUTION Use **ONLY** propylene glycol as antifreeze in your pool/spa system. Propylene glycol is non-toxic and will not damage plastic system components. Other anti-freezes are highly toxic and may damage plastic components in the system.

Drain all water from pump and piping when expecting freezing temperatures or when storing pump for a long time (see instructions below).

Keep motor dry and covered during storage. To avoid condensation/corrosion problems, do **NOT** cover or wrap pump with plastic film or bags.

STORING PUMP FOR WINTERIZATION

⚠ WARNING To avoid dangerous or fatal electrical shock hazard, turn **OFF** power to motor before draining pump. Failure to disconnect power may result in serious personal injury or death.



1. Drain water level below all inlets to the pool.
2. Remove drain plugs from bottom of strainer body, and remove strainer cover from strainer housing.
3. Disconnect pump from mounting pad, wiring system (after power has been turned OFF), and piping system.
4. Once the water is emptied from the pump, re-install the strainer cover and drain plugs. Store pump in a dry area.

TROUBLESHOOTING

PROBLEM	CHECK FOR:	SOLUTION
A. Motor Will NOT Start	Improper or loose wiring connections; open switches or relays; tripped circuit breakers, GFCI's, or blown fuses.	Check all connections, circuit breakers, and fuses. Reset tripped breakers or replace blown fuses
	Check rotation of motor shaft	Remove any obstructions.
	Properly working timer.	Bypass timer if necessary.
B. Motor Shuts OFF	Low voltage at motor or power drop (frequently caused by undersized wiring or extension cord use.)	Contact qualified professional to check that the wiring gauge is heavy enough.
<p>**NOTE: Your motor is equipped with an "automatic thermal overload protector." The motor will automatically shut off if power supply drops before heat damage can build up causing windings to burn out. The "thermal overload protector" will allow the motor to automatically restart once the motor has cooled. It will continue to cut On/Off until the problem is corrected. Be sure to correct cause of overheating.</p>		
C. Motor Hums, But Does NOT Start	Impeller jammed with debris.	Have a qualified repair professional open the pump and remove the debris.
D. Pump Won't Prime	Empty pump/strainer housing.	Make sure pump/strainer housing is filled with water and cover O-Ring is clean. Ensure O-Ring is properly seated in the cover O-Ring groove. Ensure O-Ring is lubricated and that strainer cover is locked firmly in position.
	Loose connections on suction side.	Tighten pipe/union connections.
	Leaking O-Ring or packing glands on valves. Strainer basket or skimmer loaded with debris.	Remove strainer housing cover or skimmer cover, clean basket, and refill strainer housing with water. Tighten cover.
	Suction side clogged.	Contact a qualified repair professional.

Block off to determine if pump will develop a vacuum. You should have 5"-6" of vacuum at the strainer cover **(Only your pool dealer can confirm this with a vacuum gauge)**. You may be able to check by removing the skimmer basket and holding your hand over the bottom port with skimmer full and pump running. If no suction is felt, check for line blockage.

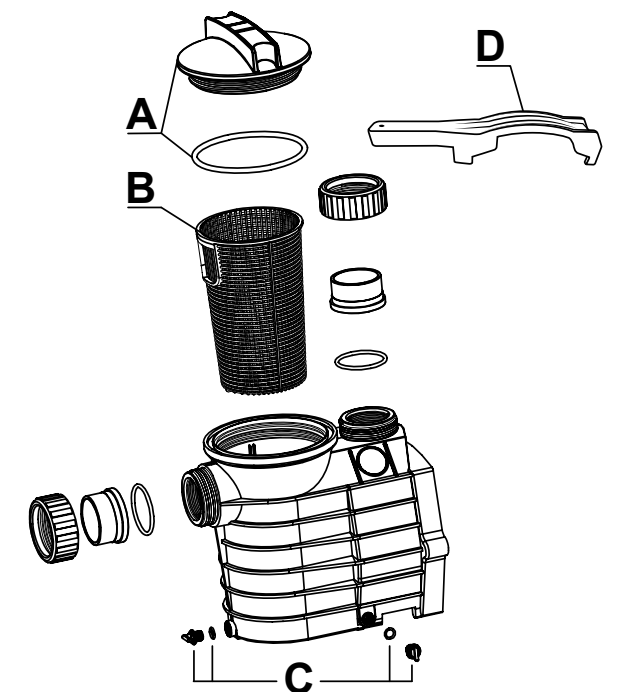
- a. If pump develops a vacuum, check for blocked suction line or dirty strainer basket. An air leak in the suction piping may be the cause.
- b. If pump does not develop a vacuum and pump has sufficient "priming water":
 - i. Re-check strainer housing cover and all threaded connections for suction leaks. Check if all system hose clamps are tight.
 - ii. Check voltage to ensure that the motor is rotating at full RPM's.
 - iii. Open housing cover and check for clogging or obstruction in suction. Check impeller for debris.
 - iv. Remove and replace shaft seal only if it is leaking.

TROUBLESHOOTING

PROBLEM	CHECK FOR:	SOLUTION
E. Low Flow	Clogged or restricted strainer or suction line.	Contact a qualified repair professional.
	Undersized pool piping.	Correct piping size.
	Plugged or restricted discharge line of filter, valve partially closed (high gauge reading).	Sand filters - backwash as per manufacturer's instructions; D.E. filters - backwash as per manufacturer's instructions; Cartridge filters - Clean or replace cartridge.
	Air leak in suction (bubbles issuing from return fittings).	Re-tighten using Teflon tape.
	Plugged, restricted, or damaged impeller.	Replace, including new seal assembly.
F. Noisy Pump	1. Air leak in suction piping, cavitations caused by restricted or undersized suction line or leak at any joint, low water level in pool, and unrestricted discharge return lines.	1. Correct suction condition or throttle return lines, if practical. Holding hand over fitting will sometimes prove this point or putting in a smaller eyeball fitting.
	2. Vibration due to improper mounting, etc.	2. Replace mounting.
	3. Foreign matter in pump housing. Loose stones/debris hitting impeller could be cause.	3. Clean the pump housing.
	4. Motor bearings noisy from normal wear, rust, overheating, or concentration of chemicals causing seal damage which will allow chlorinated water to seep into bearings wiping out the grease causing bearing to whine.	4. All seal leaks should be replaced at once.

REPAIR PARTS

ITEM	P/N	DESCRIPTION
A	025467	Cover with O-Ring
B	025466	Filter/Strainer Basket
C	025465	Drainage Plug with O-ring
D	025468	Spanner - Tool for Opening the Transparent Cover



WARRANTY

This product is warranted for one year from the date of purchase. Subject to the conditions hereinafter set forth, the manufacturer will repair or replace to the original consumer, any portion of the product which proves defective due to defective materials or workmanship. This warranty does not cover replacement parts for failure due to normal wear and tear. To obtain warranty service, contact the dealer from whom the product was purchased. The manufacturer retains the sole right and option to determine whether to repair or replace defective equipment, parts or components. Damage due to conditions beyond the control of the manufacturer is not covered by this warranty.

THIS WARRANTY WILL NOT APPLY:

- (a) To defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided;
- (b) to failures resulting from abuse, accident or negligence or use of inappropriate chemicals or additives in the water;
- (c) to normal maintenance services and the parts used in connection with such service;
- (d) to units which are not installed in accordance with normal applicable local codes, ordinances and good trade practices; and
- (e) if the unit is used for purposes other than for what it was designed and manufactured.

RETURN OF WARRANTED COMPONENTS: Any item to be repaired or replaced under this warranty must be returned to the manufacturer at Kendallville, Indiana or such other place as the manufacturer may designate, freight prepaid.

THE WARRANTY PROVIDED HEREIN IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES, AND MAY NOT BE EXTENDED OR MODIFIED BY ANYONE. ANY IMPLIED WARRANTIES SHALL BE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY AND THEREAFTER ALL SUCH IMPLIED WARRANTIES ARE DISCLAIMED AND EXCLUDED. THE MANUFACTURER SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO DAMAGE TO, OR LOSS OF, OTHER PROPERTY OR EQUIPMENT, LOSS OF PROFITS, INCONVENIENCE, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR NATURE. THE LIABILITY OF THE MANUFACTURER SHALL NOT EXCEED THE PRICE OF THE PRODUCT UPON WHICH SUCH LIABILITY IS BASED.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow limitations on duration of implied warranties or exclusion of incidental or consequential damages, so the above limitations may not apply to you.

In those instances where damages are incurred as a result of an alleged pump failure, the Homeowner must retain possession of the pump for investigation purposes.