



INSTALLATION AND OPERATION MANUAL

ENGLISH | FRANÇAIS | ESPAÑOL



Jandy Pro Series VS PlusHP Pumps Models VSPHP270JEP & VSPHP270AUT

WARNING

FOR YOUR SAFETY - This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exist. The maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death.

Improper installation and/or operation will void the warranty.



Improper installation and/or operation can create unwanted electrical hazard which can cause serious injury, property damage, or death.

ATTENTION INSTALLER - This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner/operator of this equipment.

TABLE OF CONTENTS

Section 1. Important Safety Instructions	3	3.2.6 Auxiliary Load Operation Characteristics	11
1.1 Safety Instructions	3	3.2.6.1 Contact Closure.....	11
1.2 Pool Pump Suction Entrapment Prevention Guidelines.....	5	3.2.6.2 Contact Opening	12
Section 2. General Description	6	Section 4. Operation.....	12
2.1 Introduction	6	4.1 Remove Pump Lid	12
2.2 Description	6	4.2 Conduct Pressure Test	13
2.3 Preparation	6	4.3 Start-up	13
Section 3. Installation.....	6	Section 5. Maintenance.....	14
3.1 Plumbing.....	6	5.1 Routine Maintenance	14
3.1.1 Pump Location	6	5.2 Winterizing the Pump.....	14
3.1.2 Pipe Sizing	7	Section 6. Troubleshooting and Repair.....	15
3.1.3 Installation Recommendations.....	7	Section 7. Product Specifications and Technical Data	17
3.2 Electrical Installation	8	7.1 Replacement Parts List.....	17
3.2.1 Voltage Checks	8	7.2 Exploded View	17
3.2.2 Bonding and Grounding	8	7.3 Performance Curves.....	18
3.2.3 Electrical Wiring	9	7.4 Physical and Operational Specifications.....	18
3.2.4 Controller Options	9	7.4.1 Pump Specifications	18
3.2.4.1 Install with AquaLink® controller.....	9		
3.2.4.2 Install with JEP-R variable-speed controller	10		
3.2.4.3 Pump Dip Switch Settings	10		
3.2.5 Auxiliary Load Operation.....	11		
3.2.5.1 Auxiliary Load Connection Requirements.....	11		

EQUIPMENT INFORMATION RECORD

DATE OF INSTALLATION _____

INSTALLER INFORMATION _____

INITIAL PRESSURE GAUGE READING (WITH CLEAR FILTER) _____

PUMP MODEL _____

HORSEPOWER _____

NOTES:

Section 1. Important Safety Instructions

READ AND FOLLOW ALL INSTRUCTIONS

1.1 Safety Instructions

All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes. When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

WARNING

RISK OF SUCTION ENTRAPMENT HAZARD, WHICH, IF NOT AVOIDED, CAN RESULT IN SERIOUS INJURY OR DEATH. Do not block pump suction as this can cause severe injury or death. Do not use this pump for wading pools, shallow pools or spas containing bottom drains, unless the pump is connected to at least two functioning suction outlets. Suction outlet (drain) assemblies and covers must be certified to the latest published version of ANSI®/ASME® A112.19.8, or its successor standard, ANSI/APSP-16.

WARNING

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

WARNING

To reduce the risk of property damage or injury, do not attempt to change the backwash (multiport, slide, or full flow) valve position with the pump running.

WARNING

Zodiac® pumps are powered by a high voltage electric motor and must be installed by a licensed or certified electrician or a qualified swimming pool service technician.

WARNING

RISK OF ELECTRIC SHOCK, FIRE, PERSONAL INJURY, OR DEATH. Connect only to a branch circuit that is protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI. 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 electrical shock. Do not use the pump. Disconnect the pump and have the problem corrected by a qualified service representative before using.

Due to the potential risk of fire, electric shock, or injuries to persons, Zodiac Pumps must be installed in accordance with the National Electrical Code® (NEC®), all local electrical and safety codes, and the Occupational Safety and Health Act (OSHA®). Copies of the NEC may be ordered from the National Fire Protection Association (NFPA®) online at www.nfpa.org or call 617-770-3000, or contact your local government inspection agency.

In Canada, Zodiac Pumps must be installed in accordance with the Canadian Electrical Code (CEC).

WARNING

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

WARNING

- Do not connect the system to an unregulated city water system or other external source of pressurized water producing pressures greater than 35 PSI.
- Trapped air in system can cause the filter lid to be blown off, which can result in death, serious personal injury, or property damage. Be sure all air is out of the system before operating.

⚠ WARNING

To minimize the risk of severe injury or death the filter and/or pump should not be subjected to the piping system pressurization test.

Local codes may require the pool piping system to be subjected to a pressure test. These requirements are generally not intended to apply to the pool equipment such as filters or pumps.

Zodiac® pool equipment is pressure tested at the factory.

However, if the WARNING cannot be followed and pressure testing of the piping system must include the filter and/or pump, **BE SURE TO COMPLY WITH THE FOLLOWING SAFETY INSTRUCTIONS:**

- Check all clamps, bolts, lids, lock rings and system accessories to ensure they are properly installed and secured before testing.
- **RELEASE ALL AIR** in the system before testing.
- Water pressure for test must NOT EXCEED 35 PSI.
- Water temperature for test must NOT EXCEED 100°F (38°C).
- Limit test to 24 hours. After test, visually check system to be sure it is ready for operation.

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

⚠ WARNING

Chemical spills and fumes can weaken pool/spa equipment. Corrosion can cause filters and other equipment to fail, resulting in severe injury or property damage. Do not store pool chemicals near your equipment.

⚠ CAUTION

Do not start pump dry! Running the pump dry for any length of time will cause severe damage and will void the warranty.

⚠ 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.

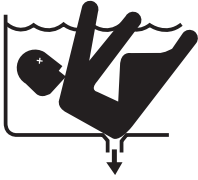
⚠ CAUTION

Do not install within an outdoor enclosure or beneath the skirt of a hot tub or portable spa. The pump requires adequate ventilation to maintain air temperature at less than the maximum ambient temperature rating listed on the motor rating plate.

SAVE THESE INSTRUCTIONS

1.2 Pool Pump Suction Entrapment Prevention Guidelines

⚠ WARNING



SUCTION HAZARD. Can cause serious injury or death. Do not use this pump for wading pools, shallow pools or spas containing bottom drains, unless the pump is connected to at least two (2) functioning suction outlets.

⚠ WARNING

Pump suction is hazardous and can trap and drown or disembowel bathers. Do not use or operate swimming pools, spa, or hot tubs if a suction outlet cover is missing, broken, or loose. The following guidelines provide information for pump installation that minimizes the risk of injury to users of pools, spas, and hot tubs:

- **Entrapment Protection** - The pump suction system must provide protection against the hazards of suction entrapment.
- **Suction Outlet Covers** - All suction outlets must have correctly installed, screw-fastened covers in place. All suction outlet (drain) assemblies and their covers must be properly maintained. Suction outlets (drain) assemblies and their covers must be listed/certified to the latest version of ANSI®/ASME® A112.19.8 or its successor standard, ANSI/APSP-16. They must be replaced if cracked, broken, or missing. Do not use either the pool or the spa until repair or replacement is performed.
- **Number of Suction Outlets Per Pump** - Provide at least two (2) hydraulically-balanced main drains, with covers, as suction outlets for each circulating pump suction line. The centers of the main drains (suction outlets) on any one (1) suction line must be at least three (3) feet apart, center to center. See Figure 1.
- The system **must** be built to include at least two (2) suction outlets (drains) connected to the pump whenever the pump is running. However, if two (2) main drains run into a single suction line, the single suction line may be equipped with a valve that will shut off both main drains from the pump. The system shall be constructed such that it shall not allow for separate or independent shutoff or isolation of each drain. See "Figure 2. Typical Piping Installation".
- More than one (1) pump can be connected to a single suction line as long as the requirements above are met.
- **Water Velocity** - The maximum water velocity through the suction outlet assembly and its cover for any suction outlet must not exceed the suction fitting assembly and its cover's maximum design flow rate. The suction outlet (drain) assembly and its cover must comply with the latest version of ANSI/ASME A112.19.8, the standard for Suction Fittings For Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, or its successor standard, ANSI/APSP-16.
- 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 six (6) feet per second or less, even if one (1) main drain (suction outlet) is completely blocked. The flow through the remaining main drain(s) must comply with the latest version of ANSI/ASME A112.19.8, the standard for Suction Fittings For Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, or its successor standard, ANSI/APSP-16.
- **Testing and Certification** - Suction outlet assemblies and their covers must have been tested by a nationally recognized testing laboratory and found to comply with the latest version of ANSI/ASME A112.19.8, the standard for Suction Fittings For Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, or its successor standard, ANSI/APSP-16.
- **Fittings** - Fittings restrict flow; for best efficiency use fewest possible fittings (but at least two (2) suction outlets).
- Avoid fittings which could cause an air trap.
- Pool cleaner suction fittings must conform to applicable International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Section 2. General Description

2.1 Introduction

This manual contains information for the proper installation, operation, and maintenance of Jandy Pro Series VS Plus HP pumps. Procedures in this manual must be followed exactly. To obtain additional copies of this manual, contact Zodiac Pool Systems, Inc. at 1.800.822.7933 or visit www.zodiacpoolsystems.com.

2.2 Description

The VS Plus HP is a variable-speed pump that can run from 600-3450 RPM. When connected to the JEP-R controller, up to eight (8) speed settings may be programmed and recalled. This allows you to select the most appropriate speed for your application. Even more versatile programming is possible when you use an AquaLink® RS, AquaLink PDA, or AquaLink Z4 controller.

The pump is driven by a variable speed ECM (Electronically Commutated Motor) directly attached to the pump impeller which forces water flow. The rate variability allows for optimal flow during various pump cycles. As a result, the energy efficiency of the pump is maximized which means cost savings to the pool owner while also helping to save the environment.

2.3 Preparation

1. Check the carton for damage. Open the carton and check for concealed damage, such as cracks, dents, or a bent base. If you find damage, contact the shipper or the distributor where the pump was purchased.
2. Inspect the contents of the carton and verify that all parts are included. See "Figure 1. Carton Contents".

Section 3. Installation

3.1 Plumbing

3.1.1 Pump Location

1. Zodiac Pool Systems, Inc. recommends installing the pump no more than one (1) foot (30 cm) above water level. The pump should not be installed more than five (5) feet above the water level of the pool. It is recommended that a check valve be installed when pump is installed more than 3 feet above water level.

NOTE The pump is NSF-certified for priming at heights up to 10 ft. above the water level. However, to achieve better self-priming, install the pump as close as possible to the water level of the pool.

2. If the pump is located below water level, isolation valves must be installed on both the suction and return lines to prevent pool water back flow during routine or required servicing.

⚠ WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

NOTE When the pool equipment is located below the pool surface a leak can result in large scale water loss or flooding. Zodiac Pool Systems, Inc., cannot be responsible for such water loss, flooding or damage caused by either occurrence.

3. Install the pump such that any disconnecting means and/or junction boxes for power connection are within sight of the pump and at least five (5) feet horizontally from the edge of the pool and/or spa.

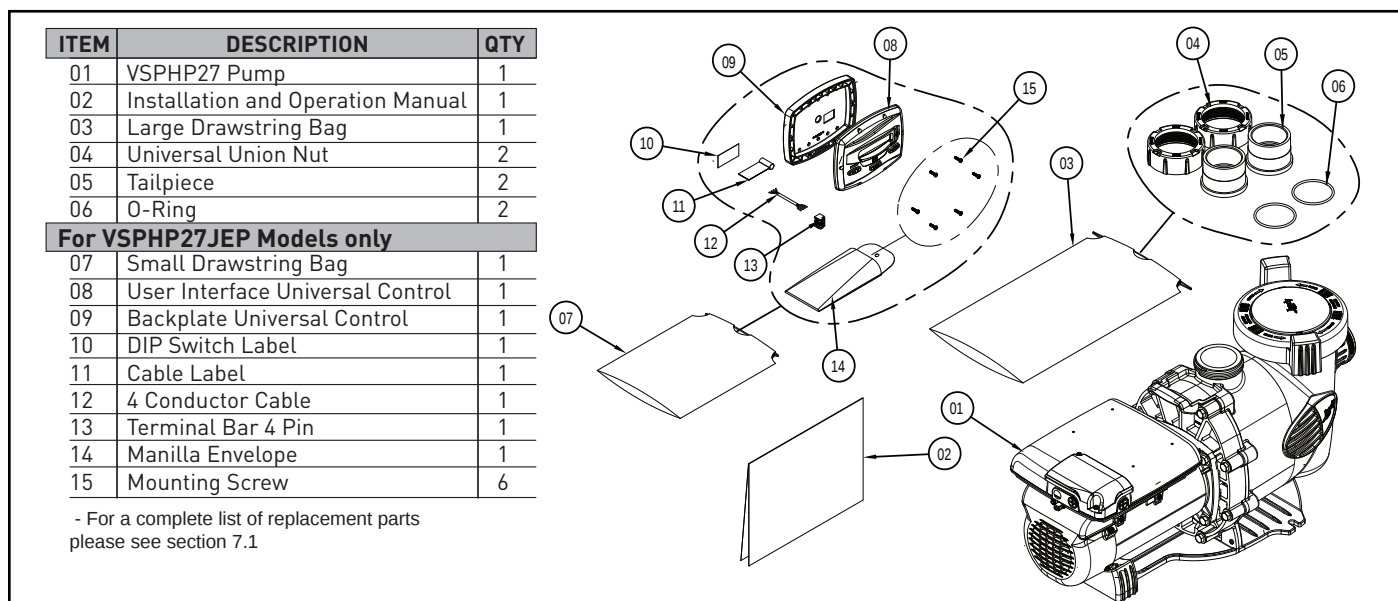


Figure 1. Carton Contents

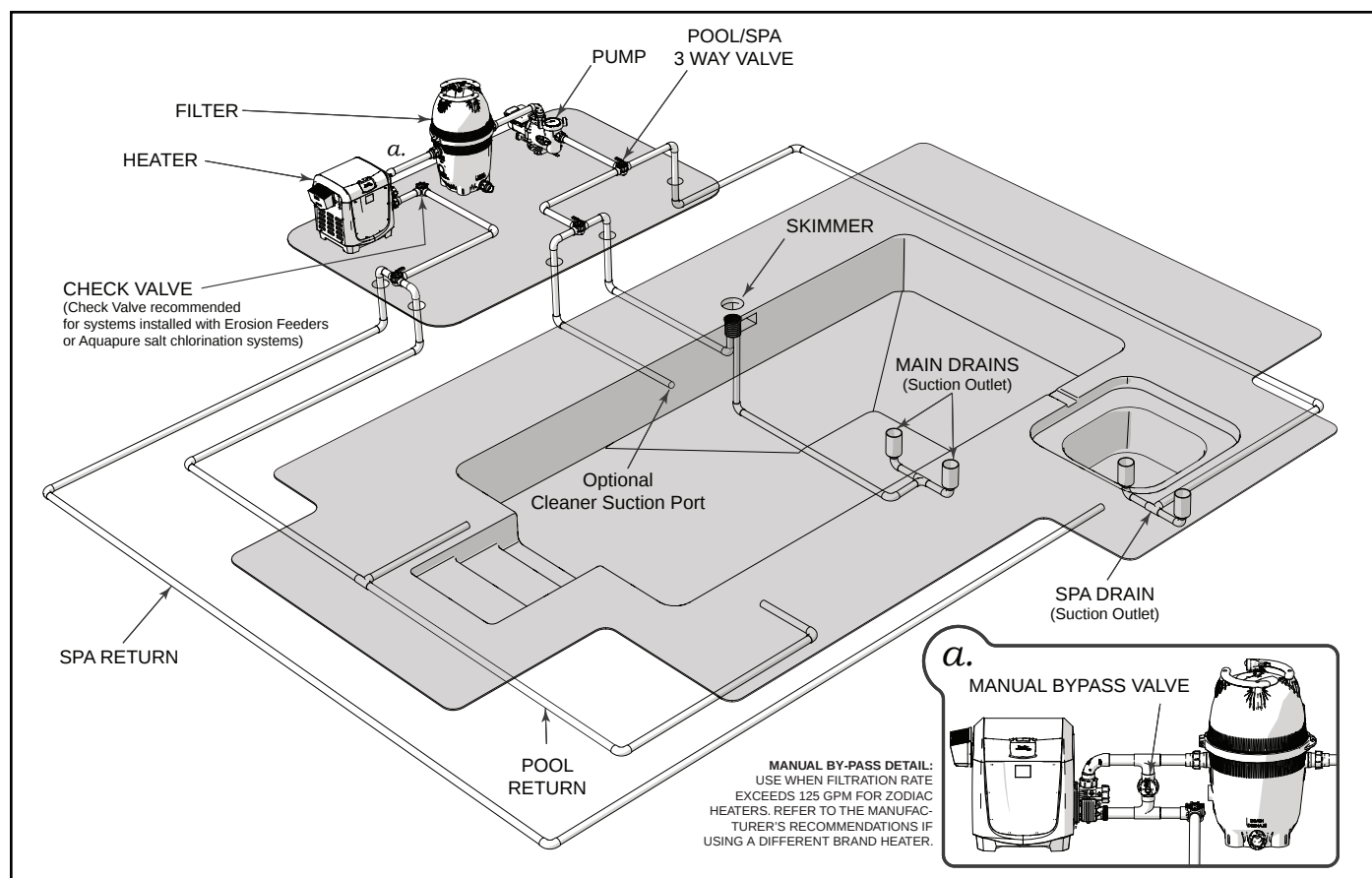


Figure 2. Typical Piping Installation

- Choose a location that will minimize turns in the piping.

NOTE In Canada, the minimum distance maintained from the edge of the pool and/or spa as noted above must be 3 meters (10 feet), as required by the Canadian Electrical Code (CEC, CSA C22.1).

- The pump must be placed on a solid foundation that will not vibrate.

NOTE: To further reduce the possibility of vibration noise, bolt the pump to the foundation, or place it on a rubber mat.

- The pump foundation must have adequate drainage to prevent the motor from getting wet.
- Protect the pump from the rain and sun.
- Proper ventilation is required for the pump to operate normally. Motor generated heat must be removed by adequate air flow.
- Provide access for future service by leaving a clear area around the pump. Allow plenty of space above the pump to remove the lid and basket.
- If the equipment is under cover, provide adequate lighting.

3.1.2 Pipe Sizing

If pump is located within 50 feet (15 m) of the pool, the recommended minimum pipe size for suction and

discharge is 2.5 inches (64 mm). For lengths greater than 50 feet increase the pipe size according to "Table 1. Pipe Sizing for Schedule 40 PVC".

3.1.3 Installation Recommendations

- To help prevent difficulty in priming, install the suction pipe without high points (above inlet of pump, or inverted "U"s, commonly referred to in plumbing as "airlocks") that can trap air.
- For installations of equipment up to 100 feet (30 m) from the water, refer to "Table 1. Pipe Sizing for Schedule 40 PVC", For installations of equipment more than 100 feet (30 m) from the water, the recommended pipe size must be increased to the next size.

Table 1. Pipe Sizing for Schedule 40 PVC

Pipe Size	Maximum Flow Suction (6 feet per second)	Maximum Flow Discharge (8 feet per second)
1½" (38 mm)	37 GPM (140 LPM)	50 GPM (189 LPM)
2" (51 mm)	62 GPM (235 LPM)	85 GPM (322 LPM)
2½" (64 mm)	88 GPM (333 LPM)	120 GPM (454 LPM)
3" (76 mm)	136 GPM (515 LPM)	184 GPM (697 LPM)
4" (102 mm)	234 GPM (886 LPM)	313 GPM (1185 LPM)

- The pump comes equipped with unions on both the suction and discharge ports. This feature simplifies installation and service and eliminates the possibility of leaks at threaded adapters.

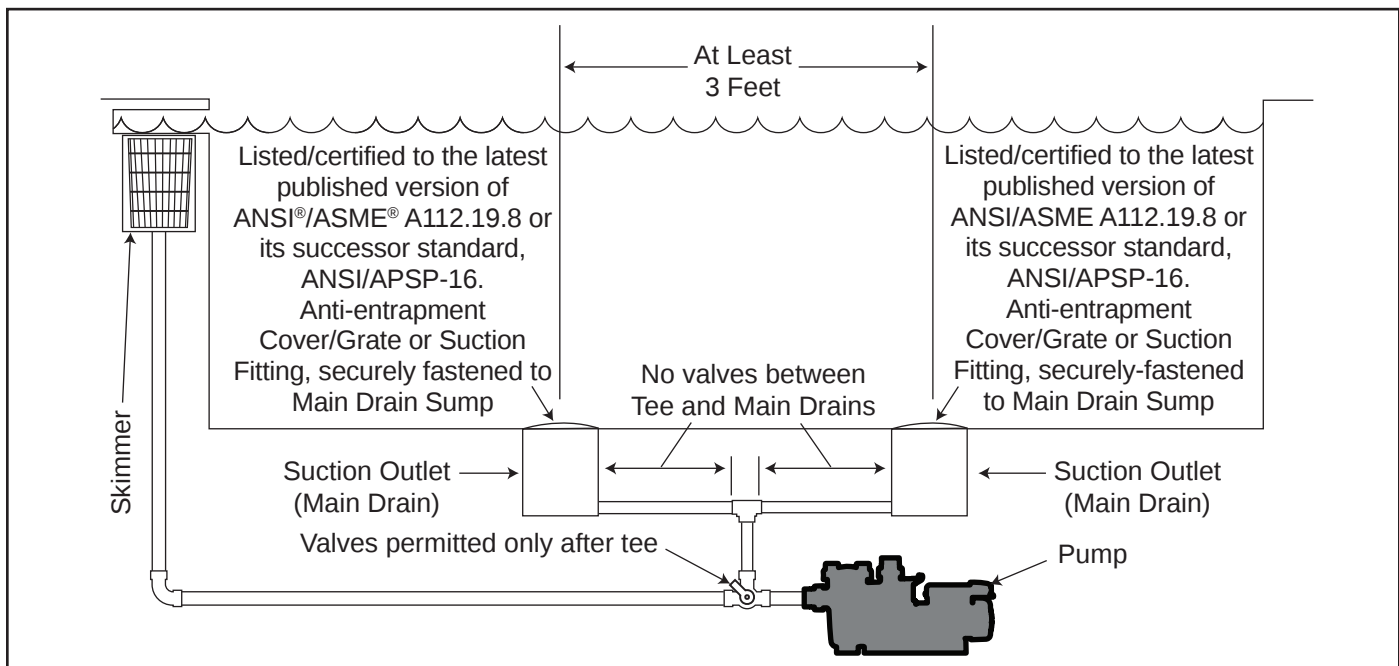


Figure 3. Number of Suction Outlets Per Pump

4. The pump must be connected to at least two (2) hydraulically-balanced main drains for each pool pump suction line. Each drain (suction outlet) assembly must be equipped with covers and must be listed or certified to the latest published edition of ANSI®/ASME® A112.19.8, or its successor standard, ANSI/APSP-16. The suction fittings of the main drains must be at least three (3) feet (1 m) apart or at different planes. The suction fittings can be a drain and skimmer, two (2) drains, two (2) skimmers, or a skimmer with an equalizer line installed. Check the local codes for proper installation.

NOTE To prevent entrapment, the system must be built so it cannot operate with the pump drawing water from only one (1) main drain. At least two (2) main drains must be connected to the pump when it is in operation. If two (2) main drains run into a single suction line, the single suction line may be equipped with a valve that will shut off both main drains from the pump.

5. The piping must be well supported and not forced together where it will experience constant stress.
6. Always use properly sized valves. Jandy Pro Series Diverter Valves and Ball Valves typically have the best flow capabilities.
7. Use the fewest fittings possible.

NOTE If more than ten (10) suction fittings are needed, the pipe size must be increased.

8. Every new installation must be pressure tested according to local codes.

3.2 Electrical Installation

3.2.1 Voltage Checks

The correct voltage, as specified on the pump data plate, is necessary for proper performance and long motor life. Incorrect voltage will decrease the pump's ability to perform and can cause overheating, reduce motor life, and result in higher electric utility cost.

It is the responsibility of the electrical installer to provide the correct operating voltage to the pump by ensuring proper circuit sizes and wire sizes for the specific application.

The National Electrical Code® (NEC®, NFPA-70) requires all pool pump circuits be protected with a Ground Fault Interrupter (GFCI). Therefore, it is also the responsibility of the electrical installer to ensure that the pump circuit is in compliance with this and all other applicable requirements of the National Electrical Code (NEC) and any other applicable installation codes.

⚠ CAUTION

Failure to provide data plate voltage (within 10%) during operation will cause the motor to overheat and void the warranty.

3.2.2 Bonding and Grounding

1. In addition to being properly grounded and in accordance with the requirements of the National Electrical Code (NEC), or in Canada the Canadian Electrical Code (CEC), the pump motor must be bonded to all metal parts of the swimming pool, spa or hot tub structure and to all electrical components and equipment associated with the pool/spa water circulation system.

- The bonding must be accomplished by using a solid copper conductor, No. 8 AWG or larger. In Canada No. 6 AWG or larger must be used. Bond the motor using the external bonding lug provided on the motor frame.

⚠ WARNING

Always disconnect the power source before working on a motor or it's connected load.

⚠ WARNING

Make sure that the control switch, time clock, or control system is installed in an accessible location, so that in the event of an equipment failure or a loose plumbing fitting, the equipment can be turned off. This location must not be in the same area as the pool pump, filter, and other equipment.

⚠ CAUTION

The pump must be permanently connected to a dedicated electrical circuit. No other equipment, lights, appliances or outlets may be connected to the pump circuit, with the exception of devices that may be required to operate simultaneously with the pump, such as a chlorinating device or heater.

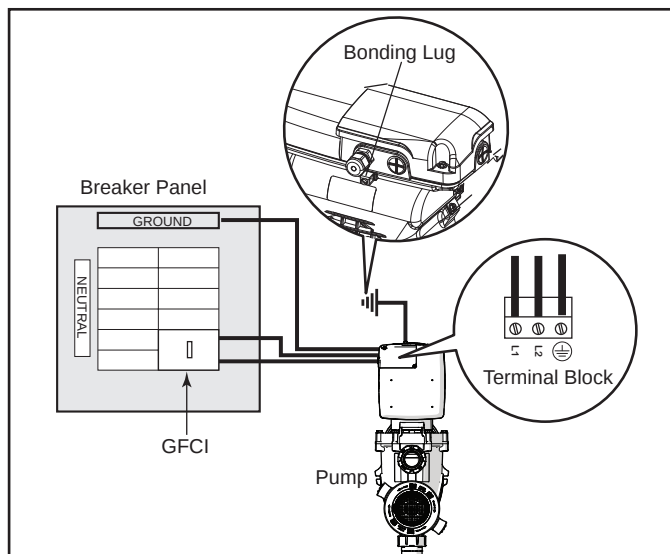


Figure 4. Bonding the Motor

3.2.3 Electrical Wiring

- The pump motor must be securely and adequately grounded using the green screw provided. Ground before attempting to connect to an electrical power supply. **Do not ground to a gas supply line.**
- Wire size must be adequate to minimize a voltage drop during the start-up and operation of the pump.
- Insulate all connections carefully to prevent grounding or short-circuits. Sharp edges on terminals require extra protection. For safety, and to prevent entry of contaminants, reinstall all conduit and terminal box covers. **Do not force connections into the conduit box.**

3.2.4 Controller Options

The pump can be operated by one (1) of four (4) controllers, JEP-R variable-speed controller, AquaLink RS, AquaLink PDA or AquaLink Z4. The pump communicates with the controllers via a four-wire RS-485 interface.

NOTE Since the pump is operated by an external controller the pump will not be turned on until it is turned on with a controller.

3.2.4.1 Install with AquaLink® controller

The VS PlusHP pump can be operated by the following AquaLink Controllers:

- AquaLink RS (Rev O or later)
- AquaLink PDA (Rev 4.0 or later)
- AquaLink Z4

- Disconnect the high voltage lines or open any breaker to which the pump power is connected.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Turn off all switches and the main breaker in the variable-speed pump electrical circuit before starting the procedure. Failure to comply may cause a shock hazard resulting in severe personal injury or death.

- Dip switches 1 and 2 need to be in the OFF position. See “Figure 5. Wiring AquaLink RS, PDA or Z4”.
- Select the desired address(es) by setting dip switches 3 and/or 4, as shown in “Table 2. Dip Switch Settings”
- Disconnect the RS-485 cable from the 4-pin header on the pump drive.

NOTE: Do not cut the cable or you will lose the ability to return to the default factory configuration

- Connect the new RS-485 cable from the AquaLink through the available compression fitting and route the 4-conductor cable through the motor drive threaded port closest to the connector. See “Figure 5. Wiring AquaLink RS, PDA or Z4”
- Connect the other end of the cable to an RS-485 connector on the AquaLink RS (or multiplexer interface board), matching wire colors with connector positions See “Figure 5. Wiring AquaLink RS, PDA or Z4”
- Restore power to the pump and verify the operation of the controller.
- Refer to the appropriate manual for set up and operation of the pump:
 - AquaLink RS Manual #6593
 - AquaLink PDA Manual #H0572300
 - AquaLink Z4 Manual #H0386600.

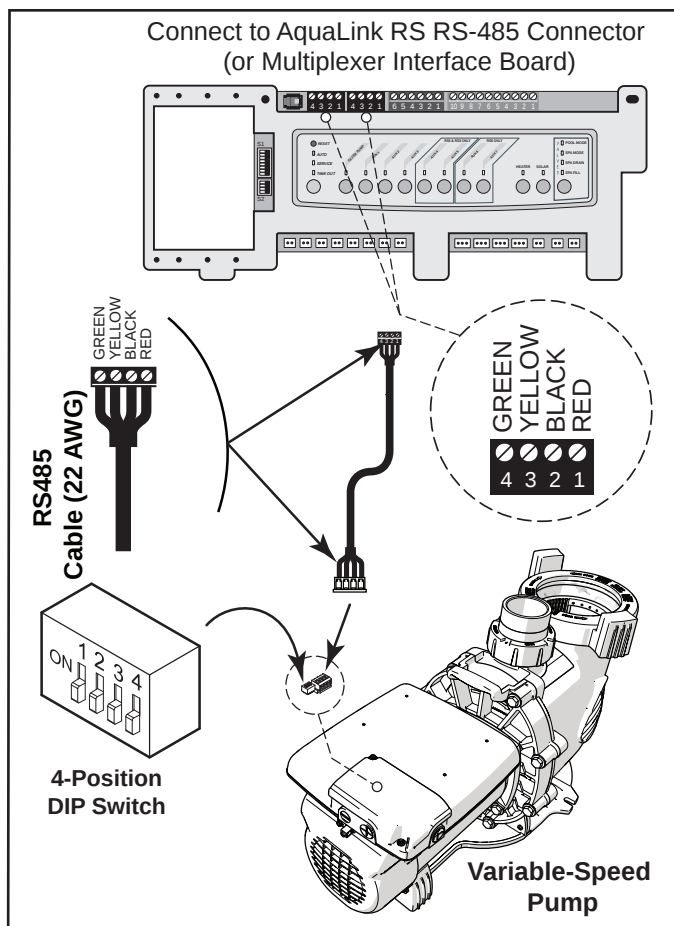


Figure 5. Wiring AquaLink RS, PDA or Z4

3.2.4.2 Install with JEP-R variable-speed controller

IMPORTANT

The installer must TURN ON switches 1 and 2 at the VS Plus HP pump when connected to the variable-speed controller.

1. Disconnect the high voltage lines or open any breaker to which the pump power is connected.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Turn off all switches and the main breaker in the variable-speed pump electrical circuit before starting the procedure. Failure to comply may cause a shock hazard resulting in severe personal injury or death.

2. Remove the junction box cover and feed the RS-485 cable into the fitting.
3. Unplug the RS-485 connector.
4. Attach the four (4) RS-485 cable wires to the RS-485 connector. Match the wire colors with the positions on the connector: See “Figure 6. Wiring JEP-R VSP Controller”

5. Insert the RS-485 connector back into the junction box.
6. Dip switches 1 and 2 must be in the ON position, and switches 3 and 4 must be in the OFF position. See “Figure 6. Wiring JEP-R VSP Controller”

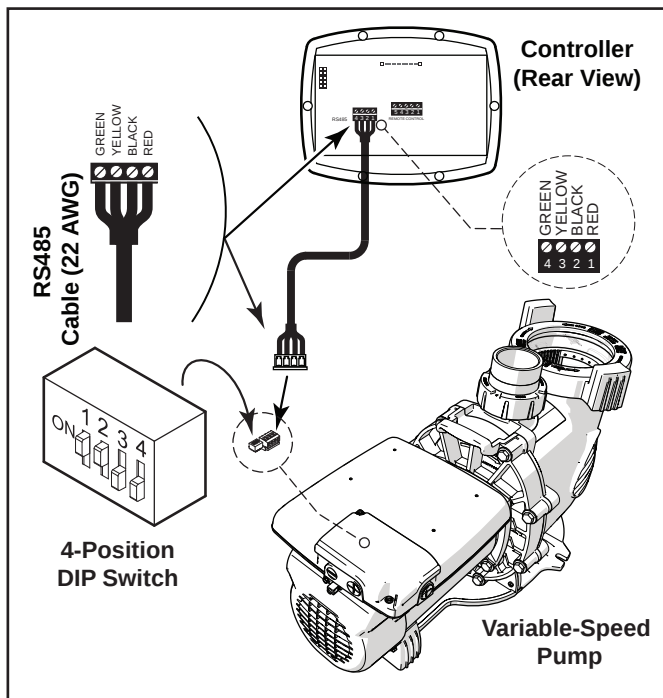


Figure 6. Wiring JEP-R VSP Controller

7. Connect the other end of the cable to the controller. Match the colors of the wires with the appropriate connector positions. See “Figure 6. Wiring JEP-R VSP Controller”
8. Restore power and verify the operation of the controller.
9. Refer to the Variable-Speed Controller Owner’s Manual, H0412200, to operate the pump.

3.2.4.3 Pump Dip Switch Settings

As shown in Figures 5 and 6 the 4 position dip switch serves two (2) functions: it selects the pump address, and it determines what type of controller will be used with the pump.

Table 2. Dip Switch Settings

Switch 1	Switch 2	Controller
OFF	OFF	Factory Default
OFF	OFF	AquaLink® RS, AquaLink PDA, or AquaLink Z4
ON	ON	Variable Speed Controller

Switch 3	Switch 4	Pump Address
OFF	OFF	PUMP 1 (Factory Default)
ON	OFF	PUMP 2
OFF	ON	PUMP 3
ON	ON	PUMP 4

3.2.5 Auxiliary Load Operation

The VS PlusHP is equipped with a terminal bar that provides user access to a built-in Auxiliary Load relay contact. This normally-open, dry contact is activated under certain operating conditions and is primarily intended to be used to control external devices that require system water flow for proper functioning, such as heaters, booster pumps, salt water chlorinators, etc. See Figures 5 and 6 for compartment's location details. An access cover with Phillips-head screw must be removed before proceeding.

3.2.5.1 Auxiliary Load Connection Requirements

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Due to the potential risk of fire, electric shock, or injuries to persons, Zodiac® Pumps must be installed in accordance with the National Electrical Code® (NEC®), all local electrical and safety codes, and the occupational Safety and Health Act (OSHA). Copies of the NEC may be ordered from the National Protection Association, 470 Atlantic Ave., Boston, MA 02210, or from your local government inspection agency.

In Canada, Zodiac Pumps must be installed in accordance with the Canadian Electrical Code (CEC).

The Auxiliary Load relay contacts are rated at 230V/11A RMS. Please ensure the requirements of the equipment to be connected to the Auxiliary Load do not exceed this rating.

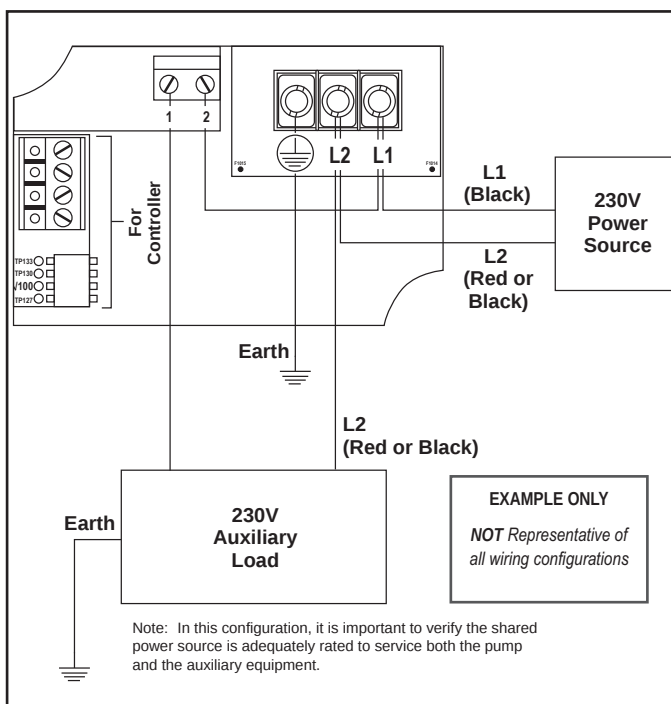


Figure 7. 230V Auxiliary Load, Shared Power Source Wiring Diagram

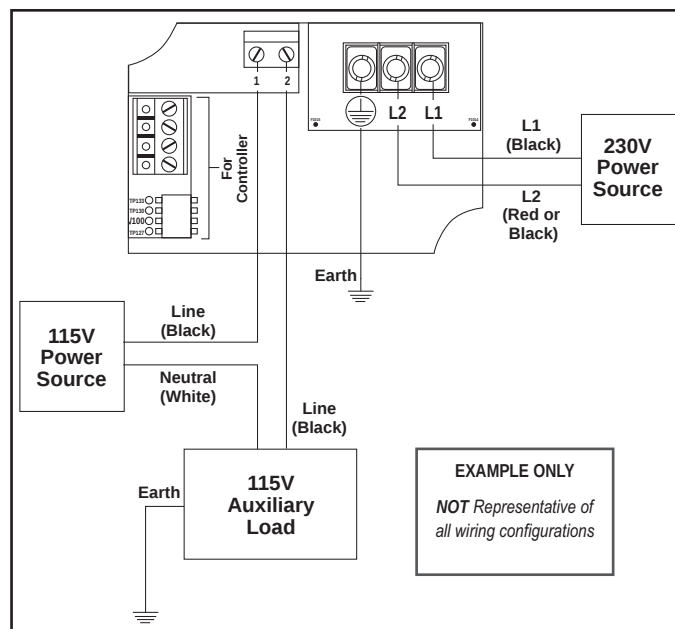


Figure 8. 115V Auxiliary Load, Separate Power Sources Wiring Diagram

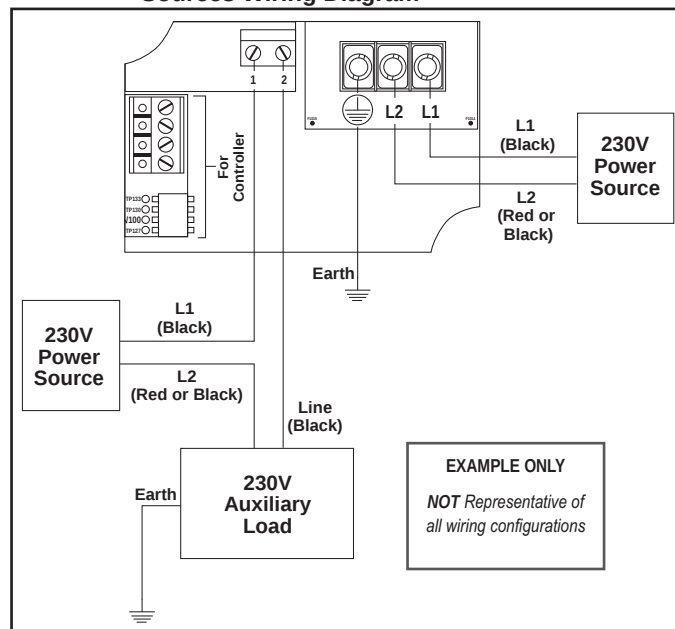


Figure 9. 230V Auxiliary Load, Separate Power Sources Wiring Diagram

3.2.6 Auxiliary Load Operation Characteristics

Auxiliary Load relay contact activation is speed-dependent, and behaves as follows:

3.2.6.1 Contact Closure

From a stopped condition, there is a three-minute delay before the Auxiliary Load contact is closed when the motor speed reaches and maintains a speed of at least 1725 RPM.

From a running condition at below 1725 RPM, there is a five-second delay before the Auxiliary Load contact is closed when the motor speed reaches and maintains a speed of at least 1725 RPM.

3.2.6.2 Contact Opening

If the pump speed is below 1725 RPM, the Auxiliary Load contact is opened. Contact openings are always immediate.

Section 4. Operation

4.1 Remove Pump Lid

1. Make sure that the pump is turned off.
2. Make sure that the switch to the circuit breaker that powers the pump motor is turned off.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Turn off all switches and the main breaker in the variable-speed pump electrical circuit before starting the procedure. Failure to comply may cause a shock hazard resulting in severe personal injury or death.

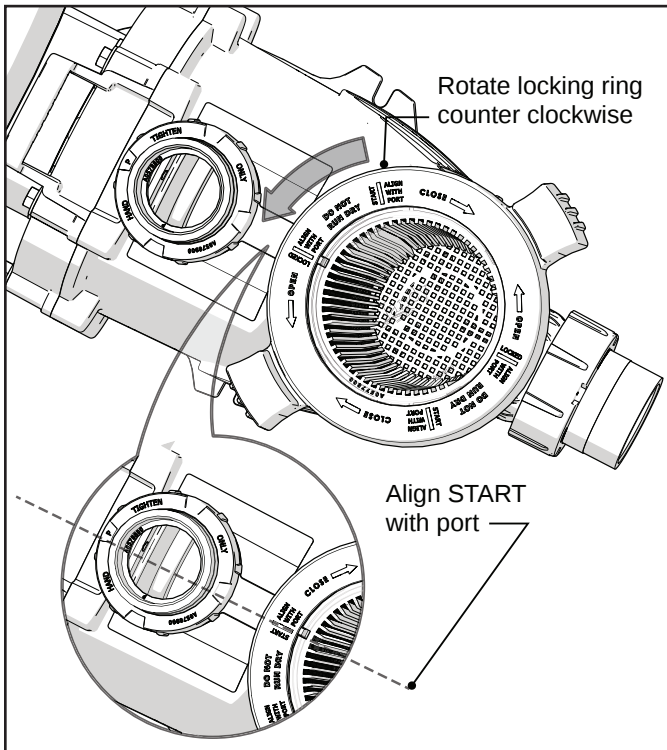


Figure 10. Disengage Lock Ring

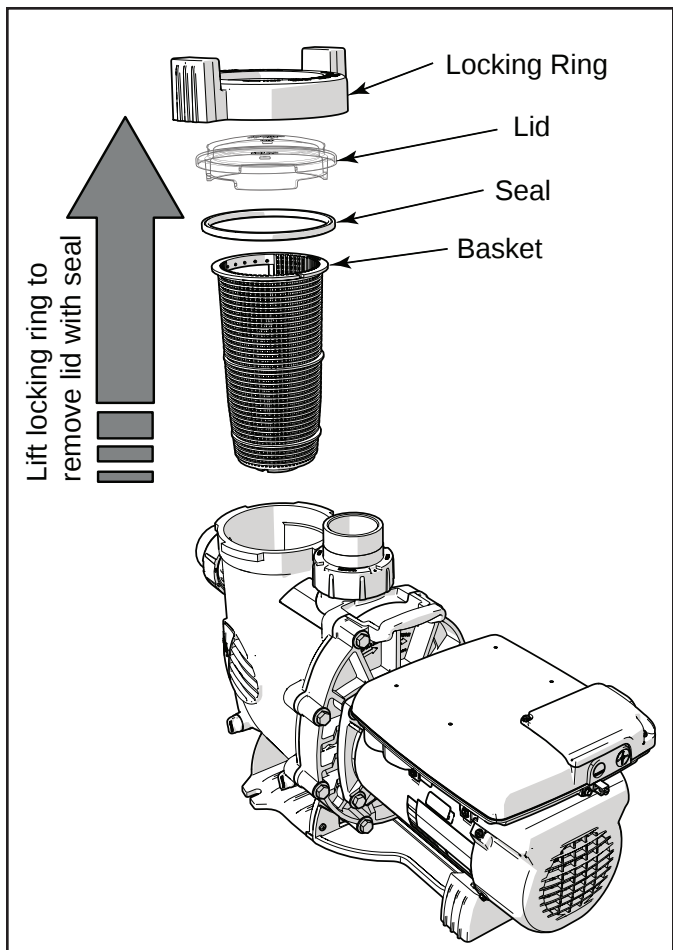


Figure 11. Remove Pump Lid

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Due to the potential risk of fire, electric shock, or injuries to persons, Zodiac® Pumps must be installed in accordance with the National Electrical Code® (NEC®), all local electrical and safety codes, and the occupational Safety and Health Act (OSHA). Copies of the NEC may be ordered from the National Protection Association, 470 Atlantic Ave., Boston, MA 02210, or from your local government inspection agency.

In Canada, Zodiac Pumps must be installed in accordance with the Canadian Electrical Code (CEC).

3. Make sure all necessary isolation valves are closed to prevent pool water from reaching the pump. If the pump is installed below water level, ensure all necessary isolation valves are closed to prevent pool water from reaching the pump.
4. Turn the locking ring counter-clockwise until the 'START' markings align with the ports. See Figure "Figure 10. Disengage Lock Ring"
5. Carefully lift to remove the lid with locking ring.

4.2 Conduct Pressure Test

⚠ WARNING

When pressure testing a system with water, air is often trapped in the system during the filling process. This air will compress when the system is pressurized. Should the system fail, this trapped air can propel debris at a high speed and cause injury. Every effort to remove trapped air must be taken, including opening the bleed valve on the filter and loosening the pump basket lid while filling the pump.

⚠ WARNING

Trapped air in the system can cause the filter lid to be blown off, which can result in death, serious injury, or property damage. Be sure all air is properly purged out of the system before operating. **DO NOT USE COMPRESSED AIR TO PRESSURE TEST OR CHECK FOR LEAKS.**

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Do not pressure test above 35 PSI. Pressure testing must be done by a trained pool professional. Circulation equipment that is not tested properly might fail, which could result in severe injury or property damage.

⚠ WARNING

When pressure testing the system with water, it is very important to make sure that the pump basket lid is completely secure.

1. Fill the system with water, being careful to eliminate trapped air.
2. Pressurize the system with water to no more than **35 PSI**.
3. Close the valve to trap pressurized water in the system.
4. Carefully observe the system for leaks and/or pressure decay.

4.3 Start-up

⚠ CAUTION

Never run the pump without water. Running the pump "dry" for any length of time can cause severe damage to both the pump and motor and will void the warranty.

If this is a new pool installation, make sure all piping is clear of construction debris and has been properly pressure tested. Check the filter for proper installation, verifying that all connections and clamps are secure according to the manufacturer's recommendations.

⚠ WARNING

To avoid risk of property damage, severe personal injury or death, verify that all power is turned off before starting this procedure.

1. Release all pressure from the system and open the filter pressure release valve.

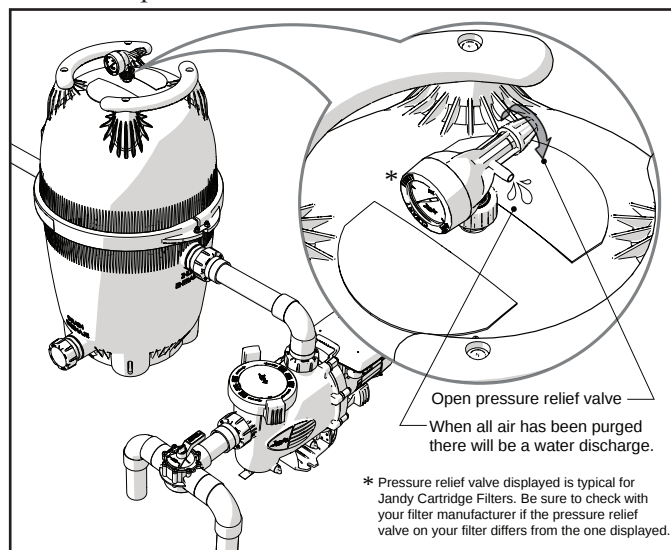


Figure 12. Purge Air from system

2. Take one of the following actions:
 - a. If the pump is located below the water level of the pool, open the filter pressure release valve to prime the pump with water.
 - b. If the pump is located above the water level, remove the lid and fill the basket with water before starting the pump.
3. Prior to replacing the lid, check for debris around the lid o-ring seat. Debris around the lid o-ring seat will cause air to leak into the system, and make it difficult to prime the pump.
4. **Hand-tighten** the lid to make an air tight seal. **Do not use any tools to tighten the lid: hand-tighten only.** Ensure that the lid is secure. Make sure all valves are open and the unions are tight.
5. Restore power to the pump and then turn it on.
6. Once all the air has left the filter, close the filter pressure release valve.
7. The pump should prime. The time it takes to prime will depend on the elevation and length of pipe used on the suction supply pipe. If the pump does not prime and all the instructions to this point have been followed, check for a suction leak. If there is no leak, repeat Steps 2 through 7.
8. For technical assistance, call Zodiac® Technical Support at 1.800.822.7933.

Section 5. Maintenance

5.1 Routine Maintenance

⚠ CAUTION

To avoid damage to the plastics, do not use lubricant or sealant on the o-ring. Only soapy water should be used to install and lubricate the o-ring.

Inspect the pump basket for debris by looking through the clear pump lid. As debris accumulates, it will begin to block the flow of water through the pump. Keep the basket clean to improve the performance of the pump.

1. Turn off the power to the pump. If the pump is located below the water level, close the isolation valves on the suction and discharge sides of the pump to prevent backflow of water.
2. Turn the lid's locking ring counter-clockwise until 'START' aligns with the ports. Carefully remove the lid.

⚠ CAUTION

A misaligned basket will cause the lid to be improperly seated, allowing an air leak, which could result in pump damage.

3. Lift the basket out of the pump. Dispose of all debris and thoroughly clean the basket, making sure all the holes are open. Using a garden hose, spray the basket from the outside to help clear the holes. Remove any remaining debris by hand.
4. Replace the basket in the pump by aligning the open section of the basket with the inlet pipe. If aligned properly, the basket will drop easily into place. **Do not force it into place.**
5. Remove the lid o-ring and remove debris around the lid o-ring seat, as this will cause air leaks into the system. Clean the lid o-ring and replace it.

NOTE Make sure the lid seal is correctly oriented.

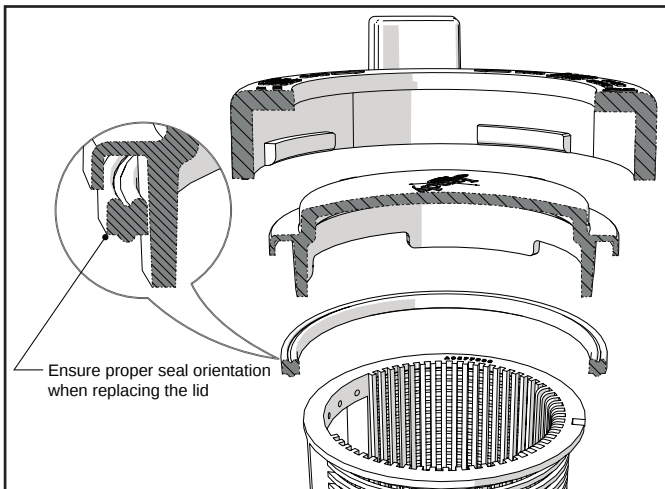


Figure 13. Replace Lid and Seal

6. Replace the lid with locking ring on the pump housing. Align 'START' with the ports and turn the lid's locking ring clockwise until 'LOCKED' aligns with the ports. **Hand-tighten** the lid to make an air tight seal. **Do not use any tools to tighten the lid.**
7. Verify that all valves have been returned to the proper position for normal operation.
8. Open the pressure release valve on the filter, and make sure it is clean and ready for operation.
9. Turn on the power to the pump. Once all the air has been evacuated from the filter, close the filter pressure release valve.

5.2 Winterizing the Pump

⚠ CAUTION

The pump **must** be protected when freezing temperatures are expected. Allowing the pump to freeze will cause severe damage and void the warranty.

⚠ CAUTION

Do not use antifreeze solutions in the pool, spa, or hot tub systems! Antifreeze is highly toxic and may damage the circulation system. The only exception to this is Propylene Glycol. For more information see your local pool/spa supply store or contact a qualified swimming pool service company.

1. Drain **all** water from the pump, system equipment, and piping.
2. Remove the two (2) drain plugs. Store the drain plugs in a safe location and reinstall them when the cold weather season is over. **Do not lose the o-rings.**
3. Keep the motor covered and dry. Do not cover it with plastic, as this will create condensation and this moisture will damage the pump.

NOTE To protect your pump, Zodiac Pool Systems, Inc. recommends having a qualified service technician or electrician properly disconnect the electrical wiring at the switch or junction box. Once the power is removed, the two (2) unions can be loosened and the pump stored indoors. For safety, and to prevent entry of contaminants, reinstall all conduit and terminal box covers.

4. When the system is reopened for operation, make sure all piping, valves, wiring, and equipment are in accordance with the manufacturer's recommendations. Pay close attention to the filter and electrical connections.
5. The pump must be primed prior to starting; refer to "4.3 Start-up"

Section 6. Troubleshooting and Repair

Zodiac® strongly recommends that you call a qualified service technician to perform any repairs on the filter/pump system. To locate a qualified technician, check your local yellow pages or visit www.zodiacpoolsystems.com or www.zodiacpoolsystems.ca and click on “Dealer Locator.”

Symptom	Possible Cause/Solution
Reduced flow being returned to pool and/or less water being pulled in by skimmer.	Verify that skimmer baskets, pump basket and other screens are clean. Clean as necessary. Check filter and clean as necessary. Check valve positions. Adjust as necessary. NOTE Multiple pieces of equipment operating at one time (for example, waterfalls, spa jets, and surface returns) will affect the proper operation of the cleaning system. Check the cleaning system manual to ensure that the system is adjusted according to the manufacturer's recommendations.
Bubbles are present in the pump basket.	Air is in the system. Check the pool or spa water level to ensure that it is at the proper level and air is not being drawn into the suction piping. If the water is at the normal level, turn off the pump. Turn the lid's locking ring counter-clockwise until 'START' aligns with the ports. Remove the lid and check for debris around the lid seal seat OR improper installation of the lid seal, as either condition will allow air to leak into the system. Clean the lid seal and replace it on the lid. Replace the lid on the pump housing. Align 'START' with the ports and turn the locking ring clockwise until 'LOCKED' aligns with the ports. Hand-tighten the lid to make an air-tight seal. Do not use any tools to tighten the lid. Turn the pump back on.
Air leaks are still present.	Check the suction side piping union. While the pump is running, try to tighten the union. If this does not stop the air leak, turn off the pump. Loosen both unions and slide the pump out of the way. Remove, clean, and re-install both union o-rings. Reposition the pump next to the piping and secure the union nuts to the pump. With clean union o-rings, hand-tightening of the unions should create a seal. If the unions still do not seal, gently tighten with a large pair of tongue-and-groove pliers. Do not over-tighten.
There is no air in the system, but the pressure is still low.	It is possible that debris is caught in the pump impeller. The pump impeller moves the water, and the vanes in the impeller can become blocked with debris.

Symptom	Possible Cause/Solution
There is no debris blocking the impeller and the pressure is still low.	The pump impeller and diffuser are showing signs of normal wear. Have a qualified service technician check the impeller and diffuser and replace as necessary. If the pump is part of a relatively new installation, it could be an electrical problem. Contact a qualified service technician. Have the technician check for loose electrical connections and check the voltage at the pump motor while it is in operation. The voltage must be within 10% of the motor's data plate rating. If the voltage is not within 10%, contact a qualified electrician and/or the local power service provider. Pump seal is leaking air. Have a qualified service technician replace the seal.
The pump is leaking water between the motor and pump body.	This is caused by a damaged or failed mechanical seal. Replace the seal.
The pump gets hot and shuts off periodically.	Make sure that there is adequate room around the motor to circulate air and keep the motor cool. Have a qualified electrician check for loose connections and check the voltage at the pump motor while it is in operation. The voltage must be within 10% of the motor's data plate rating. If the voltage is not within 10%, contact a qualified electrician and/or the local power service provider.
Pump will not start.	No power to pump. Make sure pump is properly connected to high voltage. See “3.2 <i>Electrical Installation</i> ”
	Improper low-voltage wiring. Check low-voltage wiring between pump and controller. Correct if necessary. See “3.2 <i>Electrical Installation</i> ”
	Improper pump address setting. Make sure that pump dip switches 3 and 4 are set properly for the installation. Both should be OFF for use with Variable-Speed Controller or set to the proper address when connected to an AquaLink® RS controller, an AquaLink PDA, or an AquaLink Z4. See “3.2.4.1 <i>Install with AquaLink® controller</i> ”
	Fault condition exists. View fault message on controller and correct fault before proceeding. If unsure how to correct fault, contact Zodiac® Technical Support at 800.822.7933.

Symptom	Possible Cause/Solution
Variable-Speed Controller LCD is not displaying information or pump LEDs are not illuminated.	Incorrect dip switch setting. Make sure pump dip switches 1 and 2 are both ON if the controller is the JEP-R and both are OFF if the controller is a PDA, AquaLink RS, or AquaLink Z4. See <i>"3.2.4.1 Install with AquaLink® controller"</i>
	Improper low-voltage wiring. Check low-voltage wiring between pump and controller. Correct if necessary. See <i>"3.2 Electrical Installation"</i>

Symptom	Possible Cause/Solution
Controller displays "Pump not connected".	Improper low-voltage wiring. Check low-voltage wiring between pump and controller. Correct if necessary. See <i>"3.2 Electrical Installation"</i>
	Improper pump address set. Ensure pump dip switches 3 and 4 are set properly for the installation. Both should be OFF for use with Variable-Speed Controller or set to the proper address when connected to an AquaLink RS, AquaLink PDA, or an AquaLink Z4. See <i>"3.2.4.1 Install with AquaLink® controller"</i>
Fault message appears on controller display.	Fault condition exists. View fault message on controller and correct fault before proceeding. If unsure how to correct fault, contact Zodiac Technical Support at 800.822.7933.

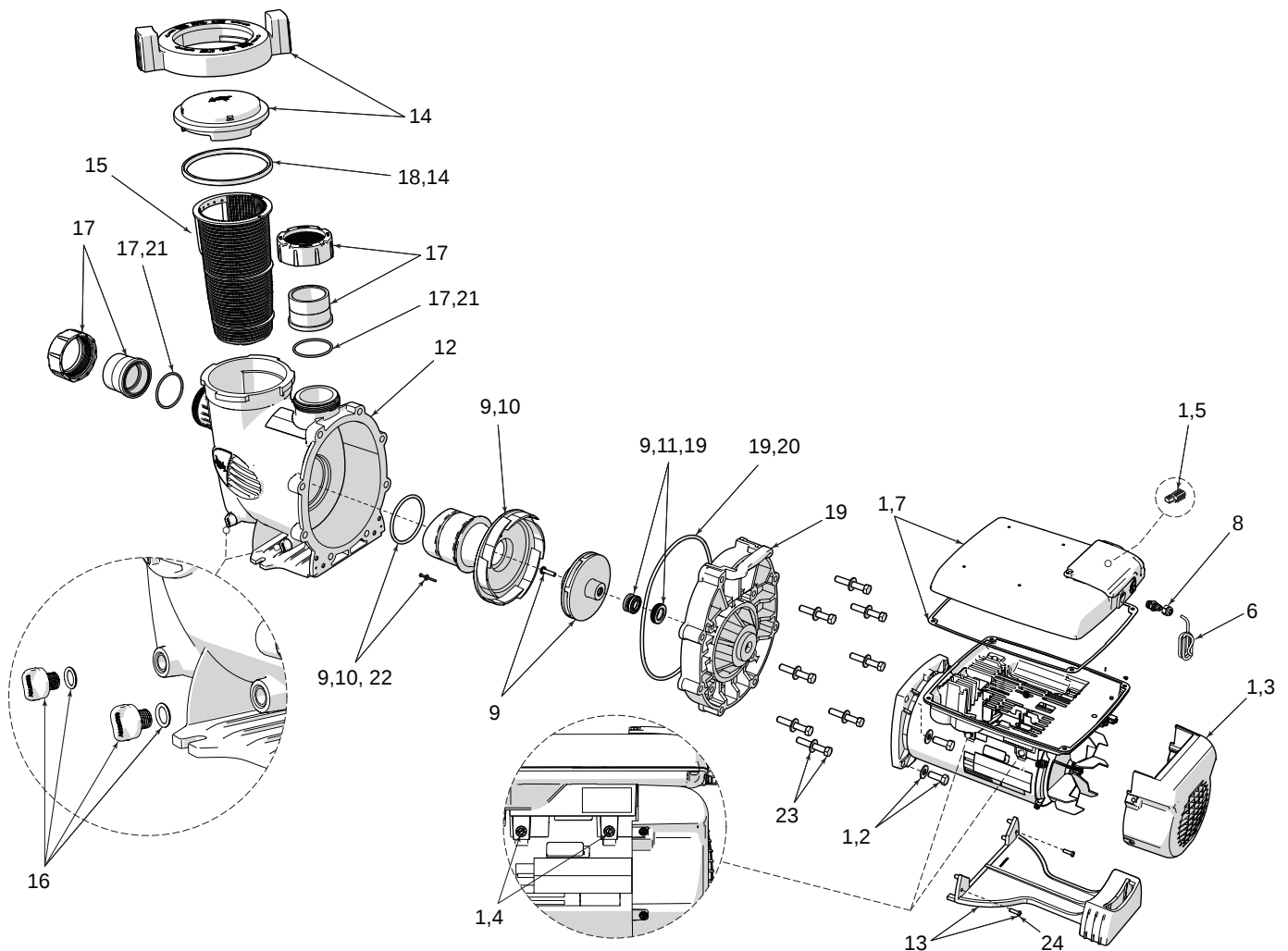
Section 7. Product Specifications and Technical Data

7.1 Replacement Parts List

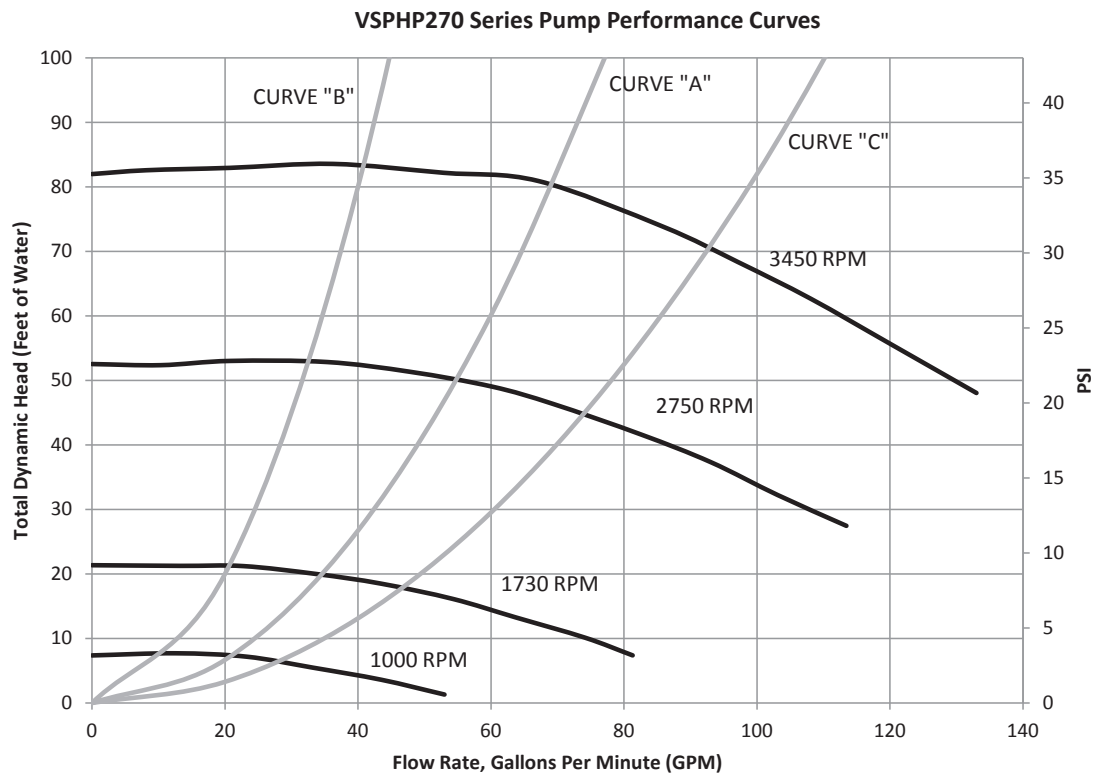
To order or purchase parts for Zodiac® pumps, contact your nearest Zodiac dealer. If the Zodiac dealer cannot supply you with what you need, contact Zodiac technical support at 1.800.822.7933, or send an e-mail message to productsupport@zodiac.com.

Key No.	Description	Order Part No.	Key No.	Description	Order Part No.
1	Motor, Drive	R0562201	13	Motor Mounting Foot Assembly w/Screws	R0445700
2	Motor Hardware Kit	R0446700	14	Locking Ring w/Lid & Seal	R0448800
3	Cover Fan, GEN II Replacement Kit (Hardware, Cover)	R0562400	15	Pump Debris Filter Basket	R0448900
4	Hardware Speed Drive, GEN II	R0562500	16	Drain Plug w/O-ring	R0446000
5	Connector, Speed Drive, (4-Pin Connector)	R0660900	17	Tail Piece (2" x 2½") w/O-ring & Coupling Nut (Set of 2)	R0449000
6	Cable, RS-485, Replacement Kit*	R0535100	18	Lid Seal and Lid O-ring (Lid O-ring Not Shown)	R0449100
7	Cover, Large, Speed Drive w/Gasket, GEN II	R0562300	19	Backplate Kit w/Hardware and Mechanical seal	R0445200
8	Data Cable, Feed Thru	R0501100	20	O-ring, Backplate	R0446300
9	Impeller & Diffuser w/ Screw w/O-ring, PHPM	R0445305	21	O-ring, Tail Piece	R0449200
10	Diffuser w/O-ring & Hardware	R0445400	22	Diffuser/Impeller w/O-rings & Mounting Hardware	R0446500
11	Mechanical Seal (Carbon and Ceramic)	R0479400	23	Backplate Bolts & Washers	R0446600
12	Pump Body	R0448700	24	Screws, Motor Mounting Foot	R0446800

7.2 Exploded View



7.3 Performance Curves

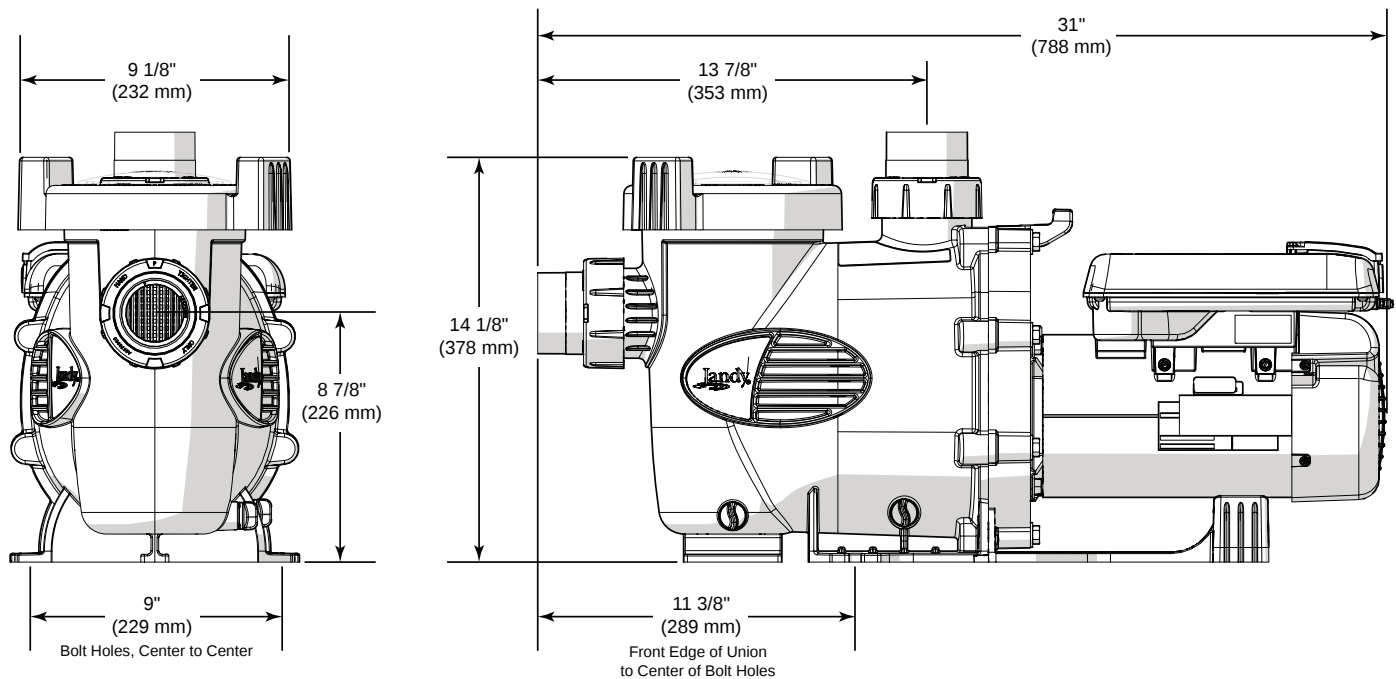


7.4 Physical and Operational Specifications

7.4.1 Pump Specifications

Model No.	HP	Voltage	Max Watts	Pipe Size	Carton Weight	Overall Length 'A'
VSPHP270	0.25 - 2.7	230 VAC	2,250W	2½" - 3"	50 lbs.	30 3/8"

7.4.3 PHP Pump Dimensions



NOTES

Zodiac Pool Systems, Inc.
2620 Commerce Way, Vista, CA 92081
1.800.822.7933 | www.ZodiacPoolSystems.com

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CONFORMS TO UL 1081
CERTIFIED TO CSA C22.2 NO 108

