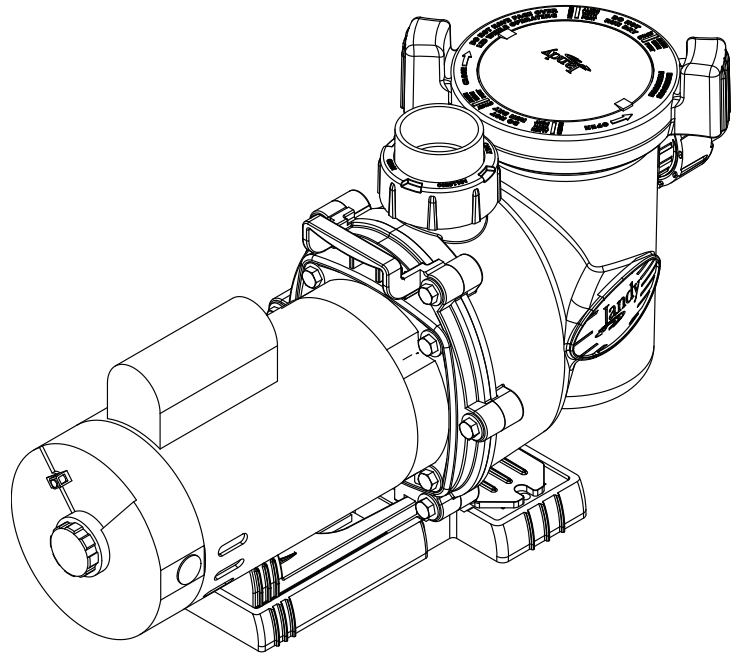




Installation and Operation Manual

FloPro Series Pumps

Model FHPM



WARNING

FOR YOUR SAFETY: This product must be installed and serviced by a professional service technician, qualified in pool/spa installation. The procedures in this manual must be followed exactly. Improper installation and/or operation can create dangerous electrical hazards, which can cause high voltages to run through the electrical system, possibly causing death, serious injury or property damage. Improper installation and/or operation will void the warranty.



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.

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EQUIPMENT INFORMATION RECORD

DATE OF INSTALLATION _____

INSTALLER INFORMATION _____

INITIAL PRESSURE GAUGE READING (WITH CLEAN 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 AND/OR DEATH. Do not block pump suction, as this can cause severe injury and/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. Drain covers must be certified to the latest published version of ANSI/ASME A112.19.8.

WARNING

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

WARNING

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

WARNING

Jandy 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

Due to the potential risk of fire, electric shock, or injuries to persons, Jandy 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, 470 Atlantic Ave., Boston, MA 02210, or received by contacting your local government inspection agency.

WARNING

Incorrectly installed equipment may fail, causing severe injury and/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 the system can cause the pump and/or filter lid to be blown off. This can result in death, serious personal injury, and/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.

Jandy 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 make sure 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 the system to make sure it is ready for operation.

Notice: These parameters apply to Jandy equipment only. For non-Jandy equipment, consult the equipment manufacturer.

⚠ WARNING

Chemical spills and fumes can weaken pool/spa equipment. Corrosion can cause filters and other equipment to fail, resulting in severe personal 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

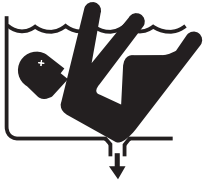
This pump is for use with permanently installed pools and may also be used with hot tubs and spas, if so marked. Do not use with storable pools. A permanently installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is 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, spas, 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) covers must be maintained. Drain covers must be listed/certified to the latest version of ANSI/ASME A112.19.8. They must be replaced if cracked, broken, or missing.

Number of Suction Outlets Per Pump - Provide at least two (2) 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 3 feet apart, center to center. See Figure 1 on page 7. For additional details and guidelines, refer to ANSI/APSP 7, the standard for *Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins*.

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 1 on page 7.

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 fitting or cover for any suction outlet must be 1.5 feet per second, unless the outlet complies with the latest published version of ANSI/ASME A112.19.8, the standard for *Suction Fittings For Use in Swimming and Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*. In any case, do not exceed the suction fitting's maximum designed flow rate.

If 100% of the pump's flow comes from the main drain system, the maximum water velocity in the pump suction hydraulic system must be 6 feet 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 published version of ANSI/ASME A112.19.8, the standard for *Suction Fittings For Use in Swimming and Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*.

Testing and Certification - Suction outlet covers must have been tested by a nationally recognized testing laboratory and found to comply with the latest published version of ANSI/ASME A112.19.8, the standard for *Suction Fittings For Use in Swimming and Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*.

Fittings - Fittings restrict flow; for best efficiency use the fewest possible fittings (but at least two (2) suction outlets).

Avoid fittings that could cause an air trap.

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

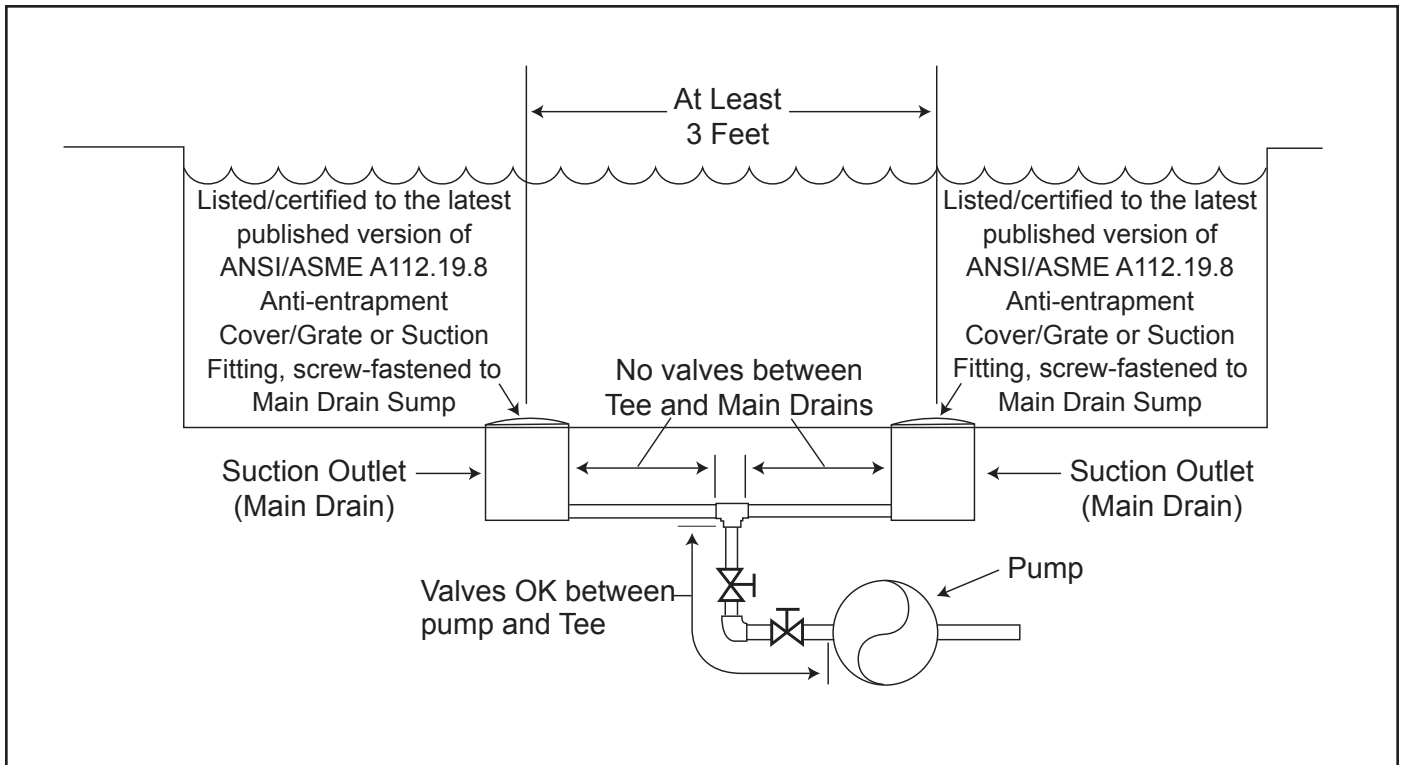


Figure 1. Number of Suction Outlets Per Pump

Section 2. General Description

2.1 Introduction

This manual contains information for the proper installation, operation, and maintenance of Jandy FloPro (FHP) Series Pumps, Model FHPM. Procedures in this manual must be followed exactly. To obtain additional copies of this manual, contact Jandy Customer Service at 1.800.822.7933. For address information, see the back cover of this manual.

2.2 Description

Jandy FHP Pumps are designed to meet the needs of today's more hydraulically demanding pool equipment. The pump housing, backplate, diffuser, impeller, and hair-and-lint pot (pump debris filter basket) are all made from high quality thermoplastic materials. These materials were chosen for their strength and corrosion resistance.

The pump is driven by an electric motor directly attached to the pump impeller. As the electric motor turns, it causes the impeller to turn, which forces water to flow through the pump. The water flows through the pump inlet and then into the filter basket. The basket assembly pre-strains/traps large particles. The water then enters the center of the pump housing, flows through the impeller into the diffuser, and then flows out the pump discharge port.

Section 3. Installation

3.1 Plumbing

3.1.1 Preparation

1. Upon receipt of the pump, check the carton for damage. Open the carton and check the pump 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 *Section 7.1, Replacement Parts List*.

3.1.2 Pump Location

1. Zodiac Pool Systems, Inc. recommends installing the pump within 1 foot above water level. The pump should not be elevated more than a few feet above the water level of the pool. A check valve is recommended on the suction line to the pump.

NOTE Better self-priming will be achieved if the pump is installed 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 the back flow of pool water during any routine or required servicing.

WARNING

Some Safety Vacuum Release System (SVRS) devices are not compatible with installation of check valves. If the pool has an SVRS device, be sure to confirm that it will continue to safely operate when any check valves are installed.

3. Zodiac Pool Systems, Inc. recommends that the pump and other circulation equipment be located more than 5 feet from the water. Choose a location that will minimize turns in the piping.

NOTE In Canada, the pump must be located a minimum of 3 meters (approximately 10 feet) from the water (CSA C22.1).

4. The pump must be placed on a solid foundation that will not vibrate. To further reduce the possibility of vibration noise, bolt the pump to the foundation, or place it on a rubber mat.

NOTE Zodiac Pool Systems, Inc. recommends bolting the pump directly to the foundation.

5. The pump foundation must have adequate drainage to prevent the motor from getting wet. Protect the pump from the rain and sun.
6. Proper ventilation is required for the pump to operate normally. All motors generate heat that must be removed by providing proper ventilation.
7. 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 for cleaning.
8. If the equipment is under cover, provide adequate lighting.

3.1.3 Replacement of Existing Pump

Jandy FHP pumps can easily replace several other pumps: the Hayward® Super Pump®, Pentair® SuperFlo®, Pentair® WhisperFlo®, Jandy PlusHP (PHP), and Jandy MaxHP (MHP).

To replace the Pentair® WhisperFlo®, Jandy PHP, or Jandy MHP, use the FHP's adjustable base. The FHP base (and its spacers) increase the total height of the pump and the height of the suction side of the pump. See Table 1.

Table 1. FHP Dimensions

Base Configuration	Suction Side Height	Pump Height
Pump without Base	7 3/4"	12 3/4"
Pump with Base	8 7/8"	13 7/8"
Pump with Base and Spacers	9 1/8"	14 1/8"

3.1.3.1 Hayward® Super Pump® and Pentair® SuperFlo®

The Jandy FHP can replace a Hayward® Super Pump® or a Pentair® SuperFlo® without using the FHP base. See Figure 2.

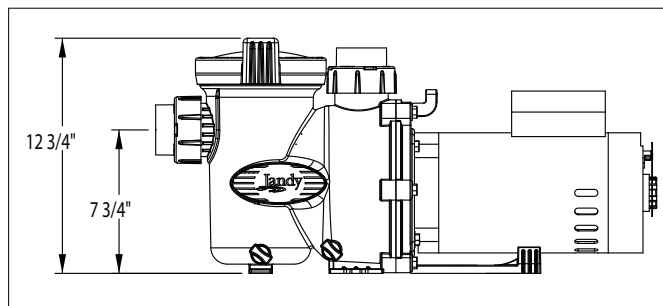


Figure 2. Place FHP Directly on Equipment Pad

3.1.3.2 Pentair® WhisperFlo® Pump

To replace a Pentair® WhisperFlo® pump with a Jandy FHP, place the FHP base on the equipment pad and place the FHP on the base, as shown in Figure 3.

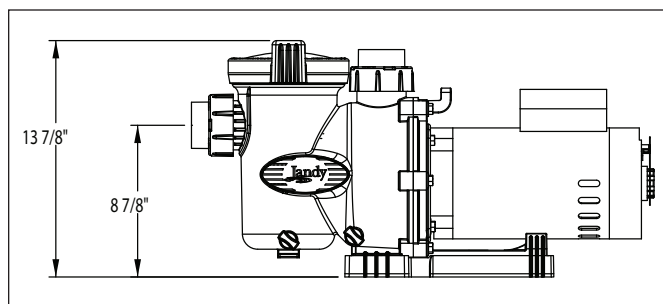


Figure 3. Place FHP with Base on Equipment Pad

Hayward and Super Pump are registered trademarks of Hayward Industries, Inc.

Pentair is a registered trademark of Pentair, Inc.

SuperFlo and WhisperFlo are registered trademarks of Pentair Water Pool and Spa, Inc.

3.1.3.3 Jandy PlusHP (PHP) and Jandy MaxHP (MHP)

To replace a Jandy PHP or Jandy MHP pump with a Jandy FHP, use the FHP base with spacers.

1. Using a hand cutter tool, cut the plastic bars connecting the top and bottom sets of spacers, as shown in Figure 4.
2. Push the two (2) top spacers and two (2) bottom spacers out of the base.
3. Align the pins in the four (4) spacers with the holes in the base and snap the spacers into place, as shown in Figure 5.
4. Place the FHP on the base assembly. See Figure 6.

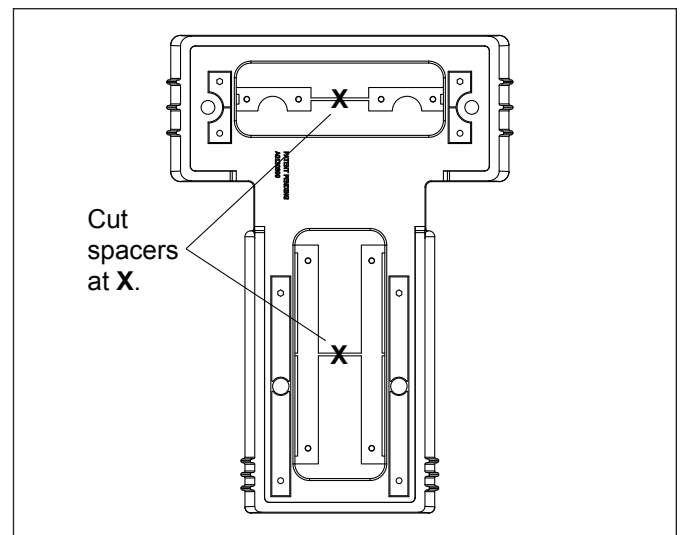


Figure 4. Cut Sets of Spacers Out of Base

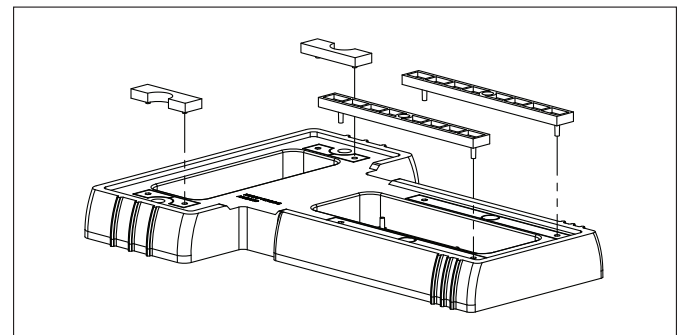


Figure 5. Snap Spacers into Place

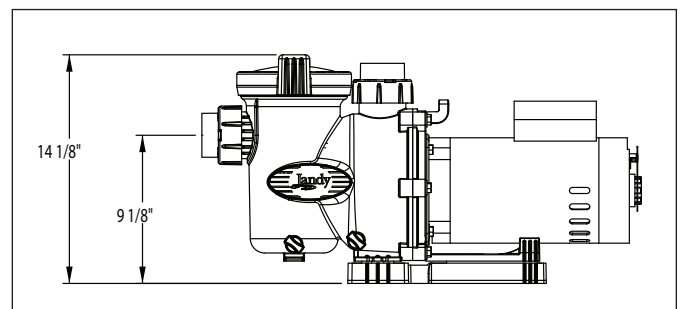


Figure 6. Place FHP with Base and Spacers on Equipment Pad

3.1.4 Pipe Sizing

3.1.3.1 Suction Pipe

When the pump is located up to 50 feet from the pool, the recommended Schedule 40 minimum pipe size for the suction side of the pump is 1½" for .75 HP and 2" for 1 to 2 HP. For 2.5 HP pumps, the recommended pipe size is 2½".

3.1.3.2 Discharge Pipe

When the pump is located up to 50 feet from the pool, the recommended Schedule 40 minimum pipe size for the discharge side of the pump is 1½" for .75 HP and 2" for 1 to 2 HP. For 2.5 HP pumps, the recommended pipe size is 2½".

NOTE All pipe sizes (Schedule 40) are able to withstand the pressures the pump will deliver, but not necessarily the flow. If the pipe is too small for the pump, or if the pump is elevated above water, the maximum gallons per minute (GPM) may not be delivered. If this happens, the pump will develop an air pocket (cavitation) that will make noise, and the life of the pump may be shortened.

3.1.3.3 Installation Recommendations

1. If the pump is located below water level, isolation valves **must** be installed on both sides of the pump to prevent the back flow of pool water during any routine or required servicing.
2. To help prevent difficulty in priming, install the suction pipe without high points, which can trap air. (High points are inverted 'U's above the inlet of a pump. In plumbing, they are commonly referred to as airlocks.) For installations of equipment up to 100 feet from the water, refer to the pipe sizing chart in Table 2. For installations of equipment more than 100 feet from the water, the recommended pipe size must be increased to the next size.

Table 2. Pipe Sizing Chart for Schedule 40 PVC

Pipe Size	Maximum Flow Suction (8 feet per second)	Maximum Flow Discharge (10 feet per second)
1½"	50 GPM (189 LPM)	65 GPM (246 LPM)
2"	85 GPM (322 LPM)	105 GPM (397 LPM)
2½"	120 GPM (454 LPM)	149 GPM (564 LPM)

3. FHP Pumps come equipped with unions on both the suction and discharge ports. This feature simplifies installation and service, and it eliminates the possibility of leaks at threaded adapters.

4. The FHP Pump must be connected to at least two (2) main drains (suction outlets) for each pool pump suction line. Each drain must be provided with covers that are listed or certified to the latest published version of ANSI/ASME A112.19.8. The suction outlets of the main drains must be at least 3 feet apart or at different planes. The suction outlets can be a drain and skimmer, two (2) drains, two (2) skimmers, or a skimmer with an equalizer line installed. For additional details and guidelines, refer to ANSI/APSP 7, the standard for *Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins*. Check the local codes for proper installation requirements. Applicable local codes will take precedence over other codes.

NOTE To prevent entrapment, the system must be built so that 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. 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.

5. The piping must be well supported and not forced together in places where constant stress will be experienced.
6. Always use properly sized valves. Jandy Diverter Valves and Jandy Ball Valves typically have the best flow capabilities.
7. Use the fewest fittings possible. Every additional fitting has the effect of moving the equipment farther away from the water.

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

8. Every new installation must be pressure tested according to local codes. See *Section 3.3, Pressure Testing*.

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. The incorrect voltage will decrease the pump's ability to perform and can cause overheating, reduce the motor life, and result in higher electric bills.

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

CAUTION

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

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.

3.2.2 Bonding and Grounding

1. The motor frame must be grounded to a reliable grounding point using a solid copper conductor, No. 8 AWG or larger. In Canada, No. 6 AWG or larger must be used. If the pump is installed within 5 feet of the inside walls of the swimming pool, spa, or hot tub, the motor frame must be bonded to all metal parts of the swimming pool, spa, or hot tub structure and to all electrical equipment, metal conduit, and metal piping within 5 feet of the inside walls of the swimming pool, spa, or hot tub.
2. Bond the motor using the provided external lug.

⚠ WARNING

To avoid the risk of property damage, severe personal injury, and/or death, always disconnect the power source before working on a motor or its connected load.

⚠ WARNING

To avoid the risk of property damage, severe personal injury, and/or death, make sure that the control switch or time clock is installed in an easily accessible location, so that in the event of an equipment failure or a loose plumbing fitting, the equipment can be easily turned off.

3.2.3 Electrical Wiring

⚠ WARNING

To avoid risk of property damage, severe personal injury, or death, always ground before connecting to an electrical power supply.

1. 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.**
2. Wire size must be adequate to minimize a voltage drop during the start-up and operation of the pump. See Table 3 for suggested wire sizes.
3. Insulate all connections carefully to prevent grounding or short-circuits. Provide extra protection for sharp edges on terminals. To prevent wire nuts from loosening, tape them using a suitable, listed (UL, ETL, CSA) electrical insulating tape. For safety, and to prevent entry of contaminants, reinstall all conduit and terminal box covers. **Do not force connections into the conduit box.**
4. To configure the internal wiring of the pump motor for the correct voltage, refer to the diagram on the motor data plate.

Table 3. Recommended Minimum Wire Size for FHP Pumps

RECOMMENDED MINIMUM WIRE SIZE (AWG) FOR FHP PUMPS*										
Distance from Sub-Panel			0-50 Feet		50-100 Feet		100-150 Feet		150 Feet-200 Feet	
Model	Branch Fuse AMPS Class: CC, G, H, J, K, RK, or T		Voltage		Voltage		Voltage		Voltage	
	230 VAC	115 VAC	230 VAC	115 VAC	230 VAC	115 VAC	230 VAC	115 VAC	230 VAC	115 VAC
FHPM 0.75HP	15A	15A	14	12	12	8	10	6	8	6
FHPM 1.0HP	15A	20A	14	10	10	8	8	6	8	4
FHPM 1.5HP	15A	20A	12	10	10	6	8	6	6	4
FHPM 2.0HP	15A	20A	12	8	8	6	6	4	6	3
FHPM 2.5HP	15A	N/A	12	N/A	8	N/A	6	N/A	6	N/A
FHPM 1.0HP-2-Speed	15A	N/A	14	N/A	10	N/A	8	N/A	8	N/A
FHPM 1.5HP-2-Speed	15A	N/A	12	N/A	10	N/A	8	N/A	6	N/A
FHPM 2.0HP-2-Speed	15A	N/A	12	N/A	8	N/A	6	N/A	6	N/A

*Assumes three (3) copper conductors in a buried conduit and 3% maximum voltage loss in branch circuit. All National Electrical Code (NEC) and local codes must be followed. Table shows minimum wire size and branch fuse recommendations for a typical installation per NEC.

3.3 Pressure Testing

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 property damage, severe injury, or death. 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 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 properly out of system before operating. **DO NOT USE COMPRESSED AIR TO PRESSURE TEST OR CHECK FOR LEAKS.**

WARNING

Do not pressure test above 35 PSI. Pressure testing must be done by a trained pool professional. Circulation equipment that is not tested properly may fail. This could result in severe personal 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.

Section 4. Operation

4.1 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.
2. Take one of the following actions:
 - If the pump is located below the water level of the pool, open the filter pressure release valve to prime the pump with water.
 - 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. See *Section 3.1.3.3, Installation Recommendations* for proper elevation and pipe size.
8. 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.
9. For technical assistance, call Jandy Technical Support at 1.800.822.7933.

Section 5. Service and Maintenance

5.1 Routine Maintenance

⚠ WARNING

To avoid the risk of property damage, severe personal injury, and/or death, turn off the pump and switch off the circuit breaker to the pump motor before servicing the pump.

Inspect the pump basket for debris by looking through the clear pump lid. Remove any debris, because 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.
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 *Section 4.1, Start-up*.

Section 6. Troubleshooting and Repair

Zodiac Pool Systems, Inc. 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.jandy.com and click on “Product Support.”

6.1 Troubleshooting

Symptom	Possible Problem/Solution
The cleaning/circulating system is not operating correctly.	<p>Verify that skimmer baskets, pump basket and other screens are clean. Clean as necessary.</p> <p>Check filter and clean as necessary.</p> <p>Check valve positions. Adjust as necessary.</p> <p>NOTE Multiple pieces of equipment operating at one time (for example, waterfalls, spa jets, and surface returns) may affect the cleaning system and prevent it from working properly.</p> <p>Check the cleaning system manual to ensure that the system is adjusted according to the manufacturer's recommendations.</p>
Bubbles present in the pump basket.	<p>Air in system. Check the pool or spa water level to ensure that it is at the proper level and that 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. Carefully remove the lid and check for debris around the lid o-ring seat, as debris will cause air to leak into the system. Clean the lid o-ring and place on the lid. 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. Turn the pump back on.</p>
Air leaks are still present.	<p>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.</p> <p>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.</p> <p>Do not over-tighten.</p>
There is no air in the system, but the pressure is still low.	<p>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. See <i>Section 6.2, Service Technician Maintenance, 6.2.1, Blocked Impeller</i>, for more information.</p>
There is no debris blocking the impeller and the pressure is still low.	<p>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.</p> <p>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.</p> <p>The pump seal is leaking air. Have a qualified service technician replace the seal.</p>
The pump is leaking water between the motor and pump body.	<p>This is caused by a damaged or failed mechanical seal. Replace the seal. See <i>Section 6.2, Service Technician Maintenance, 6.2.4, Mechanical Seal Replacement</i>.</p>
The pump gets hot and shuts off periodically.	<p>Ensure 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.</p>

6.2 Service Technician Maintenance

⚠ WARNING

This pump must be serviced by a professional service technician, qualified in pool/spa installation. The following procedures must be followed exactly. Improper installation and/or operation can create dangerous electrical hazards, which can cause high voltages to run through the electrical system. This can cause property damage, serious injury, and/or death. Improper installation and/or operation will void the warranty.

6.2.1 Blocked Impeller

⚠ WARNING

Before servicing the pump, turn off the pump and switch off the circuit breaker to the pump motor. Severe personal injury, death, or property damage may occur if the pump starts while your hand is inside the pump.

1. Turn off the pump. Switch off the circuit breaker to the pump motor.
2. Remove the lid and basket.
3. Look inside the pump for any debris. Remove any debris found inside.
4. Replace the basket and lid.
5. Switch on the circuit breaker to the pump motor.
6. Turn on the pump, and see if the problem is solved.
7. If the impeller is still blocked with debris and it is not possible to remove the debris using Steps 2 through 4, the pump will need to be disassembled in order to access the inlet and outlet of the impeller.

6.2.2 Impeller Removal

⚠ WARNING

Before servicing the pump, turn off the pump and switch off the circuit breaker to the pump motor. Severe personal injury, death, or property damage may occur if the pump starts while your hand is inside the pump.

1. Turn off the pump. Switch off the circuit breaker to the pump motor. If you are not replacing the motor, do not disconnect the electrical wiring.

NOTE If you are replacing the motor, Zodiac Pool Systems, Inc. strongly recommends that a qualified service technician or electrician properly disconnect the electrical wiring at the pump motor.

2. Turn off any valves to prevent pool water from reaching the pump. Drain the water from the pump by loosening the unions or removing the drain plugs.
3. Using a 9/16" wrench, loosen the bolts connecting the pump body to the motor backplate. See Figure 7.

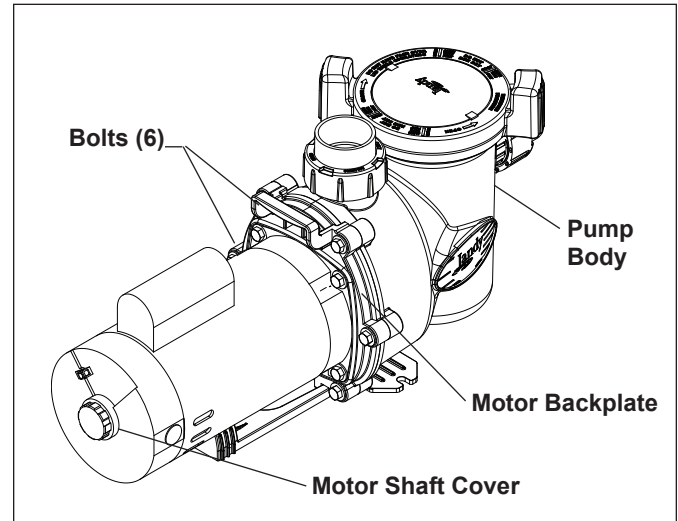


Figure 7. Remove the Pump Housing

4. Pull the motor and backplate out of the pump body. Remove the pump body o-ring. The impeller is connected to the motor shaft.
5. Using a No. 1 Phillips screwdriver, remove the two (2) screws holding the diffuser. (The diffuser is the cover over the impeller). Then remove the diffuser. (See Figure 8.)

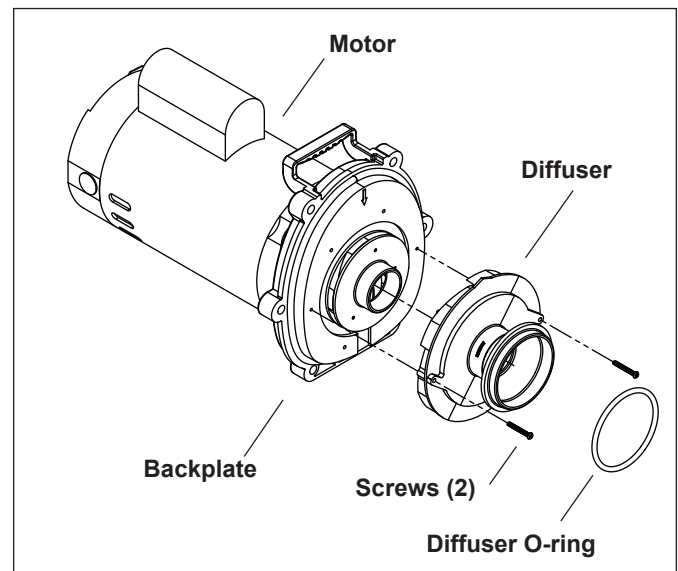


Figure 8. Remove the Diffuser

6. If necessary, remove any debris in the inlet and outlet of the impeller.
7. Remove the motor shaft cover on the back of the motor by twisting the hex-head screw with a 90° crescent wrench. (See Figure 7.) The motor shaft will be exposed.
8. Hold the exposed motor shaft with a ½" wrench and remove the impeller center screw using a No. 2 Phillips screwdriver. Turn the left-hand-threaded screw clockwise to loosen it. See Figure 9.

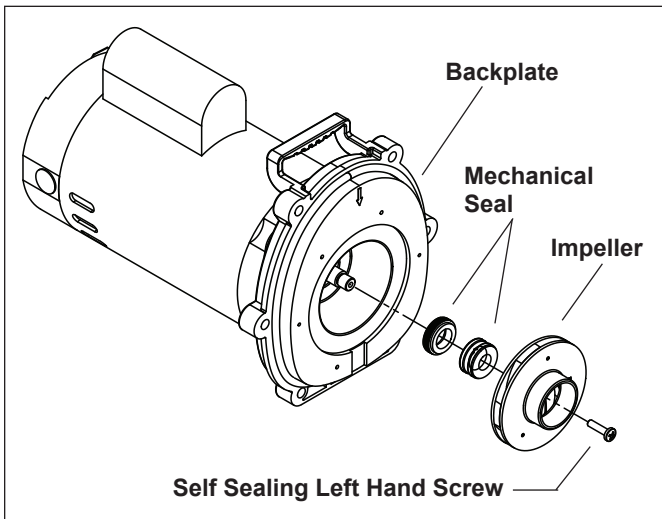


Figure 9. Remove the Impeller

9. Hold the motor shaft with a ½" wrench while unscrewing the impeller from the motor shaft with your hand. Turn the right-hand-threaded impeller counter-clockwise to unscrew it.
10. Inspect the impeller and diffuser for signs of rubbing and/or damage. See Figure 10.

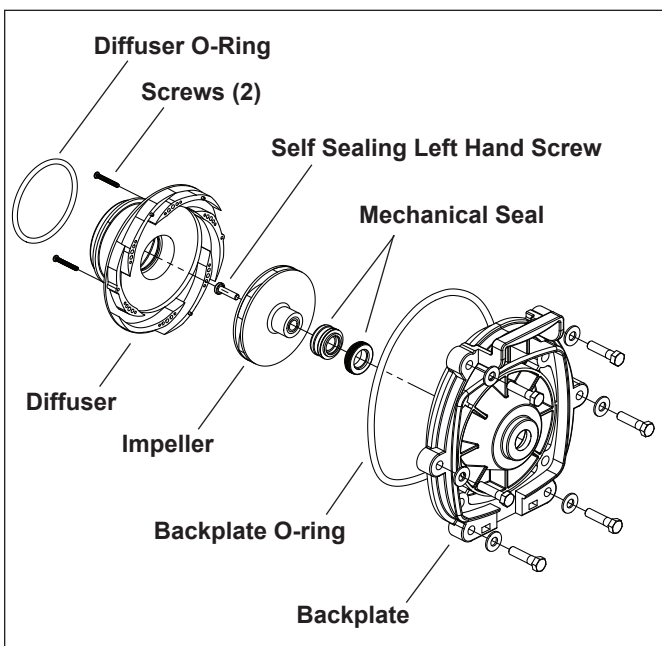


Figure 10. Diffuser and Impeller Exploded View

6.2.3 Impeller Replacement

⚠ WARNING

To avoid the risk of property damage, severe personal injury, or death, turn off the pump and switch off the circuit breaker to the pump motor before beginning this procedure.

1. Press the carbon face seal half (see Figure 11) on the motor shaft using a twisting motion. Make sure the carbon surface is facing toward the ceramic ring in the backplate.

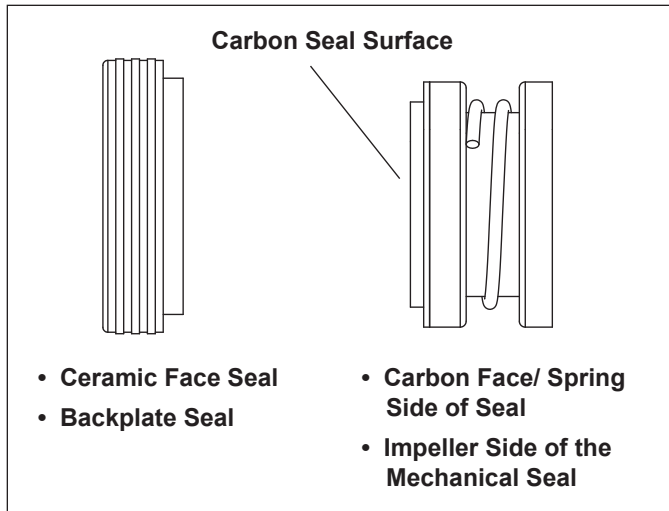


Figure 11. Mechanical Seal

CAUTION

VERY IMPORTANT! Grasp the lower portion of the seal (opposite the carbon face) when installing the seal or it will be damaged.

NOTE To assist assembly, **only** use water or a soap solution as a lubricant. Any other lubricant will destroy the seal after a short period of time.

NOTE Exercise great care to keep the seal and mating parts clean.

2. While holding the motor shaft with a ½" wrench, thread the impeller onto the motor shaft. Hand-tighten the impeller until it is secure. Install the impeller center screw into the center of the impeller and tighten, using a No. 2 Phillips screwdriver. **Do not overtighten.** Turn the left-hand-threaded impeller screw counter-clockwise to tighten it.
3. Replace the motor shaft cover by inserting the cover tabs into the slots and rotating the cover 90° clockwise.
4. Replace the diffuser over the impeller, using care to insert alignment pins into the correct holes. The alignment pins in the diffuser allow the diffuser to be inserted only one (1) way.

5. Replace the two (2) small Phillips-head screws. Tighten the screws to draw the diffuser against the motor backplate.
6. Make sure the diffuser o-ring, o-ring groove, and o-ring seal area are clean and free of debris, which could cause a leak. If you removed the diffuser o-ring during disassembly, re-install it on the diffuser, as shown in Figure 12. If grease is used to retain the diffuser o-ring, it **must be silicone based. Do not use petroleum-based grease. It will destroy the o-ring.**

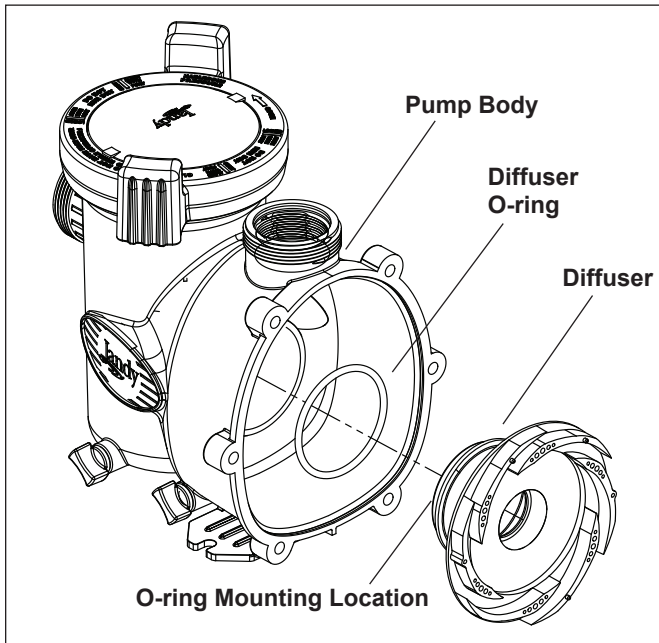


Figure 12. Pump Body and Diffuser Exploded View

7. Slide the diffuser into the mating hole in the pump body. While supporting the motor, start two (2) screws on opposite sides. (This will hold the motor in position while you start the other screws.) Start the other four (4) screws.
8. Tighten all six (6) screws lightly in a crossing “X” pattern using a 9/16” wrench. Start with the inner (middle) two (2), then tighten the outer (top and bottom) four (4) to draw the backplate to the body in an even manner. Once all the screws are snug, torque in the same order to 10 foot-pounds.
9. If the pump is located above the water level of the pool, remove the lid and fill the basket with water before starting the pump.
10. Prior to replacing the lid, remove any debris around the lid o-ring seat, as debris will allow air to leak into the system.
11. Place 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.**

12. Open the pressure release valve on the filter and make sure it is clean and ready for operation.
13. Switch on the circuit breaker to the pump motor.
13. Turn on the pump and check the system for normal operation.
14. Once all the air has left the filter, close the filter pressure release valve.

6.2.4 Mechanical Seal Replacement

NOTE Refer to Figure 13 for an illustration of the location of the mechanical seal and impeller.

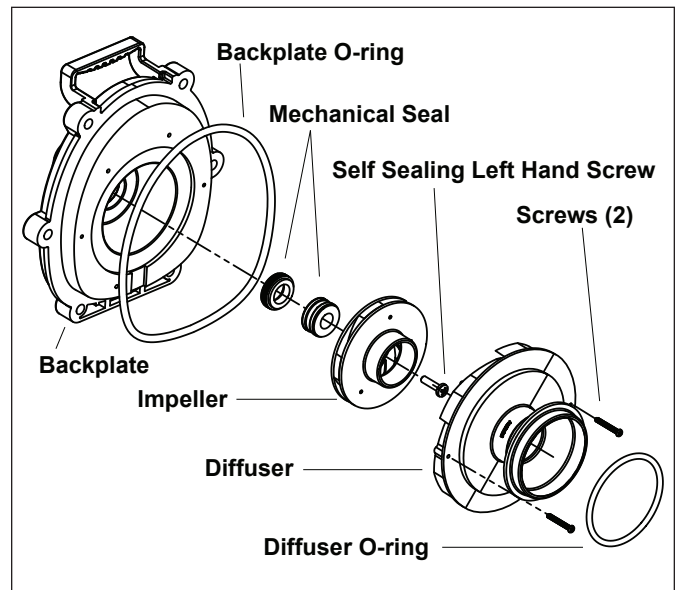


Figure 13. Backplate, Impeller, Diffuser, and Mechanical Seal Exploded View

NOTE This is a two-part replacement process. **The mechanical seal must be replaced as a set.**

⚠ WARNING

Do not damage the ceramic or carbon surfaces of the seals. If surfaces are damaged, leaks will occur.

1. To access the mechanical seal, comply with the warning and follow steps 1 through 8 of *Section 6.2.2, Impeller Removal*.
2. Remove the carbon face seal half from the motor shaft. (See Figure 11.) This is a spring-loaded seal. Grasp the portion of the seal closest to the impeller body and pull the seal off using a twisting motion.
3. Remove the motor from the backplate following steps 1 through 3 in *Section 6.2.5, Motor Replacement*.
4. Place the backplate o-ring side down and force the ceramic seal out using a screwdriver or drift.

5. Turn the backplate o-ring side up and insert the new ceramic seal side into the backplate. Use great care to press the seal in squarely with your fingers. The ceramic is easily damaged and must be pressed in using only your fingers or soft tools. Do not use any lubricant other than water and soap solution.
6. Install the backplate following the steps in *Section 6.2.3, Impeller Replacement*.
7. Install the motor following the steps in *Section 6.2.5, Motor Replacement*.

6.2.5 Motor Replacement

CAUTION

To ensure continued safety and reliable operation, Zodiac Pool Systems, Inc. requires that you replace the motor with a motor that has the identical HP rating and service factor (Zodiac Pool Systems, Inc. approved only).

⚠ WARNING

To avoid the risk of property damage, severe personal injury, or death, turn off the pump and switch off the circuit breaker to the pump motor before beginning this procedure.

1. To disassemble the pump housing from the motor, follow steps 1 through 8 in *Section 6.2.2, Impeller Removal*.
2. Remove the four (4) screws on the main cover and remove the main cover.
3. Place the backplate motor assembly o-ring side down and unscrew the four (4) 9/16" screws and remove the motor.

NOTE Before removing the backplate, note the alignment of the backplate to the motor. See Figure 14.

4. If installing a new motor, remove the protective plastic cap from the motor shaft. Place the motor on the backplate so that the opening in the motor faces the bottom of the backplate. The starting capacitor on the motor should be at the 12 o'clock position.
5. Replace the four (4) bolts and washers holding the backplate to the motor.
6. To reassemble the pump after replacing the motor, follow steps 1 through 13 of *Section 6.2.3, Impeller Replacement*.

NOTE Zodiac Pool Systems, Inc. recommends replacing the mechanical seal at the same time that you replace the motor. See *Section 6.2.4, Mechanical Seal Replacement*, for details.

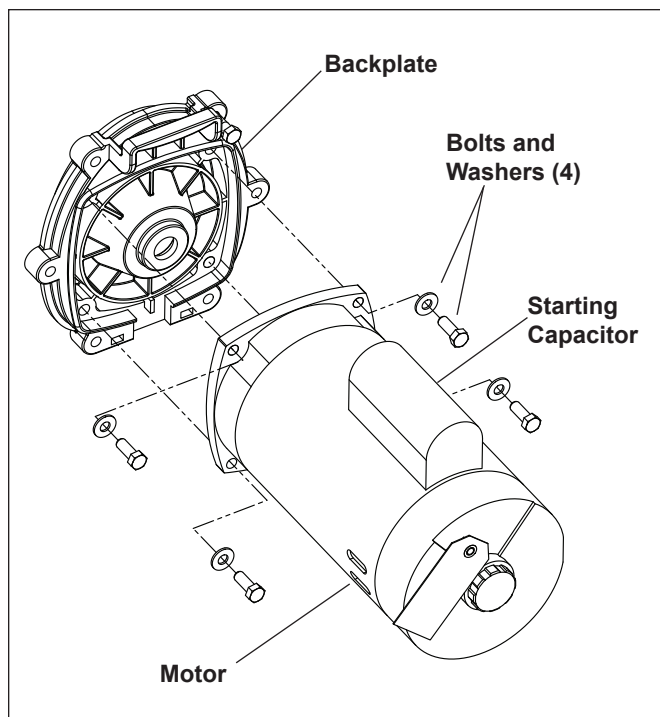


Figure 14. Backplate Assembly

Section 7. Product Specifications and Technical Data

7.1 Replacement Parts List

To order or purchase parts for Jandy pumps, contact your nearest Jandy dealer. If the Jandy dealer cannot supply you with what you need, contact Jandy customer service at 1.800.822.7933, or send an e-mail message to info@jandy.com.

Key No.	Description	Model No. (HP)	Order Part No.
1	Single-speed Motor & Hardware, FHP	0.75	R0479310
1	Single-speed Motor & Hardware, FHP	1.0	R0479311
1	Single-speed Motor & Hardware, FHP	1.5	R0479312
1	Single-speed Motor & Hardware, FHP	2.0	R0479313
1	Single-speed Motor & Hardware, FHP	2.5	R0479314
1	2-Speed Motor & Hardware, FHP	1.0	R0479306
1	2-Speed Motor & Hardware, FHP	2.0	R0479307
1	2-Speed Motor & Hardware, FHP	2.5	R0479308
2	Backplate, FHP (Backplate w/Hardware, Backplate O-ring & Mechanical Seal)	All	R0479500
3	Impeller, FHP (Impeller, Screw w/O-ring & Backplate O-ring)	0.75	R0479601
3	Impeller, FHP (Impeller, Screw w/O-ring & Backplate O-ring)	1.0, 1.0-2	R0479602
3	Impeller, FHP (Impeller, Screw w/O-ring & Backplate O-ring)	1.5, 1.5-2	R0479603
3	Impeller, FHP (Impeller, Screw w/O-ring & Backplate O-ring)	2.0, 2.0-2	R0479604
3	Impeller, FHP (Impeller, Screw w/O-ring & Backplate O-ring)	2.5	R0479505
4	Diffuser, FHP (Diffuser w/O-ring, Hardware & Backplate O-ring)	0.75, 1.0, 1.0-2	R0479702
4	Diffuser, FHP (Diffuser w/O-ring, Hardware & Backplate O-ring)	1.5, 1.5-2, 2.0, 2.0-2, 2.5	R0479701
5	Mechanical Seal, Carbon and Ceramic (1 Set)	All	R0479400
6	Pump Body, FHP (Body and Backplate O-ring)	All	R0479800
7	Motor Mounting Foot, FHP	All	R0479900
8	Lid w/Locking Ring, FHP (Lid w/Locking Ring & Lid O-ring)	All	R0480000
9	Pump Debris Filter Basket, FHP	All	R0480100
10	Drain Plug w/ O-ring (Set of 2)	All	R0446000
11	Tail Piece, O-ring & Union Nut (Set of 2)	All	R0327301
12	Lid O-ring, FHP	All	R0480200
13	Backplate O-ring, FHP	All	R0480300
14	Diffuser/Impeller Hardware (Diffuser O-ring, Screws (2), Screw w/O-ring & Backplate O-ring)	All	R0480400
15	Backplate Hardware, FHP (Backplate Hardware & Backplate O-ring)	All	R0480500
16	Motor Hardware Kit	All	R0446700
17	Tailpiece O-ring (Set of 2)	All	R0337601
18	Pump Base Kit	All	R0486700

7.2 Exploded View

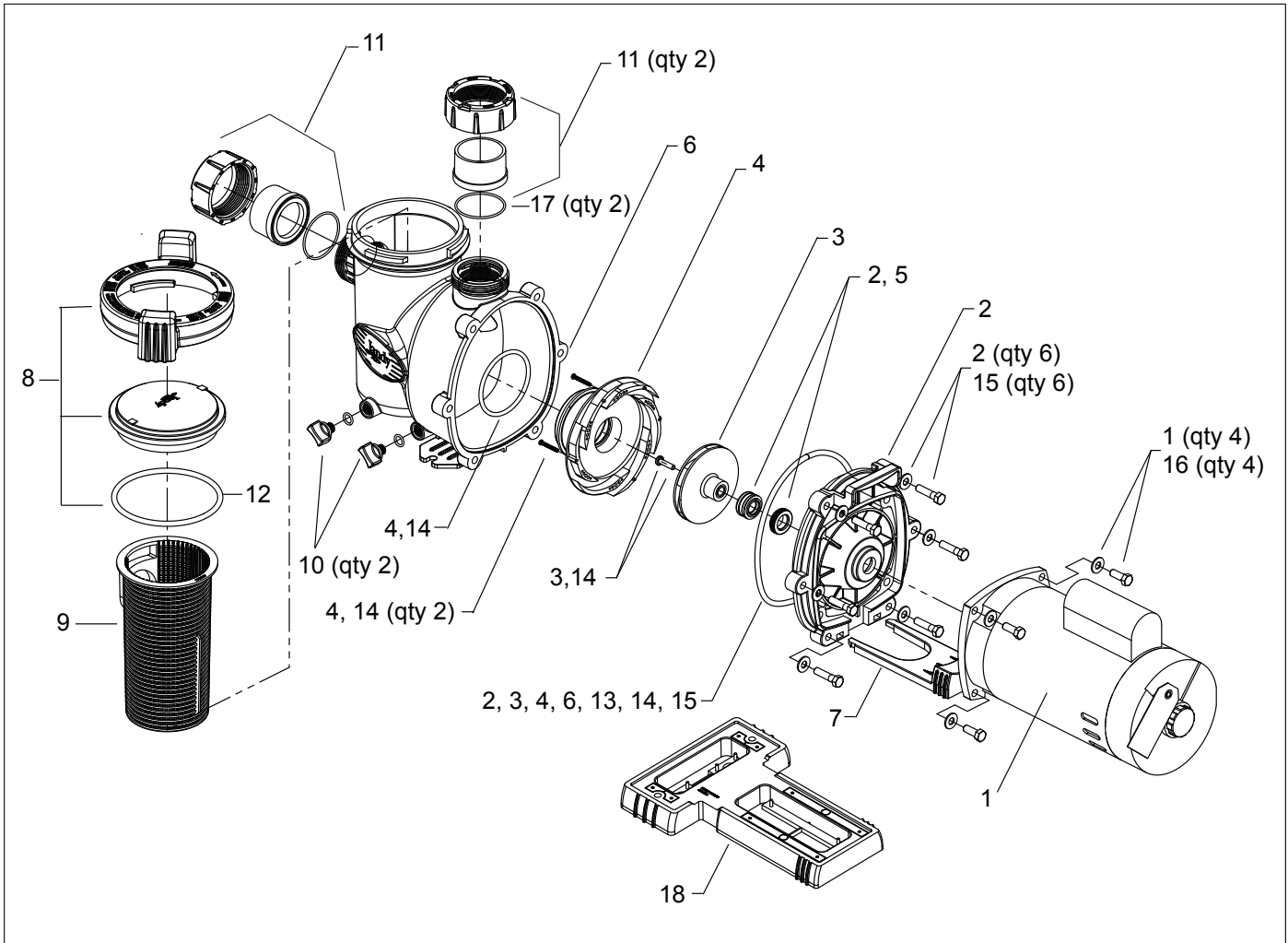
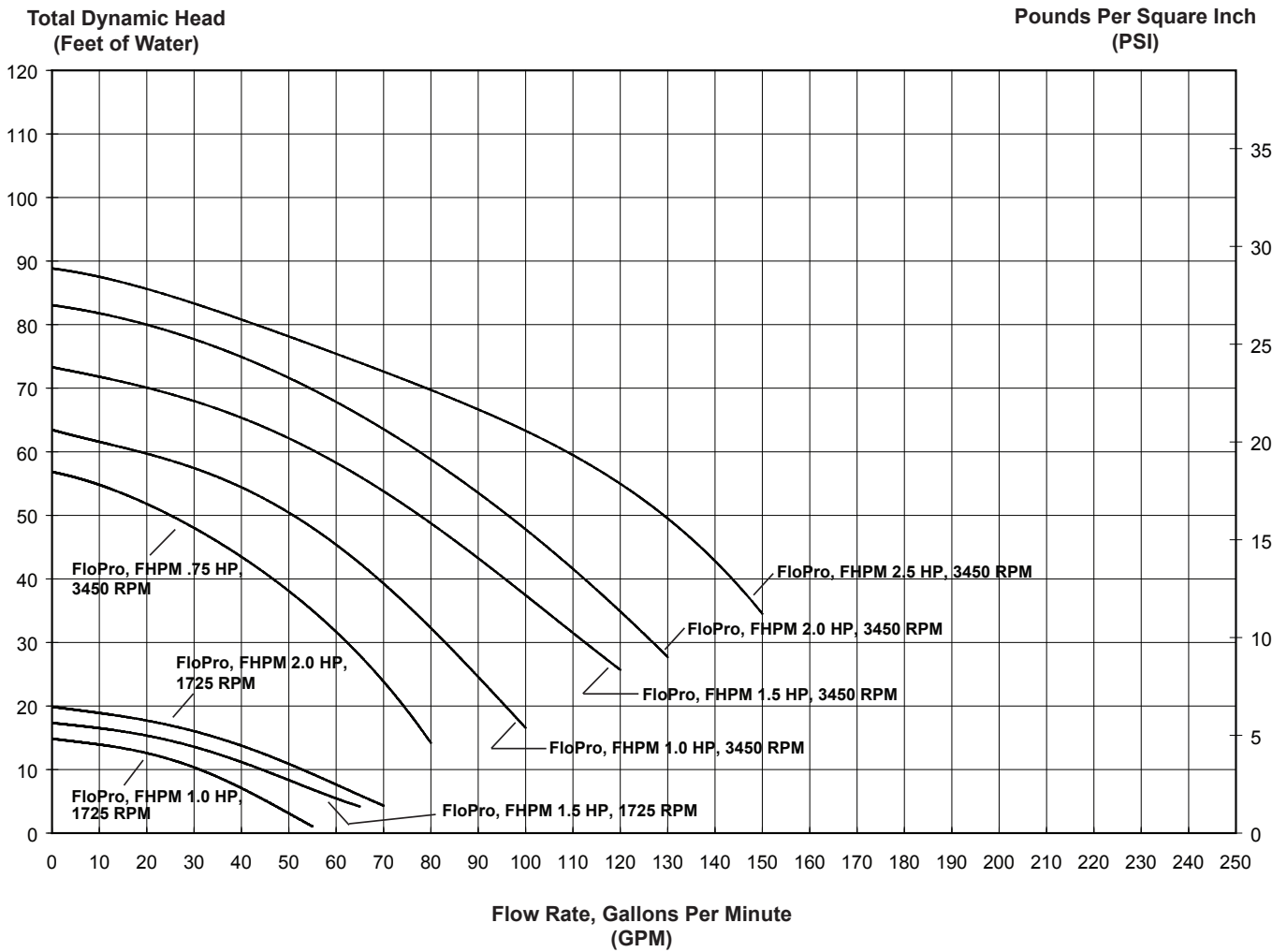


Figure 15. FHP Exploded View

7.3 Performance Curves

Jandy FloPro Series Pumps Max-Rated (FHPM)



7.4 Physical and Operational Specifications

7.4.1 Specifications

Table 4. FHPM Pump Specifications

Model No.	HP	Voltage	Amps	Pipe Size	Carton Weight	Overall Length 'A'
FHPM .75	0.75	230/115	5.4/10.8	1½-2"	40.6	25 3/16"
FHPM 1.0	1.00	230/115	7.1/14.2	2-2½"	41.2	25 3/16"
FHPM 1.5	1.50	230/115	8.0/16	2-2½"	42.6	25 ½"
FHPM 2.0	2.00	230/115	11.2/22.4	2-2½"	54.6	27 3/16"
FHPM 2.5	2.50	230	11.5	2½-3"	48.6	26 3/16"
FHPM 1.0-2-SPD	1.00	230	7.1/2.3	2½-3"	46.5	26 5/16"
FHPM 1.5-2SPD	1.50	230	8.0/3.0	2½-3"	48.0	26 9/16"
FHPM 2.0-2SPD	2.00	230	11.2/3.5	2½-3"	52.9	27 11/16"

7.4.2 Dimensions

Table 5 shows the height of the FHP pump in the three (3) mounting configurations listed below. Figures 2, 3 and 6, on page 9, show drawings of these three (3) configurations.

- 1) Without the FHP base
- 2) With the FHP base
- 3) With the FHP base and spacers

The width of the FHP base (with or without spacers) is 8⅞".

Table 5. FHP Mounting Configurations

FHP Mounting Configurations	Suction Side Height	Pump Height
FHP Pump without Base	7 ¾"	12¾"
FHP Pump with Base	8⅞"	13⅞"
FHP Pump with Base and Spacers	9⅞"	14⅞"

Figure 16 shows the dimensions (height, width, and length) of the FHP pump without the FHP base and spacers.

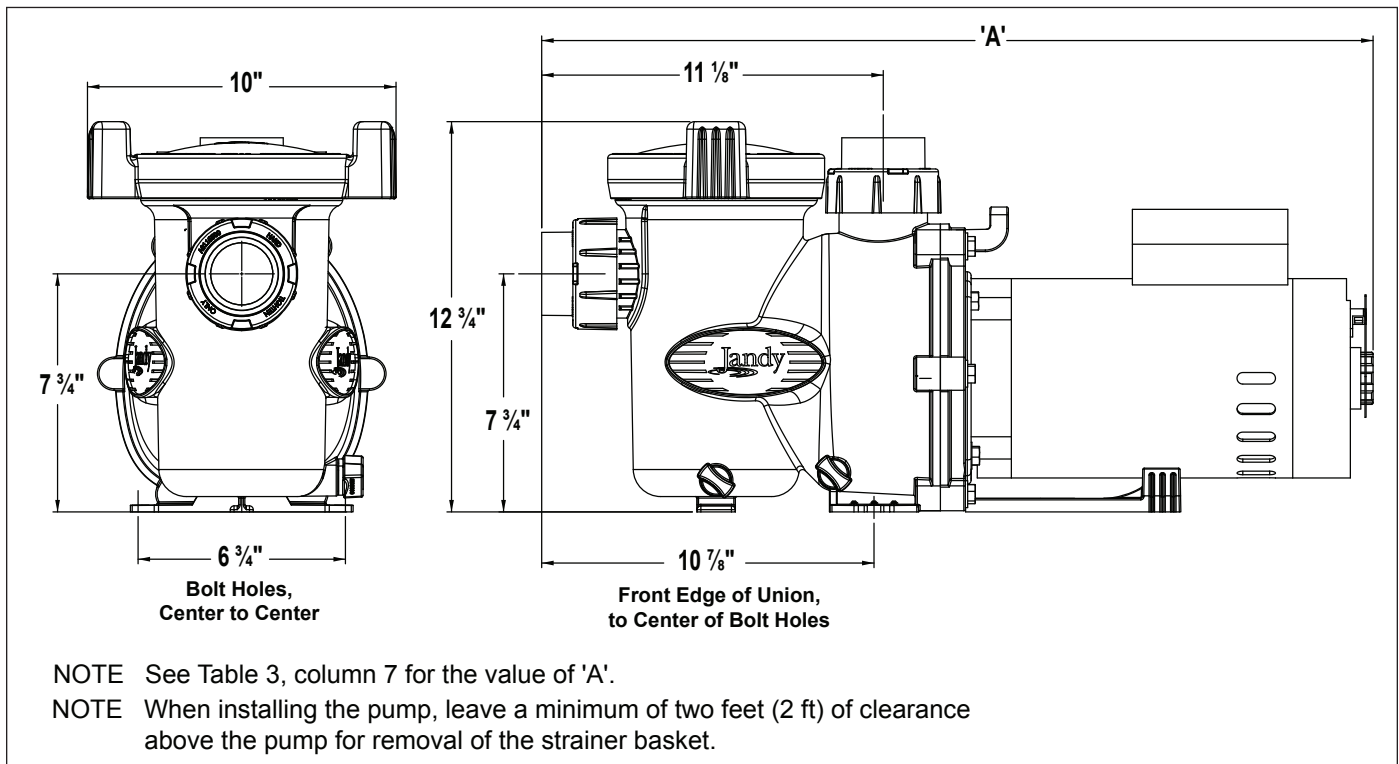


Figure 16. FHP Pump Dimensions (without Base or Spacers)

7.5 Replacement Motor Guide

Table 6. FHPM Replacement Motor Guide

Jandy FHPM Pump Model	A.O. Smith Century Model	Emerson Motor Technologies Model
FHPM 0.75	B852	EB852
FHPM 1.0	B853	EB853
FHPM 1.5	B854	EB854
FHPM 2.0	B859	EB859
FHPM 2.5	B840	EB840
FHPM 1.0-2SPD	B980	EB980
FHPM 1.5-2SPD	B982	EB982
FHPM 2.0-2SPD	B983	EB983

LIMITED WARRANTY

Thank you for purchasing Jandy® pool and spa products. Zodiac Pool Systems, Inc. warrants all parts to be free from manufacturing defects in materials and workmanship for a period of one (1) year from the date of retail purchase, with the following exceptions:

- AquaLink® RS units installed with Jandy® Surge Protection Kits will be covered for two (2) years.
- Never Lube® valves are warranted for the life of the pool and/or spa on which they were originally installed.
- AquaPure® Electronic Chlorine Generator Electrolytic Cells carry a five (5) year limited warranty on a prorated basis.
- Heat pumps are covered for two (2) years. There is a lifetime warranty on titanium tubing.
- The heat pump compressor is covered for five (5) years.

This warranty is limited to the first retail purchaser, is not transferable, and does not apply to products that have been moved from their original installation sites. The liability of Zodiac Pool Systems, Inc. shall not exceed the repair or replacement of defective parts and does not include any costs for labor to remove and reinstall the defective part, transportation to or from the factory, or any other materials required to make the repair. Refrigerant or other expendables are not covered by the warranty. This warranty does not cover failures or malfunctions resulting from the following:

1. Failure to properly install, operate, or maintain the product(s) in accordance with our published Installation, Operation, and Maintenance Manuals, which are provided with the product(s).
2. The workmanship of any installer of the product(s).
3. Not maintaining a proper chemical balance in your pool and/or spa [pH levels between 7.2 and 7.8, with ideal ranges being between 7.4 and 7.6, Total Alkalinity (TA) between 80 to 120 ppm, Total Dissolved Solids (TDS) less than 2000, not including salt ppm].
4. Abuse, alteration, accident, fire, flood, lightning, rodents, insects, negligence, or acts of God.
5. Scaling, freezing, or other conditions causing inadequate water circulation.
6. Operating the product(s) at water flow rates outside the published minimum and maximum specifications.
7. Use of non-factory authorized parts or accessories in conjunction with the product(s).
8. Chemical contamination of combustion air or improper use of sanitizing chemicals, such as introducing sanitizing chemicals upstream of the heater and cleaner hose or through the skimmer.
9. Overheating; incorrect wire runs; improper electrical supply; collateral damage caused by failure of O-rings, DE grids, or cartridge elements; or damage caused by running the pump with insufficient quantities of water.

LIMITATION OF LIABILITY:

This is the only warranty given by Zodiac Pool Systems, Inc. No one is authorized to make any other warranties on behalf of Zodiac Pool Systems, Inc. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. ZODIAC POOL SYSTEMS, INC. EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, OR PUNITIVE DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.** This warranty gives you specific legal rights. You may also have other rights that vary by state or province.

WARRANTY CLAIMS:

For prompt warranty consideration, contact your dealer and provide the following information: proof of purchase, model number, serial number, and date of installation. The installer will contact the factory to obtain instructions regarding the claim and to determine the location of the nearest designated service center. If the dealer is not available, you can locate a service center in your area by visiting www.jandy.com or by calling our technical support department at 1.800.822.7933. All returned parts must have a Returned Material Authorization number to be evaluated under the terms of this warranty.



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



Jandy®

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