Polaris® Metal Blower Installation Instructions

IMPORTANT SAFETY INSTRUCTIONS

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

READ AND FOLLOW ALL INSTRUCTIONS.

Installation of this equipment should be performed by a licensed electrician and conform to all National Electric Code® (NEC®), state and local codes. Installations in Canada must comply with CEC requirements.

WARNING - To reduce risk of electric shock.

- Install at least five (5) feet (1.5 m) from water using non-metallic plumbing. Install blower no less than one (1) foot (305 mm) above the maximum water level to prevent water from contacting electrical equipment. Install in accordance with the installation instructions.
- A wire connector is provided on this unit to connect a solid copper conductor, minimum No. 8 AWG (8.4 mm^2), between the unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within five (5) feet (1.5 m) of the unit.
- **Models: 1-516-02, 1-516-04, 1-521-02, 1-521-04, 1-566-02, and 1-566-04 are intended for indoor use only.**
- Mount blower vertically, preferably in a shaded area in hot climates.
- Accurately size blower to prevent motor overheating.

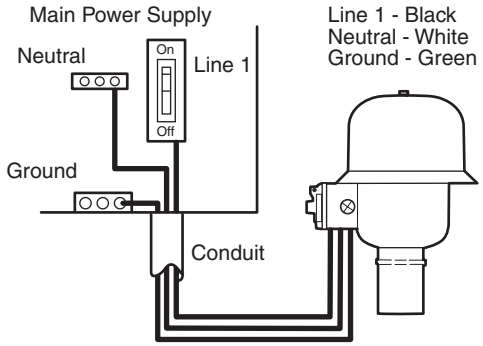
To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

SAVE THESE INSTRUCTIONS.

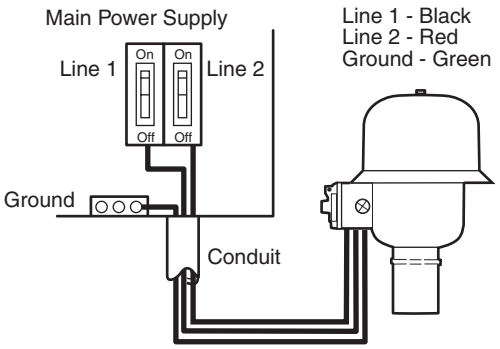
Wiring Instructions

1. Pull in voltage source and ground wire from main supply. Be careful and ensure that you don't damage or abrade the wiring during this procedure.
2. Connect ground wire from supply to ground wire (green) supplied with the blower.
3. Connect remaining line wires individually to remaining wires in the blower.

120V Connection



240V Connection



Installation Guidelines

- **Refer to Blower Sizing section to properly size blower for application.**
- Pressure test the system prior to installation.
- **Use 2" PVC pipe from the blower to the spa inlet fitting.**
- Ensure check valves are accessible for servicing.
- Do not install adjustable jets with the Polaris® blower as these can cause excessive back pressure.
- Do not glue the blower to the air line. Glue fumes can explode. Install a 1/4" self-tapping screw to secure joint, if necessary.
- Do not glue or otherwise permanently attach blower to plumbing.
- Do not remove the surge protector.
- A solid copper bonding conductor, No. 8 AWG (8.4 mm^2) min., should be connected from the wire connector on the blower to all metal parts of the swimming pool, spa, or hot tub and to all electrical equipment, metal conduit, and metal piping within 5 ft. (1.5 m) of the inside walls of the swimming pool, spa or hot tub, if the blower is installed within 5 ft. of the swimming pool, spa, or hot tub.
- Measure the current draw under load using an amp meter. The maximum acceptable amp reduction due to back pressure is:
  1.0 amp for 120V
  0.5 amp for 240V

To install the blower above water level, the blower airloop or standpipe must stand at least 12" above the maximum water level of the spa
to prevent possible water damage to the blower. See Diagrams 1 and 2.

Hydrotherapy jets naturally aerate when installed correctly. **Do not use Polaris blower to improve aeration on improperly installed jets. This will damage the blower and void the warranty.**

When using the Polaris blower to super-charge jets, install a 1/2 lb. Nationally Recognized Testing Laboratory (NRTL)-listed (e.g. UL, ETL®, CSA®) check valve between the blower and the jets to prevent water damage to the blower. See Diagrams 1 and 2.

If blower is installed more than 25 feet from the spa, install a loop to prevent the blower line from filling with water and overworking the blower. The loop should be 12" above the spa level, as close as possible to the spa. See Diagram 2.

To install the blower below water level, or if the blower air line drops below the bottom of the spa, use the Hartford Loop plumbing configuration (see Diagram 3) to prevent the air line from filling with water. Plumb a 1/2 lb. Nationally Recognized Testing Laboratory (NRTL)-listed (e.g. UL, ETL, CSA) check valve as shown.

Diagram 1 - Typical Installation (5' - 25' from Spa)

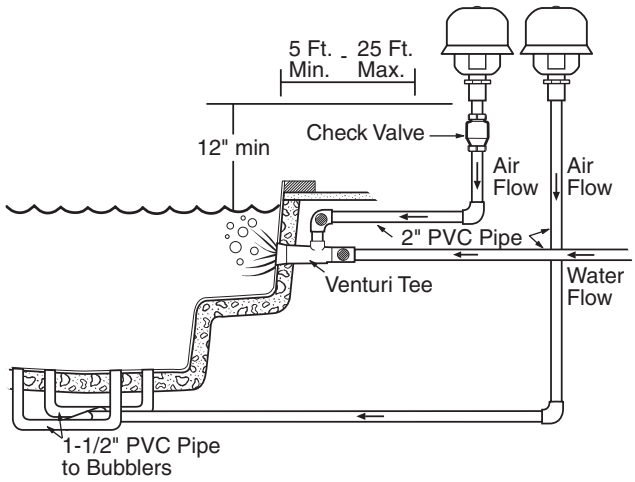


Diagram 2 - Long Run Installation (over 25' from Spa)

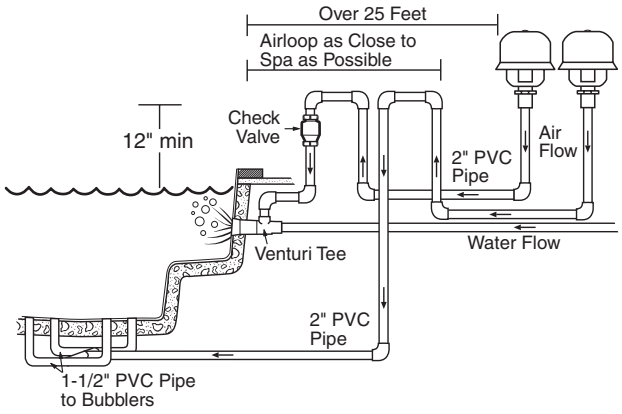
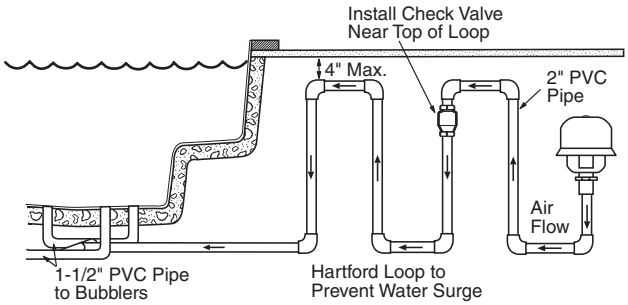


Diagram 3 - Blower Below Water Level



Blower Sizing Worksheet

Accurately sizing the blower for the application is crucial for proper blower function. Damage caused by improperly sized blowers is not covered under the warranty. To calculate blower size:

Step 1 – Calculate Back Pressure

Use the formula below to determine the spa's back pressure as an "inches of water" measurement. If available, use an Inches-of-Water gauge.

Measure from water surface to air line (in inches) = _____

\+ No. of feet of 2" pipe ____ divided by 10 = _____

\+ No. of 90° elbows ____ x .5 = _____

\+ No. of 45° elbow ____ x .125 = _____

\+ No. of 1/2 lb check valves ___ x 4 = _____

Total Back Pressure (Inches of Water) = ☐

Step 2 – Determine the Airflow

Locate the Total Back Pressure on the left side of the **Blower Performance Chart** and draw a horizontal line. Note where the line intersects each dashed line. Reference the Airflow requirement listed directly below the intersection for each size blower.

Total Airflow SCFM
(Standard Cubic Feet per Minute) = ☐

Step 3 – Calculate Number of Air Holes

Determine how many air holes are needed to achieve the necessary airflow. Installing less than the required number of holes will increase back pressure. **Do not increase back pressure beyond minimum airflow for the blower.** Too many holes will result in reduced blower action.

Choose an air hole size from the chart below and apply the adjacent conversion factor in the formula to determine how many holes are required.

Air Hole Size	Conversion Factor
1/8"	2.4
5/32"	1.5
3/16"	1.1
1/4"	0.6
3/8"	0.27
1.2"	0.15
Jet	0.1

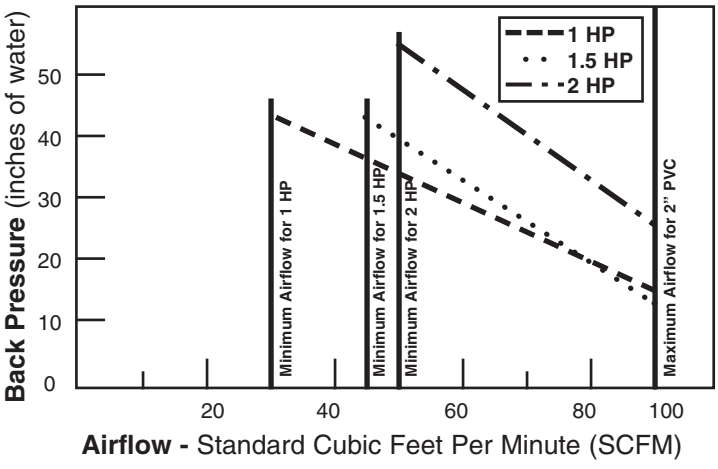
Total Airflow (SCFM) From Step 2 _____

Conversion Factor X _____

Number of Holes Required = ☐

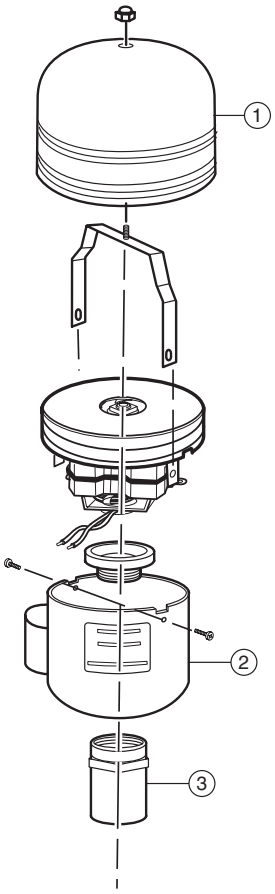
For more information, contact Zodiac's Technical Service at 1-800-822-7933 (USA and Canada only) or (760) 599-9600.

Blower Performance Chart



Polaris Metal Blower

Exploded Parts Diagram



No.	Part#	Description	Qty
1	1-700-32	Round Dome Blower Top	1
2	1-700-40	Base Plate, Beige (Side Mount)	1
3	1-700-06	Check Valve, Bottom	1

Blower Specifications

Model Number	Horsepower	Amps	Volts
521	1.0	6.8	120
	1.0	3.8	240
516	1.5	7.5	120
	1.5	4.0	240
566	2.0	9.0	120
	2.0	5.11	240

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Polaris®