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## ***Installation and Instruction Manual for Outdoor Air Blowers Silencer, Galaxy and Astro Series Models***

### **IMPORTANT SAFETY INFORMATION**

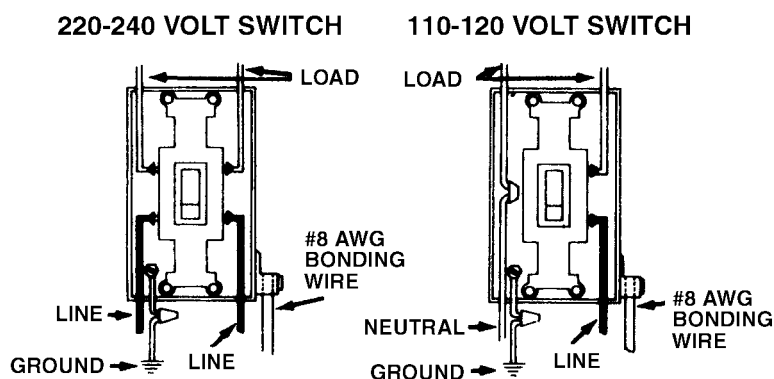
When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

### **READ AND FOLLOW ALL INSTRUCTIONS**

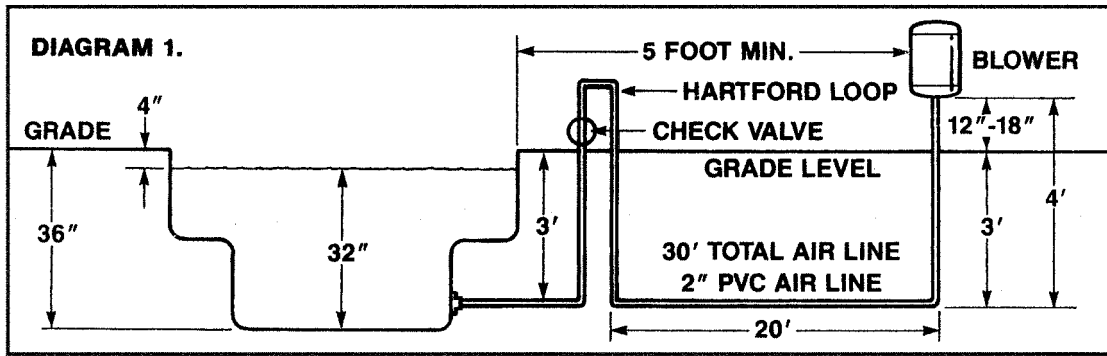
1. **WARNING** – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
2. To reduce the risk of electrical shock, connect the green colored wire within the electrical box to the grounding terminal of your electrical service or supply panel with a continuous green insulated copper wire equivalent in size to the circuit conductors supplying this equipment.
3. A wire connector is provided on the Astro series air blower to connect a minimum No. 8 AWG wire (8.4 mm) solid copper conductor between this and any metal enclosures of electrical equipment, metal water pipe or conduit within 5 feet (1.5 m) of this unit. NOTE: Silencer and Galaxy series air blowers are designed with plastic enclosures and do not require exterior bonding.
4. **WARNING** – Silencer, Galaxy, and Astro series air blowers have been designed for indoor or outdoor use. Install blower a minimum of two feet (610 mm) off the ground in a well ventilated location free of debris, chemicals and sprinklers.
5. **WARNING** – Risk of electrical shock. Install blower at least five feet (1.5 m) away from tub water using nonmetallic plumbing. Install blower no less than one foot (305 mm) above the maximum water level to prevent water from contacting electrical equipment. Install in accordance with the installation instructions.

### **WIRING INSTRUCTIONS**

1. Check the line voltage to be sure it is correct for the blower being used. **Do not connect 220 volt to a 110 volt blower; this will destroy your blower.**
2. Refer to the National Electrical Code Guidelines for wire size and to prevent electrical shock.
3. If switch is used, install as illustrated below. Use a double pole switch for 220/240 volt blowers.
4. Be sure to connect ground wire (green) supplied with blower to ground from your electrical panel.
5. Astro series air blowers require exterior bonding with a minimum No. 8 AWG solid copper wire. See safety instructions for complete details.
6. Connect remaining line wires individually to the remaining wires in blower.



## INSTALLATION GUIDELINES



1. Install blower vertically at least **one foot (305 mm)** above the water line in a well ventilated location free of debris, chemicals and sprinklers.
2. If the blower is to be installed more than 25 feet from the spa, it is necessary to install a Hartford loop that is 1 foot above the water line and as close as possible to the spa.
3. Install check valve in a vertical orientation in an easily accessible location above water level so that it can be serviced.
4. Use 2" supply line from the blower to the spa. At the spa you can reduce down to 1.5" pipe to feed the jets, air caps, or air channel.
5. Do not glue blower to the supply line. Glue fumes may cause an explosion when the blower is started. You can secure the blower to the supply line by pre-drilling a small hole through the neck of the blower and securing with a screw.
6. A loop and check valve must be installed at least 1 foot above water level if the blower is installed below grade level.
7. A loop and check valve must be installed a minimum of 1 foot above water level when supercharging water jets.

## BLOWER SIZING FOR AIR CHANNEL

There are many variables to consider when choosing the proper size air blower for your spa or hot tub.

These include: water depth, the number and size of air holes, distance of blower from spa, number of 90 and 45 degree turns, and the size of the supply line. Together these variables create back pressure on the blower as measured in inches of water column (inches H<sub>2</sub>O). Compare your calculations with the chart below to determine the best size blower for your spa.

1. Measure maximum height of water above lowest section of air channel.
2. For each 10 feet of 2" supply pipe, add 1" (inch) of water pressure.
3. For each 90 degree turn, add 1/2" (inch) of water pressure.

### For example:

An 8 ft. in-ground spa with a water depth of 38 inches is located 45 feet away from the equipment.

There are 6 - 90 degree turns and 2 - 45 degree turns. Calculation of total water pressure is as follows:

1. Water height in spa = 38"
2. 45 feet of supply line = 4.5 inches
3. 6 - 90 degree turns and 2 - 45 degree turns = 3.5 inches

**Total water height is 46" of water pressure (inches H<sub>2</sub>O).**

**This spa would require a 1.5 hp blower – see chart below.**

BLOWER SIZE	VOLTS	AMPS	INCHES OF WATER ("H <sub>2</sub> O)
1 HP	120/240	6.7/3.5	UP TO 40" OF PRESSURE
1.5 HP	120/240	8.0/4.0	UP TO 50" OF PRESSURE
2.0 HP	120/240	10.0/6.0	UP TO 65" OF PRESSURE

## BLOWER SIZING FOR AIR CHANNEL

### Number of holes

The number of holes in the spa floor and seats determine the size of your air blower. For a 1.0 hp blower the total hole area should be .85 square inches, for a 1.5 hp blower the hole area should be 1.2 square inches, and for a 2.0 hp blower the total hole area should be 1.5 square inches. The chart below shows some common hole sizes. For example: you could drill as many as 70 - 1/8 inch holes with a 1.0 hp blower.

Hole diameter in inches	Hole area in square inches
1/8	.0123
3/16	.0277
1/4	.0491

$$\text{Total hole area} = (\text{number of holes}) \times (\text{hole area})$$

## BLOWER SIZING - WATER JETS

Air blowers are commonly used to supercharge or boost hydro therapy jets located in the wall of the spa. The water jets are normally designed with a venturi fitting which allows the water and air to mix at the jet. By connecting all the venturi fittings together back to the blower supply line, you can increase the amount of air mixed with the water. In a well planned system adding a blower makes a dramatic difference in jet action.

## NEW SPA APPLICATIONS

1. Determine the number of water jets required in your spa. Next choose the correct size water pump - the water jet manufacturer will supply horsepower per-jet guidelines to help you choose. Loop air line above water level as per Diagram #2. **It is important to size the water pump correctly for the number and size of water jets in your spa. Improper sizing can cause both blower and water pump to overheat and or water to back up into the blower.**
2. Choose the correct size blower based on the number of water jets in your spa. See the chart below. Note that you may require a larger blower if your installation differs significantly from the standard installation. Please refer to the installation guidelines for more details.

BLOWER SIZE	VOLTS	AMPS	NUMBER OF WATER JETS
1 HP	120/240	6.7/3.5	4 TO 8
1.5 HP	120/240	8.0/4.0	8 TO 12
2.0 HP	120/240	10.0/6.0	14 OR MORE

## BLOWER REPLACEMENT - EXISTING SPA

Determining the size of blower for an existing spa is more difficult since many factors including length of supply line and number of 90 degree turns are unknown under concrete and decking.

1. Use the sizing chart above as a good starting point based on standard installation.
2. Check the size of the water pump and see if it is sized correctly based on the number of water jets. A good rule of thumb is 1/4 hp for every water jet. Run the water pump without the blower and check the air line for signs of water backing up.
3. Allow the blower to run for 30 minutes and check that air is exiting all water jets.
4. Use a Magnehelic pressure gauge (0-100 inches) to measure back pressure while blower is operating. See trouble shooting guidelines for complete details.

# OUTDOOR SPA BLOWERS – U.L. LISTED



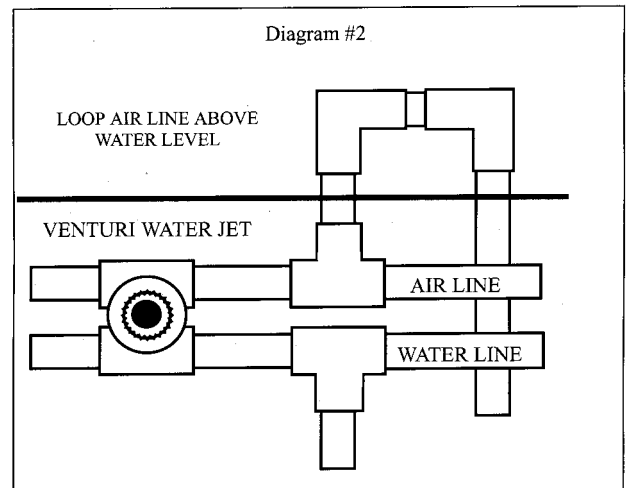
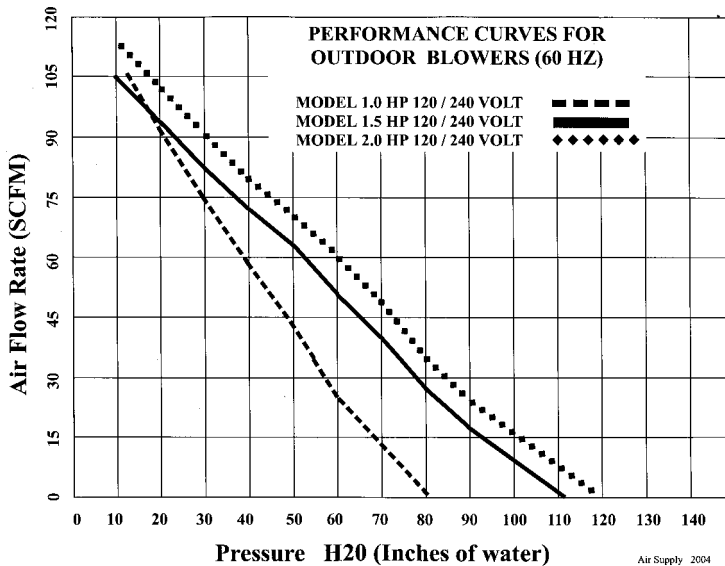
**SILENCER**



**GALAXY**



**ASTRO**



## LIMITED WARRANTY

Air Supply of the Future, Inc., 1230 NE 9th Avenue, Ft. Lauderdale, Florida 33304, from this point forward referred to as Air Supply, offers a one year warranty on the blower subject to the following terms and conditions:

- 1) This blower is warranted to the original owner for a period of 16 months from the date of manufacture. This warranty covers defects in materials and workmanship.
- 2) Air blowers returned under warranty will be inspected by Air Supply. Damage to the blower which, in our judgment, occurred because of misuse, negligence, accident or in improper installation will not be covered by the warranty. This warranty is void if the blower has been altered or tampered with in any way or if the description label and/or date stamp has been removed or tampered with.
- 3) The air blower must be installed in a residential application according to the installation guidelines.
- 4) Air Supply will not be responsible for any water damage to blowers due to improper installation. The home owner must make provisions to protect the surrounding equipment from being damaged by the resulting flow of water. Air Supply will not be responsible for loss of the unit, or inconvenience damage or loss to personal property or other consequential damage. NOTE: Some states do not allow the exclusions or limitations of incidental or consequential damages, so the above limitations or exclusions may not apply.
- 5) Unless service labor agreement exists between the owner and his contractor or dealer, replacement costs for labor, service removal or reinstallation will be assumed by the owner. Any freight or shipping charges to return the air blower to Air Supply for warranty evaluation, must be paid by the owner. If the blower is determined to be in warranty, it will be repaired and/or replaced and returned to the home owner at no charge, including the return shipping charges.
- 6) This limited warranty is valid only in the United States of America and does not apply to blowers sold or installed in any other country.