High-Pressure Regenerative Blowers
Operating and Maintenance Instructions
(Part Nos. AHPB05–AHPB125)
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Dear Customer,

Thank you for your purchase of Sweetwater® equipment. The Sweetwater® name represents the finest blend of quality, performance and price on the market, all backed by our unequalled 3-year guarantee.

Pentair Aquatic Eco-Systems has delivered outstanding products and service since 1978. We have the knowledge and experience to help you accomplish your goals.

Best regards,

Todd Childress
President

PAES is open from 8 AM to 7 PM Monday–Thursday and 8 AM to 5 PM Friday. For technical help call 877-347-4788.

Safety Messages

Safety is important to us. We have included safety messages throughout this manual and for your protection. Please read and follow all directions.

A safety message has a safety alert symbol followed by an explanation of what the hazard is, what can happen and what you should do to avoid injury. This is the safety alert symbol:

The safety alert symbol and “WARNING” or “CAUTION” will precede all safety messages:

WARNING

You will be killed or seriously injured if you don’t follow instructions.

CAUTION

You can be killed or seriously injured if you don’t follow instructions.

ELECTRICAL SHOCK HAZARD

Disconnect electrical power at the circuit breaker or fuse box before installing this product. Install where it will not come into contact with water or other liquids and where it will be weather protected. Electrically ground this product. Failure to follow these instructions can result in death, fire or electrical shock.

Guidelines for Product Use

- Pump only clean, dry air. Do not pump flammable or explosive gases or use in an atmosphere that contains such gases.
- Operate at 32–104°F (0–40°C).
- Protect unit from dirt and moisture.
- Blower must be installed with the properly sized inlet (included) and in-line filters, gauges and relief valves to protect against dirt and overheating.

Wiring

Make sure the wiring is done by a qualified electrician familiar with NEMA MG2 safety standards, national electric code and all local safety codes. Select fuses, motor protective switches or thermal protective switches to provide protection. Fuses act as short circuit protection for the motor, not as protection against overload. Incoming line fuses help to withstand the motor’s starting current.

Motor starters with thermal magnetic overload or circuit breakers protect the motor from overload or reduced voltage conditions. See the wiring diagram(s) attached to the product for required electrical information.

Check that the power source is correct in order to properly operate a dual-voltage motor.

Operating and Maintenance Instructions

Description

All regenerative blowers are dynamic compression devices and utilize a noncontacting impeller to accelerate the gas and a specially designed housing to compress the gas. Cooling is accomplished by using the motor fan to blow air over the housing. In larger models, the housing is specially designed with cooling fins to allow a wider range of operation. Both the inlet and outlet ports have built-in silencers and mesh screens. Both the inlet and outlet have an inside connection thread corresponding to DIN ISO 228. On larger units, multiple suction and discharge connection configurations may be available.

The blower shares a bearing with the motor. The seal between the bearing and the motor is not gas tight in most models, therefore these blowers are not recommended for handling of toxic or explosive gases. Contact Aquatic Eco-Systems for additional options if explosive or toxic gases will be handled.

A full range of accessory items are available, including vacuum or pressure relief valves, check valves, suction filters, motor starters, vacuum/pressure cross-over valves and in-line filters.

Application/Installation Environment

CAUTION

These blowers are designed for use in general industry. Suitable personnel protection according to OSHA requirements is provided, but the equipment should not be operated in residential settings. Sweetwater® blowers can be operated as either vacuum pumps or compressors. They are suitable for use with air having a relative humidity up to 90%, but not generally suitable for handling corrosive or erosive gases. Special versions for toxic or aggressive gases may be available. Use of the standard blower in aggressive environments may cause damage to the blower or exposure to gases being handled in the local environment.
CAUTION
Dangerous (flammable or explosive) or aggressive (corrosive) gases should not be handled by the standard blower.

Handling of flammable or aggressive gases and vapors may be possible by using a specially configured or modified blower. Contact factory for additional information. The standard blower is not suitable for operation in explosive environments as defined by NFPA 70. Contact factory for assistance.

CAUTION
The ambient and suction temperatures should be between 40º and 104ºF. For temperatures outside this range, please contact the factory. The maximum permissible pressure difference for vacuum or pressure is dependent on the motor rating and power supply frequency. Operation at an ambient temperature of 104ºF (40ºC) is the maximum permissible, and will result in a reduction of 10% of maximum vacuum or pressure attainable by the unit.

Installation
As illustrated in Figure 1, Sweetwater® High-Pressure blowers can be installed in any physical configuration.

CAUTION
Regenerative blowers can have surface temperatures in excess of 120ºF. To avoid burns or other physical injury, take care to avoid contact with the surfaces of the blower during and immediately after operation. To ensure adequate cooling of the blower during operation, install the blower with the minimum clearance as indicated in the table below.

Minimum Installation Clearances

<table>
<thead>
<tr>
<th>Range</th>
<th>Distance from fan guard to closest obstruction (inches/mm)</th>
<th>Distance from cover (opposite of fan) to closest obstruction (inches/mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHPB05-AHPB45</td>
<td>1.3/34</td>
<td>1.18/30</td>
</tr>
<tr>
<td>AHPB50-AHPB125</td>
<td>2.1/54</td>
<td>1.57/40</td>
</tr>
</tbody>
</table>

Please note that it may be desirable, where possible, to allow for larger clearances to allow access for maintenance or repair personnel. The noted clearances are to ensure adequate airflow for cooling only and are a minimum requirement.

Failure to allow for the noted clearances may result in premature failure of the blower due to lack of cooling, even if all other precautions are taken as recommended. For specific advice about installations requiring closer clearances, please contact AES for recommendations.

Sweetwater® regenerative blowers can be mounted in any configuration, either horizontally or vertically mounted. It is not usually necessary to bolt the smaller blowers to a rigid surface during operation, though this may be desirable to reduce pipe vibration, movement and noise. Larger models should be bolted in place, especially when installed vertically, to prevent possible rotation, damage or injury due to startup torque.

CAUTION
For installations at altitudes greater than 3,250’ above sea level there will be a loss in capacity. Please contact your factory representative for assistance in determining the extent of the loss of capacity likely at your specific location.
provide maximum protection for the motor and wiring. All cabling used on starters should be secured with good quality cable clamps.

We recommend that the motor starters used feature a time delay trip on high amperage to avoid nuisance trips on startup. When the unit is started cold, over amperage may be experienced for a short time due to the higher resistance of the windings at lower temperatures.

If using a change over or solenoid valve, ensure that the voltage connected to the valve matches that shown on the valve instructions or nameplate. Most valves are rated for 115V/60 Hz or 230V/50 Hz. Connection of these valves to higher voltages may result in immediate valve failure.

WARNING
The electrical installation should be made by a qualified electrician and in complete compliance with all NFPA 70 (National Electrical Code) requirements along with all state and local code requirements. The main disconnect and motors starters are assumed to be provided by others.

4. Install the necessary relief valves and confirm their proper operation.

**Maintenance and Servicing**

**WARNING**
Be sure the power supply is disconnected and locked out before attempting to do any maintenance on the unit. It is critical that the unit be locked out from starting during maintenance as severe injury or death could result from exposure to high voltage or rotating parts.

**CAUTION**
Allow the blower to cool to a surface temperature of less than 100°F before attempting maintenance. Prolonged exposure to temperatures above 120°F can cause severe burns.

Clean the blower surfaces periodically to avoid build up of dust or other debris. Build up of debris can cause overheating and premature failure of the blower. If an inlet filter is being use, ensure that it remains clean during operation by examining the filter cartridge for debris build up. Replace dirty or clogged filter.

**CAUTION**
Do not attempt to check the filter during operation of the blower. Only check the filter after disconnecting the power from the blower and locking out the power to prevent an unexpected start.

**Potential Risks for Operators**
Noise emission: Hearing protection is not normally required at the expected noise generation levels; however, local conditions may result in higher ambient noise. If this is the case and local noise exceeds OSHA recommended levels for expected exposure time (typically 85 dBA for eight hours), hearing protection should be used.
<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Remedy</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor does not start, no noise.</td>
<td>Two or more power legs interrupted.</td>
<td>Check fuses, terminals, etc., for source of interruption and correct.</td>
<td>Electrician</td>
</tr>
<tr>
<td>Motor does not start, humming noise.</td>
<td>One power supply lead interrupted.</td>
<td>Check fuses, terminals, etc., for source of interruption and correct.</td>
<td>Electrician</td>
</tr>
<tr>
<td></td>
<td>Impeller jammed.</td>
<td>Open blower cover, remove debris and clean.</td>
<td>Service Technician</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check impeller clearance and reset if necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Defective bearing.</td>
<td>Replace defective bearing.</td>
<td>Service Technician</td>
</tr>
<tr>
<td>Motor starter trips at startup.</td>
<td>Incorrect starter setting.</td>
<td>Ensure starter setting is correct (check current on nameplate)</td>
<td>Electrician</td>
</tr>
<tr>
<td></td>
<td>Winding short circuit.</td>
<td>Megger motor</td>
<td>Electrician</td>
</tr>
<tr>
<td></td>
<td>Motor overloaded due to operation of pump at excessive differential pressures.</td>
<td>Inspect filters, mufflers and connection pipes. Clean as required. Check relief valve operation. Reset or replace as necessary.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Impeller jammed.</td>
<td>See above fault Motor does not start, humming noise, cause jammed impeller.</td>
<td>Operator</td>
</tr>
<tr>
<td>No vacuum or pressure.</td>
<td>Severe leak in system.</td>
<td>Close off pump and run deadheaded to confirm pump is operating properly. If so, find and fix leak in the system.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Wrong rotation.</td>
<td>Check air flow direction and change direction of rotation if necessary.</td>
<td>Operator/Electrician</td>
</tr>
<tr>
<td>Insufficient air flow.</td>
<td>System too small.</td>
<td>Use larger system.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Inlet piping too long or too small.</td>
<td>Increase pipe diameter to reduce pressure loss in inlet piping. Contact AES for assistance in determining correct pipe size.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Leak at connection to vacuum system.</td>
<td>Check for leaks and repair if necessary.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Change in impeller geometry due to erosion.</td>
<td>Clean impeller and examine for wear. Replace if necessary.</td>
<td>Service Technician</td>
</tr>
<tr>
<td></td>
<td>Inlet filter clogged.</td>
<td>Change filter element; remove clog.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Relief valve incorrectly set.</td>
<td>Reset or replace relief valve. Contact AES for assistance.</td>
<td>Operator</td>
</tr>
<tr>
<td>Abnormal flow noises.</td>
<td>Flow speed too high.</td>
<td>Clean pipes or use larger pipes to connect unit to process.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Muffler soiled.</td>
<td>Clean muffler inserts, replace if necessary.</td>
<td>Operator</td>
</tr>
<tr>
<td>Abnormal running noise.</td>
<td>Ball bearing defective or insufficient lubrication on bearing.</td>
<td>Re-grease or replace bearing as required.</td>
<td>Service Technician</td>
</tr>
</tbody>
</table>
Wiring Diagrams

115 Volt, 1 phase, 60 Hz
Low Voltage Connections

230 Volt, 1 phase, 60 Hz
High Voltage Connections
Standard Warranty

Sweetwater® regenerative blowers, when properly installed and operated under normal conditions of use, are warranted by PAES to be free from defects in material and workmanship for a period of three (3) years from ship date. In order to obtain performance under this warranty, the buyer must promptly give verbal or written notice of the defect by calling the PAES Returns Department at 877-347-4788, sending a fax to 407-886-6787 or by email to PAES.General@Pentair.com. The buyer is responsible for freight charges, both to and from PAES, in all cases.

PAES warranties do not extend to any goods or parts which have been subjected to misuse, modification, lack of maintenance, neglect, transit damage or damage resulting from lightning, natural or accidental flooding, fire or accident. Operating use or circumstances outside normal conditions, such as high heat or high moisture, may also be excluded from this warranty.

THIS EXPRESS WARRANTY EXCLUDES ALL OTHER WARRANTIES OR REPRESENTATIONS EXPRESSED OR IMPLIED BY ANY LITERATURE, DATA OR PERSON. THE MAXIMUM LIABILITY OF AES UNDER THIS EXCLUSIVE REMEDY SHALL NEVER EXCEED THE COST OF THE SUBJECT PRODUCT AND AES RESERVES THE RIGHT, AT ITS SOLE DISCRETION, TO REFUND THE PURCHASE PRICE IN LIEU OF REPAIR OR REPLACEMENT.

PAES WILL NOT BE RESPONSIBLE OR LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, however arising, including but not limited to those for use of any products, loss of time, inconvenience, lost profit, labor charges or other incidental or consequential damages with respect to persons, animals, business or property, whether as a result of breach of warranty, negligence or otherwise. Notwithstanding any other provision of this warranty, BUYER'S REMEDY AGAINST AES FOR GOODS SUPPLIED OR FOR NONDELIVERED GOODS OR FAILURE TO FURNISH GOODS, WHETHER OR NOT BASED ON NEGLIGENCE, STRICT LIABILITY OR BREACH OF EXPRESS OR IMPLIED WARRANTY IS LIMITED SOLELY, AT THE OPTION OF AES, TO REPLACEMENT OF OR CURE OF SUCH NONCONFORMING OR NONDELIVERED GOODS OR RETURN OF THE PURCHASE PRICE FOR SUCH GOODS AND, IN NO EVENT, SHALL EXCEED THE PRICE OR CHARGE FOR SUCH GOODS. AES EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE WITH RESPECT TO THE GOODS SOLD. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTIONS SET FORTH IN THIS WARRANTY, notwithstanding any knowledge of PAES regarding the use or uses intended to be made of goods, proposed changes or additions to goods or any assistance or suggestions that may have been made by PAES personnel.

Unauthorized extensions of warranties by the customer shall remain the customer’s responsibility.

CUSTOMER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF PAES PRODUCTS FOR CUSTOMER’S USE OR RESALE OR FOR INCORPORATING THEM INTO OBJECTS OR APPLICATIONS THAT THE CUSTOMER DESIGNS, ASSEMBLES, CONSTRUCTS OR MANUFACTURES.

This warranty can be modified only by PAES personnel by signing a specific, written description of any modifications.

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3-Phase

Y High Voltage, 415-460 Volts

Δ Low Voltage, 220-250 Volts

115 Volt, 1 phase, 60 Hz

230 Volt, 1 phase, 60 Hz

2TB1 and 2TB2 are connections for thermal protection, Do not connect to 2TB1 and 2TB2 when using power cord.