PX-SERIES ULTRA HIGH EFFICIENCY CENTRIFUGAL BLOWERS WITH WASHDOWN ENCLOSURE

Models PX-300, PX-500, PX-750, PX-1000, PX-1500, PX-1550 and PX-2000

PAXTON PRODUCTS

INSTALLATION & OPERATION MANUAL

ITW Air Management

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www.paxtonproducts.com

PLEASE READ THIS MANUAL BEFORE INSTALLING YOUR BLOWER

WELCOME TO PAXTON PRODUCTS!

Paxton Products has been manufacturing high efficiency centrifugal blowers for nearly 60 years. A Paxton Air System delivers superior drying and blow off performance while conserving energy by coupling high-efficiency centrifugal blowers with Paxton's custom-engineered air delivery devices.

To ensure peak performance of your new Paxton System, please read and follow all installation and operation procedures carefully.

EQUIPMENT ARRIVAL AND INSPECTION

When the shipment arrives, open the crate and inspect the contents. Check the packing list to confirm that all equipment and parts have been received. If any equipment or parts are damaged or missing, you must make a claim with the freight carrier.

Notify Paxton Products of any damages or missing components immediately. We will assist in getting replacement components or parts to you as quickly as possible. **All claims must be made within 10 days of receipt.**

i Contact Customer Service at 1-800-441-7475 or by email at **techsupport@paxtonproducts.com**

Care should be exercised when moving the crate, to ensure that nothing is dropped or damaged.

TOOLS NEEDED FOR INSTALLATION

- 5/16" nut driver
- Phillips head screwdriver
- 9/16" socket
- Flat head screwdriver

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SAFETY PRECAUTIONS

Safety First! When installing, operating, or servicing the equipment, always use proper safety procedures in accordance with Federal, State and Local laws and regulations. To avoid injury to yourself, others, or damage to the equipment, adhere to the following safety practices.

➤ **Always use qualified personnel and electricians** for installation, maintenance and servicing of all Paxton blowers and motors. Electrical connections, servicing and maintenance should be performed only by properly trained, certified and licensed electricians. Operating a blower without proper grounding could result in personal injury or death.

➤ **Always disconnect the electrical power** at the circuit breaker or fuse box, before working on the motor and/or blower assembly. Take special precautions to ensure that the **power cannot be turned "ON"** while you are working on the motor and/or blower assembly. Observe proper lockout/tagout procedures.

➤ **Always wear safety glasses** while working on any Paxton blower assembly. Per OSHA regulations, always wear hearing protection when working near operating blowers.

➤ **Do not operate** the motor/blower assembly without the belt guard properly installed, or with the blower inlet **unprotected** by a filter element assembly.

➤ **Do not operate** the motor/blower assembly with the discharge outlet open. Always connect the outlet to the system piping or Paxton control valves. Failure to operate blowers under a working load could result in high current draw, damaging the motor and electrical systems.

➤ **Always** keep hands, tools, long hair, loose clothing, neckties, jewelry or similar loose items away from all moving or rotating parts.

➤ **Use caution** around all water-cooled units; the blower head assemblies operate at high temperatures, causing the outer surfaces to be dangerous to the touch.

➤ **Always** install motor current protectors (for 3-phase units), circuit breakers or fuses for line protection. Devices should be sized per motor nameplate data.

PAXTON BLOWER ENCLOSURE FAMILY

Paxton offers sound-reducing washdown enclosures in both polypropylene and stainless steel. The PX-300, 500, and 750 are in the B-G, or vertical orientation. The PX-1000, 1500,1550, and 2000 are in the A-A, or horizontal orient. Regardless of MOC or orientation, the installation procedures are identical, to the shown.

Polypropylene Enclosure for PX-300, -500, -750

Stainless Blower Enclosure for PX-1000, -1500, -1550, -2000

BLOWER INSTALLATION PROCEDURES (WITH BLOWER ENCLOSURE)

1. If you have purchased a blower enclosure from Paxton Products, the blower will be shipped already installed in the enclosure, and the entire unit packed in a crate.

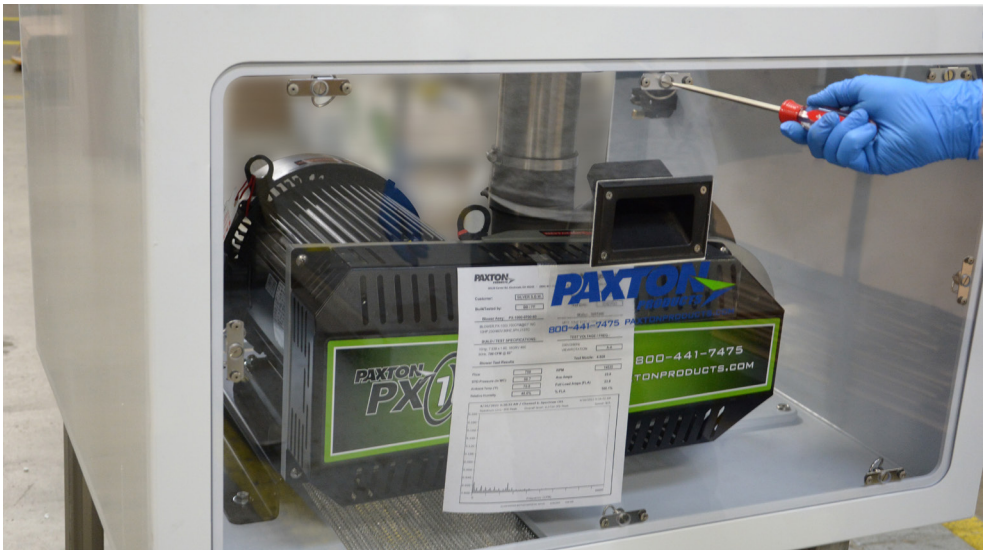
   Cut the straps holding the enclosure base to the crate.

2. Using a forklift, remove the blower and blower enclosure from the crate.

Be sure to lift the blower enclosure from the bottom of the stand and not directly underneath the enclosure.

The blower with enclosure and base weighs between 250 and 400 pounds (550–880 kg), depending on the size of the motor.

3. Remove the polycarbonate windows from the enclosure, using a flat head screw driver.



4. Remove the accessories and parts from the enclosure.

Various parts and accessories will be shipped in the enclosure for safekeeping.

5. Position and level the enclosure.

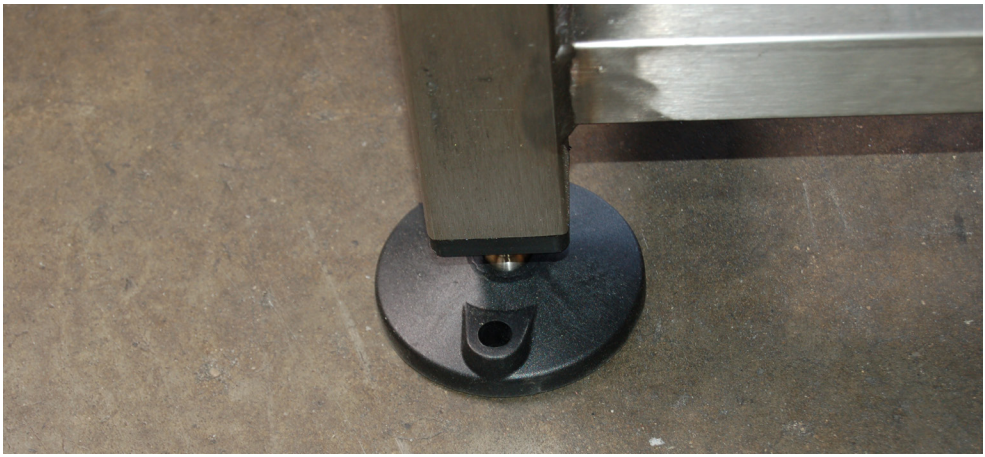
Tips for blower positioning:

a. Position the blower as close as possible to the target. The length of piping from the blower outlet to the air delivery devices should be minimized.

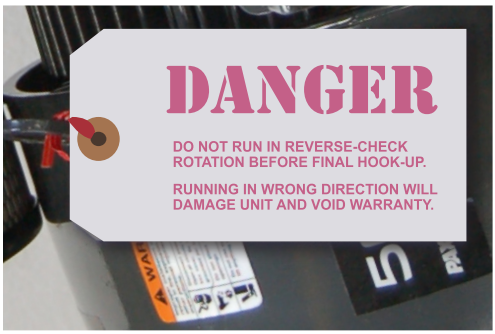
b. If the blower will be placed more than 10 feet but less than 50 feet from the target, 4" solid PVC piping should be used. If the blower will be placed more than 50 feet from the target, 6" solid PVC piping must be used AND the blower performance may be degraded. Minimize turns in the piping from the blower to the target. When turns are required, use long sweep elbows.

Refer to Piping Engineering Bulletin at **paxtonproducts.com** for more guidelines and information on piping pressure losses.

Blower must not be placed in ozone-present environments traditionally found in water filling rooms, as ozone compromises the integrity of the belt, resulting in premature failure.



6. If desired, affix the enclosure to the floor, ensuring that it is level.
7. Make electrical connections to the motor.
   - Switch off and disconnect electricity at the circuit.
   - Follow the wiring diagram on the motor nameplate to connect to either the power supply or the variable frequency drive (VFD).
   - Ensure that all electrical connections are tight and well insulated to protect against moisture.



Refer to the motor nameplate for power supply requirements.

VFDs purchased from Paxton Products will be pre-programmed for use with your blower.

Follow proper lockout/tagout procedures to ensure that the power cannot be turned on while you are working on the motor.

Be sure to ground the motor.

8. Check the rotation.

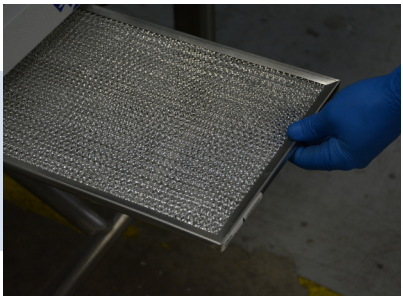
   - After making the electrical connections, proper electrical phase rotation must be determined.
   - Bump start (turn on then immediately turn off) the motor to observe the rotation of the motor fins to ensure that it is counterclockwise when facing the far side of the motor. Do NOT remove the belt guard to determine rotation. Note the rotation labels on the blower and motor.

i If wired improperly and running backwards, the amp draw of the motor will be 80% of the nameplate amp draw, and the blower output pressure will be about 40% of normal. The scroll will be very hot, about 50°F higher than ambient, and about 25°F higher when compared to operating in the forward direction.

Blower rear view, with inlet air filter removed

9. Reinstall the polycarbonate window to enclosure.

i Note that the enclosure comes equipped with a mesh air filter on the bottom of the unit. This filter should be removed and washed periodically. See instructions in the Service and Maintenance manual.



10. Remove red cap and install piping to air delivery devices.

> PX-series blowers have a 4" outside diameter outlet. The outlet may be either at the top or bottom of the enclosure, depending on the blower orientation ordered.
>
> Do not use flexible tubing until within 5 feet of the air delivery device.

11. See separate Paxton instructions for installation of the air delivery devices.

> Do not operate the blower without the air delivery devices, as uncontrolled air flow may overload the motor and /or belt drive system.

INSTALLATION OF THE OUTLET AIR FILTER

While inlet air filtration is required on Paxton Air Systems, Paxton also offers HEPA-quality outlet air filtration as an option for critical applications.

Outlet filtration housings are sized to minimize pressure drops across the filter, to maintain system pressures at the target, thus ensuring the highest quality blow off, drying or rinsing.

The outlet air filter comes pre-installed in the filter housing.

1. The outlet filtration housing should be installed within 10 feet (3 meters) of the blower, using the 4" flexible hose provided.

   Install one end of the hose to the blower or blower enclosure outlet; and the other end to the inlet of the filter housing.

> *i* The inlet to the filter housing can be identified using the directional arrow on the filter housing.

2. Connect hose or pipe to filter housing outlet. Flexible hose can be used if the distance to the air delivery devices is less than 10 feet (3 meters). If distance is greater than 10 feet, use 4" PVC piping.

3. For air flows greater than 1000 cfm, two outlet air filters will be required, putting 50% of the air through each filter, using the configuration shown here.

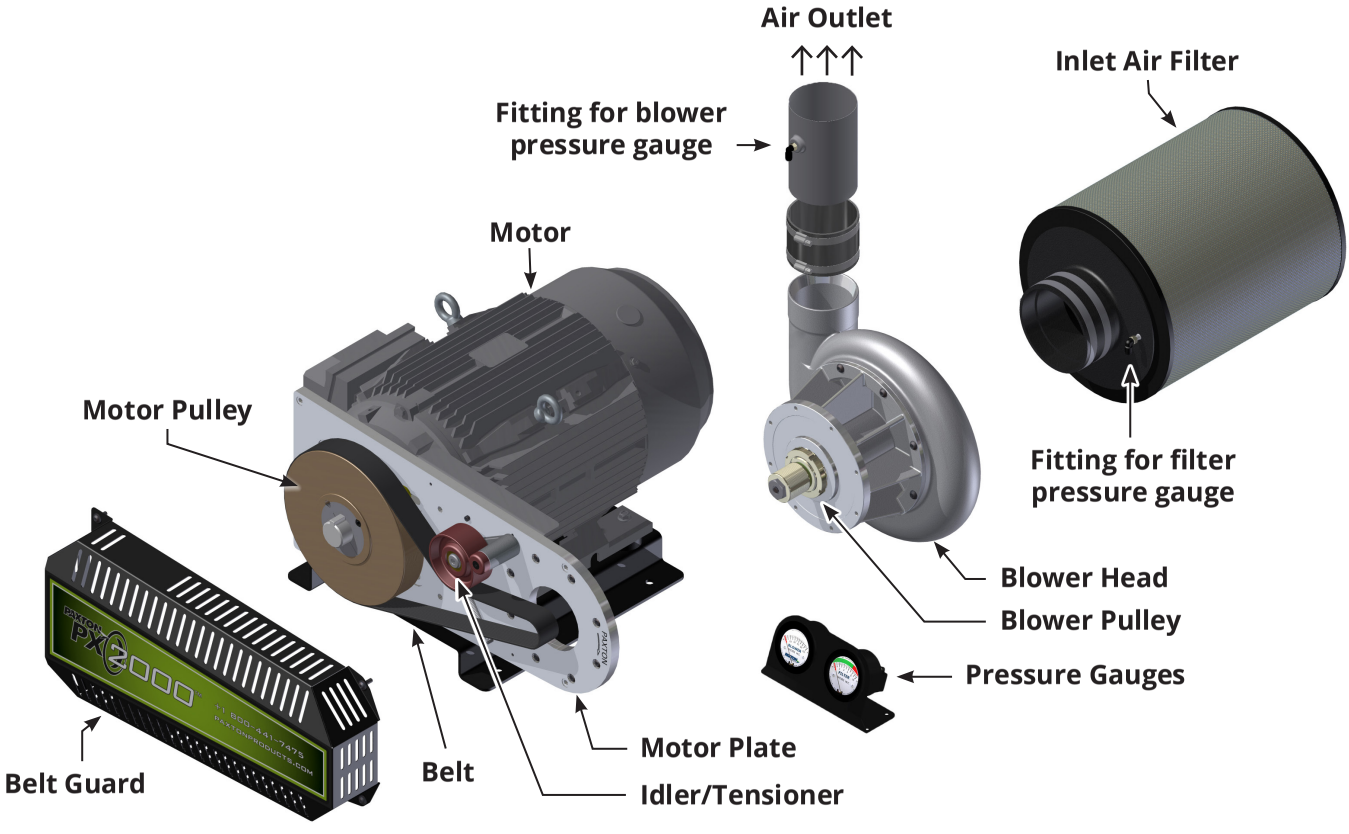
4. The outlet air filtration housing comes equipped with a filter gauge for monitoring the pressure drop across the filter.

   The gauge must be zeroed at startup. To zero, start the system and allow it to reach target flow rate (10–30 minutes). With the clean filter installed, and using a small flat head screw driver, adjust the gauge to read "0" inches of water column.

> *i* New filters can be ordered by calling **800-441-7475** or sending an email to **orders@paxtonproducts.com**

5. The filter should be changed when the pressure drop approaches 10" of water column, i.e. when the gauge indicator reaches the red zone.

PX-SERIES BLOWER, EXPLODED VIEW



GETTING TO KNOW YOUR BLOWER

A blower is a popular method for pumping air for industrial applications. Blowers use centrifugal force to aid the pumping. Your new Paxton ultra high efficiency centrifugal blower consists of the following key components:

1. **Motor**
2. **Belt Drive Assembly**
    a. Motor Plate
    b. Motor Pulley
    c. Blower Pulley
    d. Idler/Tensioner
    e. Belt
    f. Belt Guard
3. **Blower Head**
    a. Bearing carrier with ABEC-7 bearings
    b. Scroll
    c. Impeller (inside the scroll)
    d. Outlet Air Pressure Port
4. **Inlet Air Filter with pressure port**
5. **Pressure Gauge Kit installed on enclosure with Filter gauge and Blower gauge**

HOW THE BLOWER WORKS

An electric motor spins at about 3500 rpm, and through the blower's belt and pulley system, it causes the impeller to spin at 11,500–18,000 rpm. Room air is drawn into the blower through the inlet air filter. The inlet air comes into contact with the spinning impeller, accelerating the air. The accelerated air exits the blower at high velocity and pressures of 30–80 inches of water (75–200 mbar). The accelerated air is discharged into the piping system as it travels to the air delivery devices.

i

The blower must not be used without an inlet air filter, as the incursion of dust or dirt into the blower will damage the impeller and void the warranty.

STARTING AND STOPPING

Blower performance over the long term is maximized by minimizing starts and stops. If your application requires frequent starts and stops, the installation of a variable frequency drive (preferred) or soft start system is highly recommended to reduce the initial start up torque. This is particularly critical for larger horsepower models.

i Do not start and stop the blower more than 6 cycles per hour, without the use of a variable frequency drive.

BLOWER OPERATION AND MAINTENANCE

BLOWER OPERATION

1. After ensuring correct motor shaft rotation and connecting the air delivery devices, your new Paxton blower is now ready to use.
2. Switch the power "ON" to the blower unit and let it run while you measure the blower's voltage and amperage rating and compare to the values listed on the motor nameplate. Measure amperage and voltage on L1, L2 and L3 to ground using a Clamp Meter.

⚠ Do not operate the blower if it exceeds the voltage or current ratings on the motor nameplate. Call Paxton Technical Support at 1-800-441-7475.

3. Measure output pressure (page 19) and compare to design pressure, as indicated on the test sheet. If output pressure varies from design pressure by 10% or more, contact Paxton technical service at 1-800-441-7475.

i If wired improperly and running backwards, the amp draw of the motor will be 80% of the nameplate amp draw, and the blower output pressure will be about 40% of normal. The scroll will be very hot, about 50°F higher than ambient, and about 25°F higher when compared to operating in the forward direction.

4. The blower will achieve steady state operation in 30–60 minutes.

To ensure peak performance of your Paxton Air System, please read and follow all service and maintenance procedures carefully, as defined in the Service and Maintenance Manual, enclosed with the shipment and available online at:

www.paxtonproducts.com/px

MAINTENANCE GUIDELINES

In order to maintain the blower warranty, it is necessary to use genuine Paxton replacement parts replaced at the minimum frequency prescribed below. Please refer to the Service and Maintenance Manual for replacement instructions.

Paxton part	1 or 2 shifts/day operation	3 shifts/day operation
Belts	12 months	6 months or 4000 hours
Belt Springs	12 months	6 months or 4000 hours
Tensioners	24 months	12 months
Filters	Filters must be changed as often as needed to maintain blower or system performance as measured by increased pressure drop across the filter. The filter must be changed if the pressure drop exceeds 10" of water column. Filter change frequency will vary widely based on environmental and atmospheric conditions. Minimum recommended filter change frequency is every 12 months for 1 or 2 shift/day operation; and every 6 months for 3 shift/day operation.	

MEASURING PRESSURE

The PX-series blowers come equipped with a pressure gauge kit, with one gauge to measure the output pressure of the blower, and one gauge to measure the pressure drop across the filter.

➤ **Blower Output Pressure:** Each Paxton Air System is custom-engineered to match the number, size and types of air delivery devices with the flow and pressure of the blower. For one application, it may be optimum for the blower to operate at 50" W/C and 1000 CFM, whereas for another application, 30" W/C and 1400 CFM is specified. The blower is then built and tested to the design pressure and air flow rate. In order to achieve the drying performance specified, it is critical that the blower operate at the design pressure and flow.

The Blower Output Pressure Gauge is designed to indicate the outlet pressure of the blower, signaling proper operation. The pressure gauge should be connected to the outlet fitting of the blower via the pressure tap fitting. Upon start up of the Air System, the indicated outlet pressure should be compared to the design outlet pressure. This pressure gauge is also used for troubleshooting any performance issues. A complete loss of pressure indicates an electrical power issue or a mechanical problem such as a belt failure.

➤ **Pressure Drop Across the Filter:** The second pressure gauge measure the pressure drop across the inlet air filter, and indicates when the filter must be replaced. Filter replacement is required when the pressure drop across the filter exceeds 10" of water column, or annually, whichever comes first. A drop in pressure indicates a dirty filter.

Paxton Products, an ITW Company

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