



## Instructions & Procedures for Model PB and SPB Blowers

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### **DANGER**

THE INSTRUCTIONS AND PROCEDURES IN THIS MANUAL SHOULD ONLY BE PERFORMED BY AUTHORIZED PERSONNEL WITH MECHANICAL MACHINE TRAINING OR EXPERIENCE. PROPER EYEWEAR SAFETY AND ALL APPLICABLE OSHA SAFETY REGULATIONS MUST BE UTILIZED WHILE PERFORMING THE PROCEDURES CONTAINED HEREIN.

BEFORE STARTING ANY OF THE PROCEDURES CONTAINED HEREIN, POWER TO THE MOTOR MUST BE DISABLED USING OSHA LOCK-OUT/TAG-OUT PROCEDURES.

DO NOT ATTEMPT TO START THESE PROCEDURES UNTIL THE BLOWER WHEEL, INSIDE THE BLOWER HOUSING, HAS COME TO A COMPLETE STOP.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN BLOWER FAILURE, PROPERTY DAMAGE, SEVERE PERSONAL INJURY AND DEATH.

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**Models PB & SPB**

## I. INSTRUCTIONS TO CHANGE THE BLOWER WHEEL SET SCREWS ONLY.

1. **Make sure the power to the motor has been disabled using the proper OSHA Lock-out/Tag-out procedures, and the blower wheel has come to a complete stop. If you were not trained in the OSHA Lock-out/Tag-out procedures, consult a licensed electrician that has been trained.**
2. Disconnect any duct work or hose connections from the inlet and/or discharge of the blower housing. If necessary, or easier, disconnect the blower base and move the complete blower, motor and base assembly to a work bench.
3. Loosen and remove all the bolts, washers and nuts around the perimeter of the blower housing that hold the two housing halves together.
4. Pry the two housing halves apart with a screw driver or pry bar. On **Model PB**, be careful not to crack the cast aluminum housing.  
**NOTE:** Since there was a sealant applied when the blower was manufactured, performing this step might require two people to eliminate the chance for personal injury. One person to do the prying and one to hold the inlet side of the housing from falling.
5. Loosen and remove the two set screws in the side of the wheel hub with an Allen wrench. Discard the used set screws.
6. Replace the two set screws. **DO NOT tighten them yet.**  
Use new set screws that have a nylon "**locking patch**" on the threaded side of the screw. The head of the screws should have a "**knurled cup-point head**". These two features of the set screw are only good for one time use, but will prevent the set screws from vibrating loose while the blower is operating.  
**NOTE:**  
The set screws must be tightened to the proper torque as shown in Table 1 below. **DO NOT** use an air driven tool such as an impact wrench or pneumatic wrench. These tools could weaken or strip the threads in the wheel.
- 7 **IMPORTANT:** Tighten the set screw over the keyway **first**. Then tighten the set screw onto the shaft.

Table 1

SET SCREW TORQUE VALUES		
Diameter Number of Threads Per Inch	Hex Wrench Size (Across Flats)	Required Torque (in Inch Pounds)
1/4-20	1/8"	65
5/16-18	5/32"	165
3/8-16	3/16"	228

8. The sealant that was initially applied between the two housing halves must be removed. Using gloves, apply a degreaser such as Naphtha or Toluene to remove the silicone. **DO NOT USE GASOLINE.**
9. Apply a fresh bead of silicone sealant to the mating flange of the motor side of the housing.  
**NOTE:** On **Models PB-8** through **PB-15A** housing sizes, there is a tongue surface on one side of the housing and groove surface on the other side of the housing. Apply the bead of silicone into the **groove** on the grooved side housing.
10. Re-attach the inlet side of the housing using the same hardware. Tighten all the hardware.
11. **Carefully** reach into the blower inlet and spin the wheel by hand to make sure it is not rubbing anywhere inside the blower housing and that it rotates freely. If there is a rubbing or grinding sound, locate the cause and correct it.
12. Re-install the blower, motor, base assembly back into the system, if it was removed.
13. Reconnect any duct work, guards or accessories that were removed in **Step 2** above.
14. Reconnect the wiring to the motor in accordance with National Electric Code (NEC) standards.
15. "**Bump start**" the motor and turn the power off. As the wheel is slowing down, check to make sure it is turning the proper rotation. If it is not, reverse any two power leads (on 3 Phase motors only) and repeat this step until the proper rotation is achieved.
16. Perform a vibration test to make sure the vibration levels do not exceed the limits shown in the maintenance manual. You will need to refer to the maintenance manual for the fan model and arrangement for the correct information. All maintenance manuals can be found on our web site listed on the front cover of these instructions.

**NOTE:** Any open inlet, discharge, belts and sheaves or couplings **MUST** be guarded per OSHA standards.

## II. INSTRUCTIONS TO CHANGE CAST ALUMINUM WHEELS IN PB & SPB BLOWERS.

1. **Make sure the power to the motor has been disabled using the proper OSHA Lock-out/Tag-out procedures, and the blower wheel has come to a complete stop. If you were not trained in the OSHA Lock-out/Tag-out procedures, consult a licensed electrician that has been trained.**
2. Disconnect any duct work or hose connections from the inlet and/or discharge of the blower housing. If necessary, or easier, disconnect the blower base and move the complete blower, motor and base assembly to a work bench.
3. Follow **Steps 3, 4 and 5** on page 2.
4. Position two pry bars 180° apart, behind the back plate of the wheel and behind where two opposite blades connect to the back plate of the wheel. Carefully pry the wheel off of the shaft by applying force between the back plate of the wheel and the blower housing.  
**CAUTION:** Make sure the wheel can't fall off the end of the shaft and injure your legs or feet.
5. Remove the key in the motor or blower shaft keyway and discard it.
6. Clean the motor or blower shaft of any foreign material. All nicks and burrs in the shaft must be removed with a file and emery paper.
7. **ALL** wheels are supplied with two set screws, installed before the wheel is balanced at the factory. Check to make sure that the two set screws in the new wheel are not protruding **into** the bore or keyway of the new wheel.
8. In most cases the blower wheel can be mounted on the blower or motor shaft by hand and with little force. If the wheel does not slide on, check the wheel bore and the blower or motor shaft for nicks or burrs. The wheels are bored with a  $-.000$  to  $+.001$  tolerance so a slight interference may occur between the wheel bore and the blower or motor shaft. If this is the case, a moderate amount of force may be required by using a rawhide or hard rubber mallet to **tap on the hub of the wheel. DO NOT USE A STEEL HAMMER. Using a steel hammer may damage the blower or motor bearings and it can deform the wheel and/or crack the hub.**
9. The wheel should be positioned on the fan or motor shaft so there is an 1/8" minimum to 1/4" maximum clearance between the back plate of the wheel and the inside of the blower housing.
10. Install a new key of adequate length. For 14" diameter and larger wheels, the length of the key should be 1" minimum.

**NOTE:**

Each blower wheel is supplied with two set screws. One is over the keyway and the other is 90°-120° away. All set screws have a nylon "locking patch" on the side of the screw and a "knurled, cup point head".

**DO NOT use an air driven tool such as an impact wrench or pneumatic wrench to tighten the set screws. These tools could weaken or strip the threads in the wheel. The set screws must be tightened to the proper torque as shown in Table 1 below.**

11. **IMPORTANT:** Tighten the set screw over the keyway **first**. Then tighten the set screw onto the shaft.

Table 1

SET SCREW TORQUE VALUES		
Diameter Number of Threads Per Inch	Hex Wrench Size (Across Flats)	Required Torque (in Inch Pounds)
1/4-20	1/8"	65
5/16-18	5/32"	165
3/8-16	3/16"	228

12. The sealant that was initially applied between the two housing halves must be removed. Using gloves, apply a degreaser such as Naphtha or Toluene to remove the silicone. **DO NOT USE GASOLINE.**
13. Apply a fresh bead of silicone sealant to the mating flange of the motor side of the housing.  
**NOTE:** On **Models PB-8 through PB-15A** housing sizes, there is a tongue surface on one side of the housing and groove surface on the other side of the housing. Apply the bead of silicone into the **groove** on the grooved side housing.
14. Re-attach the inlet side of the housing using the same hardware. Tighten all the hardware.
15. **Carefully** reach into the blower inlet and spin the wheel by hand to make sure it is not rubbing anywhere inside the blower housing and that it rotates freely. If there is a rubbing or grinding sound, locate the cause and correct it.
16. Re-install the blower, motor, base assembly back into the system, if it was removed.
17. Reconnect any duct work, guards or accessories that were removed in **Step 2** above.
18. Reconnect the wiring to the motor in accordance with National Electric Code (NEC) standards.
19. "**Bump start**" the motor and turn the power off. As the wheel is slowing down, check to make sure it is turning the proper rotation. If it is not, reverse any two power leads (on 3 Phase motors only) and repeat this step until the proper rotation is achieved.
20. Perform a vibration test to make sure the vibration levels do not exceed the limits shown in the maintenance manual. You will need to refer to the maintenance manual for the fan model and arrangement for the correct information. All maintenance manuals can be found on our web site listed on the front cover of these instructions.

**NOTE:** Any open inlet, discharge, belts and sheaves or couplings **MUST** be guarded per OSHA standards.

### III. INSTRUCTIONS TO CHANGE ROTATION ON MODELS PB-14A, PB-15A, PB-18 AND PB-18WA, WITH REMOVABLE SIDE PLATES.

1. **Make sure the power to the motor has been disabled using the proper OSHA Lock-out/Tag-out procedures, and the blower wheel has come to a complete stop. If you were not trained in the OSHA Lock-out/Tag-out procedures, consult a licensed electrician that has been trained.**
2. Disconnect any duct work or hose connections from the inlet and/or discharge of the blower housing. If necessary, or easier, disconnect the blower base and move the complete blower, motor and base assembly to a work bench.
3. Follow **Steps 3, 4 and 5** on page 2.
4. Position two pry bars 180° apart, behind the back plate of the wheel and behind where two opposite blades connect to the back plate of the wheel. Carefully pry the wheel off of the shaft by applying force between the back plate of the wheel and the blower housing.  
**CAUTION:** Make sure the wheel can't fall off the end of the shaft and injure your legs or feet.
5. Remove the key in the motor or blower shaft keyway and discard it.
6. Clean the motor or blower shaft of any foreign material. All nicks and burrs in the shaft must be removed with a file and emery paper.
7. Remove the four outer circle bolts, nuts and washers holding the drive side of the housing to the drive side plate of the housing that is bolted to the blower base. Carefully pry the two castings apart so you don't crack them.
8. Remove the four bolts, nuts and washers holding the inlet side of the housing to the inlet side plate of the housing. Carefully pry the two castings apart so you don't crack them.
9. The sealant that was initially applied between the cast parts must be removed. Using gloves, apply a degreaser such as Naphtha or Toluene to remove the silicone. **DO NOT USE GASOLINE.**
10. Apply a fresh bead of silicone sealant to all the same mating surfaces of the housing and side plates where you removed the old silicone.  
**NOTE:** On **Models PB-14A** and **PB-15A** housings, there is a tongue surface on one side of the housing and a groove surface on the other side of the housing. Apply the bead of silicone into the **groove** on the grooved side housing.  
**NOTE:** When reinstalling the two housing halves, the original inlet side now becomes the drive side and the original drive side now becomes the inlet side.
11. Install the old inlet side housing onto the motor side plate with the original hardware and tighten it.
12. Install the inlet side plate onto the old motor side housing with the original hardware and tighten it.
13. Install the new inlet side housing and inlet plate onto the new motor side housing with the original hardware and tighten it.
14. For the rest of the assembly, follow **Steps 15 through 20** on page 3.

**NOTE: Any open inlet, discharge, belts and sheaves or couplings MUST be guarded per OSHA standards.**