Form: IPLM-0809
Effective: 8/7/09
Part No.: 01246
Supersedes: IPLM-1007

Instructions & Procedures for Model LM and LMF Blowers

⚠ 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, PROPERT DAMAGE, SEVERE PERSONAL INJURY AND DEATH.

Cincinnati Fan
7697 Snider Road
Mason, OH 45040-9135
Phone: (513) 573-0600
Fax: (513) 573-0640
www.cincinnatifan.com

Models LM & LMF

I. INSTRUCTIONS TO CHANGE THE BLOWER WHEEL SET SCREWS ONLY.
(without removing the blower housing)

YOU CAN ONLY USE THIS PROCEDURE IF YOU HAVE THE CORRECT ALLEN WRENCH. IF NOT, SEE PAGE 3. YOU WILL NEED A "T" HANDLE ALLEN WRENCH AT LEAST 8" LONG.

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. Carefully put your hand into the inlet of the blower to hold onto the blades of the wheel.
4. Turn the wheel so one of the two set screws, in the hub of the wheel, is **in-line** with the discharge of the blower.
5. Insert the correct size, **T Handle** Allen wrench into the blower discharge, in between two of the blades, till it connects the wheel set screw.
6. Loosen the set screw, remove it and discard it.
7. Repeat ***Steps 4, 5 and 6*** for the other set screw.
8. 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.
9. **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**

10. ***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.
11. Re-install the blower, motor, base assembly back into the system, if it was removed.
12. Reconnect any duct work, guards or accessories that were removed in ***Step 2*** above.
13. Reconnect the wiring to the motor in accordance with National Electric Code (NEC) standards.
14. "**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.

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

II. INSTRUCTIONS TO CHANGE THE BLOWER WHEEL SET SCREWS ONLY. (by removing the blower housing)

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. On Model LM-10, remove the screws that hold the inlet collar onto the blower housing. Remove the inlet collar and proceed to ***Step 5.***
4. Pry the two housing halves apart with a screw driver or pry bar. 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

After tightening the set screws on Model LM-10, reinstall the inlet collar and proceed to ***Step 11*** below.

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 some models of LM & LMF 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.

III. INSTRUCTIONS TO CHANGE THE WHEEL IN MODEL LM & LMF 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. Follow ***Steps 2, 3 and 4*** on page 3**.** For Model LM-10, follow ***Step 2 and 3*** on page 3 and then proceed to ***Step 3*** below.
3. **CRITICAL:** Measure the dimension from the front of the wheel hub to the end of the fan or motor shaft.
   Write this dimension down and keep it for later.
4. Loosen and remove the two set screws in the side of the wheel hub with an Allen wrench. Discard the used set screws.
5. Remove the wheel from the shaft. For Model LM-10, remove the wheel and then go to ***Step 7*** below.
6. 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.**
7. Remove the key in the motor or blower shaft keyway and discard it.
8. 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.
9. **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.
10. 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 against the hub of the wheel**. **DO NOT push hard against the outer rim of the wheel. That will damage 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 break the hub away from the wheel.**
11. The wheel **MUST** be positioned on the fan or motor shaft with the same dimension you took in **Step 3** above. It is critical to locate the wheel in the same position on the shaft, to maintain the proper airflow and pressure during operation.
12. Install a new key of adequate length.

    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.
13. **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**

    After tightening the set screws on Model LM-10, reinstall the inlet collar and then proceed to ***Step 16*** below.
14. Apply a fresh bead of silicone sealant to the mating flange of the motor side of the housing.
    NOTE: On some models of LM & LMF 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.
15. Re-attach the inlet side of the housing using the same hardware. Tighten all the hardware.
16. ***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.
17. Re-install the blower, motor, base assembly back into the system, if it was removed.
18. Reconnect any duct work, guards or accessories that were removed in ***Step 2*** above.
19. Reconnect the wiring to the motor in accordance with National Electric Code (NEC) standards.
20. "**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.
21. 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.