

Wheel Replacement

Models LM - LMF

INSTRUCTIONS AND PROCEDURES

CF-IPLM-24 ISSUED 4/2024

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT



LM Blower

instructions

Warning

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.

Replacing Blower Wheel Set Screws

WITHOUT REMOVING BLOWER HOUSING

Note

An 8" long T Handle Allen wrench will be required in order to access set screws.

- 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, 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 No** tighten 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.

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⚠ Caution

The set screws now must be tightened to the proper torque as shown in Table 1. 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.

Tighten the set screw over the keyway first. Then tighten the set screw onto the shaft.

Table 1

Diameter and Number of Threads/Inch	Hex Wrench Size (across flats)	Required Torque in-lbf
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.
- 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 (3 Phase motors only) and repeat this step until the proper rotation is achieved.

⚠ Caution

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

Replacing Blower Wheel Set Screws

BY REMOVING 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.



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- 2 Disconnect any duct work or hose connections from the inlet and/or discharge of the blower housing. If necessary, 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 LM-10 model, 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 pry bar. Be careful not to crack the cast aluminum housing.

⚠ Caution

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. 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.

⚠ Caution

The set screws now must be tightened to the proper torque as shown in Table 1. 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.

Tighten the set screw over the keyway first. Then tighten the set screw onto the shaft.

- 7 After tightening the set screws on an LM-10 model, reinstall the inlet collar and proceed to Step 11.
- 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 housing sizes of some models 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.

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- 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.
- 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 (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 product *User Manual*. You will need to refer to the product *User Manual* for the fan model and arrangement for the correct information. All product *User Manuals* can be found on our web site.

 **Caution**

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

Replacing Wheel

- 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 4. For LM-10 model follow Steps 2 and 3 on page 4 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. **Record this dimension.**
- 4 Loosen and remove the two set screws in the side of the wheel hub with an Allen wrench. Discard the used set screws.



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- 5 Remove the wheel from the shaft. For LM-10 model, remove the wheel and then proceed to Step 7.
- 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 recorded in Step 3. 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° apart. All set screws have a nylon locking patch on the side of the screw and a knurled, cup point head.

⚠ Caution

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.

Tighten the set screw over the keyway first. Then tighten the set screw onto the shaft.

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13 After tightening the set screws on LM-10 model, reinstall the inlet collar and then proceed to Step 16.

14 Apply a fresh bead of silicone sealant to the mating flange of the motor side of the housing.

Note

On housing sizes of some models 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.

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 (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 product *User Manual*. You will need to refer to the product *User Manual* for the fan model and arrangement for the correct information. All product *User Manuals* can be found on our web site.

Caution

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wheel replacement

USER MANUAL

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CF-IPLM-24 | ISSUED 4/2024

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