

Replacing a 3-Blade Prop with a 4 or 5-Blade Prop
DID YOU KNOW?

You can replace a propeller with a propeller that has a different number of blades. For example, if you have a condenser that has a 3-blade fan, you can replace it with a 4 or 5-blade propeller.

How to replace a 3-Blade Propeller with a 4-Blade or 5-Blade Propeller.

Step 1: Find the closest match to current blade from the data in the catalog.

Match number of blades of the original propeller you are replacing.

Match diameter of the original blade you are replacing.

Match pitch (as closely as possible) to the original blade you are replacing.

Check direction of rotation.

Step 2: Check current motor RPM for the existing blade.

Step 3: Check the Lau catalog technical data for the closest matching 3-blade replacement propeller's CFM and HP required.

Step 4: Find a propeller with same diameter and a different number of blades.

Step 5: Following the row for the motor's speed, find a propeller with CFM closest to original blade. Make sure the CFM is equal or greater to CFM of the blade you are replacing.

Do NOT replace existing blade with a propeller that has a lower CFM.

Step 6: Ensure new blade's BHP required is less than the nameplate rating of the motor. If BHP exceeds name plate rating, use prop with less CFM until BHP is under nameplate rating on motor.



If minimum HP required for a fan blade is .501 the motor must be more than 1/2 HP motor.

EXAMPLE:

Original propeller is a 3-blade, 24", 27°, clockwise direction. Check Lau catalog to find a 24", 27° pitch propeller. Part number 60557701 matches this propeller. Motor RPM is 1075 and the CFM is 5,195 with a required BHP of .59 (at .3"WC). 60557701 is not in stock so turn to the 4-blade section. Find the 24" blades. The 24", 27° pitch in the 4 blade section (part 60559701) in the 1075 RPM row has a CFM of 5,546 with a required HP of .657. The CFM is greater than 3-blade replacement (and original blade). If the motor nameplate rating is greater than .657 (such as .75), the 4 blade propeller can replace the 3 blade propeller.

FREQUENTLY ASKED QUESTIONS
What is the effect on the head pressure if the new propeller increases CFM?

Although the head pressure will increase as CFM increases, the difference should be small enough to not adversely affect performance of the unit if the new blade is a close match to the original blade.

Does a heavier blade require more HP from the motor?

No, the weight of the blade does not affect how much HP is required to turn it and will not hurt the efficiency of your blade. However, the stronger the blade the longer it will last.

Will an increase in BHP required hurt my unit's efficiency?

It may affect your unit's efficiency which is why it is important to find the closest match to your current blade. You may find the new blade requires less BHP and improves your unit's efficiency.

WHY INSTALL A NEW BLOWER ASSEMBLY

Lau Universal Replacement Blowers are the cost-effective alternative to time-consuming blower repairs. Lau blower products are exclusively engineered to endure the most rugged handling and withstand the increased workload expected of quality replacement products through years of service.

For over 80 years, Lau has been the recognized global leader in air moving equipment for heating, ventilation, and air conditioning industry. Lau offers several categories of blowers in popular sizes for all your property maintenance needs.

PREVENTATIVE MAINTENANCE FOR BELT DRIVE BLOWERS

Show the homeowner how they can perform basic service on the blower:

- Oil the motor seasonally with medium weight (SAE 20) motor oil.
- Vacuum the blower and blower compartment seasonally.
- If the blower has oil-type bearings, they must be oiled regularly. See detailed oiling information on the blower housing.
- Change filters seasonally and replace when dirty.
- The cabinet door should be kept closed except when performing service.

BELT DRIVE TIP

Loosen the setscrew on the outer face of the variable pitch motor pulley and turn the face.

The speed is **reduced** by turning the outer face to move the two pulley faces farther apart.

The speed is **increased** by turning the outer face to move the faces closer together.



For options on pulleys and belts, check out the Gates section beginning on Page 61.



BLOWER TABLE OF CONTENTS

Blower Assemblies

How to Replace a Blower	35
Belt Drive Blowers	36-37
Blower Selection Procedure	37
Twin Blower Parts Kit	37
Vibro-Pads	37
Direct Drive Blowers	38
Blower Performance Data	39

Blower Wheels

Single Inlet, Galvanized	40-43
Steel Shaft Adapter Bushings	43
FGP & BD Series, Single Inlet, Galvanized	44
Double Inlet, Aluminum with Steel Hubs	45
Double Inlet, Direct Drive	46-47
Double Inlet, Belt Drive	48-49
Reducing Bushings	49
Double Inlet, Large Belt Drive	50-51

FGP Series Blower Assemblies	52
Discharge Positions	52

Blower Parts & Accessories

Blower Replacement Parts	53-54
Component Limits	54
Brackets & Bracket Kits	55
Bearings	56-58
How to Install a Self-Locking Collar on Sealed & Pillow Block Bearings	58
Installation Parts	
Kits & Motor Adjustment Grommets	59
Vibro-Pads & Shafts	59

Torque Guide Chart for Lau Blower Wheels ..	60
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HOW TO REPLACE A BELT DRIVE BLOWER



CAUTION: Always disconnect, lock and tag power supply before servicing the blower or working with the unit for any reason. This is especially important with blowers equipped that have automatic reset thermal protection. Motor may activate without warning.

1. Begin by mounting the blower feet. Feet can be mounted in any of four standard positions by using the slotted holes and screw holes in the housing sides. Any variation of position may be easily obtained by trimming off the tabs and drilling new screw holes. The hardware bag contains rubber Vibro-Pads. Slip one into each of the corner holes of the feet.
2. Attach motor mounting bracket to the blower housing using the provided sheet metal screws. Attach the motor on the mount, but don't tighten the bolts until after installing and aligning the belts and pulleys. Bolt the tension-adjusting bracket to the motor, start the adjusting screw, add the locknut, and place the rubber bumper on the end.
3. Mount the variable-pitch motor pulley on the motor shaft with its movable face towards the end of the shaft, away from the motor. On the side of the pulley nearest the motor, tighten the setscrew on the *flat* or *key* of the motor shaft. Leave some clearance between the pulley and the end bell of the motor.
4. Mount the blower pulley on the blower shaft by tightening its setscrew securely on the *flat* or *key* of the shaft. Be sure the blower pulley is perpendicular to the shaft; it will be used later as a guide for aligning the drive.
5. Wipe off the pulleys and belt with a clean rag to get rid of oil and dirt. Dirt and grease are tough abrasives that cause the belt to wear out faster, throwing it out of balance and shortening its life.
6. Install the V-Belt in the pulley grooves by loosening the belt take-up or the adjusting screw on the motor. Do not *roll* or *snap* the belt on the pulleys; this causes too much strain on the pulleys. Be sure the belt doesn't *bottom* in the pulley grooves.
7. Align both pulley and shafts by moving the motor on its motor mount. Hold a straight edge flush against the blower pulley, then move the motor until the belt is parallel to the straight edge.
8. A pulley alignment short-cut: Sight down the top of the belt from slightly above it. If the belt is straight where it leaves the pulley and does not bend, the alignment is fairly accurate.
9. Check belt tension before proceeding further. Remember that a V-belt *rides* the inside of the pulley faces.



Belt-Tension Adjustment Tip: Using the belt take-up or motor-adjusting screw, tighten the belt until the slack side can be depressed about 3/4" for each foot of span between the pulleys. Otherwise, use a Gates tension tester on Page 87.



Warning: Excessive belt tension is the most frequent cause of bearing wear and noise.

10. Install the blower in the furnace or air conditioning unit following the checklist below:
 - Center and seal the blower outlet in the blower opening so there is no air leakage.
 - Support the blower by its mounting feet, avoid metal-to-metal contact.
 - Wire the motor according to the diagram supplied with the unit or its control, following all local codes.
 - Anchor the wiring with resilient clips to keep it from rattling or transmitting vibration noises.
11. Double check all electrical connections. Insure all fasteners are tight. Remove all loose tools and objects from the furnace or air conditioning compartment, blower wheel, and belt. Install cabinet door. Turn electrical power on and run for five to ten minutes.
12. Turn power off and adjust blower speed as required. The blower speed can be adjusted to increase or decrease its output of air in a furnace or air conditioning unit. With the cabinet door closed, check motor amps with an amp probe. Insure amp reading is within the motor nameplate rating.