



Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage!



General Safety Information

Only qualified personnel should install this fan. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. Other considerations may be required if seismic activity is present. If more information is needed, contact a licensed professional engineer before moving forward.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electric Code (CEC) in Canada.
2. The rotation of the wheel is critical. It must be free to rotate without striking or rubbing any stationary objects.
3. Motor must be securely and adequately grounded.
4. Do not spin fan wheel faster than max cataloged fan RPM. Adjustments to fan speed significantly affects motor load. If the fan RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
5. Do not allow the power cable to kink or come in contact with oil, grease, hot surfaces or chemicals. Replace cord immediately if damaged.
6. Verify that the power source is compatible with the equipment.
7. Never open access doors to a duct while the fan is running.

DANGER

Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury.

CAUTION

When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing.

CAUTION

Precaution should be taken in explosive atmospheres.

DANGER

Pour écarter les risques d'incendie, de choc électrique ou de blessure grave, veiller à toujours débrancher, verrouiller et étiqueter la source de courant avant l'installation ou l'entretien.

ATTENTION

Lors de toute intervention sur la soufflante, le moteur peut être suffisamment chaud pour provoquer une douleur voire une blessure. Laisser le moteur refroidir avant toute maintenance.

ATTENTION

Faire preuve de précaution dans les atmosphères explosives.

Receiving

Upon receiving the product, check to ensure all items are accounted for by referencing the delivery receipt or packing list. Inspect each crate or carton for shipping damage before accepting delivery. Alert the carrier of any damage detected. The customer will make a notation of damage (or shortage of items) on the delivery receipt and all copies of the bill of lading which is countersigned by the delivering carrier. If damaged, immediately contact Larkin Industries, Inc. Any physical damage to the unit after acceptance is not the responsibility of Larkin Industries, Inc.

Unpacking

Verify that all required parts and the correct quantity of each item have been received. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the bill of lading.

Storage

Fans are protected against damage during shipment. If the unit cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the unit during storage. The user assumes responsibility of the fan and accessories while in storage. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user.

Indoor - The ideal environment for the storage of fans and accessories is indoors, above grade, in a low humidity atmosphere which is sealed to prevent the entry of blowing dust, rain or snow. Temperatures should be evenly maintained between 30° to 110°F (-1° to 43°C), wide temperature swings may cause condensation and “sweating” of metal parts. All accessories must be stored indoors in a clean, dry atmosphere.

Remove any accumulations of dirt, water, ice, or snow and wipe dry before moving to indoor storage. To avoid “sweating” of metal parts allow cold parts to reach room temperature. To dry parts and packages use a portable electric heater to remove any moisture build up. Leave coverings loose to permit air circulation and to allow for periodic inspection.

The unit should be stored at least 3½ inches (89 mm) off the floor on wooden blocks covered with moisture proof paper or polyethylene sheathing. Aisles between parts and along all walls should be provided to permit air circulation and space for inspection.

Outdoor - Fans designed for outdoor applications may be stored outdoors, if absolutely necessary. Roads or aisles for portable cranes and hauling equipment are needed.

The fan should be placed on a level surface to prevent water from leaking into the fan. The fan should be elevated on an adequate number of wooden blocks so it is above water and snow levels and has enough blocking to prevent it from settling into soft ground. Locate parts far enough apart to permit air circulation, sunlight and space for periodic inspection. To minimize water accumulation, place all fan parts on blocking supports so rain water will run off.

Do not cover parts with plastic film or tarps as these cause condensation of moisture from the air passing through heating and cooling cycles. Fan wheels should be blocked to prevent spinning caused by strong winds.

Inspection and Maintenance During Storage

While in storage, inspect fans once per month. Keep a record of inspection and maintenance performed.

If moisture or dirt accumulations are found on parts, the source should be located and eliminated. At each inspection, rotate the wheel by hand ten to fifteen revolutions to distribute lubricant in motor and bearings. If paint deterioration begins, consideration should be given to touch-up or repainting. Fans with special coatings may require special techniques for touch-up or repair.

Machined parts coated with rust preventive should be restored to good condition promptly if signs of rust occur. Immediately remove the original rust preventive coating with petroleum solvent and clean with lint-free cloths. Polish any remaining rust from surface with crocus cloth or fine emery paper and oil. Do not destroy the continuity of the surfaces. Thoroughly wipe clean with Tectyl® 506 (Ashland Inc.) or the equivalent. For hard to reach internal surfaces or for occasional use, consider using Tectyl® 511M Rust Preventive, WD-40® or the equivalent.

Removing From Storage

As fans are removed from storage to be installed in their final location, they should be protected and maintained in a similar fashion until the fan equipment goes into operation.

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Installation

Inspect the unit for any damage and report it to the shipper immediately. Also, check to see that all accessory items are accounted for.

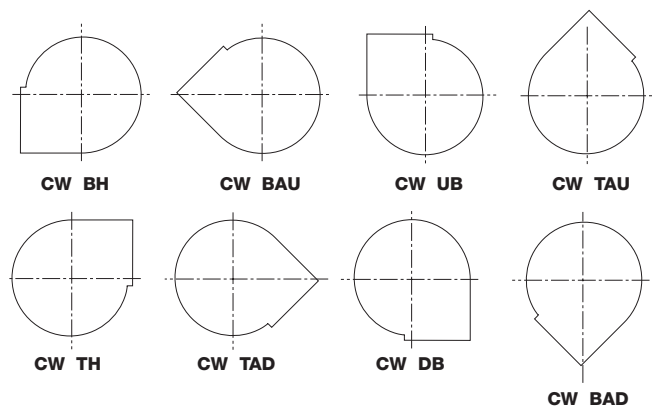
Move the fan to the desired location and fasten securely through mounting holes provided in the base angles. The unit must be set level (shimming may be necessary). Flexible duct connections and vibration isolators should be used where noise is a factor.

The motor voltage and ampere rating must be checked for compatibility with the electrical supply prior to final electrical connection. Supply wiring to the fan must be properly fused, and conform to local and national electrical codes.

The discharge is factory set as specified by customer order, however, it can be rotated to other discharge positions in the field if necessary. Removal of the housing bolts allows the discharge to be rotated to the clockwise positions below. For TAD, BD and BAD discharge positions, a portion of the frame angle must be removed.

Clockwise rotation shown. Counterclockwise discharge positions are a mirror image of those shown. Fan rotation is always specified from the drive side of the housing.

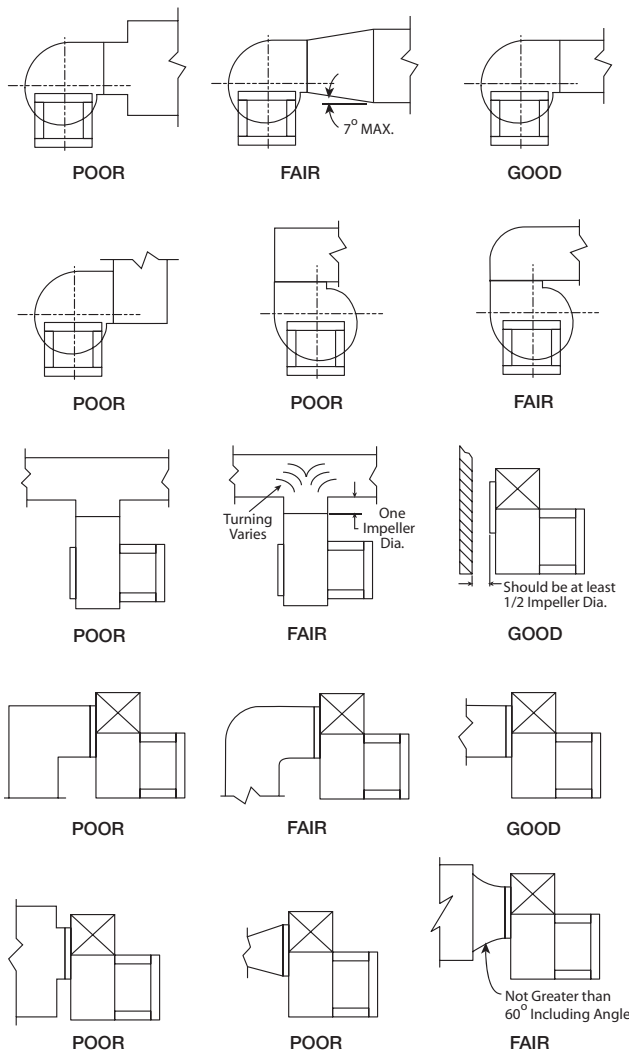
Discharge Positions



Effect of Installation on Performance

Restricted or unstable flow at the fan inlet can cause pre-rotation of incoming air or uneven loading of the fan wheel, yielding large system losses, increased sound levels and structural failure of the fan wheel. Free discharge or turbulent flow in the discharge ductwork will also result in system effect losses.

These examples show the system layout and inlet and discharge configurations which can affect fan performance.



Pre-Starting Checks

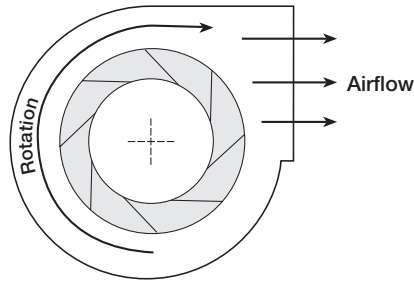
| DANGER |
|---|
| Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury. |
| CAUTION |
| When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing. |
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| Precaution should be taken in explosive atmospheres. |
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| ATTENTION |
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Wheel Rotation

Rotation direction of the wheel is critical and incorrect rotation will result in reduced air performance, increased motor loading and possible motor burnout.

Check wheel rotation by momentarily energizing the unit and noting if rotation is in the same direction as the airflow at the outlet and conforms to the rotation decal affixed to the unit.

Wheels as viewed from the drive side:



Backward Inclined

Wheels

Wheels must rotate freely and not rub on the inlet venturi. Model XUED wheels overlap the inlet venturi as shown in Figure 2. Refer to the Approximate Wheel Clearance Dimensions table for the proper dimensions for wheel overlap and radial gap.

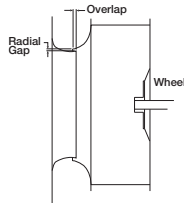


Figure 2

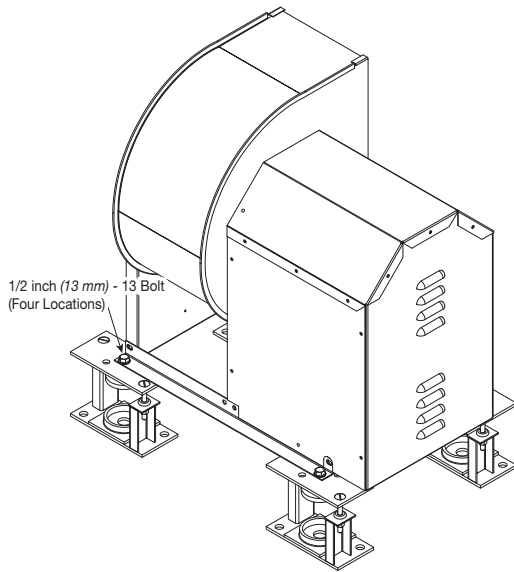
Approximate Wheel Clearance Dimensions

| XUED | Overlap | Overlap Tolerance | Radial Gap |
|------|-------------|-------------------|------------|
| | inches (mm) | | |
| 7 | 3/8 (10) | 1/4 (6) | 5/32 (4) |
| 8 | 3/8 (10) | 1/4 (6) | 5/32 (4) |
| 10 | 3/8 (10) | 1/4 (6) | 5/32 (4) |
| 13 | 7/16 (11) | 1/4 (6) | 5/32 (4) |
| 15 | 1/2 (13) | 1/4 (6) | 5/32 (4) |
| 16 | 1/2 (13) | 1/4 (6) | 5/32 (4) |
| 18 | 5/8 (16) | 3/8 (10) | 5/32 (4) |

Mounting for Severe Duty Installation

Isolator Anchoring

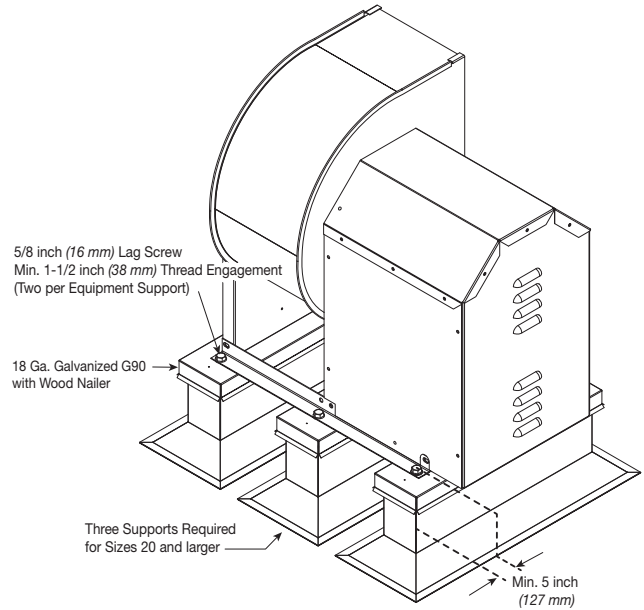
One fastener per isolator anchoring.
Four isolators required.



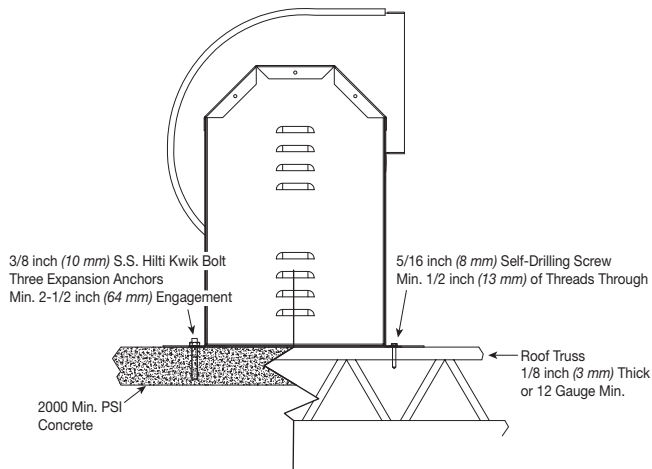
Isolator Anchoring

Equipment Support Anchoring

Two fasteners per equipment support.
Three supports required for model sizes 20 and larger.

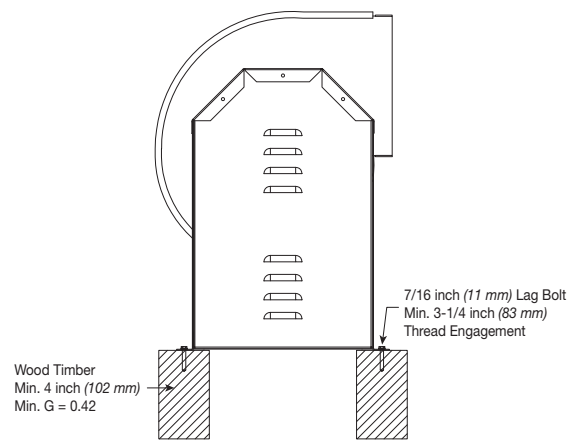


Equipment Support Anchoring



Concrete Deck Anchoring

Steel Deck Anchoring



Timber Anchoring

Maintenance

Motor Maintenance

Motor maintenance is generally limited to cleaning and lubrication (where applicable). Cleaning should be limited to exterior surfaces only. Removing dust and grease buildup on the motor housing assures proper motor cooling. Use caution and do not allow water or solvents to enter the motor or bearings. Under no circumstances should motors or bearings be sprayed with steam, water or solvents.

Many fractional horsepower motors are permanently lubricated for life and require no further lubrication. Motors supplied with grease fittings should be greased in accordance with the manufacturer's recommendations.

Wheel and Fastener Maintenance

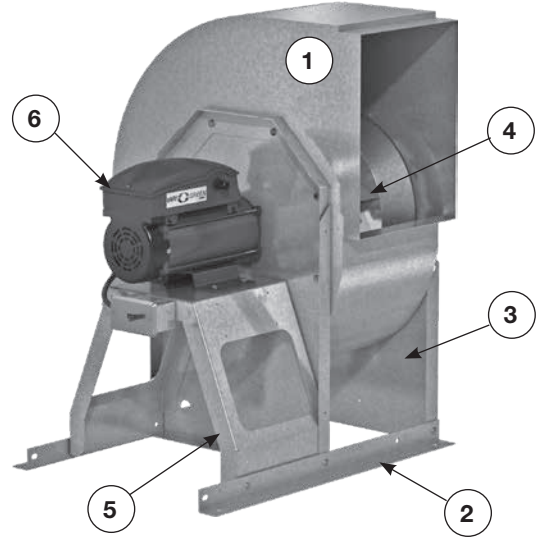
Wheels require very little attention when exhausting clean air, however, wheels exhausting dirty air require frequent cleaning to assure smooth and safe operation.

All fasteners, including set screws in the bearing collars, should be checked for tightness each time maintenance checks are performed.

A proper maintenance program will help preserve the performance and reliability designed into the fan.

Parts List

Each fan bears a manufacturer's nameplate with model number and serial number embossed. This information will assist Larkin Industries, Inc. and the factory in providing service and replacement parts. Before taking any corrective action, make certain unit is not capable of operation during repairs.



Available Replacement Parts

1. Scroll housing
2. Drive frame - base angle
3. Intake support panel
4. Wheel (specify rotation)
5. Drive frame assembly
6. Motor

Troubleshooting

WARNING

Before taking any corrective action, make certain unit is not capable of operation during repairs.

AVERTISSEMENT

Avant d'entreprendre toute action corrective, s'assurer que l'appareil ne pourra pas fonctionner durant les réparations.

| PROBLEM | CAUSE | CORRECTIVE ACTION |
|-----------------------|---|---|
| Excessive Noise | Wheel Rubbing Inlet | Adjust wheel and/or inlet cone. Tighten wheel hub or bearing collars on shaft. |
| | Wheel Unbalance | Clean all dirt off wheel. Check wheel balance, rebalance in place if necessary. |
| Low CFM | Fan | Check wheel for correct rotation. Increase fan speed.* |
| | Duct System | See page 3. |
| High CFM | Fan | Resize ductwork. Access door, filters, grills not installed. |
| | Duct System | Change obstructions in system. Use correction factor to adjust for temperature/altitude. Resize ductwork. Clean filters/coils. Change fan speed.* |
| Static Pressure Wrong | Duct system has more or less restriction than anticipated | Check rotation of wheel. Adjust fan speed. |
| High Horsepower | Fan | Check rotation of wheel. Reduce fan speed. |
| | Duct System | Resize ductwork. Check proper operation of face and bypass dampers. Check filters and access doors. |
| Fan Doesn't Operate | Electrical Supply | Check fuses/circuit breakers. Check for switches off. Check for correct supply voltage. |

*Always check motor amps and compare to nameplate rating. Excessive fan speed may overload the motor and result in burnout.



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