# Fan-Air® Power Vents O&M Manual

PART NO. 11899

# NOTE! READ AND SAVE THESE INSTRUCTIONS — IMPORTANT SAFETY INSTRUCTIONS

## USE AND CARE INFORMATION FOR Fan-Air® COMMERCIAL/INDUSTRIAL POWER VENTILATORS

The selection of power ventilators as a method of exhausting your commercial/industrial building will provide you with minimum operating expense. Your power vent unit is designed and built to provide many years of dependable operation. The following information includes sections on installation, start-up and regular maintenance.

## INSTALLATION AND START-UP SAFETY

- An commercial/industrial power ventilator should only be installed by a qualified and experienced installer in which all work should be in compliance to all local and national building and electrical codes.
- Before installation it is important to be certain the mounting surface will bear the operating weight of the unit. For proper unit operation it is also important that it be operated in a completely level position.
- Electrical wiring must be installed a safe distance away from any sharp or moving parts (fan blades, pulleys, sheaves, belts, etc.).
- Either an open drip proof or totally enclosed fan cooled motor may be used. Check the electrical supply to see that it matches the requirements shown on the motor name plate.
- All safety devices and panels of unit must be reinstalled and remounted as previously mounted before start-up or servicing.
- Multi-speed motors: Power ventilators are designed to operate on specific RPMs. If a multi-speed motor is installed only the correct speed must be used. Refer to the motor specification for your model.
- Guards should be installed when fan prop is within seven feet (7') of working area or whenever deemed advisable for safety reasons.
- Units are mounted in the down discharge position, fan guards must be installed at discharge or the unit or duct.

## PRE-START CHECK LIST

Complete and fax a copy of the enclosed Pre-Start Checklist to United Metal Products within 30 days of start-up for warranty validation.

For field support and installation assistance, or to obtain a printed copy of these instructions, please contact Customer Service at:
T 480-968-9550 F 480-968-9555
service@unitedmetal.com

For future reference, record Model and Serial Numbers from the outside of your power ventilator here:

Model No. _____

Serial No._____

**WARNING – TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

- Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.



**⚠ WARNING**

**DISCONNECT ALL ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING TO INSTALL, OPEN, OR SERVICE YOUR UNIT. IF THE UNIT IS THERMOSTATICALLY CONTROLLED, THE THERMOSTAT IS NOT TO BE USED AS A DISCONNECT AS IT MAY RESET AND START THE UNIT UNEXPECTEDLY.**

# START-UP PROCEDURE

## RECEIVING

Inspect the complete unit for shipping damage. If damage is present, you have the right to either accept or reject the shipment. If you (customer) elect to receive the equipment in a damaged condition, it then becomes your responsibility to note the extent of the damage on the delivering freight bill of lading in the presence of the delivering agent (driver) of the delivering freight carrier in accordance with the ICC regulations. It also then becomes your responsibility to work with the delivering carrier to have the equipment repaired to the satisfaction of United Metal Products, Inc., so the warranty may remain valid. United Metal Products must also be notified of shipping damage immediately. Be sure to read the warranty for further information. United Metal Products will in no way be responsible for any unauthorized back charges due to events or circumstances out of their control which may cause shipping delays.

## INSPECTION OF EQUIPMENT-VISUAL

The equipment type and arrangement should be verified as ordered at once when it arrives at the jobsite. When a discrepancy is found, the local United Metal Products Sales Representative must be notified immediately so that corrective action may be investigated, also verify electrical conformance to specifications. Unauthorized alterations and unauthorized back charges will not be recognized by United Metal Products, Inc.

## LONG-TERM STORAGE

There is a time limit of one year from date of shipment that any unit may be kept in long-term storage. At the end of the one year period, the unit must be in operation. Rotate the wheel by hand every two weeks to redistribute grease on internal bearing parts.

**NOTE: Failure to perform the long-term storage requirements past 60 days from shipment and properly log these required procedures will void the warranty.**

## CURB INSTALLATION

**NOTE: If the unit is installed on grillage, this section will not apply.** The curb will be shipped unassembled. It may be necessary to assemble it on the job-site. Each part of the curb is identified with the proper tags and/or markings. It is important the curb be installed level and square.

**NOTE: See section under receiving instructions when receiving curbs and inspecting for freight damage and filing of freight damage claims. Any freight damage is the responsibility of the receiving contractor and/or his authorized receiving agent and the delivering carrier.**

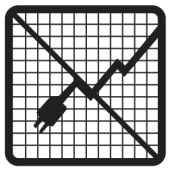
When installing the curb, obtain a copy of the approved submittal, as each unit and actual curb installation may not be identical.

# INSTALLATION AND START-UP SAFETY

- Before installation it is important to be certain the mounting surface will bear the operating weight of the unit. For proper unit operation, it is also important that it be operated in a completely level position.
- Electrical wiring must be installed a safe distance away from any sharp or moving parts (blower wheels, pulleys, sheaves, belts, etc.).
- All guards and/or interlocks, mechanical or electrical, provided by manufacturer must always remain in place to provide needed protection against moving parts.
- Guards must be installed when fan or discharge is within personnel or within seven (7) feet of working area or whenever deemed advisable for safety.
- All safety devices, panels, and doors of the unit must be installed and remounted as previously mounted before start-up, servicing, or cleaning.
- Check belt tension.

**WARNING – TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
- When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- Ducted fans must always be vented to the outdoors.



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**CAUTION! For General Ventilating Use Only. Do Not Use To Exhaust Hazardous Or Explosive Materials And Vapors.**

# PRE-START CHECKLIST

(RESPONSIBILITY OF INSTALLING CONTRACTOR)

NOTE: Please complete & return fax to United Metal Products within 30 days of start-up for warranty validation. Fax: 480-968-9555

INSTALLER _____ COMPANY _____ DATE _____

MODEL NUMBER _____ SERIAL NUMBER _____ TAG NUMBER _____

| | Y | N | NA | FAN(S) |
|---|---|---|---|---|
| 1. | ☐ | ☐ | ☐ | bearing blocks tight and aligned |
| 2. | ☐ | ☐ | ☐ | bearing concentrics tight |
| 3. | ☐ | ☐ | ☐ | driven pulley and hub tight |
| 4. | ☐ | ☐ | ☐ | remove shipping blocks under isolator and adjust for deflection |
| 5. | ☐ | ☐ | ☐ | set screws in fan hub tight and secure (NOTE: after two weeks of operation - retighten) |
| | | | | **MOTOR(S)** |
| 6. | ☐ | ☐ | ☐ | mounting bolts tight |
| 7. | ☐ | ☐ | ☐ | electrical connections and cover tight |
| 8. | ☐ | ☐ | ☐ | pulley and hub tight |
| | | | | **BELTS** |
| 9. | ☐ | ☐ | ☐ | guard in place and secure |
| 10. | ☐ | ☐ | ☐ | belts tight and aligned |
| | | | | **ACTUATED DAMPERS** |
| 11. | ☐ | ☐ | ☐ | adjust and secure |
| 12. | ☐ | ☐ | ☐ | operate freely |
| 13. | ☐ | ☐ | ☐ | shipping blocks removed |
| | | | | **ELECTRICAL CONNECTIONS** |
| 14. | ☐ | ☐ | ☐ | all electrical connections tight |
| 15. | ☐ | ☐ | ☐ | prove out all door safety switches |

| | Y | N | NA | CABINET |
|---|---|---|---|---|
| 16. | ☐ | ☐ | ☐ | check caulked seams and seals |
| 17. | ☐ | ☐ | ☐ | check door latches for a tight seal and fan access doors secured with provided allen head (5/16") latch |
| 18. | ☐ | ☐ | ☐ | remove isolator tie downs if provided |
| 19. | ☐ | ☐ | ☐ | tighten any loose bolts or screws |
| 20. | ☐ | ☐ | ☐ | all safety devices, panels, and doors of the unit must be installed and remounted as previously mounted before start-up, servicing, or cleaning |
| | | | | **OPERATION** |
| 21. | ☐ | ☐ | ☐ | amps |
| 22. | ☐ | ☐ | ☐ | fan noise |
| 23. | ☐ | ☐ | ☐ | rotation correct |
| 24. | ☐ | ☐ | ☐ | air capacity |
| 25. | ☐ | ☐ | ☐ | vibration |
| 26. | ☐ | ☐ | ☐ | door safety locks closed |
| 27. | ☐ | ☐ | ☐ | all safety devices installed and secure |
| 28. | ☐ | ☐ | ☐ | thermal overloads set properly |

## COMMISSIONING RECORD

SUPPLY FAN

| | AMPS | VOLTS |
|---|---|---|
| A. | L1_____ L2_____ L3_____ | L1 - L2 _____ L1 - L3 _____ L3 - L2 _____ |
| B. | L1_____ L2_____ L3_____ | L1 - L2 _____ L1 - L3 _____ L3 - L2 _____ |

Final Overload Setting_____

Nameplate: Model #_____ Volts_____ Amps_____ HP_____

☐ Verify all Amp and Volt readings meet nameplate data

Installer's Acceptance Signature X _____ Date _____

NOTES:

_____

_____

_____

# REGULAR START-UP AND MAINTENANCE



**⚠ WARNING**

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## 1. TO SERVICE UNIT

For efficient operation it is crucial that your power ventilator be properly maintained every year.

Remove the two bolts and nuts located on the underside of the hood, near the motor. Lift the hood upward.
**WARNING! A falling hood could cause serious injury.** Pull up and attach the hood support rod located to the right side of the motor. Install the bolt and nut to secure rod to the hood. (FIGURE1).



FIGURE 1

## 2. CHECK BELT TENSION

With each ventilator inspection be sure to check for proper belt tension. Proper belt tension is approximately ½" movement of the belt when pressed at mid-span under normal thumb pressure. Do not overtighten belt. However, a new belt should be tighter than a used belt. (FIGURE 2)

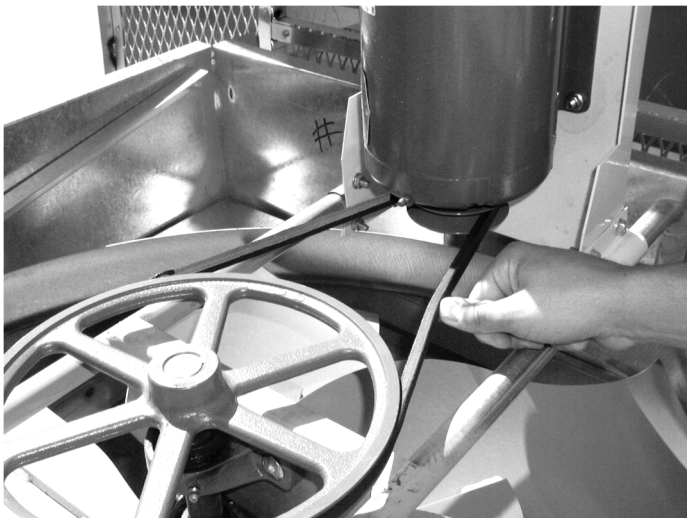


FIGURE 2

## 3. DAMPER MOVEMENT

Damper blades should be free from any binding or dragging. Inspect each blade for ease of operation, wipe and clean off blades that have accumulated excess amount of dirt or grease.

## 4. LUBRICATION

Motor and fan shaft bearings on the units will require relubrication with a #2 consistency Lithium Base grease.(EXAMPLES: Shell Alvania #2, Mobil Mobilux #2, Texaco Multifax #2.) NOTE: Do not overgrease. The major cause for bearing failure is overgreasing. (FIGURE 3)



FIGURE 3

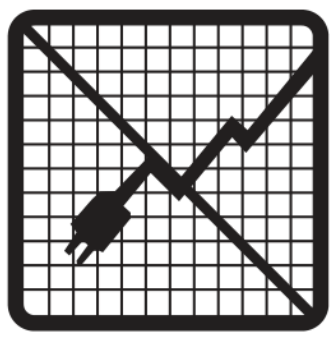
## 5. ELECTRICAL

Check all electrical connections at the motor and the disconnect for tightness. Loose connections can shorten motor life.

For units fitted with GFCI, press TEST / RESET buttons to assure proper operation on a monthly basis.

## WIRING INSTRUCTIONS

ALL grounding, wiring and materials must be installed in accordance with all current N.E.C. and local codes, and must be performed by a qualified licensed technician. Consult the chart below for proper wire, circuit breaker and fusible switch. **WARNING!** Improper wiring, installation or maintenance of equipment may cause electric shock, fire or injury to persons.



**⚠ WARNING**

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**WARNING!** Do not exceed the maximum amperage output as stamped on the motor specification plate or motor can overload. Only qualified persons with proper electrical equipment and knowledge should adjust variable pitch sheaves.

**WARNING!** Disconnect all the electrical power to the unit and ensure that belt is not rotating before adjusting belt tension. Do not adjust belt tension by changing diameter of adjustable sheave. Adjust belt tension only by adjusting motor bracket.

Even while routinely inspecting or servicing the inside, the unit can be accidentally started. Keep children and pets away from the unit and electrical supply when you are working on it.

Do not attempt to perform any part of the installation described in this booklet unless you are FULLY QUALIFIED to do so. All electrical work must meet local codes and must be performed by qualified personnel only.

Full load currents. wire sizes, and switch sizes are based on 1990 NEC. Fuse sizes and circuit breaker trip amperes are appropriate selections, suitable for most installations. Thermal unit selections are not based on NEC currents (see NEC 430-6), but are selected from average full load currents. Thermal units can be more accurately selected using table furnished with starter and full load current marked on motor nameplate.

# THREE PHASE MOTOR DATA

MOTOR H.P.

| FOR 60 Hz. 1800 RPM STANDARD SQUIRREL CAGE MOTORS (non Design E) | | 200 | 150 | 125 | 100 | 75 | 60 | 50 | 40 | 30 | 25 | 20 | 15 | 10 | 7 ½ | 5 | 3 | 2 | 1 ½ | 1 | ¾ | ½ | MOTOR SYSTEM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FULL LOAD CURRENT (NEC)—AMPS. | 552 | 414 | 359 | 285 | 221 | 177 | 150 | 120 | 92 | 78.2 | 62.1 | 48.3 | 32.2 | 25.3 | 17.5 | 11.0 | 7.8 | 6.9 | 4.8 | 3.7 | 2.5 | 200 (208) VOLTS |
| | MINIMUM COPPER WIRE SIZE–(75) THW, THHN–THWN, XHHW–SIZE | 2-500 | 2-300 | 2-4/0 | 500 | 300 | 4/0 | 3/0 | 1/0 | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | |
| CIRCUIT BREAKER | THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS | 800 | 600 | 600 | 400 | 300 | 250 | 200 | 175 | 125 | 110 | 100 | 90 | 60 | 50 | 35 | 20 | 15 | 15 | 15 | 15 | 15 | |
| | INDUSTRIAL BREAKER–CAT. NO. (breaker only) | MAL36800 | MAL36600 | MAL36600 | LAL36400 | LAL36300 | LAL36250 | LAL36200 | KAL36175 | KAL36125 | KAL36110 | FAL32100 | FAL32090 | FAL32060 | FAL32050 | FAL32035 | FAL32020 | FAL32015 | FAL32015 | FAL32015 | FAL32015 | FAL32015 | |
| FUSIBLE SWITCH | HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO. | — | H326 | H326 | H325 | H325 | H325 | H324N | H324N | H324N | H323N | H323N | H322N | H322N | H322N | H321N | H321N | H321N | H321N | H321N | H321N | H321N | |
| | WITH DUAL ELEMENT TIME DELAY FUSE—AMPS | — | 600 | 500 | 400 | 300 | 250 | 200 | 175 | 125 | 100 | 90 | 60 | 50 | 40 | 25 | 17.5 | 10 | 10 | 8 | 6.25 | 4 | |
| MAGNETIC STARTER | NEMA 1 ENCL.—CLASS 8536 TYPE | SJG-2 | SHG-2 | SHG-2 | SHG-2 | SGG-1 | SGG-1 | SGG-1 | SFG-1 | SFG-1 | SEG-1 | SEG-1 | SEG-1 | SDG-1 | SCG-3 | SCG-3 | SBG-2 | SBG-2 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | |
| | WITH THREE MELTING ALLOY THERMAL UNITS—NO | — | B4.15 | B3.30 | B2.65 | DD280 | DD220 | DD160 | CC180 | CC143 | CC143 | CC94.0 | CC74.6 | B56 | B45 | B28.0 | B15.5 | B11.5 | B10.2 | B6.90 | B4.85 | B3.30 | |
| | FULL LOAD CURRENT (NEC)—AMPS. | 480 | 360 | 312 | 248 | 192 | 154 | 130 | 104 | 80 | 68 | 54 | 42 | 28 | 22 | 15.2 | 9.6 | 6.8 | 6.0 | 4.2 | 3.2 | 2.2 | 230 (240) VOLTS |
| | MINIMUM COPPER WIRE SIZE–(75) THW, THHN–THWN, XHHW–SIZE | 2-350 | 2-4/0 | 2-3/0 | 350 | 250 | 3/0 | 2/0 | 1 | 3 | 4 | 4 | 6 | 10 | 10 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| CIRCUIT BREAKER | THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS. | 800 | 600 | 450 | 350 | 250 | 225 | 200 | 150 | 110 | 100 | 90 | 80 | 60 | 45 | 30 | 20 | 15 | 15 | 15 | 15 | 15 | |
| | INDUSTRIAL BREAKER–CAT. NO. (breaker only) | MAL36800 | MAL36600 | MAL36450 | LAL36350 | LAL36250 | LAL36225 | KAL36200 | KAL36150 | KAL36110 | FAL32100 | FAL32090 | FAL32080 | FAL32060 | FAL32045 | FAL32030 | FAL32020 | FAL32015 | FAL32015 | FAL32015 | FAL32015 | FAL32015 | |
| FUSIBLE SWITCH | HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO. | H326 | H326 | H325 | H325 | H325 | H324N | H324N | H324N | H323N | H323N | H323N | H322N | H322N | H321N | H321N | H321N | H321N | H321N | H321N | H321N | H321N | |
| | WITH DUAL ELEMENT TIME DELAY FUSE—AMPS. | 600 | 500 | 400 | 350 | 300 | 200 | 200 | 150 | 100 | 100 | 80 | 60 | 40 | 30 | 25 | 15 | 10 | 10 | 8 | 5.6 | 4 | |
| MAGNETIC STARTER | NEMA 1 ENCL.—CLASS 8536 TYPE | SHG-2 | SHG-2 | SHG-2 | SGG-1 | SGG-1 | SGG-1 | SFG-1 | SFG-1 | SEG-1 | SEG-1 | SEG-1 | SDG-1 | SDG-1 | SCG-3 | SCG-3 | SBG-2 | SBG-2 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | |
| | WITH THREE MELTING ALLOY THERMAL UNITS—NO. | B4/85 | B4.30 | B3.00 | DD320 | DD240 | DD185 | CC208 | CC167 | CC156 | CC112 | CC87.7 | B79 | B45 | B36 | B25 | B14 | B10.2 | B9.10 | B6.25 | B4.15 | B3.30 | |
| | FULL LOAD CURRENT (NEC)—AMPS | 240 | 180 | 156 | 124 | 96 | 77 | 65 | 52 | 40 | 34 | 27 | 21 | 14 | 11 | 7.6 | 4.8 | 3.4 | 3.0 | 2.1 | 1.6 | 1.1 | 460 (480) VOLTS |
| | MINIMUM COPPER WIRE SIZE–(75) THW, THHN–THWN, XHHW–SIZE | 350 | 4/0 | 3/0 | 2/0 | 1 | 3 | 4 | 6 | 8 | 8 | 10 | 10 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| CIRCUIT BREAKER | THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS | 350 | 250 | 225 | 200 | 125 | 110 | 100 | 90 | 80 | 70 | 60 | 40 | 25 | 20 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |
| | INDUSTRIAL BREAKER–CAT. NO. (breaker only) | LAL36350 | LAL36250 | LAL36225 | KAL36200 | KAL36125 | KAL36110 | FAL34100 | FAL34090 | FAL34080 | FAL34070 | FAL34060 | FAL34040 | FAL34025 | FAL34020 | FAL34015 | FAL34015 | FAL34015 | FAL34015 | FAL34015 | FAL34015 | FAL34015 | |
| FUSIBLE SWITCH | HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO. | H365 | H365 | H364 | H364 | H364 | H363 | H363 | H363 | H362 | H362 | H362 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | |
| | WITH DUAL ELEMENT TIME DELAY FUSE—AMPS | 350 | 250 | 200 | 175 | 150 | 100 | 100 | 80 | 60 | 50 | 40 | 30 | 20 | 20 | 15 | 8 | 6.25 | 5.6 | 4 | 3.2 | 2 | |
| MAGNETIC STARTER | NEMA 1 ENCL.—CLASS 8536 TYPE | SGG-1 | SGG-1 | SGG-1 | SFG-1 | SFG-1 | SFG-1 | SEG-1 | SEG-1 | SEG-1 | SDG-1 | SDG-1 | SDG-1 | SCG-3 | SCG-3 | SBG-2 | SBG-2 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | |
| | WITH THREE MELTING ALLOY THERMAL UNITS—NO | DD300 | DD240 | DD185 | CC196 | CC156 | CC112 | CC103 | CC81.5 | CC59.4 | B62 | B45 | B32 | B25 | B17.5 | B11.5 | B6.90 | B4.85 | B4.15 | B3.00 | B2.40 | B1.45 | |
| | FULL LOAD CURRENT (NEC)—AMPS. | 192 | 144 | 125 | 99 | 77 | 62 | 52 | 41 | 32 | 27 | 22 | 17 | 11 | 9.0 | 6.1 | 3.9 | 2.7 | 2.4 | 1.7 | 1.3 | 0.9 | 575 (600) VOLTS |
| | MINIMUM COPPER WIRE SIZE–(75) THW, THHN–THWN, XHHW–SIZE | 250 | 3/0 | 2/0 | 1 | 3 | 4 | 6 | 6 | 8 | 10 | 10 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| CIRCUIT BREAKER | THERMAL-MAGNETIC BREAKER TRIP RATING—AMPS. | 250 | 200 | 200 | 150 | 110 | 100 | 90 | 80 | 60 | 60 | 45 | 35 | 20 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |
| | INDUSTRIAL BREAKER–CAT. NO. (breaker only) | LAL36250 | LAL36200 | KAL36200 | KAL36150 | KAL36110 | FAL36100 | FAL36090 | FAL36080 | FAL36060 | FAL36060 | FAL36045 | FAL36035 | FAL36020 | FAL36015 | FAL36015 | FAL36015 | FAL36015 | FAL36015 | FAL36015 | FAL36015 | FAL36015 | |
| FUSIBLE SWITCH | HEAVY DUTY SWITCH–NEMA 1 ENCL.–CAT. NO. | H365 | H364 | H364 | H364 | H363 | H363 | H363 | H362 | H362 | H362 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | H361 | |
| | WITH DUAL ELEMENT TIME DELAY FUSE—AMPS. | 300 | 200 | 175 | 150 | 100 | 90 | 80 | 60 | 50 | 40 | 30 | 25 | 20 | 15 | 10 | 6.25 | 5 | 4 | 3.2 | 2.5 | 1.8 | |
| MAGNETIC STARTER | NEMA 1 ENCL.—CLASS 8536 TYPE | SGG-1 | SGG-1 | SGG-1 | SFG-1 | SFG-1 | SFG-1 | SEG-1 | SEG-1 | SEG-1 | SDG-1 | SDG-1 | SDG-1 | SCG-3 | SCG-3 | SBG-2 | SBG-2 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | SAG-12 | |
| | WITH THREE MELTING ALLOY THERMAL UNITS—NO. | DD250 | DD160 | DD150 | CC156 | CC112 | CC87.7 | CC81.5 | CC64.3 | CC46.6 | B45 | B36 | B25 | B17.5 | B12.8 | B9.10 | B4.85 | B3.70 | B3.30 | B2.40 | B1.88 | B1.30 | |

# FAN ASSEMBLY

**NOTE: Refer to the illustration below as an aid when assembling unit.**
For easier assembly it is advisable to install the sheave, pulley, and belt before the unit is set over the roof opening.

1. Place the motor base so that the flanges are facing toward the fan blade as shown in the illustration.

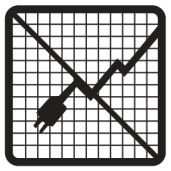
**NOTE: On motors with side conduit boxes, interference may occur with the side plates. In such instances, turn the base over, i.e. flanges facing away from fan blade.**
**Important: When assembling the motor and drive, the sheaves must be alinged to keep the belt straight. This is accomplished by ensuring that the motor and fan sheave grooves are directly in line with one another.**

2. Adjust motor base as required to assure proper belt tension.

**NOTE: Proper belt tension is approximately 1/2" movement of the belt when pressed at mid-span under normal thumb pressure. Do not overtighten the belt.**

However, a new belt should be tighter than a used belt.

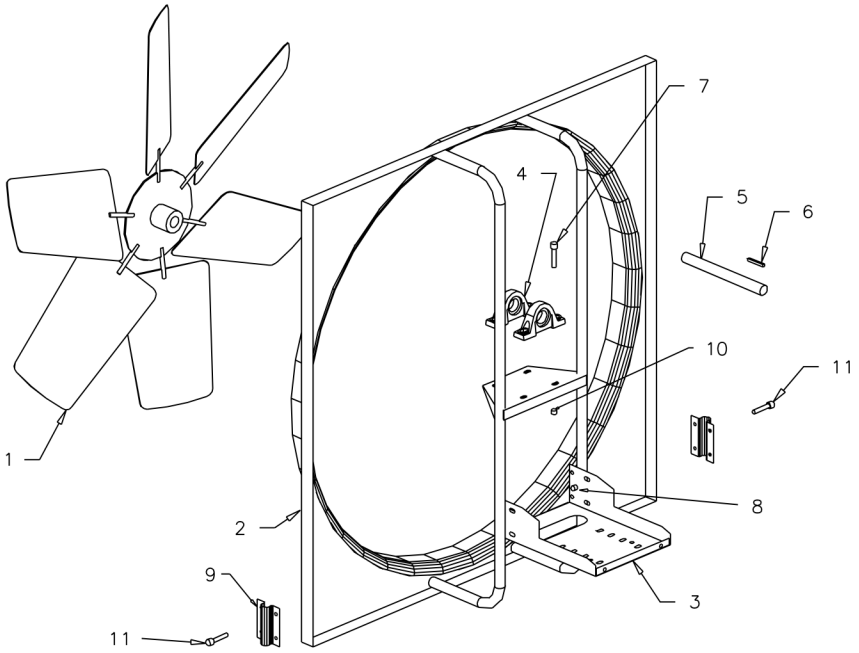
**3. GUARDS SHOULD BE INSTALLED WHEN FAN PROP IS WITHIN SEVEN FT. OF WORKING LEVEL OR WHEN DEEMED ADVISABLE FOR SAFETY.**



**⚠ WARNING**

**DISCONNECT ALL ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING TO INSTALL, OPEN, OR SERVICE YOUR UNIT. IF THE UNIT IS THERMOSTATICALLY CONTROLLED, THE THERMOSTAT IS NOT TO BE USED AS A DISCONNECT AS IT MAY RESET AND START THE UNIT UNEXPECTEDLY.**

| REF # | DESCRIPTION | QTY |
|---|---|---|
| 1 | Propeller | 1 |
| 2 | Venturi frame | 1 |
| 3 | Motor base | 1 |
| 4 | Bearing | 2 |
| 5 | Shaft | 1 |
| 6 | Key | 1 |
| 7 | Cap screw | 2 |
| 8 | Spin locknut | 2 |
| 9 | Cap screw | 2 |
| 10 | Spin locknut | 4 |
| 11 | Cap screw | 8 |



# TROUBLESHOOTING GUIDE

| SYMPTOM | POSSIBLE CAUSES | CORRECTIVE ACTION |
|---|---|---|
| EXCESSIVE NOISE AND/OR VIBRATION | 1. Defective bearing.<br>2. Locking collar loose on shaft.<br>3. Foreign material inside sealed bearing.<br>4. Sheave not tightened on shaft (motor or fan).<br>5. Loose fan.<br>6. Loose belt.<br>7. Belts are worn, oily, or dirty.<br>8. Improper drive selection.<br>9. Misaligned sheaves.<br>10. Fan out of balance.<br>11. Motor or motor base not securely anchored.<br>12. Bent fan shaft.<br>13. Bearings dry. | 1. Replace.<br>2. Tighten set screw.<br>3. Replace.<br>4. Tighten set screw and check alignment.<br>5. Tighten set screws.<br>6. Adjust tension.<br>7. Clean or replace.<br>8. Check model nameplate for correct drive selection.<br>9. Realign.<br>10. Straighten or replace.<br>11. Secure properly.<br>12. Replace.<br>13. Lubricate fan bearings. |
| FAN INOPERATIVE | 1. Blown fuse or open circuit breaker.<br>2. Broken belt.<br>3. Loose sheaves.<br>4. Electricity turned off.<br>5. Defective motor. | 1. Replace fuse or reset circuit breaker.<br>2. Replace.<br>3. Tighten and check alignment.<br>3. Contact local power company.<br>5. Repair or replace. |
| INSUFFICIENT AIR FLOW | 1. Lack of sufficient air exhaust.<br>2. Fan speed too slow.<br>3. Belt slippage.<br>4. Inlet/outlet screen plugged. | 1. Open window or doors to increase ventilation.<br>2. Check for proper drive combination.<br>3. Tighten and check alignment.<br>4. Clean or replace screen. |
| ELECTRIC MOTOR CYCLES ON AND OFF | 1. Excessive belt tension.<br>2. Fan shaft tight or frozen.<br>3. Motor overloaded.<br>4. Improper pulley sizing of fan unit. | 1. Adjust belt tension.<br>2. Lubricate fan bearings.<br>3. Adjust motor to nameplate amps.<br>4. Refer to individual nameplate for proper sizes. |

# LIMITED WARRANTY

UNITED METAL PRODUCTS, INCORPORATED extends this limited warranty to the original buyer and warrants that products manufactured by United Metal Products shall be free from original defects in workmanship and materials for 12 months from start-up or 18 months from date of shipment (whichever is sooner), provided same have been properly stored, installed, serviced, maintained and operated with bleed-off system properly installed. This warranty shall not apply to products which have been altered or repaired without United Metal Products' express authorization, or altered or repaired in any way so as, in United Metal Products' judgment, to affect its performance or reliability, nor which have been improperly installed or subjected to misuse, negligence, or accident, or incorrectly used in combination with other substances. Warranties on purchased parts, such as electric motors, pumps and pads, are limited to the terms of warranty extended by our supplier (usually one year duration).

**LIMITATION OF REMEDY AND DAMAGES:** All claims under this warranty must be made in writing and delivered to United Metal Products, Inc., 1920 East Broadway Road, Tempe, Arizona 85282, within 15 days after the date of shipment by United Metal Products of the product claimed defective, and buyer shall be barred from any remedy if buyer fails to make such claim within such period.

Within 30 days after receipt of a timely claim, United Metal Products shall have the option either to inspect the product while in buyer's possession or to request buyer to return the product to United Metal Products at buyer's expense for inspection by United Metal Products. United Metal Products shall replace, or at its option repair, free of charge, any product it determines to be defective, and it shall ship the repaired or replacement product to buyer FOB. point of shipment; provided, however, if circumstances are such as in United Metal Products' judgment to prohibit repair or replacement to remedy the warranted defects, the buyer's sole and exclusive remedy shall be a refund to the buyer of any part of the invoice price, paid to United Metal Products, for the defective product or part.

United Metal Products is not responsible for the cost of removal of the defective product or part, damages due to removal, or any expenses incurred in shipping the product or part to or from United Metal Products plant, or the installation of the repaired or replaced product or part.

Implied warranties, when applicable, shall commence upon the same date as the express warranty provided above, and shall, except for warranties of title, extend only for the duration of the express warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. The only remedy provided to you under an applicable implied warranty and the express warranty shall be the remedy provided under the express warranty, subject to the terms and conditions contained therein, United Metal Products shall not be liable for incidental and consequential losses and damages under the express warranty, any applicable implied warranty, or claims for negligence, except to the extent that this limitation is found to be unenforceable under applicable state law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

No employee, agent, dealer, or other person is authorized to give any warranties on behalf of United Metal Products or to assume for United Metal Products any other liability in connection with any of its products except in writing and signed by an officer of United Metal Products. Liability shall in no case exceed the unit price of the defect product or part.

**TECHNICAL ADVICE AND RECOMMENDATIONS, DISCLAIMER:**
Notwithstanding any past practice or dealings or any custom of the trade, sales shall not include the furnishing of technical advice or assistance or system design. All structural and/or seismic calculations are not provided. Please refer to engineering plans and specifications. Any such assistance shall be at United Metal Products' sole option.

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### ⚠ WARNING

Our products are designed and manufactured to provide performance, but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failure, and this possibility should be recognized by the user. If these products are used in a life support ventilation system where failure could result in loss or injury, the use should provide adequate back-up ventilation, supplementary natural ventilation or failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

DO NOT USE IN HAZARDOUS ENVIRONMENTS where fan's electrical system could provide ignition to combustible or flammable materials.

### NOTE

If any assistance from the factory is needed to check, test, or start-up any UMP equipment, a prevalent rate per day, per person plus travel, lodging, food, etc., will be paid by the buyer/contractor.

### ⚠ WARNING

Guards must be installed when fan is within reach of personnel or within seven (7) feet of working level or when deemed advisable for safety.

### DISCLAIMER

United Metal Products, Inc. had made a diligent effort to illustrate and describe the products in this literature accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions or dimension.

All information in this literature is subject to change without notice.