

# Acme Hurricane and High Wind Products



**Est. 1938**

**ACME ENGINEERING & MANUFACTURING CORP.**

P.O. Box 978 • Muskogee, OK 74402 • 918/682-7791  
Fax 918/682-0134 • [www.acmefan.com](http://www.acmefan.com)

# Miami-Dade Certified Hurricane and High Wind Products




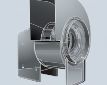



Hurricanes and high winds can turn ordinary building components into dangerous projectiles. Steps taken to prevent objects from being torn off of buildings and flung through the air are steps taken to save lives. Acme has gone the extra mile to certify a wide range of products to resist hurricane and high wind damage.

Acme offers superior quality hurricane fans, vents and curbs, all of which are independently certified by Miami-Dade County. With high-quality Acme equipment, you can rest assured that you're buying the safest and the best.



## Hurricane Line Features Include:

- Miami-Dade certification
- Tested for static and cyclic wind loading as well as missile impact
- Construction to withstand up to 150 mph wind loads
- Easy assembly that does not require tie-downs
- Installation and mounting instructions provided

Product Images	Model	Exhaust or Supply	PSF	Missile Impact	NOA Number/Expiration Date*	Texas Department of Insurance Certification	Certification Sizes
	PRN	Exhaust	+53/-112	Yes	10-0714.01/ November 4, 2015	Pending	80-171
	PNU/PDU Series	Exhaust	+53/-112	Yes	10-0727.03/ January 13, 2016	Pending	80-300/ 80-200
	PV	Exhaust	+53/-112	Yes	11-0114.02/ May 5, 2016	Pending	75-240
	QBR	Exhaust or Supply	Pending	Pending	Pending	Pending	100-365
	EV/IV	Exhaust/Supply	Pending	Pending	Pending	Pending	Throat Size Up To 54" x 54"
	LEV/LIV	Exhaust/Supply	Pending	Pending	Pending	Pending	Throat Size Up To 60" x 60" (up to 12 tiers)
	AFSL/AFSN/ AFSI	Supply	Pending	Pending	Pending	Pending	Pending

\* NOA Numbers/Expiration Date issued by Miami-Dade County, Florida Building Code Compliance Office, Product Control Division



# Direct Drive Centrifugal Roof Exhauster: Model PRN

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Model PRN direct drive fans are centrifugal power roof ventilators designed for exhausting clean air in high wind and hurricane resistance applications. The PRN is a downblast exhauster suitable for all types of commercial and institutional buildings such as schools, hospitals, office buildings, and retail stores. Models are certified to all three Miami-Dade procedures for static loading, missile impact and cyclic loading.

NOA# 10-0714.01 Exp. November 4, 2015.

## Standard Construction

- Hoods constructed of heavy-gauge aluminum, die-formed with rolled bead for strength
- Secure internal support and bracing structure
- Single piece curb cap and inlet with continuous welded corners for durability
- Continuous duty motors are located outside the airstream, cooled by "forced air" and protected by an aluminum barrier
- Heavy-gauge corner support brackets transmit motor and impeller weight directly to curb base
- The impeller is precision balanced for smooth operation
- Conduit post through fan base to the motor compartment for ease of electrical wiring
- Motors are factory wired with polarized plug and socket (except explosion proof motors)



## Performance Capacities

- Up to 2,770 CFM
- Up to 1" w.g. static pressure

## Curbs

- Self-flashing curbs available in heavy-gauge galvanized steel
- See High Wind Curbs on Page 5.

# Belt Drive Centrifugal Roof Exhauster: Model PV

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Model PV belt drive fans are centrifugal power roof ventilators designed for exhausting clean air in high wind and hurricane resistance applications. The PV is designed for high air performance with low sound and is ideal for all types of commercial and institutional buildings such as schools, hospitals, office buildings, and retail stores. Models are pending certification from all three Miami-Dade procedures for static loading, missile impact and cyclic loading.

NOA# 11-0114.02 Exp. May 5, 2016.

## Standard Construction

- Hoods constructed of heavy-gauge aluminum
- Reinforced internal support and bracing structure
- Continuous duty motors are located outside the airstream and cooled by "forced air"
- Cast iron drives are sized for 150% of fan horsepower
- Heavy-gauge, full perimeter storm band shell transmits motor and impeller weight directly to curb base
- Permanently lubricated bearings in duplex split pillow block housing and rated at L50 life of 200,000 hours.

- Nema 1 disconnect is mounted and wired internally

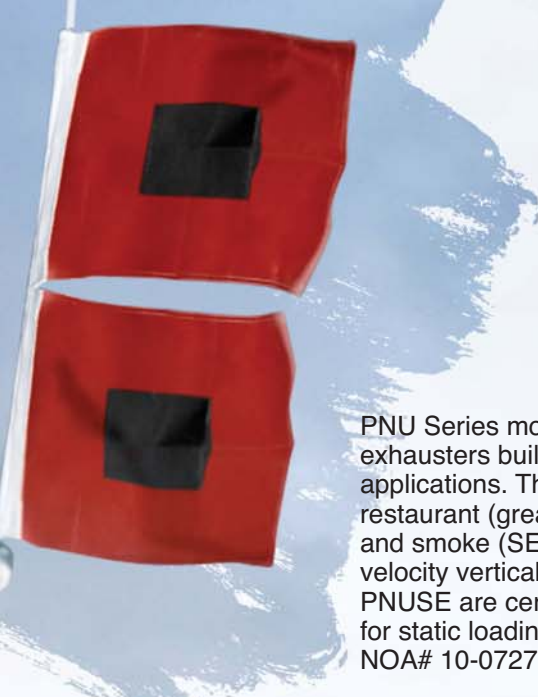
## Performance Capacities

- Up to 8,757 CFM
- Up to 1.5" w.g. static pressure

## Curbs

- Self-flashing curbs available in heavy-gauge galvanized steel
- See High Wind Curbs on Page 5.





# Belt Drive Centrifugal Roof Exhauster: Model PNU Series



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PNU Series models are belt drive upblast centrifugal exhausters built for high wind and hurricane resistance applications. The PNU upblast design is ideal for restaurant (grease laden) (RG), general clean air (RF), and smoke (SE) where air is exhausted through high velocity vertical discharge. Models PNURF, PNURG, and PNUSE are certified to all three Miami-Dade procedures for static loading, missile impact and cyclic loading. NOA# 10-0727.03 Exp. January 13, 2016.



## Standard Construction

- Windband constructed of heavy-gauge aluminum with rolled bead for strength
- External ribs for superior impact resistance
- Secure internal support and bracing structure
- Sealed windband perimeter to prevent leakage
- Motors are located outside the airstream and ventilated by outside air directed by a large breather tube
- Cast iron drives are sized for 150% of fan horsepower
- Wheel optimally matched with die-formed orifice and precision balanced for smooth operation
- Permanently lubricated bearings in duplex split pillow block housing and rated at L50 life of 200,000 hours.

- Nema 1 disconnect or plug is mounted internally (except RG models: waterproof disconnect switch mounted externally)

## Performance Capacities

- Up to 14,622 CFM
- Up to 5" w.g. static pressure

## Curbs

- Self-flashing curbs available in heavy-gauge galvanized steel
- See High Wind Curbs on Page 5.

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# Direct Drive Centrifugal Roof Exhauster: Model PDU Series



PDU Series models are direct drive centrifugal upblast exhausters designed for high wind and hurricane resistance applications. The PDU upblast design is designed for high velocity vertical discharge and is ideal for restaurant (grease laden) (RG), and general clean air (RF), where air is exhausted as a high velocity vertical discharge. Models PDURG, and PDURF are certified to all three Miami-Dade procedures for static loading, missile impact and cyclic loading. NOA# 10-0727.03 Exp. January 13, 2016.

## Standard Construction

- Windband constructed of heavy-gauge aluminum with rolled bead for strength
- Reinforced internal support and bracing structure
- Sealed windband perimeter to prevent leakage
- Motors are located outside the airstream and ventilated by outside air directed by a large breather tube
- Wheel optimally matched with die-formed orifice and precision balanced for smooth vibration free operation
- Nema 1 disconnect or plug is mounted internally (except: RG models: waterproof disconnect switch mounted externally)

## Performance Capacities

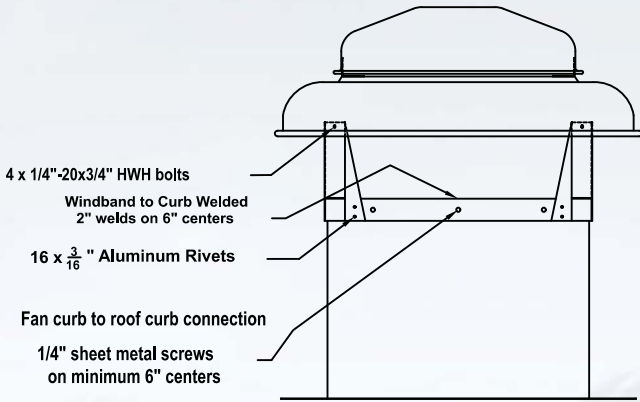
- Up to 5,317 CFM
- Up to 1.25" w.g. static pressure

## Curbs

- Self-flashing curbs available in heavy-gauge galvanized steel
- See High Wind Curbs on Page 5.



# High Wind Curbs: Models CH



Elevation View

**Note:** Curb mounting hardware provided by others.

The High Wind and Hurricane fans are certified as a complete system with specified curbs and without the need for tie-downs. The hurricane and high wind designated curbs are precisely fitted and designed to securely fasten to the fan for withstanding high velocity debris.

- Self-flashing with heavy-duty 18 gauge galvanized steel up to size 34"; size 34" and above are 16 gauge galvanized steel
- Optional Heights: 8" to 18" (203.2 mm-457.2 mm)
- Flange flashing: 4.15" (105.4 mm)
- See Installation and Maintenance Instructions for fastener information

# More Hurricane Rated Products Available Soon

## Belt Drive Centrifugal Ventset: Model QBR

Model QBR is a belt drive centrifugal utility set designed for high efficiency and low sound output. Model size QBR100 up to QBR365 are pending certification from all three Miami-Dade procedures for static loading, missile impact and cyclic loading.

- Heavy-duty, continuously welded steel housing
- Secure internal support and flanged discharge
- Available in 7 discharge positions on all sizes
- Clockwise and counterclockwise impeller rotation

**Capacities:**  
 Up to 23,230 CFM  
 Up to 3.5" w.g. static pressure



## Gravity Exhaust and Intake Vents: Low Silhouette Models EV/IV and Louvered Models LEV/LIV



**EV/IV Capacities:**  
 Up to 25,310 CFM  
 Up to 0.25" w.g. static pressure

**LEV/LIV Capacities:**  
 Up to 26,580 CFM  
 Up to 0.15" w.g. static pressure

- Heavy-gauge, galvanized steel hood with rigid structural bracing for extra support
- Full 360° perimeter hood opening for greater air flow performance
- Deep hood design for protection from blowing rain and snow
- Louvered vents are pending certification with up to 12 tiers

These high wind and hurricane resistant vents are pending certification from all three Miami-Dade procedures for static loading, missile impact and cyclic loading.



# Wind-Borne Debris Region Requirements for Miami-Dade Certification

The International Building Code has set the standard requirements for the certification and impact testing of fans located in hurricane and high wind regions. ASCE-7, as recognized by IBC, classifies wind speeds and prescribes the methods for the determination of wind loads.

The large missile testing requirements of ASTM E1996/TAS201 is necessitated if the region falls in one of these three categories:

- 120 mph wind speed
- 110 mph wind speed within one mile of the coast
- All surrounding islands, including all of Hawaii

## TAS 201-94: Large Missile Impact Test (ASTM E1996)

TAS-201 is recognized as the first of three tests required by the Florida Building Code for products installed in the Wind-Borne Debris Zone or High-Velocity Hurricane Zone. Products may be exempt if they are utilized in an open structure or installed more than 30 feet (9 m) above grade. If the fan passes the large missile test then it is not required to undergo the small missile test if there is not an opening

on the fan large enough for a 3/16" (0.5 cm) sphere to pass through. The large missile impact test measures the product impact resistance in hurricane conditions.

**Test Fan:** The fan should be entirely assembled as one unit and attached to a given type of structural framing identical to field installation. It shall also be in the maximum size determined by the manufacturer for certification.

**Large Missile:** The tests prescribe a solid 2x4 timber with a length between 7 and 9 feet (2.13-2.74 m) in Southern Pine, weight with sabot should be between 9 and 9.5 lb (4-4.3 kg).

**Test Procedure:** The large missile is to be propelled 9 feet (2.75 m) at a velocity of 50 feet per second (15.24 m/s). The test is to be delivered to the top, bottom and center of the fan to produce three impact specimens.

**Requirements to Pass:** Fan and fasteners must not become detached during the test procedure, nor can they become cracked near a seam. And the projectile must not penetrate the inside plane of the fan unit.

Regional Designation	Description	Requirements	Protocol/Code Required	Approval Body
Wind-Borne Debris Region	Basic wind speed is 120 mph or greater or 110 mph and within 1 mile of the coast	Florida Product Approved	TAS201 TAS202 TAS203	Florida Building Code Office
High-Velocity Hurricane Zone	Broward and Dade Counties	Miami-Dade Qualified Products	TAS201 TAS202 TAS203	Miami-Dade Building Code Compliance Office
Enhanced Hurricane Protection Areas	Public buildings designed to provide emergency shelter; determined by ASCE 7 wind speed map plus 40 mph increase	Florida Product Approved or Miami-Dade Qualified (in Dade or Broward Counties)	TAS201 TAS202 TAS203	Florida Building Code Office or Miami-Dade Building Code Compliance Office
Texas Windborne Debris Region	Basic wind speed of 120 mph or greater as determined by ASCE 7	Florida Product Approved	TAS202	Texas Department of Insurance/Texas Windstorm Insurance Association
All Other Regions		Florida Product Approved	TAS202	

# TAS 202-94: Uniform Static Air Pressure Test (ASTM E330)

In the Florida Building Code TAS 202, the product must meet or exceed static pressure differentials in typical hurricane and high wind conditions.

**Test Fan:** The fan should be entirely assembled as one unit and attached to a given type of structural framing identical to field installation. It shall also be in the maximum size determined by the manufacturer for certification.

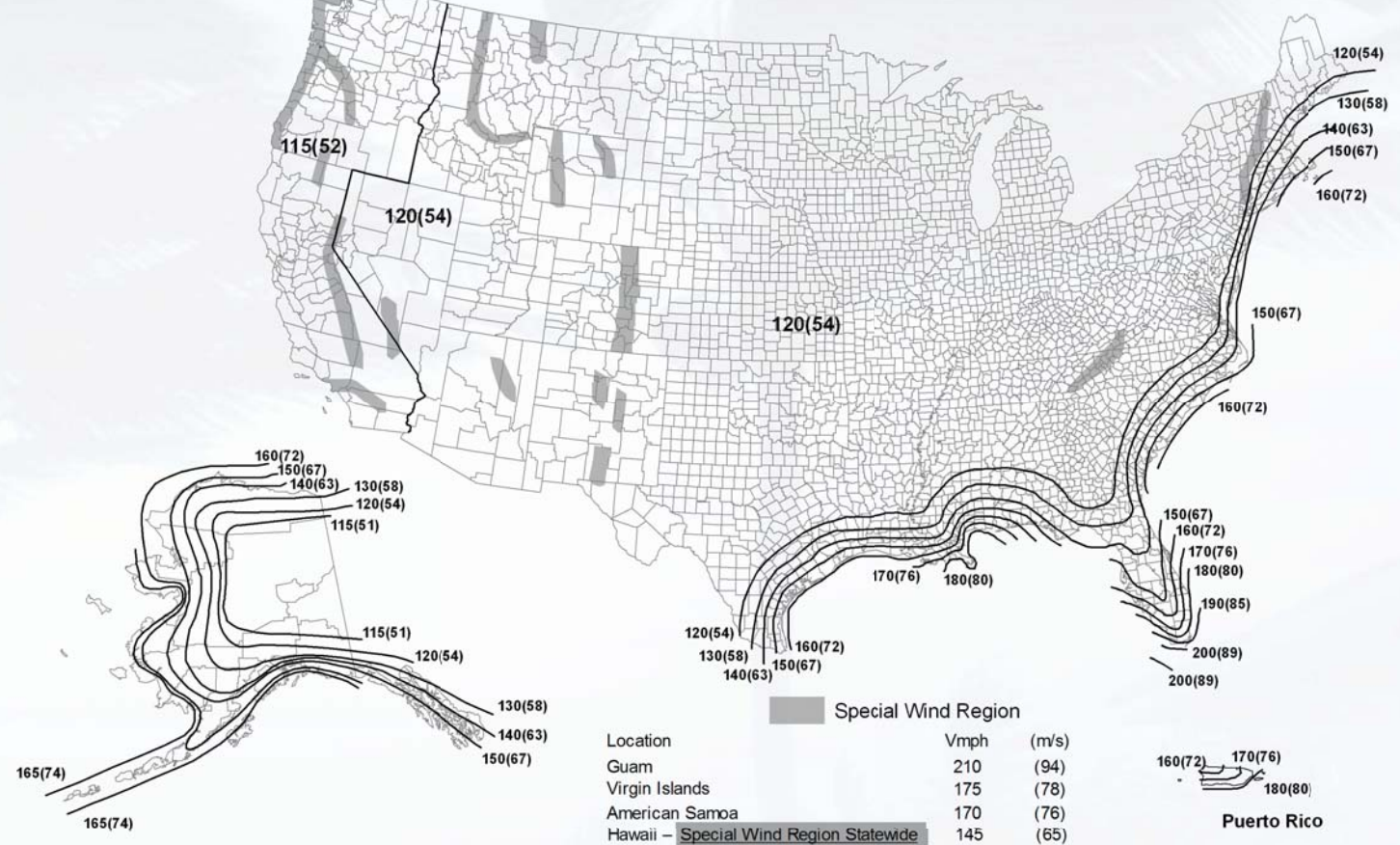
**Design Pressure:** The maximum uniform positive and negative wind load certified by the manufacturer.

**Test Load:** One and a half times the design pressure certified by the manufacturer.

**Test Procedure:** The fan will be subjected to half of the positive and negative test load for 30 seconds with a brief recovery period followed by the full positive and negative test load for 30 seconds with a brief recovery period.

**Requirements to Pass:** Fan and fasteners must not become detached during the test procedure, nor can they become cracked near a seam. Permanent deformation of the fan must not be more than 80% of allowable deflection.

# TAS 203-94: Cyclic Wind Pressure Load Test



**Notes:**

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00588, MRI = 1700 Years).

Following the successful completion of TAS 201, the product is required by the Florida Building Code to withstand wind vibration pressures similar to those undergone in hurricane conditions.

**Test Fan:** The fan should be entirely assembled as one unit and attached to a given type of structural framing identical to field installation. It shall also be in the maximum size determined by the manufacturer for certification.

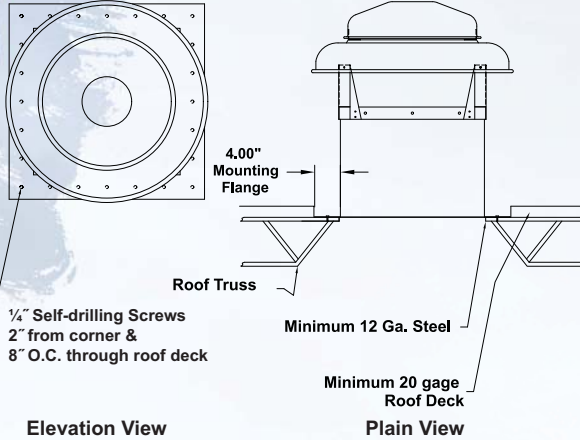
**Design Pressure:** The maximum uniform positive and negative wind load certified by the manufacturer.

**Test Procedure:** The fan shall undergo 600 cycles at half of the positive design pressure, followed by 70 cycles at 60% of positive design pressure, and finally 1 cycle at 130% of the positive design pressure. The test shall be repeated for the negative of the design pressure.

**Requirements to Pass:** Fan and fasteners must not become detached during the test procedure, nor can they become cracked near a seam. Permanent deformation of the fan must not be more than 90% of allowable deflection.

# High Wind and Hurricane Product Installation

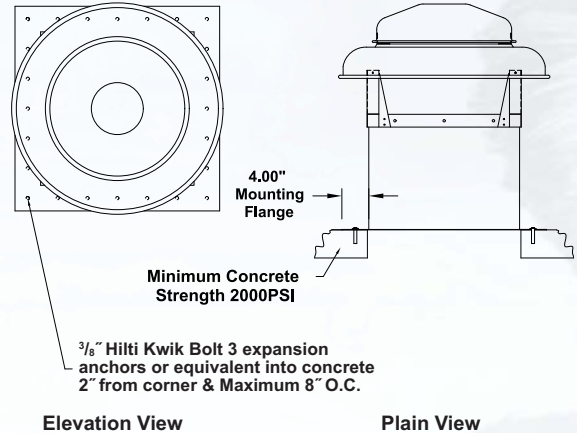
## Metal Building Installation:



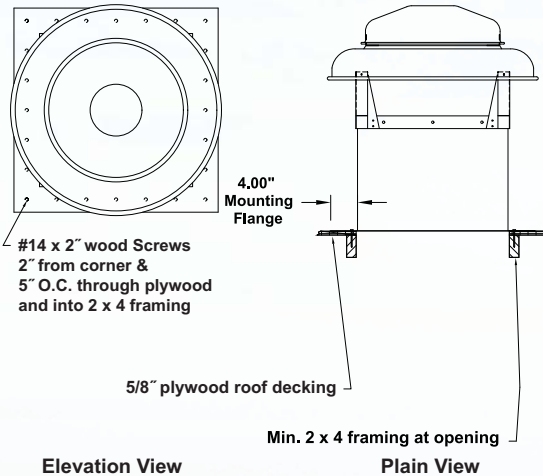
In accordance with the Miami-Dade certification protocol, ACME will provide installation instructions for these high wind fan systems with three optional mounting selections: Wood Deck, Concrete Deck and Metal Building. Mounting fastener information will be available with the installation instructions; the fasteners are provided by others.

*Installation drawings shown only apply to PRN. Drawings for other models can be found in each individual product Installation and Maintenance Instructions.*

## Concrete Deck Installation:



## Wood Deck Installation:



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**LIMITED WARRANTY** Acme Engineering and Manufacturing Corporation extends this limited warranty to the original purchaser and warrants that products described herein shall be free from original defects in workmanship and materials for two years from date of shipment (except for Acme's exclusive duplex split pillow block bearings and shaft 5 years from shipment, belts one year from shipment, and polyethylene tubing at 90 days from shipping), provided same have been properly handled, stored, installed, serviced, maintained and operated. Refer to Form MS149 for complete limited warranty terms and conditions. This form is available to anyone at [www.acmefan.com](http://www.acmefan.com).



The Company's warranty is in lieu of all other warranties, express or implied, arising by law or otherwise, including without limitation the implied warranties of merchantability and fitness for a particular purpose, which are hereby expressly disclaimed and waived. Acme products are designed and manufactured to provide reliable performance but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failures and this possibility should be recognized by the Purchaser and End User. If these products are used in a life support ventilation system where failure could result in loss or injury, the Purchaser and End User 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.

**WARNING** DO NOT use in HAZARDOUS ENVIRONMENTS where fan's electrical system could provide ignition to combustible or flammable materials unless unit is specifically built for hazardous environments. Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA). Guards must be installed when fan is within reach of personnel or within eight (8) feet (2.5 m) of working level or when deemed advisable for safety.

**DISCLAIMER** The Company has 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.

**INDEMNITY** Purchaser acknowledges various warnings by the Company regarding the products and its installation and use. If the Company incurs any claims, lawsuits, settlements, or expenses (including attorney fees) for any loss, injury, death or property damage including, but not limited to, claims arising out of the Purchaser's or any end user's installation or use of the products, the Purchaser shall indemnify and hold the Company harmless.