

# Direct Drive Centrifugal Exhausters

**CENTRIMASTER® MODEL PRN**



ACME ENGINEERING & MANUFACTURING CORPORATION / MUSKOGEE, OKLAHOMA

# Quality and Service that will Blow you Away!

## Industry Leadership

Founded in 1938, Acme Engineering and Manufacturing Corporation is known worldwide as a leader in the manufacture of fans, blowers, and ventilation equipment. Acme's growth over the past half century is a tribute to superior quality, customer loyalty, and dedicated employees and sales representatives.

Today, from its headquarters in Muskogee, Oklahoma, Acme serves customers worldwide with high quality air movement and control products.

## Manufacturing

With approximately 350,000 square feet of manufacturing space, Acme produces one of the broadest lines of air moving equipment in the industry. State-of-the-art manufacturing equipment and a well trained, experienced workforce is the key to Acme's timely delivery of quality air moving products.

## Research and Testing

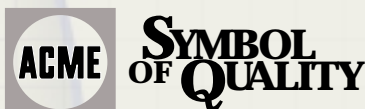
The Acme Research and Development Center operates both air and sound laboratories. The Center houses four wind tunnels with a data acquisition system, a reverberant sound room with the latest sound analyzer equipment, and a structural laboratory for stress and vibration analysis. Solid modeling, and finite element analysis support product research and development. The Center also houses a fully equipped prototype facility enabling Acme to develop and introduce new products to the market in the shortest time possible.

## Sales & Service

A factory trained, knowledgeable sales organization addresses the needs of many diverse and distinct markets. Customers around the world are serviced by a complete system of sales representatives, equipment distributors and local dealers supported by nationwide distribution centers and backed by a staff of sales and marketing professionals.

## Quality

A highly trained production staff sets the standard for dependable, quality air moving products. By using the latest computer techniques for research and design, and rigorous quality control standards Acme can offer one of the best warranty programs in the industry. Our exclusive 2/5 year limited warranty provides our customers with confidence...Year After Year.



## CONSTRUCTION FEATURES

Model PRN direct drive fans are centrifugal power roof ventilators designed for exhausting clean air. Capacities up to 2770 CFM and up to 1 inch static pressure. The PRN is a downblast exhauster suitable for all types of commercial and institutional buildings such as schools, hospitals, office buildings, and retail stores.



### Fan and Motor

Combinations are individually tested for balance of motor capacity to fan's service requirements, insuring proper motor loading for longer life.

### Heavy Gauge Aluminum Hoods

Die-formed for uniformity, with a rolled bead for improved strength. Easily removed for access to motor compartment.

### Motor Base

Design transmits the motor and impeller weight to the support brackets. This prevents distortion of the exhauster base as is frequently the case with conventional exhausters that carry the weight through the orifice and housing.

### Support Brackets (PRN100-171)

Heavy gauge corner mounted hood support brackets transmit motor and impeller weight directly to curb. Each bracket is secured to curbcap on both sides of corner, providing maximum strength and rigidity.

### Forward Curve Impeller (PRN80 only)

Forward curved aluminum impeller is statically and dynamically balanced for smooth, vibration-free performance. Blades are precision die formed to insure that each blade has a uniform aerodynamic profile. Blades are secured to front and back plates by "locking tabs" that are an integral part of each blade. Available in 1", 1 $\frac{3}{4}$ ", 2 $\frac{1}{2}$ " impeller widths.

### Non-Overloading Airfoil Impeller (PRN100-171)

Backward curved non-overloading aluminum airfoil impeller is statically and dynamically balanced for smooth, vibration free performance. Hollow airfoil blades are precision die-formed to insure that each blade has a uniform aerodynamic profile. Blades are secured to front and back plates by "locking tabs" that are an integral part of each blade.

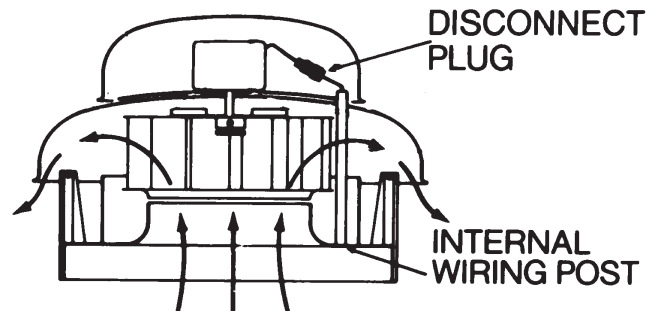


### Birdscreen

Birdscreen is made of .50" x .50" galvanized hardware cloth and is standard on all PRN models.

### Motor Ventilation System

All PRN fans have motor compartments that are separated from the air being exhausted which helps protect the motor from contaminants that the exhausted air might contain. The motor compartment is ventilated by a unique "forced air" cooling system that continuously draws fresh outside air over the motor and discharges it with the exhaust air. This continual airflow helps protect the motor from the build-up of solar heat and hot exhaust gasses thereby extending motor life. The maximum operating temperature is 104°F.



### Die-Formed Inlet Orifice

Inlet orifices are die-formed to insure that the inlet's aerodynamic profile is maintained. The curbcap and inlet orifice are constructed of one piece, with continuous welded corners to assure weather tightness.

### Heavy Duty Assembly

Acme's special attention to welds, use of heavy set rivets and coated external fasteners assures rugged dependability and longer lasting fans.

### Design Reduces Weight

The PRN design with special emphasis on "load bearing" structures, has produced a fan that is considerably lighter, yet is much more rigid than conventional exhausters of this type.



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## CONSTRUCTION FEATURES

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### Polarized Disconnect Plug

All motors, except explosion resistant\*, are factory wired with polarized plug and socket. Positive locking prevents accidental disconnect and subsequent loss of circuit continuity.

An optional disconnect switch is available for all PRN fans. Disconnect switch will be mounted in a junction box attached to the internal wiring post. Explosion resistant\* switches are not mounted. All motors, except explosion resistant\* are then factory wired from the motor to the junction box.

\*Due to varying local codes covering explosion proof applications, explosion resistant motors are not factory wired and disconnect switches are not mounted. Motors shipped separately are not factory wired.

### Motors

All models are equipped with one speed motors with thermal overload protectors and pre-lubricated ball bearings. Optional solid state controllers are available for most PRN models.

### Vibration Isolators

Impeller, motor and drive assembly completely supported and cushioned by multi-directional neoprene vibration isolators.

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## OPTIONAL ACCESSORIES

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### Solid State Speed Controller

For use on 115 volt single phase, permanent split capacitor or shaded pole type motors, this controller provides an infinite number of motor speed settings. You simply "dial the amount of ventilation desired" down to 50% of maximum capacity, eliminating the need for two or three speed motors.

Controller also serves as on-off switch and is easily installed in a standard wall box. Power connection requires only a simple 2-wire hook-up, an extra power lead wire is provided that operates a motorized damper when required.

Controller is also available mounted in the motor compartment where performance can be set and considered "fixed," but still retains the ability to be changed for future ventilation requirements.

### Backdraft Dampers

All aluminum multiple blade construction. Precision balanced full opening blades. Wide damper frame for installing flush to ceiling opening or to mounting frame in roof opening. Mounts inside Acme prefabricated curb. Available as automatic or motor operated. (Motor operated not available on PRN80).



### Damper Box

For easy mounting of damper inside field constructed roof curb. Required for SONEMASTER® sound curbs, but not required when Acme prefabricated curbs are used.



### Prefabricated Curbs

Heavy gauge galvanized steel curb for easy installation of exhauster over roof opening. Curbs are insulated with 1½" thickness of fire resistant, sound absorbing glass fiber to reduce condensation and noise.

**Type SF** - Self-flashing type features wide base flange for easy flashing to roof. This eliminates need for extending roofing material up over top of curb. Includes foam rubber gasket.

**Type RF** - Roofed-over type features built-in cant strip to accommodate roofing materials for flashing up over top of curb. Wood nailer is standard.

### Sound Attenuating Curb

For use on applications where exceptional quietness is necessary or where the specifications require sound attenuating curbs. The SONEMASTER® sound curb provides a straight-through streamlined air passage that has an air flow interference of only 2 to 4% for most applications.

## OPTIONAL COATINGS

**Painted Finishes** Aluminum and galvanized components remain unpainted as a standard finish, but when required are processed through the finishing system to apply decorative or special coatings. A high turbulence oven is used to produce a baked on finish for most special coatings. Decorative coatings are not baked on.

**Decorative Coating** Acme offers 16 popular colors for decorative finishes utilizing an industrial grade enamel applied to the exterior of the hood, housing and curbcap base. Special colors are available upon request. See your Acme Representative for complete color selections.

**Special Coatings** Products receiving special coatings have components painted before assembly. Fasteners are not painted.

**Acrylic Epoxy** This product provides a more durable surface.

**Heresite (Air Dry)** A phenolic coating with greater resistance to most organic and inorganic acids.

**Insulmatic** A black asphalt based mastic that provides some condensation control, sound deadening and corrosion resistance.

**Note:** For any coating selected the user assumes the responsibility for the corrosive agent, its concentration, temperature, moisture content and the ultimate effect on the coating and the equipment.

## PERFORMANCE DATA

PERFORMANCE DATA																	
Fan Model	HP	RPM	Tip Spd.	CFM and Sones vs. Static Pressure													
				.000"		.125"		.250"		.375"		.500"		.750"		1.000"	
				CFM	Sone	CFM	Sone	CFM	Sone	CFM	Sone	CFM	Sone	CFM	Sone	CFM	Sone
PRN080-1	1/10	1550	3019	195	9.1	163	7.7	113	7.7								.071
PRN080-2	1/10	1550	3019	295	11.0	255	8.2	200	8.2								.106
PRN080-3	1/10	1550	3019	382	13.0	328	9.0	248	9.0								.170
PRN100	1/10	1550	4058	770	6.8	690	6.2	610	5.8	520	5.3	380	5.3				.067
		1300	3403	650	5.3	550	4.6	450	4.0	280	4.0						
		1050	2749	520	3.8	410	6.0	210	3.0								
		860	2251	430	2.6	270	1.8										
PRN110	1/10	1550	4464	1090	12.3	990	14.1	890	11.3	780	10.4	650	9.5	210	11.1		.100
		1300	3744	910	9.3	790	9.5	670	7.6	510	7.1	270	8.4				
		1050	3024	740	6.5	590	5.2	400	4.7								
		860	2477	600	3.8	420	2.6										
PRN118E	1/4	1725	5329	1582	12.1	1489	11.9	1397	9.9	1305	9.8	1195	10.2	932	9.3	578	8.3
		1300	4016	1192	7.0	1069	6.6	942	6.1	780	6.0	571	6.0				.182
		1100	3398	1009	4.8	864	4.6	691	4.1	442	4.0						
		860	2657	789	3.1	594	3.0	284	2.4								
PRN126E	1/4	1625	5361	1760	13.0	1670	13.0	1560	12.0	1450	12.0	1320	12.0	1040	12.0	680	12.0
		1300	4289	1410	10.0	1290	9.3	1150	9.0	980	9.0	800	8.5	270	8.5		.253
		1050	3464	1140	7.3	980	6.5	790	6.6	540	6.4	150	6.4				
PRN135G	1/2	1725	5743	2160	15.9	2070	15.7	1970	15.0	1860	14.7	1740	14.4	1460	14.2	1090	13.2
		1300	4594	1730	11.6	1610	11.1	1480	10.8	1320	10.2	1140	9.9	580	9.4		.337
		1050	3711	1390	8.7	1250	8.2	1060	7.7	810	6.8	430	6.8				
PRN145G	1/2	1625	6168	2540	14.9	2420	15.2	2300	14.5	2180	14.6	2060	14.3	1780	13.9	1440	14.2
		1300	4594	2030	10.8	1880	10.8	1730	10.7	1580	10.1	1400	10.7	920	10.1		.453
		1050	3986	1640	8.2	1460	7.8	1270	7.6	1030	7.4	710	7.2				
PRN163F	1/3	1100	4694	2448	15.5	2259	15.1	2062	14.6	1851	14.3	1587	14.1	902	13.4		.254
PRN171F	1/3	1075	4813	2770	15.0	2610	14.0	2430	14.0	2220	14.0	1960	13.0	1300	12.0		.328

Performances shown are for Installation Type A: Free Inlet, Free Outlet.

Performance ratings do not include the effects of appurtenances in the airstream.

The sound ratings shown are loudness values in fan sones at 5 feet (1.524 m) in a hemispherical free field calculated per AMCA Standard 301.

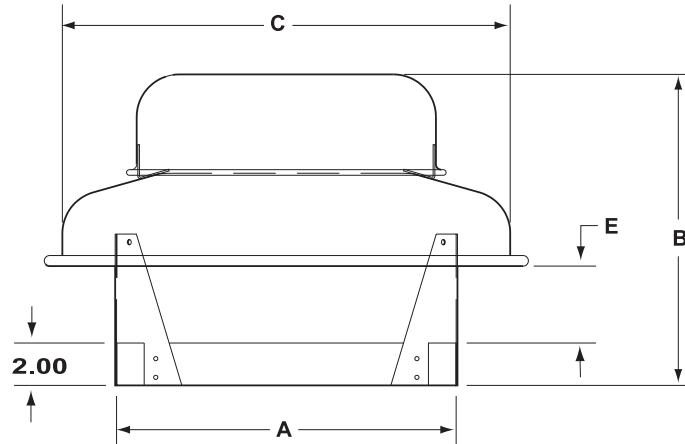
Values shown are for Installation Type A: Free Inlet fan sone levels.

Maximum RPM shown obtained with the standard one speed motor, for all other RPM's use solid state controller (SSC).

Speed (RPM) shown is nominal for PRN80-1, PRN80-2, and PRN80-3 only. Performance is based on actual speed of test.

The brake horsepower capability of an exhaustor motor is dependent on the degree of cooling the motor receives from the air moving through the motor. The motor loading beyond the motor nameplate rating does not overheat the motor and is in accordance with the motor manufacturer's recommendations. It is therefore not detrimental to the motor and is economically desirable.

## DIMENSIONAL DATA



### DIMENSIONS

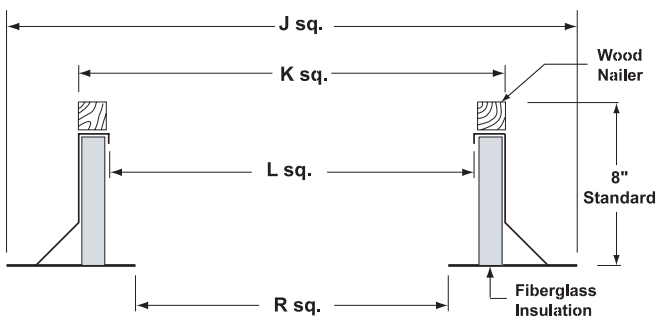
Fan Model	A	B	C	E	Roof Opening*	Damper Model	Curb Model	SSC	Duct Size	Est. Ship Wt.	Est. Unit Wt.
PRN080	13.50	9.00	18.25	—	9 x 9	AR8.75	C12	3 AMP	8.00	24	22
PRN100	16.00	13.25	21.12	3.81	11.5 x 11.5	AR11	C14.5	3 AMP	10.00	25	23
PRN110	16.00	13.25	21.12	3.81	11.5 x 11.5	AR11	C14.5	3 AMP	10.00	26	24
PRN118	21.00	16.38	27.75	4.81	16.5 x 16.5	AR16	C19.5	6 AMP	12.00	42	37
PRN126	21.00	16.38	27.75	4.81	16.5 x 16.5	AR16	C19.5	6 AMP	12.00	44	38
PRN135	21.00	16.38	27.75	4.81	16.5 x 16.5	AR16	C19.5	6 AMP	12.00	51	44
PRN145	21.00	16.38	27.75	4.81	16.5 x 16.5	AR16	C19.5	6 AMP	12.00	64	58
PRN163	24.00	18.12	31.63	5.56	19.5 x 19.5	AR18	C22.5	6 AMP	16.00	75	66
PRN171	24.00	18.12	31.63	5.56	19.5 x 19.5	AR18	C22.5	6 AMP	16.00	83	75

Dimensions are shown in inches.

Weights are shown in pounds.

\*Recommended maximum.

## CURB DIMENSIONS



### CURB DIMENSIONS

Curb Model	J	K	L	R
C12	20.00	12.00	9.00	8.00
C14.5	22.50	14.50	11.50	10.00
C19.5	27.50	19.50	16.50	13.50
C22.5	30.50	22.50	19.50	16.50

Dimensions are shown in inches.

## TYPICAL SPECIFICATIONS

Roof exhaust fans shall be centrifugal direct drive type.

The fan **impeller** shall have centrifugal backwardly inclined hollow airfoil blades constructed of aluminum and shall include die-stamped and die-formed blades and front plate (forward curved for size PRN80). The impeller shall be matched with a die-formed orifice. The impeller shall be statically and dynamically balanced.

The fan **housing** shall be constructed of heavy gauge aluminum and shall include a full perimeter stormband to aid in protection of the orifice from blowing rain and snow.

The **support brackets** shall transmit the weight of the motor and impeller directly to the curbcap/curb to prevent orifice distortion.

**Motors** shall have sealed ball bearings and shall be mounted out of the airstream. The motor compartment shall be ventilated with fresh outside air by the "forced air" cooling system.

**Birdscreen** shall be made from heavy gauge galvanized wire and attach to the top of the windband.

A **conduit post** shall be provided through the curbcap to the motor compartment for ease of electrical wiring.

A **disconnect device/switch** shall be factory installed and wired from the fan motor to the motor compartment.

Standard **wiring** shall comply with National Electric Code and materials used shall be U.L. Listed.

All fans shall bear the **AMCA Certified Ratings Seal** for sound and air performance.

All standard fans shall be **UL705 Underwriters Laboratories** listed.

Each fan shall have a permanently affixed manufacturer's **nameplate** containing the model number and serial number for future identification.

**Thermal overload protectors** shall be standard for one speed single phase ODP (open dripproof) and EP (explosion resistant) motors.

Fans shall be supplied with a **two year limited warranty**.

Fans shall be Model PRN as manufactured by Acme Engineering and Manufacturing Corporation of Muskogee, Oklahoma.



Acme Engineering and Manufacturing Corporation certifies that the CENTRIMASTER® Exhauster shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.



U.L. 705 Listed



CSA Certified

*Consult your Acme representative for availability.*

### CENTRIFUGAL EXHAUSTERS



### CEILING AND CABINET EXHAUSTERS



### IN-LINE CENTRIFUGAL FANS



### IN-LINE AXIAL FANS



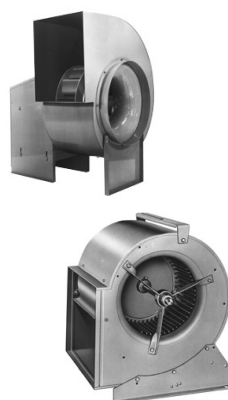
### PROPELLER ROOF FANS



### PROPELLER WALL FANS



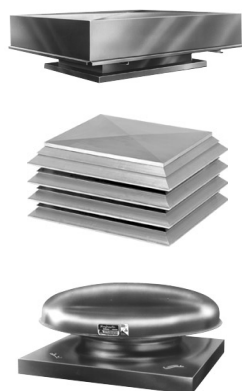
### UTILITY BLOWERS



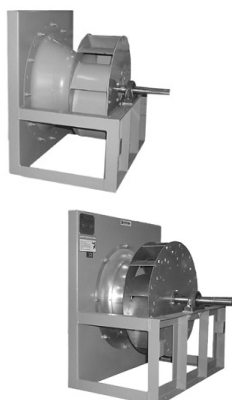
### SUPPLY AIR FANS



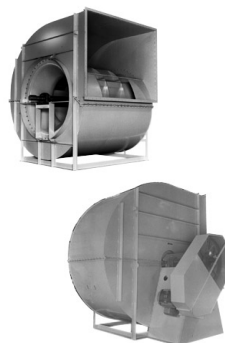
### ROOF VENTS



### PLENUM FANS



### BACKWARD INCLINED/AIRFOIL CENTRIFUGAL FANS



### CENTRIFUGAL INDUSTRIAL EXHAUSTERS



**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 claimed 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 seven (7) feet (2.134 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.



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Member Air Movement and Control Association International, Inc.

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