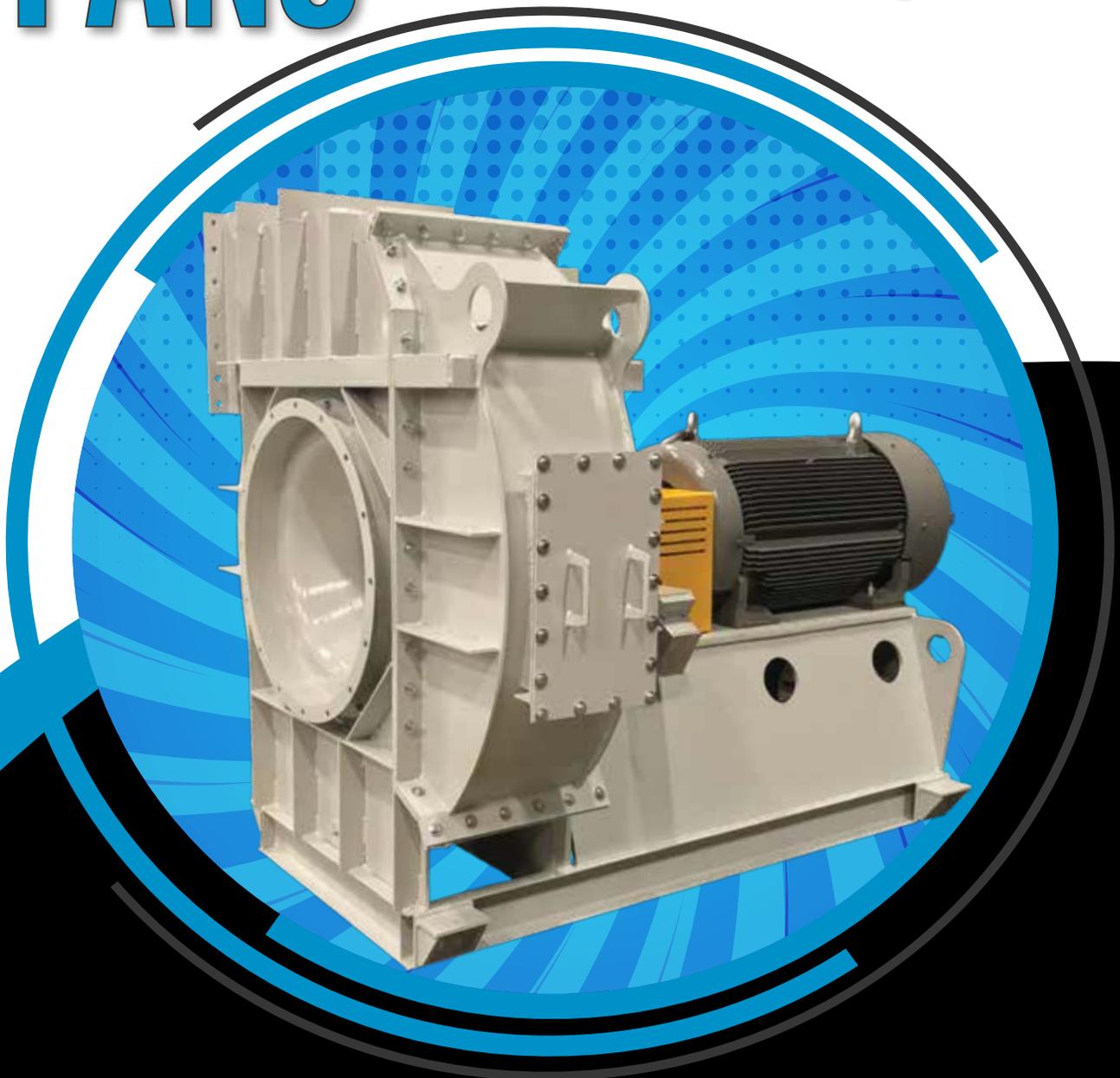


# PBC

PACKAGED BACKWARD CURVED

# FANS



# High-Efficiency Backward Curved Fans

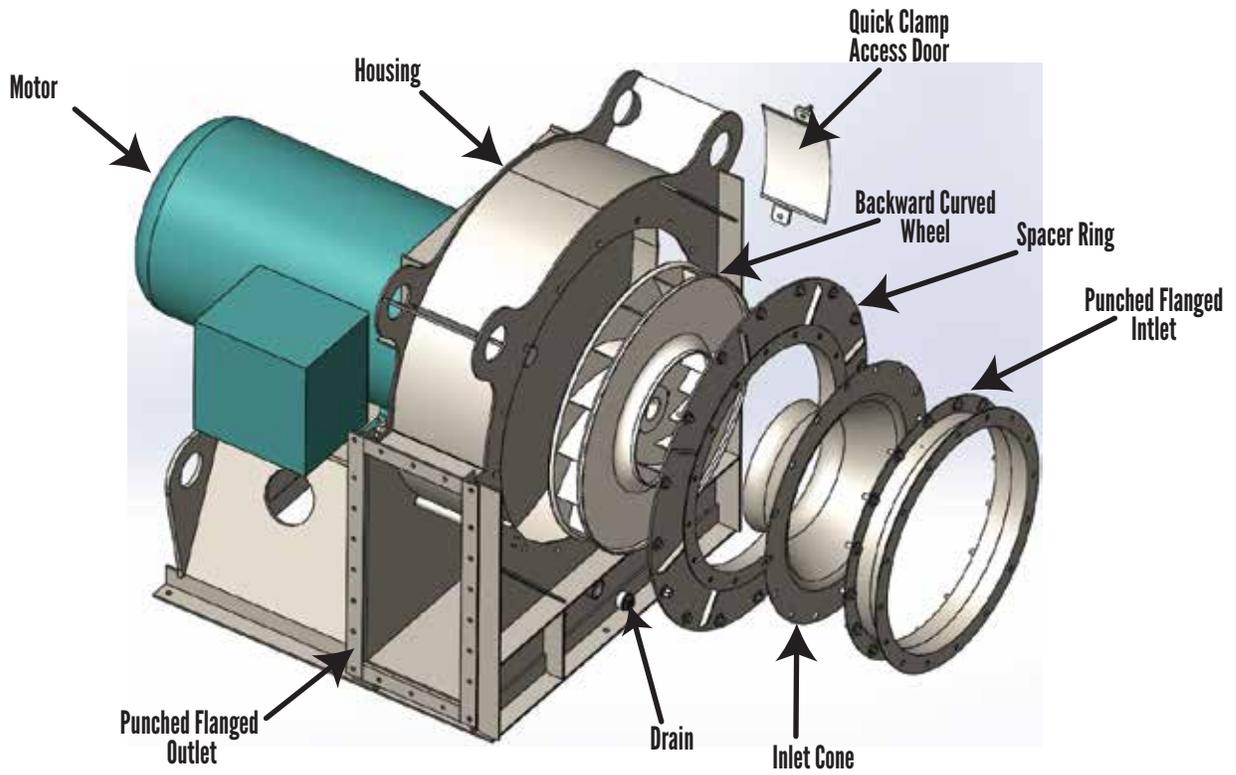
System Pressure requirements have risen significantly over the years, and greater levels of energy have become necessary to move the air or gas through a system. Operating efficiency of fans has become more critical than ever before.

Chicago Blower's New PBC fan is a pre-engineered packaged fan, but with the performance capabilities of our Heavy Duty Custom Design 5500 & 5800 Backward Curved fans. With the credibility of an established design, customers can be confident that the PBC will run trouble free for many years.

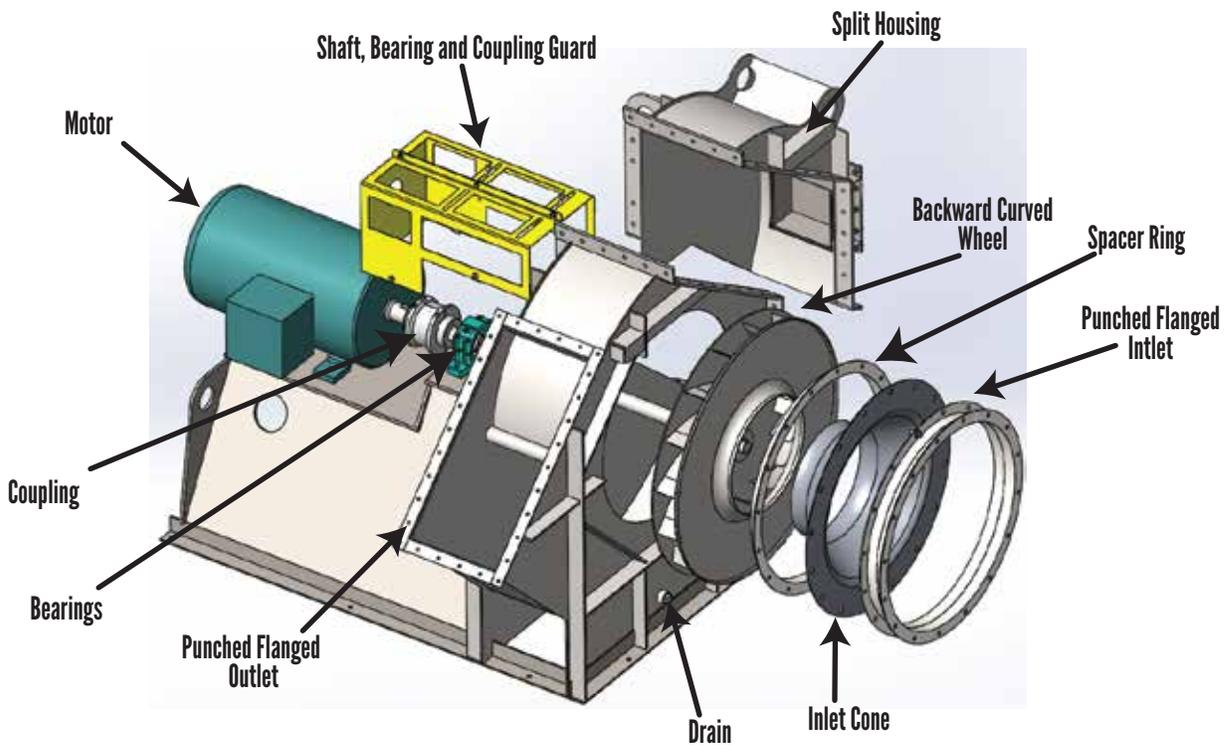


Chicago's PBC fans are available as Arrangement 4 or 8. Both Arrangements have sizes 3000 to 5414, and size 6000 is available with Arrangement 8. Each fan size has variable effective wheel diameters available to best meet the system specified desired performance. Since Chicago's PBC fans are pre-engineered, completely assembled and factory tested, they are ready to run. Customer installation time and labor costs are also substantially less than custom fans.

# PBC Arrangement 4



# PBC Arrangement 8



## Wide Performance Range

- Efficiencies to 80%
- Fan Sizes from 3000 to 5414, to 6000 for Arrangement 8
- Volumes to 90,000 CFM
- Static Pressures to 80"
- Arrangement 4 Temperatures to 200°F
- Arrangement 8 Temperatures to 800°F

## Highest Efficiencies

To provide the highest efficiencies throughout the performance range, there are variable wheel diameters available for each fan size. Fan housing and wheel width can also be varied to obtain maximum performance, increase efficiency and reduce energy costs.



## Quality Construction

Chicago's PBC is ruggedly constructed with heavy gauge steel housings and rigidly braced for high pressure applications. The entire airstream section is continuously welded, as is the wheel. Lifting lugs ease installation. The wheel is connected to the shaft by a taper-lock bushing or set-screws. The A/8 fan uses ball or spherical roller bearings specifically selected for each fan to achieve min. L10 life at 40,000 hours.

## Complete Ready to Run

Most PBC fans are delivered as a complete assembly requiring only bolting in place, connecting actuator lines and motor wiring. Fans are dynamically balanced and run-tested for smooth, trouble-free operation. Fans are furnished standard with punched flanged outlets. Your needs for the pre-engineered Chicago PBC fan can be fulfilled much faster than most custom engineered fans.

## OEM Components

Numerous customer systems use individual PBC components built directly into their equipment. Wheels, inlet volume controls, inlet cones and housings are standard component parts available for customer installation. Only genuine PBC components within your system assure you of Chicago quality, performance and reliability.

# Applications

- **Boiler/Burner**
- **Combustion Air**
- **Product Cooling/Drying**
- **Primary Air**
- **Supply Air**



PBC fans were developed by Chicago Blower to fill the need for higher pressure capabilities in the packaged boiler/burner industry, which exceeded the pressure capabilities of our Packaged Forced Draft (PFD) Fans.



*Three Design 5500 Size 6000 Arrangement 8S PBC fans with raised access door, split housing, and fan bearing RTDs for a combustion air application.*



*A Size 4014 Arrangement 8S PBC Design 5800 fan with split housing, being used in a glass tempering application.*

- **Inlet Volume Control**

For both varying or partial load applications, Chicago Blower's Inlet Volume Control (IVC) provides precise air control and greater efficiency than an outlet damper. The inlet vanes are nested within the inlet cone. Air volume is controlled manually or automatically by an electric or pneumatic actuator. For manual operation, a locking quadrant can be provided. An optional low-leakage IVC has tighter clearances in additional turn-down capabilities.



- **Dampers**

All Dampers have double surface 12 gauge blades, plug and stitch welded to full-length shaft, which are mounted in a heavy channel frame. Available with or without stuffing boxes. Standard design has flanged ball bearings mounted to the frame. Those with stuffing boxes have pillow-block ball bearings mounted on a bridge remote from the frame. Manual control with operating handle and quadrant are standard. Automatic operation is available with linkage for actuators.

- **Fresh Air Damper**

Typically used on boiler applications that include flue gas recirculation (FGR) and a mixing box. Slight closure helps to induce flow of flue gas into the fan inlet. Blades are designed to have opposed action to keep air from pre-spinning. Located upstream of the FGR connection. Matches inlet box, mixing box or silencer.

- **Pre-Spin Inlet Box Damper**

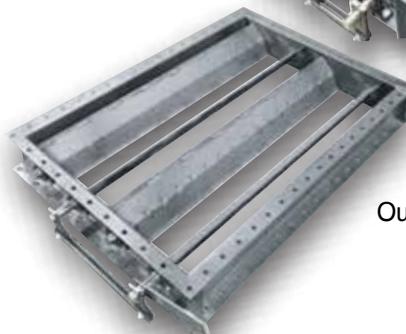
Similar operating characteristics as the IVC. Parallel blade damper pre-spins air in the same direction as the wheel rotation to improve efficiency. Designed to match bolt-on inlet box flange. Mostly used for higher temperature applications when an IVC cannot be used.



Pre-Spin Inlet Box Damper

- **Outlet Damper**

Standard damper blades run parallel to the fan or motor shaft and are opposed action. Parallel bladed dampers are available, but these would be recommended for open/closed applications. Damper has punched flanges on both ends to match fan discharge and connect to ducting.



Outlet Damper

- **Evasé**

Chicago Blower's Evasé design has a smooth and gradual transition between duct sizes so that airflow is relatively undisturbed. CBC's Evasés are designed for 75% static regain.



Evasé

# Options/Accessories

- **Inlet**

Open inlets, slip fit inlets and punched flanged inlets are available to meet installation requirements.

- **Inlet Box**

The bolt-on inlet box simplifies a duct connection when a horizontal connection is impractical. It assures fan performance when a sharp turn is required at the fan inlet. An FGR connection is available by extending the box height.

- **Shaft/Bearing/Coupling Guard**

The metal guard encloses the shaft, bearings and coupling on Arrangement 8 fans. For easier lubrication, extended grease fittings are standard.

- **Shaft Seals**

An Arrangement 4 shaft seal is a welded plate inside the housing to reduce the motor shaft hole opening. An Arrangement 8 shaft seal is comprised of a compressible fiber gasket and a split steel or aluminum plate bolted to the fan housing. It is designed to reduce leakage and noise through the drive side shaft opening. Shaft seals are not gas tight. A leak-resistant contact shaft seal is available for Arrangement 8.

- **Shaft Cooler**

For Arrangement 8 fan applications up to 800°F, an aluminum cooling wheel is required for airstreams above 300°F to remove heat from transmitting along the shaft to the bearings.

- **Access Doors**

The flush mounted door features quick opening clamps and gasket. Bolted door or insulated plug type raised door are also available.

- **Drain**

A 1-½ diameter cast iron half coupling at the bottom of the fan scroll or inlet box. A drain plug is also available.

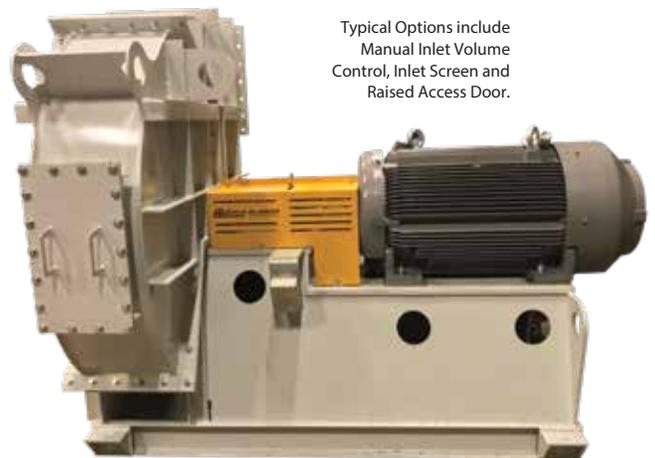
- **Spark Resistance**

AMCA Type C spark resistant construction. Maximum temperature is 650 F°

Arrangement 8 Shaft, Bearing and Coupling Guard option includes Extended Grease Fittings.



Typical Options include Manual Inlet Volume Control, Inlet Screen and Raised Access Door.



# Fan Selection



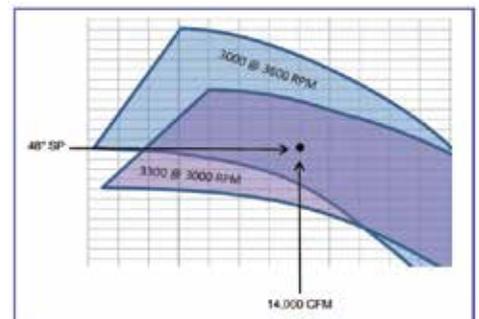
**Example:**

**Application Requirement: 14,000 CFM, 40" Static Pressure, 140°F temperature at 1500 ft. elevation.**

1. Using the table at left, the correction factor for a temperature of 140°F at an elevation of 1500 ft. is 1.20.

2. Multiplying the application static pressure of 40" by the correction factor of 1.20 gives us the equivalent static pressure (SP) of 48" wg. Note: If the flow is provided as SCFM the same correction factor would be used on its value.

3. Select from the Performance curves using the above parameters of 14,000 CFM at 48" wg. The ideal PBC fan is a Size 3000. The selection point falls within the range of the 5500 wheel design.



4. To find the BHP, follow a vertical line straight down the 14,000 CFM point to intersect the corresponding Size 3000, D/5500 BHP curve. Reading the BHP value to the left provides 126 BHP. This is the BHP at .075 density. To obtain the horsepower at our operating conditions, divide 126 BHP by the correction factor of 1.20 to get 105 BHP.

**Summary: PBC fan selection is a Size 3000, wheel Design 5500, to deliver 14,000 CFM and 40" wg static pressure at 140°F and 1500' elevation and requiring 105 BHP.**

Each of the eight Chicago PBC fan sizes is available with a variable effective diameter in the same size housing with a fixed wheel width. The design 5500 is available in percent effective diameters that range from 92.8% through 107.2% of the nominal wheel diameter. The design 5800 is available in effective diameters that range from 90% through 110% of the nominal wheel diameter. Curves show flow vs. pressure and flow vs. power and are provided for the two most common 60 hertz direct drive speeds. If your location requires a slower speed or a speed at 50 hertz, values can be adjusted by the Fan Laws or contact your local Chicago Blower Sales office. The curves depict performance for the lowest and highest percent effective diameters at 70°F and at sea level (.075 lbs/cu. ft. = density).

**Temperature/Altitude Correction**

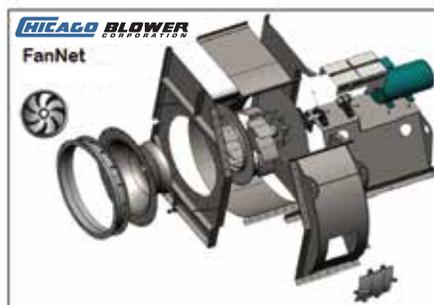
AIR TEMP (°F)	ALTITUDE (feet)										
	0'	500'	1000'	1500'	2000'	2500'	3000'	3500'	4000'	4500'	5000'
0	.87	.88	.90	.92	.93	.95	.97	.99	1.00	1.02	1.04
40	.94	.96	.98	1.00	1.01	1.03	1.05	1.07	1.09	1.11	1.13
70	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20
80	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22
100	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22	1.25	1.27
120	1.09	1.11	1.13	1.16	1.18	1.20	1.22	1.24	1.27	1.29	1.31
140	1.13	1.15	1.17	1.20	1.22	1.24	1.26	1.29	1.31	1.34	1.36
160	1.17	1.19	1.21	1.24	1.26	1.28	1.31	1.33	1.35	1.38	1.41
180	1.21	1.23	1.25	1.28	1.30	1.32	1.35	1.37	1.40	1.42	1.45
200	1.25	1.27	1.29	1.32	1.34	1.36	1.39	1.42	1.44	1.47	1.50
250	1.34	1.36	1.39	1.41	1.44	1.47	1.49	1.52	1.55	1.58	1.61
300	1.43	1.46	1.49	1.51	1.54	1.57	1.60	1.63	1.66	1.69	1.72
350	1.53	1.56	1.59	1.62	1.65	1.68	1.72	1.75	1.78	1.81	1.85
400	1.62	1.65	1.69	1.72	1.75	1.79	1.82	1.85	1.89	1.93	1.96
450	1.72	1.75	1.79	1.82	1.86	1.89	1.93	1.96	2.00	2.04	2.08
500	1.81	1.84	1.88	1.92	1.96	1.99	2.03	2.07	2.11	2.15	2.19
550	1.91	1.84	1.98	2.02	2.06	2.10	2.14	2.18	2.22	2.26	2.30
600	2.00	2.04	2.08	2.12	2.16	2.20	2.24	2.29	2.33	2.38	2.42
650	2.10	2.13	2.18	2.22	2.26	2.31	2.35	2.40	2.44	2.49	2.54
700	2.19	2.23	2.27	2.32	2.36	2.41	2.46	2.50	2.55	2.60	2.65
750	2.28	2.32	2.37	2.42	2.47	2.51	2.56	2.61	2.66	2.71	2.76
800	2.38	2.42	2.48	2.52	2.57	2.62	2.66	2.72	2.76	2.81	2.86

Arrangement 4 applications are limited to 200°F operation.

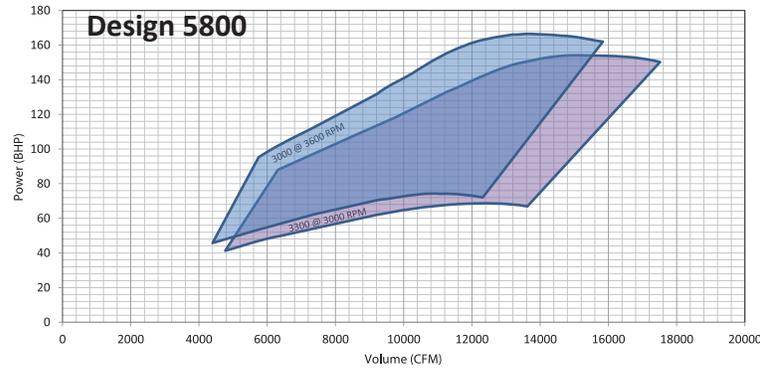
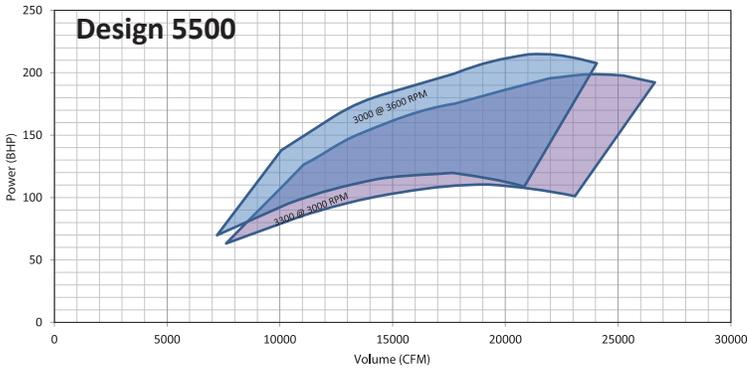
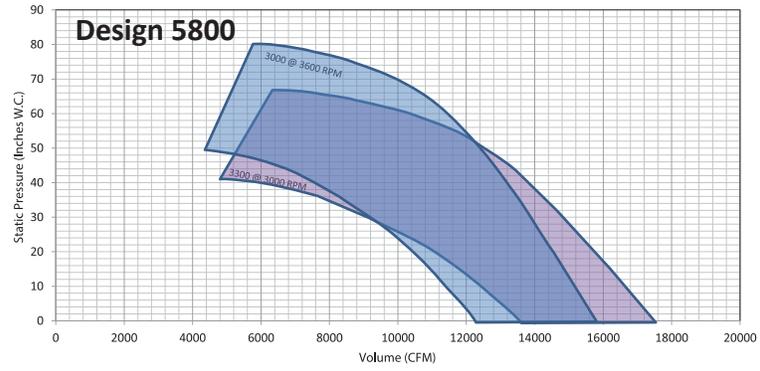
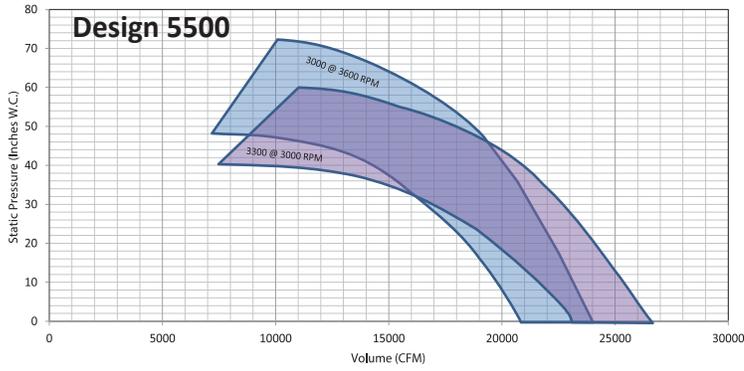
Arrangement 8 and Component Parts may be operated at temperatures to 800°F.

**FanNet**

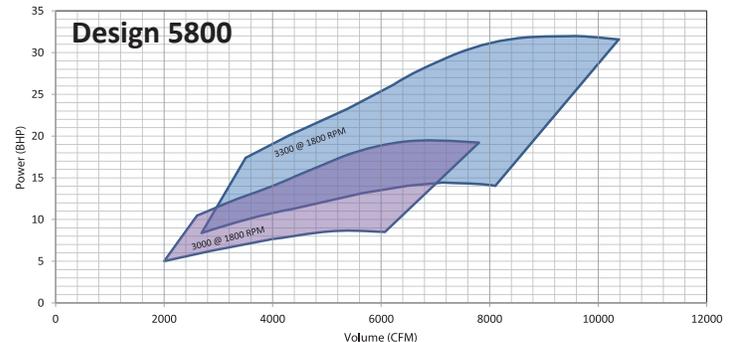
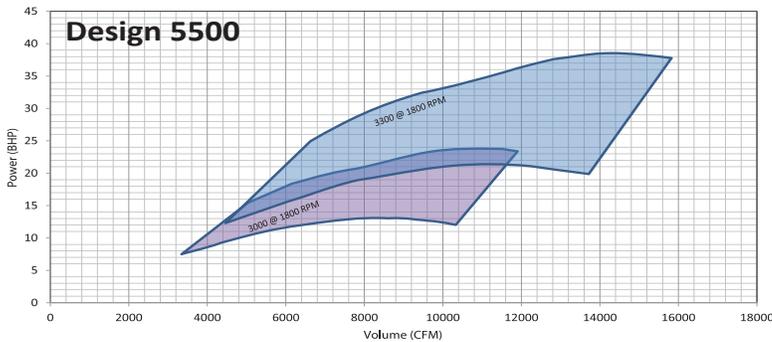
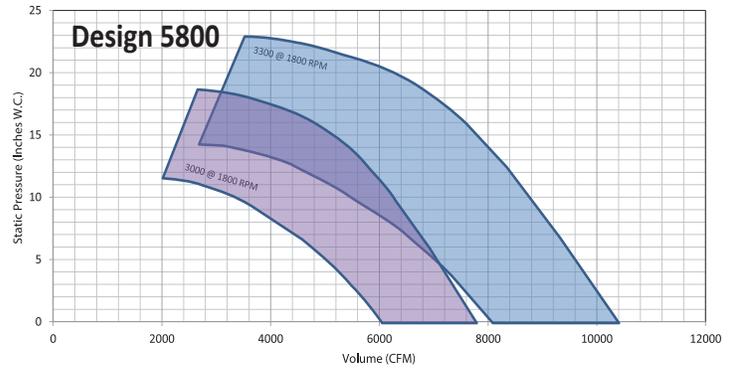
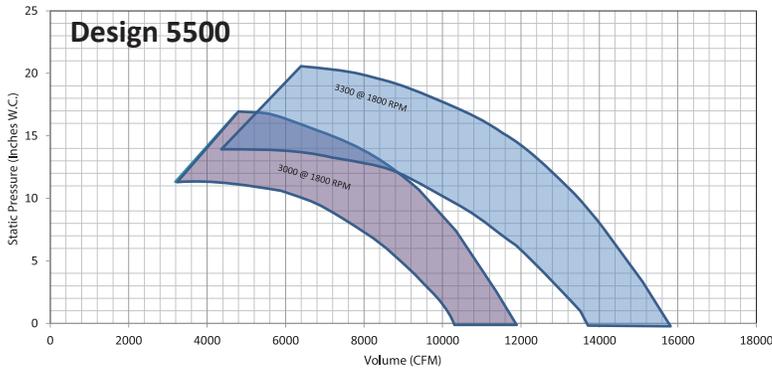
Refer to Chicago Blower's FanNet software for performance, fan curves and sound data. For further assistance, contact your local Chicago Blower sales engineer.



## SIZES 3000-3300 @3600-3000 RPM

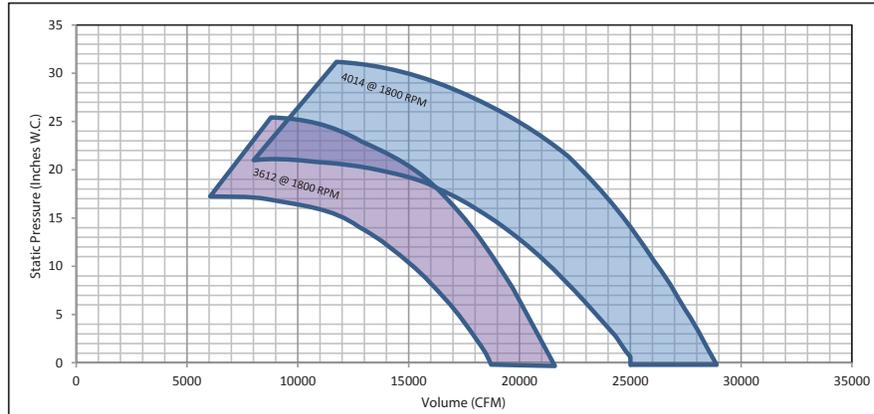


## SIZES 3000-3300 @1800 RPM

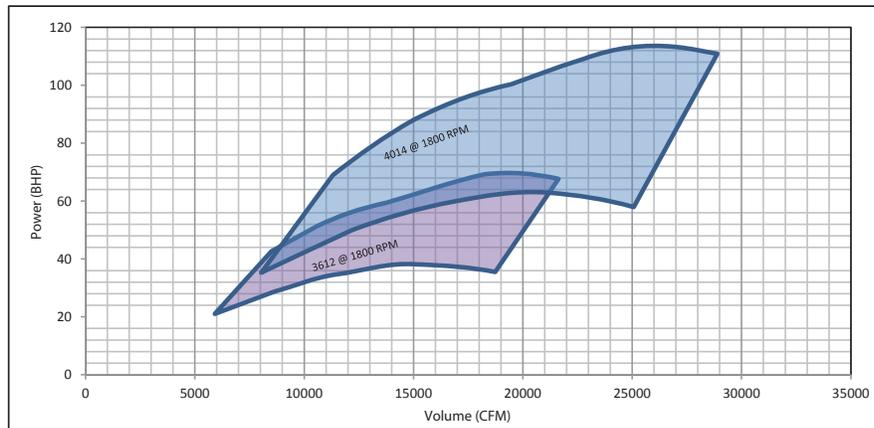


## SIZES 3612-4014 @1800 RPM

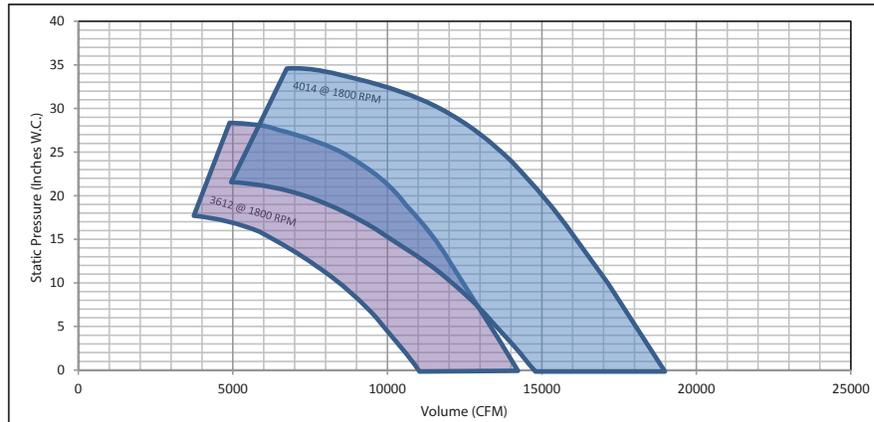
Design 5500



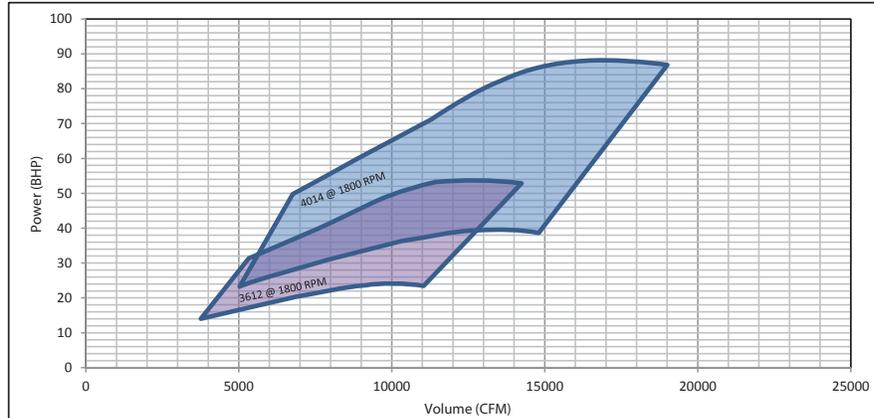
Design 5500



Design 5800

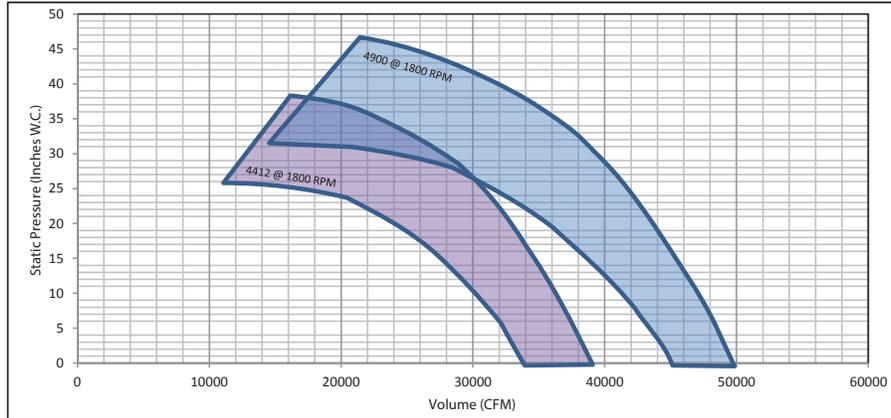


Design 5800

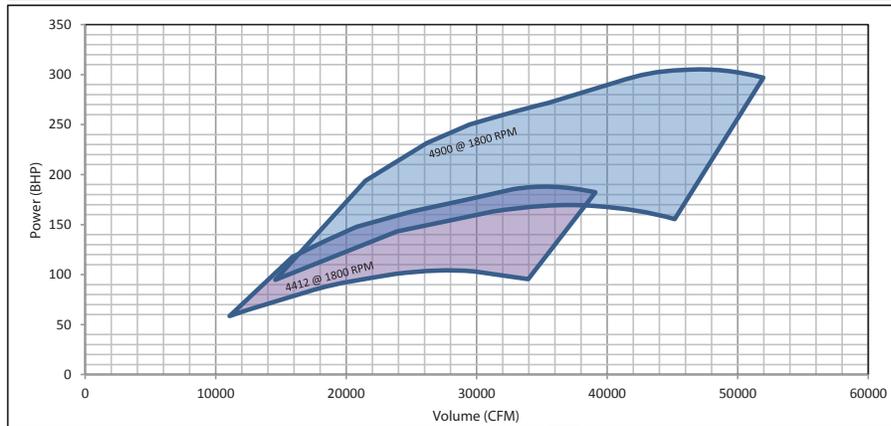


## SIZES 4412-4900 @1800 RPM

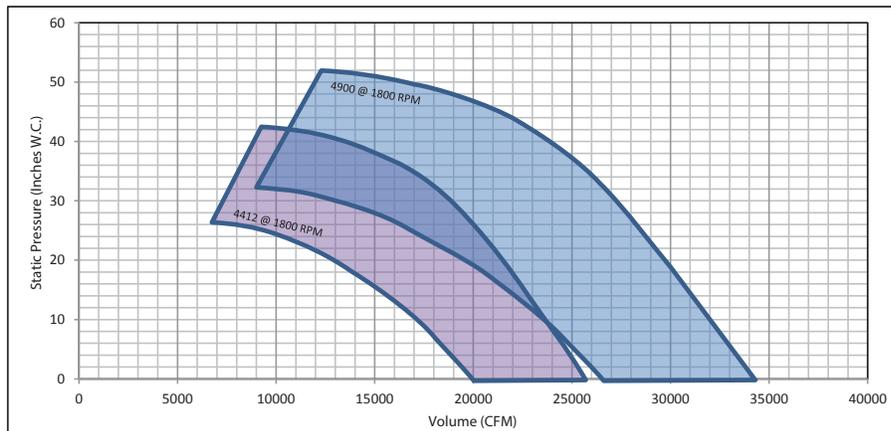
Design 5500



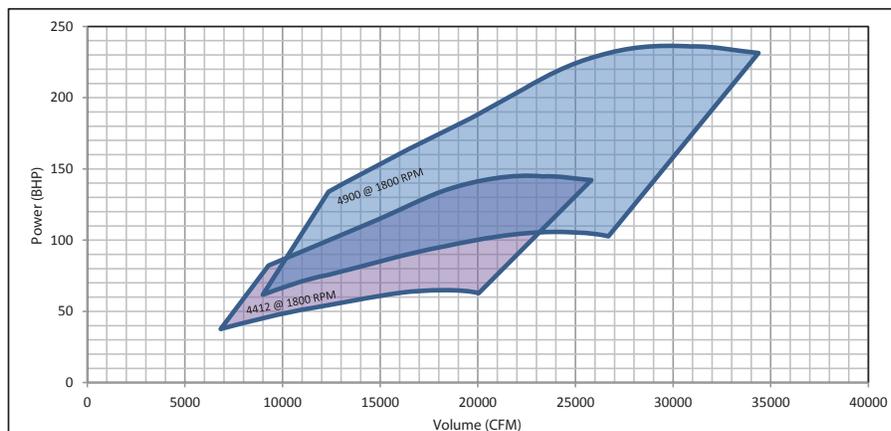
Design 5500



Design 5800

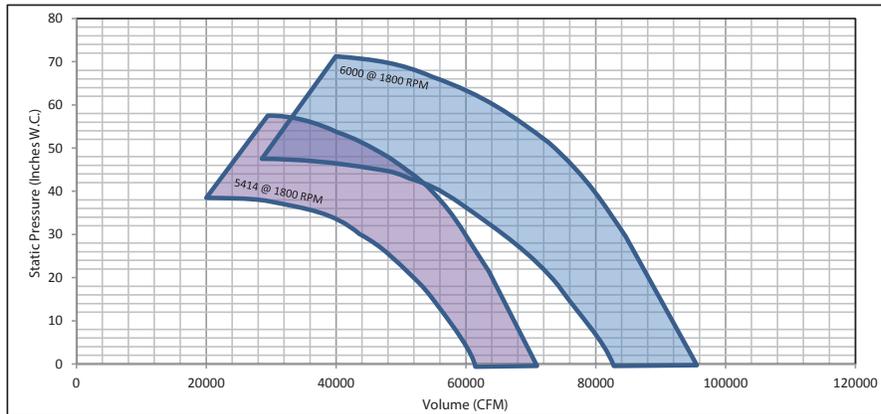


Design 5800

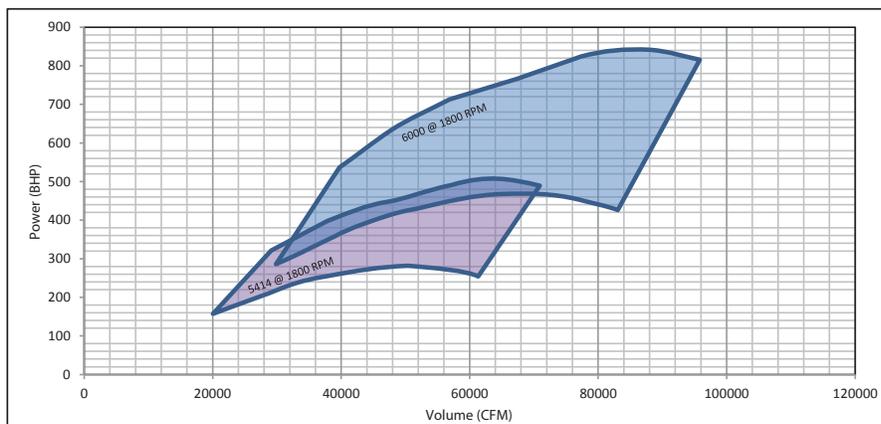


## SIZES 5414-6000 @1800 RPM

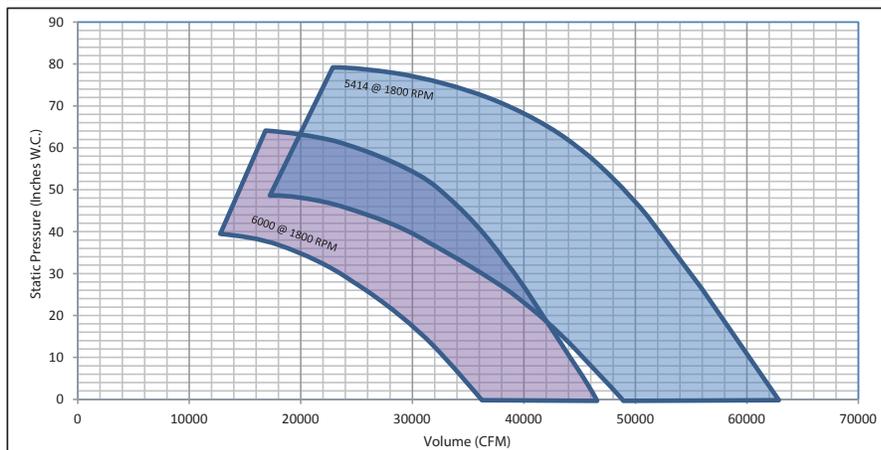
Design 5500



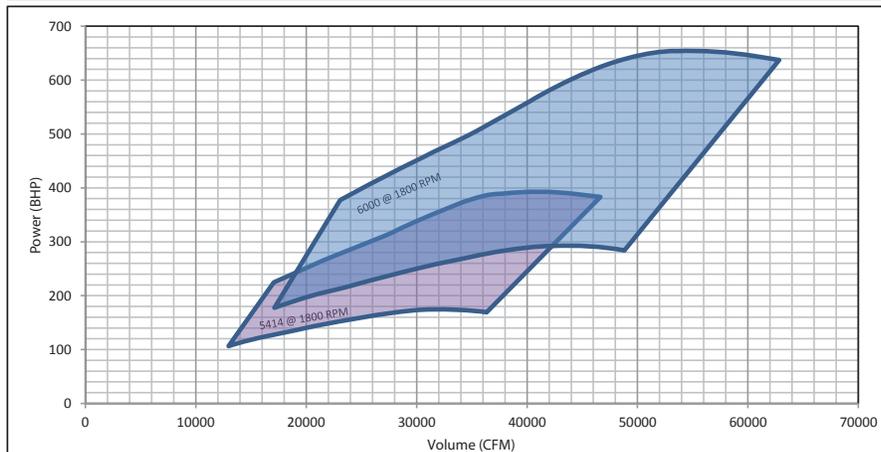
Design 5500



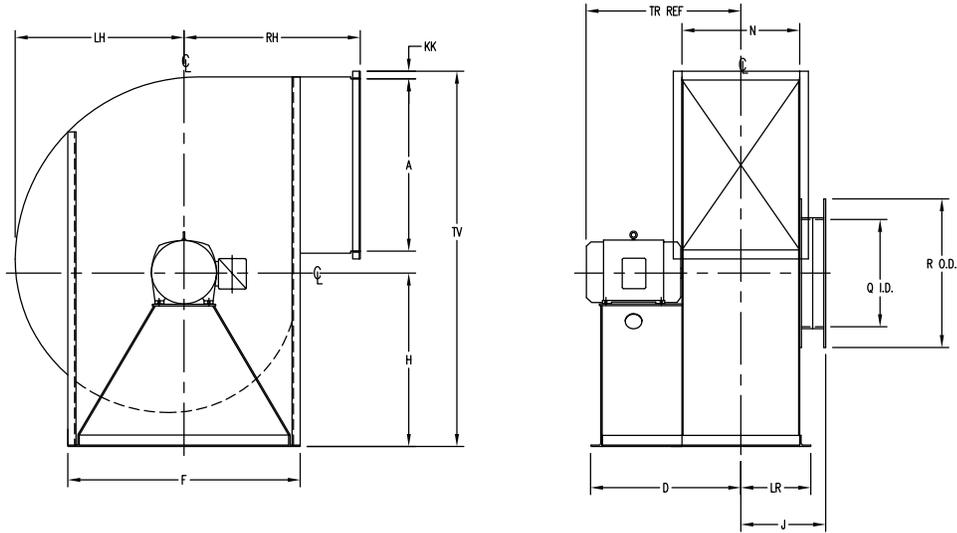
Design 5800



Design 5800



# Dimensions: Arrangement 4



CW Rotation, TH Discharge Shown

## Design 5500

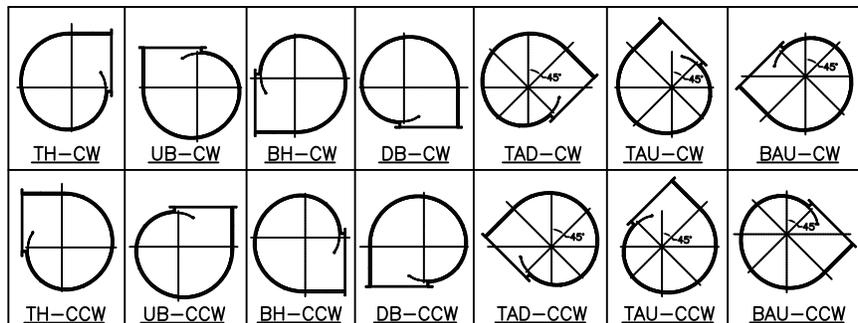
DIMENSIONS - INCHES															*EST. WEIGHT (LBS.)
FAN SIZE	A	D (MAX)	F	H	J	N	Q	R	RH	LH	LR	TV	TR (MAX)	KK	
3000	27-7/16	43-5/16	44-1/4	28-7/8	10-3/16	12-3/8	25-1/4	29-1/4	24-3/8	24-11/16	8-3/32	57-5/16	45-1/4	2	1519
3300	30-1/8	38-3/8	47-3/4	27-9/16	10-13/16	13-5/8	28-3/4	32-3/4	26-1/8	27-1/16	9-5/16	58-5/8	39-3/4	2	1432
3612	33-3/8	29-5/8	51	30-5/8	11-1/2	15	31-3/4	35-3/4	28	29-7/8	10-1/2	64-3/4	34-5/16	2	1255
4014	36-3/4	36-3/16	55	33-3/8	12-5/16	16-5/8	34-3/4	38-3/4	30-13/16	32-15/16	11-5/16	70-7/8	46-7/8	2	1670
4412	40-5/8	42-11/16	60-1/2	36-7/16	13-3/16	18-3/8	38-1/4	42-1/4	34-1/16	36-5/16	12-3/16	77-5/8	49-9/16	2	2480
4900	44-3/4	47-1/4	66-1/4	42-11/16	16-1/8	20-1/4	41	46	37-7/16	39-15/16	12-1/16	87-7/8	55-7/16	2	3241
5414	49-9/16	54-1/16	72-1/2	48-9/16	17-3/16	22-3/8	45-1/4	50-1/4	41-3/8	44-3/16	13-7/16	98-3/8	61-5/16	2	4390

- Estimated weight does not include motors, drives, couplings, or accessories.
- Dimensions shown are not certified for construction.

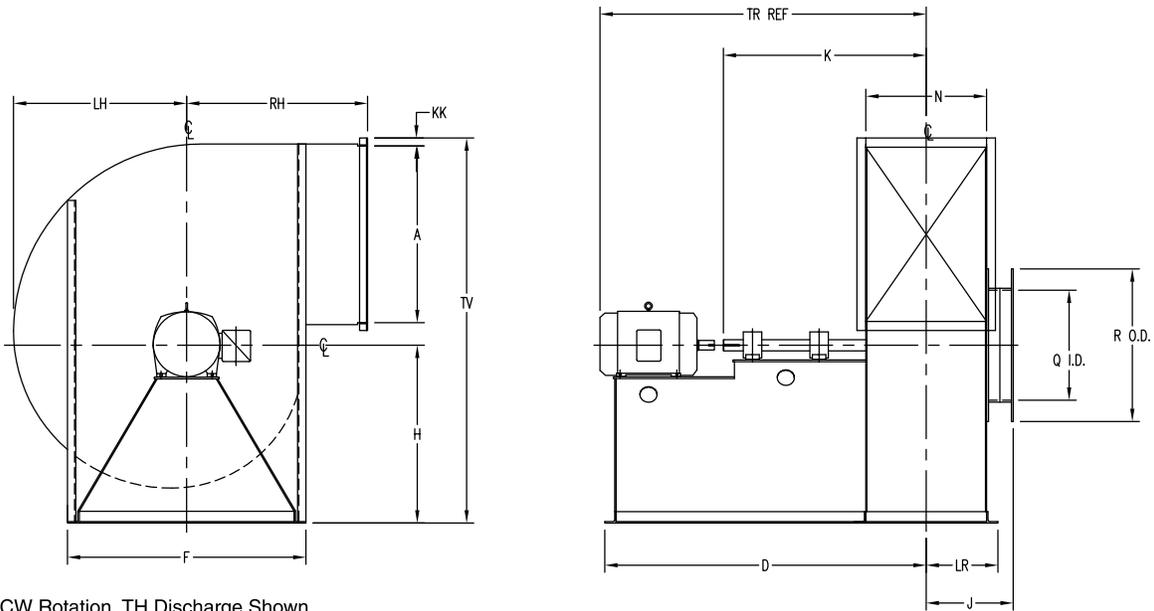
## Design 5800

DIMENSIONS - INCHES															*EST. WEIGHT (LBS.)
FAN SIZE	A	D (MAX)	F	H	J	N	Q	R	RH	LH	LR	TV	TR (MAX)	KK	
3000	14-1/16	38-3/8	32	27-1/4	10	12	23-1/4	27-1/4	22-1/2	26-1/4	8-1/2	57	39-3/4	2	1348
3300	15-1/2	38-3/8	34	29-5/8	10-5/8	13-1/4	25-1/4	29-1/4	24-3/4	28-13/16	9-1/8	62-3/16	39-3/4	2	1596
3612	17-1/8	29-5/8	37-3/4	32-15/16	11-3/8	14-3/4	28-3/4	32-3/4	27-3/8	31-13/16	10-3/8	68-11/16	34-5/16	2	1355
4014	18-7/8	33-1/4	40-3/4	35-7/8	12-1/8	16-1/4	31-3/4	35-3/4	30-3/16	35-1/16	11-1/8	75-1/8	41-9/16	2	1744
4412	20-7/8	38-3/16	44-1/4	39-1/4	12-15/16	17-7/8	34-3/4	38-3/4	33-3/8	38-11/16	11-15/16	82-7/16	48-7/8	2	2593
4900	23	46-5/8	47-3/4	45-13/16	13-7/8	19-3/4	38-1/4	42-1/4	36-3/4	42-9/16	11-13/16	93-1/8	54-13/16	2	3400
5414	25-7/16	54-1/16	51	52	16-7/8	21-3/4	41	46	40-13/16	47-1/16	13-1/8	104-3/16	61-5/16	3	4313

- Estimated weight does not include motors, drives, couplings, or accessories.
- Dimensions shown are not certified for construction.



# Dimensions: Arrangement 8



CW Rotation, TH Discharge Shown  
Rotation is viewed from the side opposite of the fan's inlet.

## Design 5500

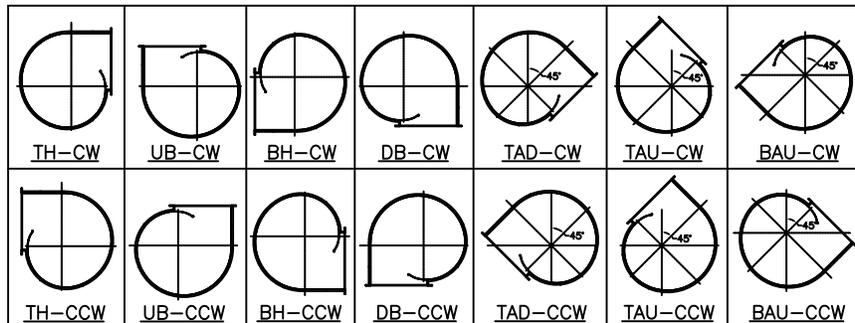
DIMENSIONS - INCHES															*EST. WEIGHT (LBS.)	
FAN SIZE	A	D (MAX)	F	H	J	K (MAX)	N	Q	R	RH	LH	LR	TV	TR (MAX)	KK	
3000	27-7/16	75-1/4	44-1/4	28-7/8	10-3/16	31-15/16	12-3/8	25-1/4	29-1/4	24-3/8	24-11/16	8-3/32	57-5/16	77-3/16	2	2314
3300	30-1/8	70-15/16	47-3/4	27-9/16	10-13/16	32-9/16	13-5/8	28-3/4	32-3/4	26-1/8	27-1/16	9-5/16	58-5/8	72-5/16	2	2077
3612	33-3/8	61-15/16	51	30-5/8	11-1/2	32-5/16	15	31-3/4	35-3/4	28	29-7/8	10-1/2	64-3/4	66-5/8	2	1679
4014	36-3/4	72-3/4	55	33-3/8	12-5/16	36-9/16	16-5/8	34-3/4	38-3/4	30-13/16	32-15/16	11-5/16	70-7/8	83-7/16	2	2336
4412	40-5/8	81-3/4	60-1/2	36-7/16	13-3/16	39-1/16	18-3/8	38-1/4	42-1/4	34-1/16	36-5/16	12-3/16	77-5/8	88-5/8	2	3414
4900	44-3/4	89-9/16	66-1/4	42-11/16	16-1/8	42-5/16	20-1/4	41	46	37-7/16	39-15/16	12-1/16	87-7/8	97-3/4	2	4442
5414	49-9/16	102	72-1/2	48-9/16	17-3/16	47-15/16	22-3/8	45-1/4	50-1/4	41-3/8	44-3/16	13-7/16	98-3/8	109-1/4	2	6808
6000	54-13/16	106-11/16	79-1/2	56-3/4	18-3/8	51-15/16	24-3/4	50-1/2	55-1/2	45-3/4	48-13/16	15-5/16	112-9/16	113-1/4	3	11951

- Estimated weight does not include motors, drives, couplings, or accessories.
- Dimensions shown are not certified for construction.

## Design 5800

DIMENSIONS - INCHES															*EST. WEIGHT (LBS.)	
FAN SIZE	A	D (MAX)	F	H	J	K (MAX)	N	Q	R	RH	LH	LR	TV	TR (MAX)	KK	
3000	14-1/16	67-1/8	32	27-1/4	10	28-3/4	12	23-1/4	27-1/4	22-1/2	26-1/4	8-1/2	57	68-1/2	2	2039
3300	15-1/2	67-3/4	34	29-5/8	10-5/8	29-3/8	13-1/4	25-1/4	29-1/4	24-3/4	28-13/16	9-1/8	62-3/16	69-1/8	2	2172
3612	17-1/8	61-13/16	37-3/4	32-15/16	11-3/8	32-3/16	14-3/4	28-3/4	32-3/4	27-3/8	31-13/16	10-3/8	68-11/16	66-1/2	2	1772
4014	18-7/8	68-3/4	40-3/4	35-7/8	12-1/8	35-1/2	16-1/4	31-3/4	35-3/4	30-3/16	35-1/16	11-1/8	75-1/8	77-1/16	2	2358
4412	20-7/8	77-1/4	44-1/4	39-1/4	12-15/16	39-1/16	17-7/8	34-3/4	38-3/4	33-3/8	38-11/16	11-15/16	82-7/16	87-15/16	2	3496
4900	23	89-5/16	47-3/4	45-13/16	13-7/8	42-11/16	19-3/4	38-1/4	42-1/4	36-3/4	42-9/16	11-13/16	93-1/8	97-1/2	2	4530
5414	25-7/16	98-3/4	51	52	16-7/8	44-11/16	21-3/4	41	46	40-13/16	47-1/16	13-1/8	104-3/16	106	2	6227
6000	28-1/8	105-9/16	57	56-1/2	18-1/16	51-1/2	24-1/8	45-1/4	50-1/4	45	52	14-5/16	115	112-13/16	3	11079

- Estimated weight does not include motors, drives, couplings, or accessories.
- Dimensions shown are not certified for construction.





# Packaged Backward Curved Fans Engineering Specifications

## GENERAL

To provide the highest efficiencies throughout the performance range, three wheel diameters are available for each fan size. These centrifugal fans are low maintenance with backward curved wheel and spun radial sideplate. Air performance and sound ratings shall be based on tests and procedures in accordance with AMCA Publication 210 and AMCA Publication 300. Fans must be manufactured and assembled in the U.S.A. Acceptable suppliers: Chicago Blower Corporation. Available as A/4 (Sizes 3000-5414) or A/8 (Sizes 3000-6000).

## PERFORMANCE

Performance shall include a steep pressure curve with non-overloading horsepower characteristics. Peak mechanical efficiency shall be no less than 80%. Wheel inlet to be designed to ensure smooth, stable air flow across the fan's entire operating range. System static pressure changes of 30% shall result in an approximate 10% volume reduction.

## HOUSING

Fan housing shall be of welded, heavy gauge construction with seven common discharge positions. Scroll is to be continuously welded. Housing stiffeners and base to be welded construction only. Bolted stiffeners and construction of structural members is strictly prohibited. Housing and base assembly complete with integral mounting angles for connection to foundation. For A/8 fan, an integral bearing and motor pedestal shall be welded to the housing.

## ROTOR

Wheel shall be welded steel construction. Steel wheel shall have fabricated steel hub that is welded to heavy gauge backplate. Steel backward curved blades must be single sheet, die formed, high strength low alloys, or equivalent steel and continuously welded to backplate and wheel sideplate. Wheels to be statically and dynamically balanced to G6.3 standards in accordance with ISO 1940 and ANSI S2.19 specifications. For A/8 fan, shaft shall be turned, ground, and polished 1045 SAE cold rolled steel and straightened to a maximum T.I.R. of 0.002 inches. Shaft critical speed shall not be less than 120% times the maximum safe speed.

## FACTORY MOUNTED MOTORS AND COUPLING (As Required)

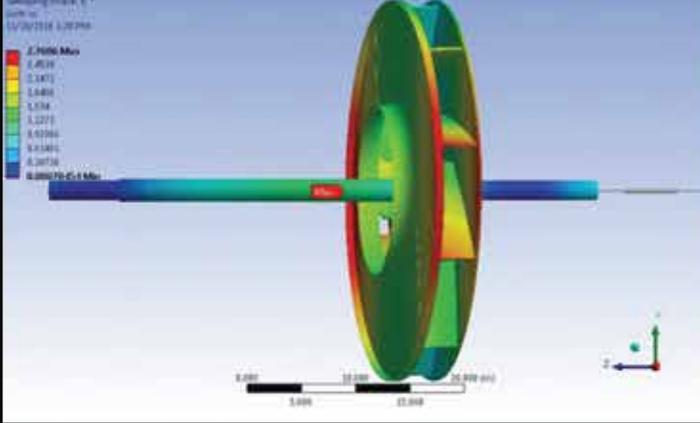
Motors and coupling shall be factory mounted. Fan to be tested at running speed for vibration and balance. Filtered vibration readings, taken at the motor bearings and fan bearings, not to exceed 0.15 inches per second, in accordance with AMCA Publication 204 "Balance Quality and Vibration Levels for Fans."

## INLET VOLUME CONTROL (As Required)

Inlet volume control (IVC) device shall be totally enclosed within the inlet cone. IVC device shall be 7-bladed or 9-bladed and pre-spin the incoming air to control volume and pressure. Operation of IVC shall be smooth without fluttering of blades. Performance control shall be repeatable and consistent without slip or hunting for required duty. Standard IVC temperature limits are 350°F for 7-bladed and 200°F for 9 bladed. All Low-Leak IVCs are limited to 200°F max temperature.

## ACCESSORIES

- Slip-fit Inlet/Outlet
- Punched, Flanged Inlet/Outlet
- Type C AMCA Spark Resistant Construction (Max Temperature is 650°F)
- 1-1/2" NPT Housing Drain
- Shaft Seal
- Access Door - Quick Clamp, Flush Bolted, or Insulated Plug Type
- Shaft Cooler (Required from 301°F and above)
- Inlet Screen
- Shaft and Bearing Guard - painted OSHA yellow
- Extended Grease Fittings
- Flexible Steel Coupling
- Bolt-on Inlet Box
- Extended Inlet Box(Bolt-on) with FGR Port
- Inlet or Outlet Dampers - Parallel or Opposed Bladed, Manual or Automatic Operation
- Split Housing
- Vibration or Unitary Base
- Special Coatings



# SETTING THE STANDARD FOR QUALITY

Innovative Engineering through Application Analysis

**Chicago Blower Fans are also available worldwide:**

- Argentina
- Australia
- Azerbaijan
- Belarus
- Belgium
- Brazil
- China
- Estonia
- Georgia
- India
- Indonesia
- Israel
- Kazakhstan
- Korea
- Kyrgyzstan
- Latvia
- Lithuania
- Luxembourg
- Mexico
- Mozambique
- Netherland
- New Zealand
- Norway
- Russia
- Saudi Arabia
- Singapore
- South Africa
- Spain
- Sweden
- Taiwan
- Tajikistan
- Thailand
- Ukraine
- Uzbekistan
- Venezuela
- Zambia
- Zimbabwe

**CHICAGO BLOWER CORPORATION**

Phone: 630-858-2600

Email: fans@chicagoblower.com

Website: www.chicagoblower.com

Address:

Chicago Blower Corporation  
1675 Glen Ellyn Rd  
Glendale Heights, IL 60139

