an ISO 9001 Company

CHICAGO

Bulletin BCPF 100

NEW Design 70 PLUG FANS

- New Energy Saving Wheel
- Mounted Motors to 125 HP
- Pre-Engineered Sizes to 60"
- Capacities to 156,000 CFM

CHICAGO BLOWER CORPORATION • GLENDALE HEIGHTS, ILLINOIS • USA

Chicago's new compact Design 70 Plug Fan is designed for high temperatures to 1000° F, typically ovens, kilns, and dryers, anywhere air streams need to be recirculated.

The system plenum serves as the fan housing, reducing space requirements and connecting ductwork, and therefore overall system costs. Fan can be installed either vertically or horizontally.

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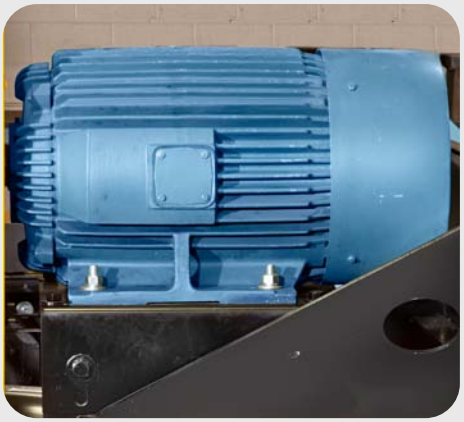
New Energy Saving Wheel

The Design 70 wheel was developed for open wheel installations and utilizes a solid, single surface airfoil blade to provide Chicago's Plug Fan with one of the industry's highest efficiencies. With reduced horsepower requirements, energy savings are significant, up to 84% efficient. Although the Design 70 Plug Fan has ambient air applications, it is typically utilized for temperatures up to 1000° F. For higher temperatures consult the factory. Sound levels are generally low over the entire performance range.



Mounted Motors to 125 HP

To meet industry applications that require more powerful motors for efficient circulation, Chicago has increased the size of the standard mounted motor to 125 horsepower, an industry first. The Design 70 Plug Fan has been engineered with heavy gauge motor base and support gussets continuously welded to the drive panel to effectively withstand the static and dynamic loads of larger motor frames.

This is a rugged fan built to Chicago Blower's industrial level of quality and reliability. Like every Chicago fan, the Design 70 Plug Fan is built only by skilled union craftsmen and displays the label "Proudly Made in the USA".

For specifications, performance data, and solutions to your air moving problems, contact one of the many Chicago Blower Sales Offices worldwide. Or, you can always reach us on the web at www.chicagoblower.com.

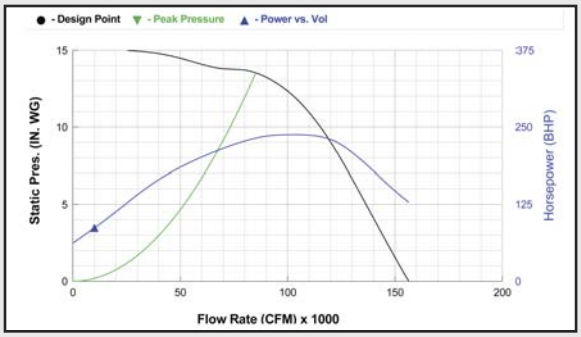
Design 70 PLUG FANS

Pre-Engineered to Size 60

Only Chicago's Design 70 Plug Fan offers standard 54" and 60" sizes. These larger sizes can be selected without lengthy engineering lead times or additional costs. With 17 sizes, 12" to 60", from which to choose, users and manufacturers now have more application and installation versatility.

Volumes to 156,000 CFM

A single Design 70 fan can be used in applications that have required more than one.



Refer to Chicago's *fan.net* for performance, fan curves and sound data.

For software and assistance, contact your local Chicago Blower sales engineer.

DESIGN FEATURES

Wheels

Wheels are formed from heavy gauge mild steel continuously welded, with cast iron hub, suitable for maximum temperatures of 800°F. Stainless steel construction is available for temperatures to 1000°F. Wheels are dynamically balanced to G6.3 before assembly.

Plug Panels

Drive panel's gusseted design provides maximum rigidity and strength. They are simply plugged into the system to supply exhaust or to circulate air. Large flush mounting surface minimizes panel wall loading. All sides are flanged offering flexible, economical support and rigidity. Bearings are assembled inside gussets, allowing for access without total disassembly.

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OPTIONAL FEATURES

High Temperature Construction

301°F-650°F
Includes shaft cooler with cooler cone in addition to high temperature bearings with high temperature grease.

651°F-800°F
Includes all of the above plus shaft seal.

801°F-1000°F
Includes all of the above plus stainless steel wheel, hub and shaft. Also includes shaft extension for required 4" insulation and includes high temperature paint on the drive panel.

1001°F-1300°F
Consult the factory.

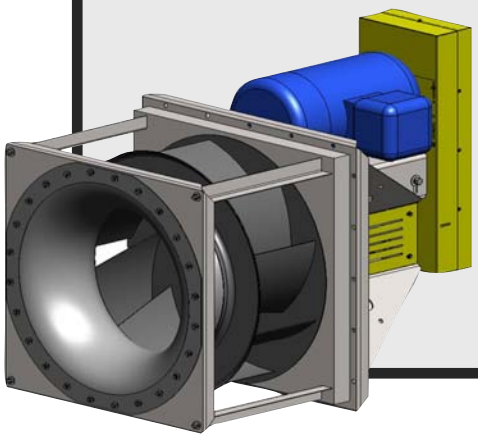
Insulated Plug Panels

Plug panels insulate the motor and drive from heat, and handle temperatures to 1000°F. They are recommended for all applications over 250°F. Panels are packed with high temperature insulation, available in 2", 4", 6", and 8" thicknesses to meet installation requirements.

AMCA Spark Resistant Construction

For Type B construction, the fan is equipped with an aluminum wheel and aluminum rubbing plate on the panel. Temperature is limited to 200°F.

Type C adds an aluminum inlet cone, with temperatures limited to 500°F.



Integral Inlet Cone Assembly

Cone assembly assures proper alignment of cone to wheel. The assembly is welded to the insulated plug or mounting panel. It can be installed or removed through the same access hole in the enclosure.

Inlet Cones

Spun steel inlet cones are designed to provide maximum adjustability and prevent wheel rubbing in both axial and radial planes, extremely critical in temperature applications because of shaft expansion. Angle inlet ring is supplied as an accessory if an inlet connection is required.

Bearings and Shafts

Heavy duty ball or spherical roller bearings are both 2-bolt or 4-bolt pillow block type with either grease or oil lubrication.

Precision shafts are made from grade SAE 1040-1045 steel, turned, ground and polished for close tolerance fit.

Design 70 PLUG FANS

Housings

Housings maximize performance by increasing efficiency while, at the same time, directing the airstream in a specific direction. They are fabricated from heavy gauge steel, continuously welded. Housings are available in both CW and CCW configuration and are rotatable. Large cutouts simplify wheel removal.

Shaft Seal

Shaft seal consists of a steel retainer plate with asbestos-free gasket for applications to 800°F. For 801°F to 1000° F, a high temperature carbon ring seal with stainless steel retainer is bolted to the drive side. Seals should not be considered gas-tight.

Shaft Cooler

Split aluminum cooling wheel must be installed to dissipate heat in applications with temperatures above 300°F.

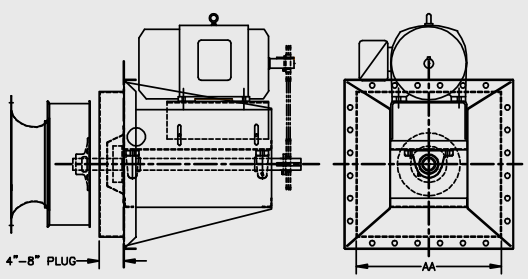
Safety Guards

Guards are recommended to protect operators from all moving equipment and from access to high velocity airstreams. Belt guards and shaft/bearing guards are available from Chicago Blower. It is the user's responsibility to assure that the installation or application meets OSHA safety standards.

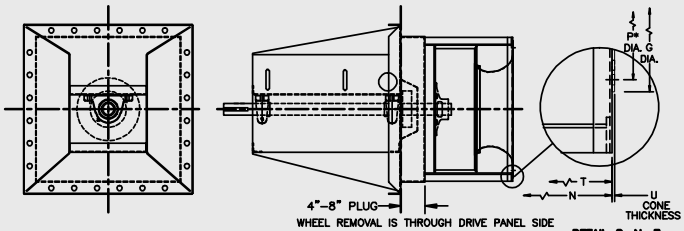
Extended Lubrication Lines

For accessibility, the lubrication fittings are mounted on the support gussets. Lube lines of nylon or copper tubing are run to the bearings. Extended lines are especially recommended for continuous operation or applications where bearings are difficult to reach.

DIMENSIONS

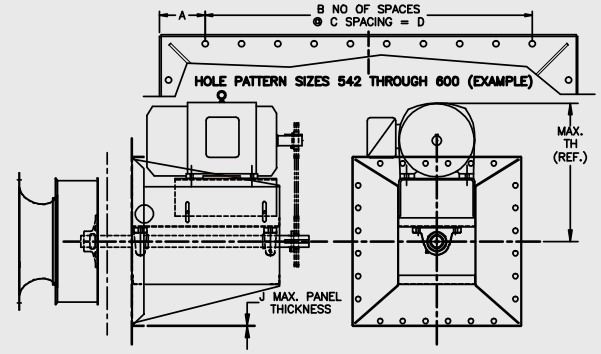


HIGH–EFFICIENCY SQUARE PLUG WITH ADJUSTABLE MOTOR BASE
INSULATED PLUG 4" WITH STANDARD SHAFT
INSULATED PLUG 6" & 8" WITH SPECIAL LONGER SHAFT



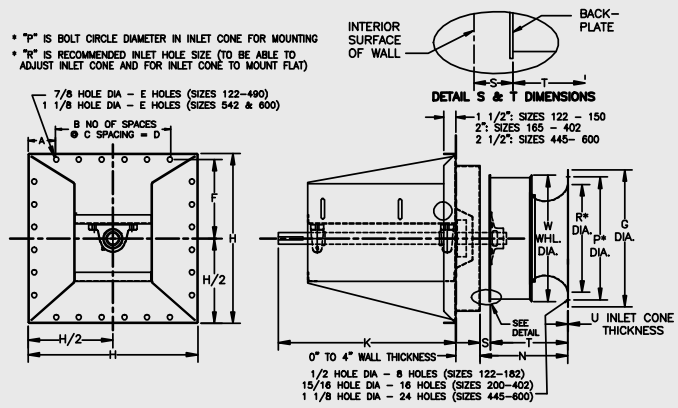
HIGH–EFFICIENCY SQUARE PLUG – ARRANGEMENT 1
INSULATED PLUG INTEGRAL INLET CONE ASSEMBLY

DETAIL G, N, P,
T & U DIMENSIONS



MAX TH (REF.) IS BASED ON MOTOR MAX. O WHICH VARIES PER MOTOR MANUFACTURER.

HIGH–EFFICIENCY SQUARE PLUG WITH ADJUSTABLE MOTOR BASE



HIGH–EFFICIENCY SQUARE PLUG – ARRANGEMENT 1

FAN SIZE	MAX. MOTOR FRAME CLASS 2	CLASS 3	CLASS 4	A	B	C	D	E	F	G	H	H/2	J MAX.
122	215T	-	-	3 5/8	5	2 3/4	13 3/4	24	9 1/2	13 3/8	21	10 1/2	12 GA.
135	215T	-	-	3 5/8	5	2 3/4	13 3/4	24	9 1/2	15	21	10 1/2	12 GA.
150	215T	254T	-	3 5/8	5	2 3/4	13 3/4	24	9 1/2	16 1/2	21	10 1/2	12 GA.
165	215T	256T	-	4 5/8	5	3 3/4	18 3/4	24	13	18 1/2	28	14	10 GA.
182	215T	256T	326T	4 5/8	5	3 3/4	18 3/4	24	13	20 5/8	28	14	10 GA.
200	256T	286T	365T	4 5/8	5	3 3/4	18 3/4	24	13	22 5/8	28	14	7 GA.
222	256T	286T	365T	4 5/8	5	3 3/4	18 3/4	24	13	25 1/8	28	14	7 GA.
245	286T	326T	365T	5 1/4	5	4 1/2	22 1/2	24	15 1/2	27 3/4	33	16 1/2	7 GA.
270	286T	326T	365T	5 1/4	5	4 1/2	22 1/2	24	15 1/2	30 5/8	33	16 1/2	7 GA.
300	326T	365T	405T	5 1/2	7	4	28	32	18 1/2	34 1/4	39	19 1/2	7 GA.
330	326T	365T	405T	5 1/2	7	4	28	32	18 1/2	37 3/4	39	19 1/2	7 GA.
365	365T	405T	405T	5 1/2	7	5	35	32	22	41	46	23	1/4
402	365T	405T	405T	5 1/2	7	5	35	32	22	42	46	23	1/4
445	365T	405T	-	5 1/2	9	5	45	40	26 3/4	48	56	28	1/4
490	365T	405T	-	5 1/2	9	5	45	40	26 3/4	52	56	28	1/4
542	405T	444T	-	7 1/2	9	6	54	40	33	56 1/2	69	34 1/2	3/8
600	405T	444T	-	7 1/2	9	6	54	40	33	61 1/2	69	34 1/2	3/8

FAN SIZE	MAX K CLASS 2	CLASS 3	CLASS 4	N	P	R	S	T	U	W	MAX TH CLASS 2	CLASS 3	CLASS 4
122	22 13/16	-	-	9 3/8	12 3/8	11 1/8	1 1/2	7 7/8	16 GA.	12 3/4	21 3/16	-	-
135	22 13/16	-	-	10 3/16	13 3/4	12 1/4	1 1/2	8 11/16	16 GA.	14 1/16	21 3/16	-	-
150	22 13/16	28 3/4	-	11 1/8	15 1/4	13 5/8	1 1/2	9 5/8	16 GA.	15 5/8	21 3/16	24 5/16	-
165	23 5/16	29 7/16	-	12 1/8	16 7/8	14 15/16	1 1/2	10 5/8	16 GA.	17 3/16	21 3/16	24 5/16	-
182	23 3/8	29 3/16	35 11/16	13 3/16	19	16 1/2	1 1/2	11 11/16	16 GA.	19	21 3/16	24 5/16	28 1/8
200	29 1/4	32 11/16	38 7/16	14 5/16	20 1/4	18 1/16	1 1/2	12 13/16	16 GA.	20 13/16	24 5/16	26 1/8	32 3/16
222	29 1/4	32 11/16	38 7/16	15 13/16	22	20 1/16	1 1/2	14 5/16	16 GA.	23 3/16	24 5/16	26 1/8	32 3/16
245	32 11/16	35 11/16	38 7/16	17 3/16	24 3/4	22 1/16	1 1/2	15 11/16	14 GA.	25 1/2	26 1/8	27 7/8	32 3/16
270	32 11/16	35 11/16	38 7/16	18 13/16	26 7/8	24 1/4	1 1/2	17 5/16	14 GA.	28 1/8	26 1/8	27 7/8	32 3/16
300	35 11/16	38 5/8	45 1/4	20 3/4	30 1/4	26 15/16	1 1/2	19 1/4	14 GA.	31 1/4	27 7/8	32 3/16	35 1/16
330	35 11/16	38 5/8	45 1/4	22 11/16	32 7/8	29 5/8	1 1/2	21 3/16	14 GA.	34 3/8	27 7/8	32 3/16	35 1/16
365	38 1/2	45 9/16	45 1/4	25 1/8	36 1/2	32 3/4	1 11/16	23 7/16	14 GA.	38	32 3/16	35	35 1/16
402	38 1/2	45 9/16	45 5/16	27 1/2	38 7/8	36 1/16	1 11/16	25 13/16	12 GA.	41 7/8	32 3/16	35	35 1/16
445	39 1/4	46 5/16	-	30 3/8	43 3/4	39 7/8	1 13/16	28 9/16	12 GA.	46 5/16	32 1/4	35 1/16	-
490	39 1/4	46 5/16	-	33 1/4	47 7/8	43 7/8	1 13/16	31 7/16	12 GA.	51	32 1/4	35 1/16	-
542	45 13/16	50 7/8	-	36 11/16	52 3/8	48 1/2	1 15/16	34 3/4	10 GA.	56 7/16	35 3/16	35 3/16	-
600	45 13/16	50 7/8	-	40 3/8	57 1/2	53 5/8	1 15/16	38 7/16	10 GA.	62 7/16	35 3/16	35 3/16	-

Do not use for general construction unless certified by CBC Engineering Dept. Dimensional tolerance: 1/8" unless otherwise noted.

Design 70 PLUG FANS

ENGINEERING SPECIFICATIONS

GENERAL:
Provide a high performance, low maintenance, centrifugal fan with single surface airfoil wheel with backward curved blades. Air performance shall be based on tests and procedures in accordance with AMCA standard 210. Fans must be manufactured and assembled in the U.S.A. Acceptable vendors: Chicago Blower Corporation

PERFORMANCE:
Performance shall include steep pressure and non-overloading horsepower characteristics. Mechanical efficiency shall be no less than 75%. Wheel inlet cone to be designed to ensure smooth, stable air flow across the entire operating range. System static pressure changes of 30% shall result in an approximate 12% volume reduction.

DRIVE PANEL:
Fan drive panel shall be of welded, heavy gauge construction. Bearing support shall be heavy gauge steel welded to panel support gussets for easy access to the bearings. Bearings shall be 2-bolt or 4-bolt pillow block mount heavy duty ball or spherical roller.

ROTOR:
Wheel shall have cast iron or cast steel hub huck bolted to a heavy backplate. Backward curve blades continuously welded to the backplate and sideplate. Wheels to be statically and dynamically balanced to G6.3 standards in accordance with ISO 1940 and ANSI S2.19 specifications. Shaft shall be turned, ground and polished 1045 hot rolled steel straightened to a maximum T.I.R. of .002 inches and mounted using heavy duty ball or roller pillow block bearings. Shaft critical speed shall not be less than 1.25 times maximum RPM.

MOUNTING:
Drive Panel assembly complete with standard bolt pattern for easy connection to oven wall. Adjustable motor base to be welded to heavy structural steel support gussets.

FACTORY MOUNTED MOTORS AND DRIVES: (Accessory)
If motors and drives are to be factory mounted, unit to be tested at running speed for vibration and balance. Filtered vibration readings, taken at fan bearings and motor bearings, are not to exceed 0.15 inches per second.

1000°F CONSTRUCTION: (Accessory)
Construction shall consist of stainless steel wheel, hub, and shaft. Drive panel shall include shaft cooler, shaft seal, and minimum 4" of insulation to isolate airstream temperatures from exterior of the fan. Drive Panel shall be coated with high temperature paint.

ACCESSORIES: (Choose from the following)
- Shaft Cooler (Required for temperatures from 300°F to 1000°F)
- Shaft and Bearing Guard with Extended Grease Fittings
- Heavy Duty Housing
- Slip-Fit Inlet Connection
- Aluminum Inlet Cone
- 4 Inch to 8 Inch Shaft Overhang
- Shaft Seal (Required from 650°F to 1000°F)
- Adjustable Motor Base
- Totally Enclosed Belt Guard with Ventilation Panel
- Constant or Adjustable Speed V-Belt Drives – minimum 1.3 S.F.
- Insulated Plug Panel (2" to 8" thick insulation available)
- Inlet Cone Mounting Hardware
- Type "B" and "C" AMCA Spark Resistant Construction
- Knock-Down Shipment
- Six Sided Open Shipping Crate

Setting the Standard For Quality

CHICAGO

Innovative Engineering Through Application Analysis

Quality Fans Shaped With Skill and Pride

Global Service Only a Click Away

Sales Offices Throughout North America

Chicago Blower Fans are also manufactured worldwide:

Argentina, Australia, Brazil, Chile, China, Colombia, Denmark, Germany, Greece, Holland, Hong Kong, India, Indonesia, Israel, Italy, Japan, Korea, Malaysia, New Zealand, Norway, Philippines, Portugal, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Thailand, Taiwan, Turkey, Venezuela.

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