



# SQI

## CENTRIFUGAL FANS



HIGH QUALITY  
HIGH EFFICIENCY

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# SQI INDUSTRIAL CENTRIFUGAL FANS

**Exceptional Reliability  
in Dirty or Abrasive  
Industrial Environments**

Chicago Blower's SQI is a high performance, trouble free fan proven in a multitude of industrial applications. With its radial wheel and square housing design, the SQI is efficient, economical and versatile. It is also quickly available through Chicago's Stock Fan program. "Packaged" fans, those furnished with motor, V-belt drive, belt guard and other options, are factory aligned, run tested and shipped ready to install. By eliminating jobsite assembly, the packaged SQI fan can substantially reduce overall installation cost.

## UNIVERSAL APPLICATIONS

The SQI wheel with radial blades is designed to handle various types of materials, long fibers or other stringy material as well as sticky, heavy or abrasive dust airstreams. Typical applications include conveying, induced draft, industrial ovens and similar high temperature installations to 650°F. For greater safety in explosive environments, spark resistant construction is offered. Lint-free construction, in which housing hardware is reversed to limit obstructions in the airstream, minimizes lint build-up. The versatile SQI is furnished in eight sizes in Arrangements 1, 9 or 9H.

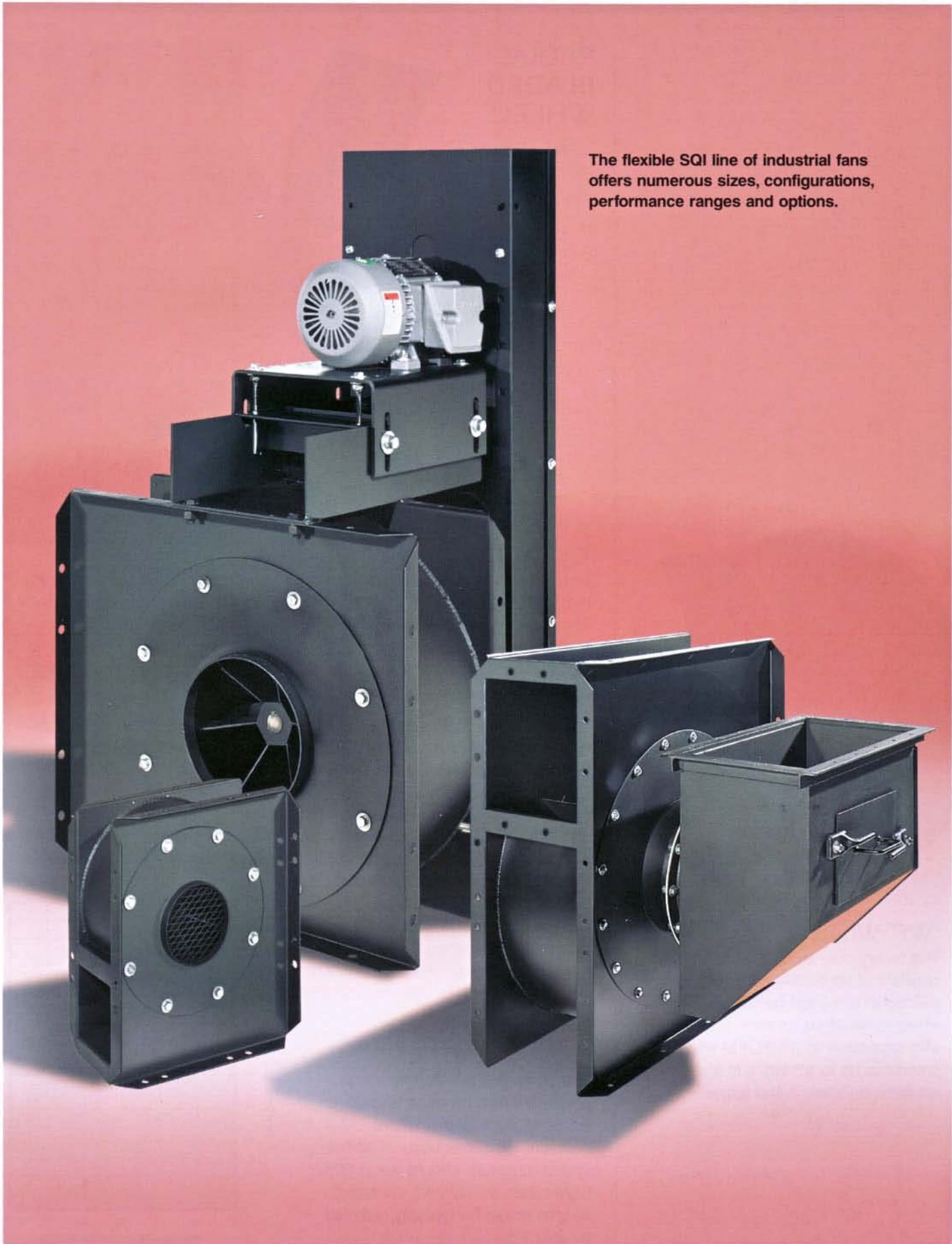
## CHICAGO QUALITY

The experience gained as a leading supplier of all types of industrial and custom heavy-duty fans is reflected in the rugged construction of all Chicago built fans. It's called "Industrial Quality" and guarantees exceptional performance and reliability. If you are unsure of the suitability of a particular fan for a specific application, the Chicago air moving professionals will evaluate your needs and provide recommendations. Chicago Blower offices are located throughout North America and around the world.



*The building of all Chicago "SQ" Fans is monitored by stringent Quality Control and Quality Assurance Programs. Chicago's Stock*

*Fan program assures expediency without sacrificing quality and reliability. "Our fan's most important feature is the reliability we are able to add to your product or system."*



The flexible SQI line of industrial fans offers numerous sizes, configurations, performance ranges and options.

## RADIAL BLADED WHEELS



"LS" Wheel

### CHICAGO "LS" WHEEL

Long Shavings wheels are designed for handling air or gasses containing materials likely to build up on other wheel configurations. It is especially effective in combating sticky, heavy or abrasive dust airstreams. Installations would include induced draft, industrial ovens and similar higher temperature applications to 650°F. It is also an effective wheel for conveying various materials.

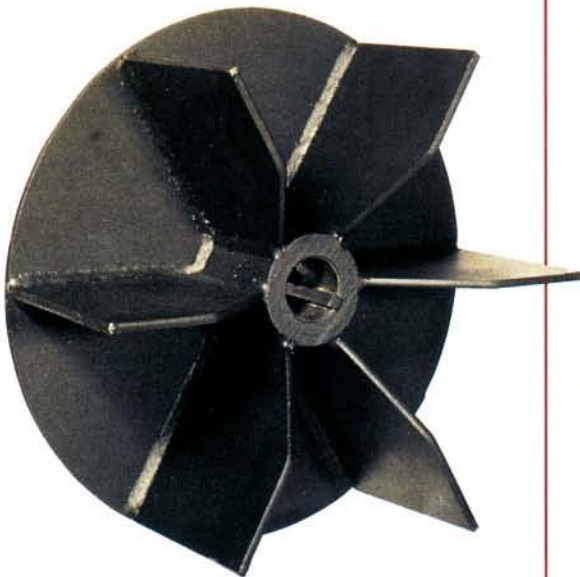
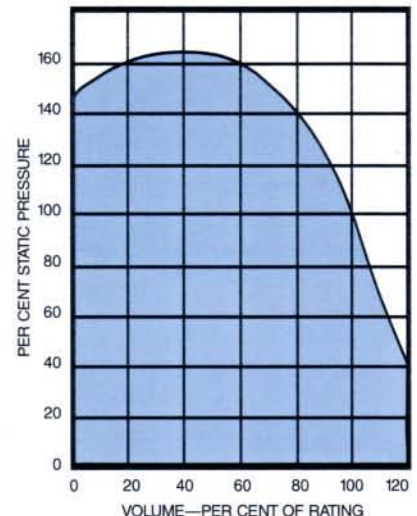
Six steel radial blades are continuously welded to a fabricated steel hub. "LS" wheels are standard on SQI sizes 7 through 17, with capacities to 9160 CFM and pressures to 18" WG.

### CHICAGO "WF" WHEEL

The "WF" wheel is a Wool-Fiber wheel developed expressly for long fibers or other stringy type materials. It also effectively handles dusty airstreams. Primary applications would include woolen mills and other fabric manufacturing, plus various paper processing industries. The wheel is not suitable, however, for continuous paper trim handling.

### STEEP PRESSURE CHARACTERISTICS

Chicago's SQI fan with its steep pressure characteristics is ideal for industrial applications where pressure variations occur. If actual system pressure should reach 30% higher than anticipated, delivered volume would be typically reduced by only 10%.



"WF" Wheel

The heavy duty steel "WF" wheel consists of six blades continuously welded to a rugged backplate. The wheel is standard on sizes 5 and 6, with capacities to 1250 CFM and pressures up to 10" wg. It is also available on sizes 7 and larger.

## Designed for easy versatile installation Built for reliable trouble-free service

### ADJUSTABLE DISCHARGE POSITIONS

Chicago's SQI fans operate equally well in any of the four discharge positions. The unique square housings are easily rotated without disassembly to simplify installation and relocation. The base has prepunched mounting holes for each discharge position.

### RUGGED STEEL HOUSING

The heavy gauge housing features continuously welded air-tight seams. Edges are flanged for exceptional rigidity.

### PUNCHED FLANGED OUTLET

A standard feature of the SQI fan is the pre-punched flanged outlet to facilitate duct connection. The flanged outlet matches the flange of the optional outlet damper.

### REMOVABLE BEARING BRACKETS

To simplify bearing or shaft maintenance, the rigid steel bearing brackets are bolted to the support structure rather than welded.

### PRECISION SHAFTS

Made from selected medium carbon steel, the shafts are turned, ground and polished to assure a tight bearing and hub fit. Shafts are designed with a critical speed that is 25% or more above operating speed.

### ADJUSTABLE MOTOR BASES

Heavy gauge bases on Arrangement 9 fans are prepunched for all popular motor frames. The compact motor bases are designed to save floor space by mounting on top or either side of the housing. Bases feature threaded belt tension adjustment and positive locking.



### FOUR-WAY GUSSET

An example of Chicago's industrial quality is the four-way gusset that maintains structural housing stability and precise shaft alignment regardless of motor location or direction of shaft pull.



### Quick, Easy Wheel Removal

Chicago's SQI fans are commonly used for adverse airstreams. To facilitate wheel and housing cleanout or full wheel removal, the housing has a removable inlet cover plate to allow easy accessibility.

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

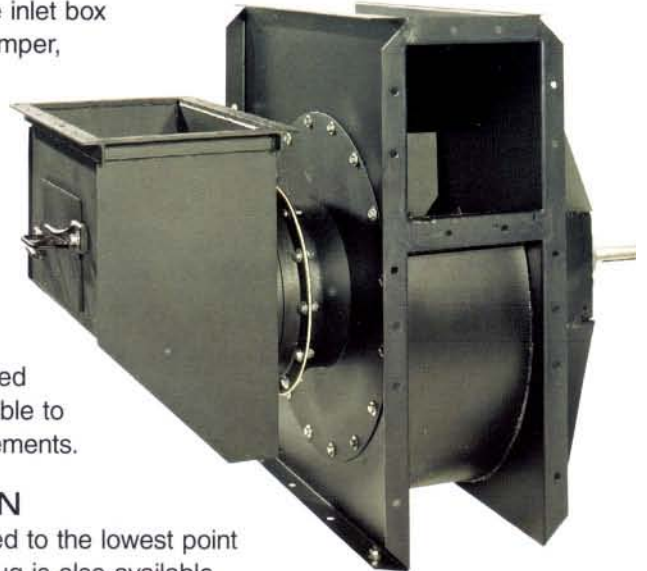
Contact your local Chicago Blower sales engineer for software and assistance.



## Performance and Convenience Options

### INLET BOX

The primary benefit of the bolt-on inlet box is to simplify ductwork connection. It also assures dependable fan performance when the installation necessitates a sharp turn at the fan inlet. The inlet box will accommodate a damper, used to improve reduced-load performance. The bolt-on inlet box is available on sizes 11 through 17.



### INLETS

Slip fit inlets and punched flanged inlets are available to meet installation requirements.

### HOUSING DRAIN

A half coupling is welded to the lowest point of the housing. Drain plug is also available.

### ACCESS DOOR

The flush mounted door features quick-opening tension clamps and gasket.

### PLUG TYPE ACCESS DOOR

The bolted door is raised off the scroll to provide clearance for insulation. It is available on sizes 11 through 17.

### SHAFT and BEARING GUARD

The expanded metal guard encloses shaft and bearings. For easier lubrication, extended grease fittings are recommended.

### EXTENDED GREASE FITTINGS

For accessibility, the fittings are mounted on the bearing support gussets with lube lines run to the bearings.

### BELT GUARD

Three sides are fully enclosed while the other side has a removable slotted metal cover for ventilation.

### SHAFT SEAL

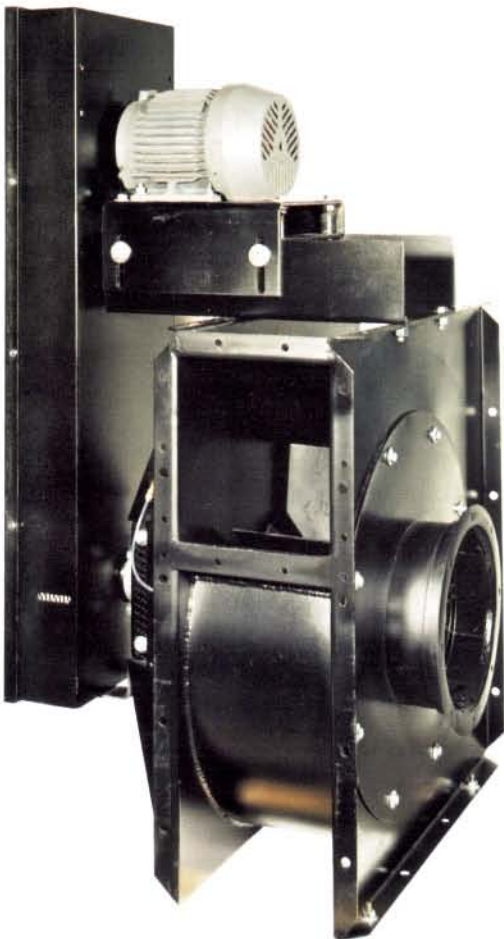
The standard seal reduces leakage through the shaft opening in the housing. Leak-resistant shaft seals are also available.

### HIGH TEMPERATURE SHAFT COOLER, GUARD

In applications where temperature will exceed 300°F, a shaft cooler must be used to dissipate the heat. Maximum temperature limit is 650°F.

### STAINLESS STEEL CONSTRUCTION

Applications involving corrosive by-products or high humidity environments require stainless steel fans.



Typical "packaged" SQI fan factory aligned, run tested and ready to install. Includes punched flanged inlet and outlet, shaft/bearing guard, belt guard and extended lube lines.

## INLET SCREEN

Screen mounts to standard slip inlet. Expanded steel is used on sizes 5 and 6, welded steel wire on all larger sizes.

## SPARK RESISTANT CONSTRUCTION

AMCA Type C spark resistant construction is available in all sizes.

## LINT FREE CONSTRUCTION

Housing hardware is reversed to minimize obstructions in the airstream.

## UNITARY BASE

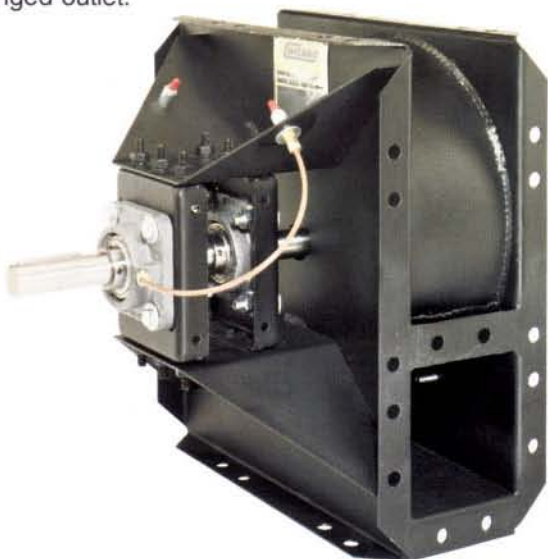
Fan and adjustable motor base is welded onto a unitary base of continuously welded structural steel channel. Can be provided with vibration isolators.

## BASE RAILS

Channel rails are fitted with rubber-in-shear or spring isolators. Available only on Arrangements 9T and 9S.

## OUTLET DAMPERS

Outlet dampers have punched flanges on both ends to simplify fan and duct connections. Parallel acting blade design is standard with opposed acting blades available. The damper mounts to the matching punched flanged outlet.



This Size 6 SQI with "WF" wheel is a counter-clockwise rotation, bottom horizontal discharge fan fitted with extended nylon grease leads.

This SQI fan is factory aligned, run tested and ready to install. The fan is equipped with belt guard, shaft and bearing guard, cooling wheel and copper lube lines for high temperature application.



# SQI INDUSTRIAL CENTRIFUGAL FANS

## DIMENSIONS

FAN SIZE	Wheel Dia.	Shaft Dia.	Weight*	Keyway Size	A	B	D	E	F	G	H	J	K	L	N	P	W	X	Motor Frames 9T & 9S**	
																			Min.	Max.
5	8-3/4	15/16	51	1/4 x 1/8	4-1/2	7-5/16	8	6-1/8	14-1/8	5	9-1/16	2-31/32	13-7/8	2	4-3/16	1-1/2	3-1/16	16-3/8	48	184T
6	10-1/2	1-3/16	67	1/4 x 1/8	5-5/8	8-9/16	9-3/8	7-3/8	16-3/4	6	10-9/16	3-1/2	15	2-1/2	5	1-1/2	3-7/16	19-1/8	48	184T
7	12-1/4	1-3/16	76	1/4 x 1/8	6-5/8	9-7/16	10-3/16	8-9/16	18-3/4	7	12-1/16	4-1/8	17-1/16	2-1/2	5-7/8	1-1/2	3-15/16	21-1/2	48	184T
9	15-5/8	1-3/16	101	1/4 x 1/8	8-1/2	11-15/16	13	11	24	9	15-1/6	5-1/8	18-5/8	3-1/4	7-1/2	1-1/2	5-1/16	27	56	256T
11	19-1/8	1-7/16	162	3/8 x 3/16	10-7/16	14-5/8	16-1/4	13-1/8	29-3/4	11	18-1/8	8	19-3/4	3-1/4	9-1/8	1-1/2	6-3/16	32-3/4	56	256T
13	22-5/8	1-7/16	212	3/8 x 3/16	12-3/8	17-5/16	18-7/8	15-7/8	34-3/4	13	21-11/16	9-1/8	24	3-1/4	10-13/16	2	7-5/16	39	56	256T
15	26-1/8	1-15/16	303	1/2x1/4	14-1/4	19-13/16	21-5/8	18-3/8	40	15	24-11/16	10	25-1/4	3-1/4	12-1/2	2	8-7/16	44-1/2	143	256T
17	29-5/8	1-15/16	428	1/2x1/4	16-1/8	22-5/16	24-3/8	20-3/4	45-1/8	17	27-11/16	11	26-1/16	3-1/4	14-1/8	2	9-9/16	50	143	256T

Notes: Dimensions are shown in inches. Do not use for construction unless certified. Arrangement 9T shown. Arrangement 1 does not include motor or base.

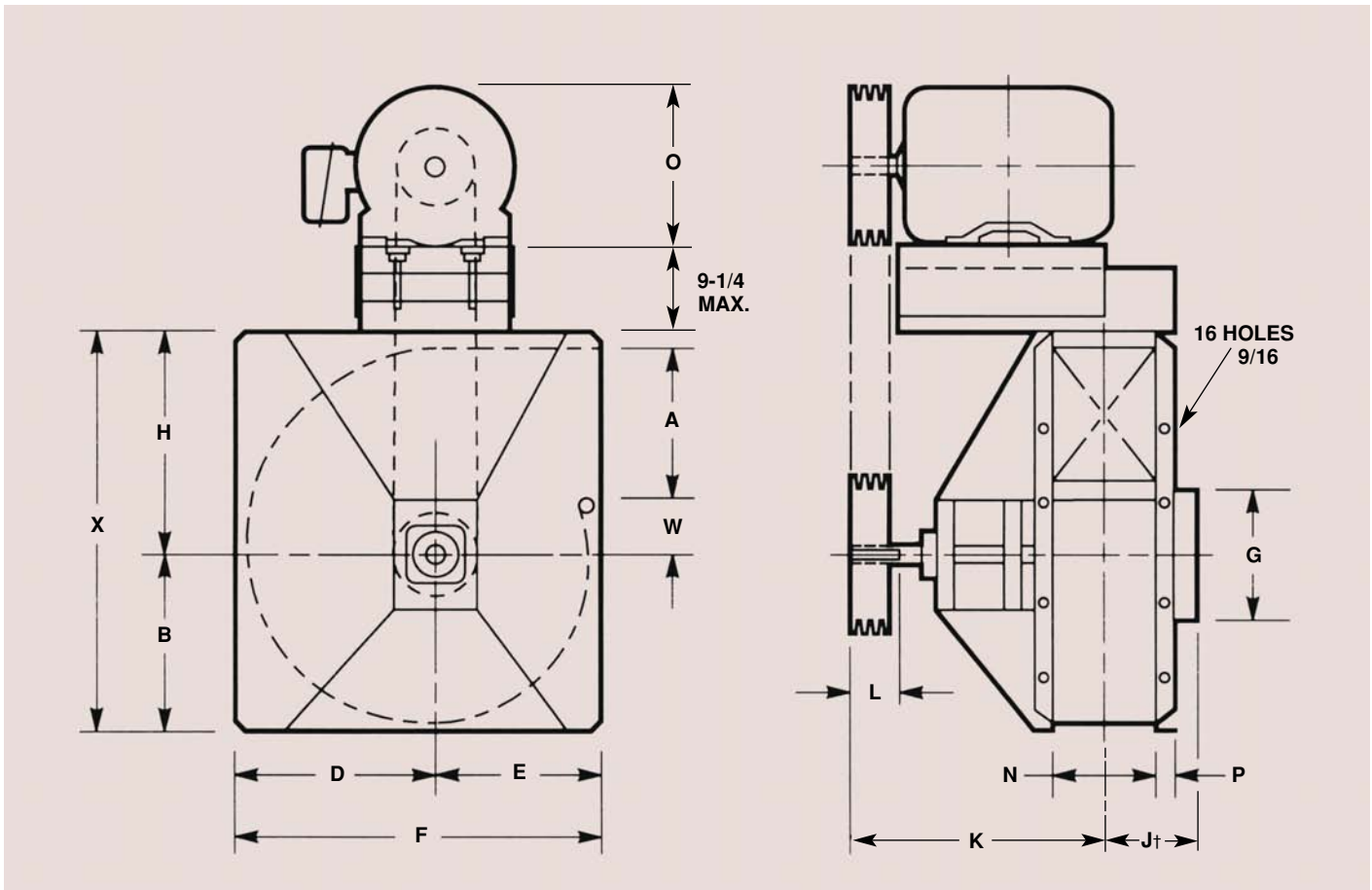
\* Bare weight in pounds, Arrangement 1.

\*\* Appropriate motor base required per motor frame. Refer to order acknowledgement for shipping details.

† Add 3/8 to "J" when spark resistant construction (200°F and above) is required. Sizes 5-15 only.

### Adjustable Motor Base Arrangement 9T and 9S

Motor Frame	48	56	182T-184T	213T-215T	254T-256T
"O" Dimension	6	6-3/4	9-3/4	11	13





## BELT CENTERS Arrangement 9T, 9S

Fan Size	Motor Frame	Discharge Position/Rotation			
		Group A	Group B	Group C	Group D
5	48	19-13/16	18-1/16	18-3/4	N/A
	56, 143-145	20-5/16	18-9/16	19-1/16	N/A
	182-184	21-5/16	19-9/16	20-1/4	N/A
6	48	21-5/16	19-5/16	20-1/8	18-1/2
	56, 143-145	21-13/16	19-13/16	20-5/8	19
	182-184	22-13/16	20-13/16	21-5/8	20
7	48	22-13/16	20-3/16	20-15/16	20
	56, 143-145	23-5/16	20-11/16	21-7/16	20-1/2
	182-184	24-13/16	21-11/16	22-7/16	21-1/2
9	56, 143-145	26-5/16	23-3/16	24-1/4	23
	182-184	27-5/16	24-3/16	25-1/4	24
	213-215	28-1/16	24-15/16	26	24-1/2
	254-256	29-1/16	25-5/16	27	25-1/2
11	56, 143-145	29-3/8	25-7/8	27-1/2	25-1/2
	182-184	30-3/8	26-7/8	28-1/2	26-1/2
	213-215	31-1/8	27-5/8	29-1/4	27-1/4
	254-256	32-1/8	28-5/8	30-1/4	28-1/4
13	56, 143-145	32-15/16	28-9/16	30-1/8	28
	182-184	33-15/16	29-9/16	31-1/8	28-7/8
	213-215	34-11/16	30-5/16	31-7/8	29-1/2
	254-256	35-11/16	31-5/16	32-7/8	30-1/2
15	56, 143-145	35-15/16	31-1/16	32-7/8	30-5/16
	182-184	36-15/16	32-1/16	33-7/8	31-5/16
	213-215	37-11/16	32-13/16	34-5/8	32
	254-256	38-11/16	33-13/16	35-5/8	33
17	56, 143-145	38-15/16	33-9/16	35-9/16	32-1/2
	182-184	39-15/16	34-9/16	36-9/16	33-1/2
	213-215	40-11/16	35-5/16	37-5/16	34-1/2
	254-256	41-11/16	36-5/16	38-5/16	35-5/16

Belt centers include +/- 1-1/2" for belt mounting and tensioning.  
Motor Frames can be either "U" or "T" frame.  
Refer to factory for Arrangement 9H.

### Discharge Position/Rotation and Motor Position

#### Group A

T.H. C.W., C.C.W. -T  
D.B. C.C.W. - SL  
D.B. C.W. - SR  
U.B. C.C.W. - SR  
U.B. C.W. -SL

#### Group B

B.H. C.W., C.C.W. -T  
D.B. C.C.W. - SR  
D.B. C.W. - SL  
U.B. C.C.W. - SL  
U.B. C.W. -SR

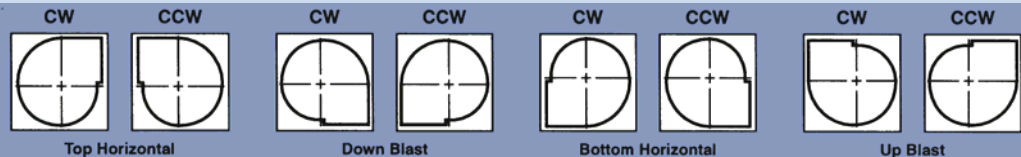
#### Group C

D.B. C.W., C.C.W. -T  
T.H. C.C.W. - SR  
T.H. C.W. - SL  
B.H. C.C.W. - SL  
U.B. C.W. -SR

#### Group D

U.B. C.W., C.C.W. -T  
OFFSET MOTOR BASE

### Positions of Discharge and Rotation (viewed from drive side)



## BEARING LIFE

Bearing life may be substantially increased or decreased by variations in the operating speed or changes in the V-belt drive. The table at right lists the design speeds (RPM) and fan sheave pitch diameters. The graph below plots the increase or the decrease in bearing life when the RPM or fan sheave pitch diameter is changed from the values in the table. Minimum average bearing life is 75,000 hours.

Fan Size	Max. RPM	Pitch Dia.
5	4600	3.0
6	4200	3.0
7	4200	3.0
9	3656	4.5
11	2980	6.1
13	2532	7.4
15	2181	6.3
17	1930	9.4

### EXAMPLE:

Determine the increased bearing life of a Size 11 fan operating at 2525 RPM. Assume the fan sheave pitch diameter used on this fan is 5.5 inches.

1. Calculate operating RPM as a percent of the design RPM.

$$2525 \text{ RPM} \div 2980 \text{ RPM} = .847 \times 100 = 84.7$$

(Use 85%)

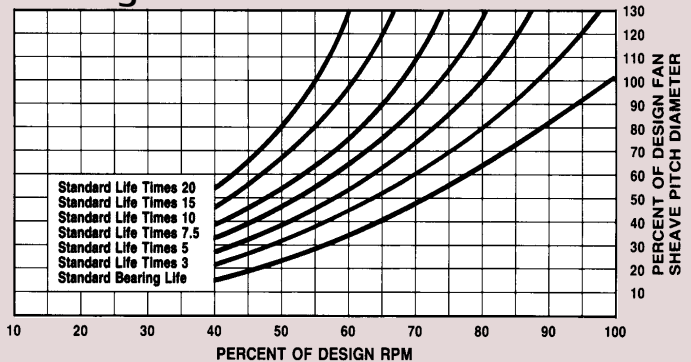
2. Calculate actual fan sheave pitch diameter as a percent of the design fan sheave pitch diameter in the table.

$$5.5" \div 6.1" = .902 \times 100 = 90.2\%$$

(Use 90%)

3. Locate the intersection of 85% of design RPM and 90% of design fan sheave pitch diameter in the graph. The increased bearing life is 4 times the design minimum bearing life or 300,000 hours minimum average life.

### Bearing Life Chart



## Engineering Specifications

### Centrifugal SQI Fans

- a. **GENERAL:**

Provide a high performance, low maintenance, centrifugal fan with radial bladed wheel. Fan shall be air performance tested based on tests and procedures in accordance with AMCA 211. Fans must be manufactured and assembled in the U.S.A.  
Acceptable vendors: Chicago Blower Corporation
- b. **PERFORMANCE:**

Performance shall include steep pressure and overloading horsepower characteristics. Mechanical efficiency shall be no less than 60%. System static pressure changes of 30% shall result in no more than 10% CFM reduction.
- c. **HOUSING:**

Fan housing shall be rectangular and of welded, heavy gauge construction with four common discharge positions. Scroll is to be continuously welded air-tight, with flanged housing sides and outlet for added stiffness. Bearing brackets are to be bolted to allow bearing service without wheel removal.
- d. **ROTOR:**

Wheel shall have fabricated steel hub continuously welded to single sheet, high strength steel blades (radial bladed wheel with backplate on sizes 5 and 6). Wheels to be statically and dynamically balanced to G 6.3 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 4-bolt flange bearings. Shaft critical speed shall not be less than 1.2 times maximum RPM.
- e. **MOUNTING:**

Housing flanged to be integral to foundation. Housing and adjustable motor base to be welded to unitary base (accessory). (Arrangement 9T and 9S fans to have motor mounted on adjustable motor base.)
- f. **FACTORY MOUNTED MOTORS AND DRIVES (Accessory)**

Motors and drives to be factory mounted. Unit to be tested at running speed for vibration and balance. Filtered vibration readings, taken at bearings, not to exceed 0.15 inches per second.
- g. **ACCESSORIES (Choose from the following accessories)**
  - Flanged Inlet - Punched Holes
  - Companion Flange - Punched or Unpunched - Inlet, Outlet or Both
  - Type "C" AMCA Spark Resistant Construction
  - 1-1/2" NPT Housing Drain
  - Shaft Seal
  - Quick Clamp or Flush Bolted Access Door
  - Inlet Screen
  - Lint-free Construction
  - Shaft Cooling Wheel with Guard (Required from 301 - 650°F)
  - Adjustable Motor Base compatible with frame sizes: 48 - 184T, 56 - 256T
  - Shaft and Bearing Guard with Extended Grease Tube Fitting
  - Totally Enclosed Belt Guards with Ventilation Panels
  - Constant or Adjustable Speed V-Belt Drives , minimum 1.2 S.F.
  - Outlet Damper - Parallel or Opposed Blades. Manual Operation with Locking Quadrant or suitable for Automatic Operation.

## CHICAGO INDUSTRIAL FANS for EVERY APPLICATION

### SQB FANS

The SQB version of Chicago's Square Fans has backwardly inclined blades to handle corrosive or dusty airstreams. It is suited for high temperature gasses and air to 650°F. Sizes range from 12-1/4 to 44-1/2 with volumes to 55,600 CFM and pressures to 15" WG.

Ask for Bulletin SQB.

### INDUSTRIAL CENTRIFUGAL FANS

The flat radial blades of Chicago's ICF wheel are designed to handle dirty air without material build-up.

Welded housing of heavy steel plate stands up to demanding industrial applications and temperatures to 800°F. Wheel diameters to 71", with volumes to 70,000 CFM and pressures to 40" WG. Ask for Bulletin ICF.

### FIBERGLASS REINFORCED PLASTIC (FRP) FANS

Chicago FRP fans resist severe corrosives and are impervious to extreme environments. Three centrifugal impeller designs, backward inclined, radial blade and radial tip, suit a wide range of applications and performances. The vaneaxial FRP has a corrosion resistant housing to protect fan shafts, bearings and drive components from airstream contaminants. Ask for Bulletin FRP.



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For Quality*

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Through Application Analysis*



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