

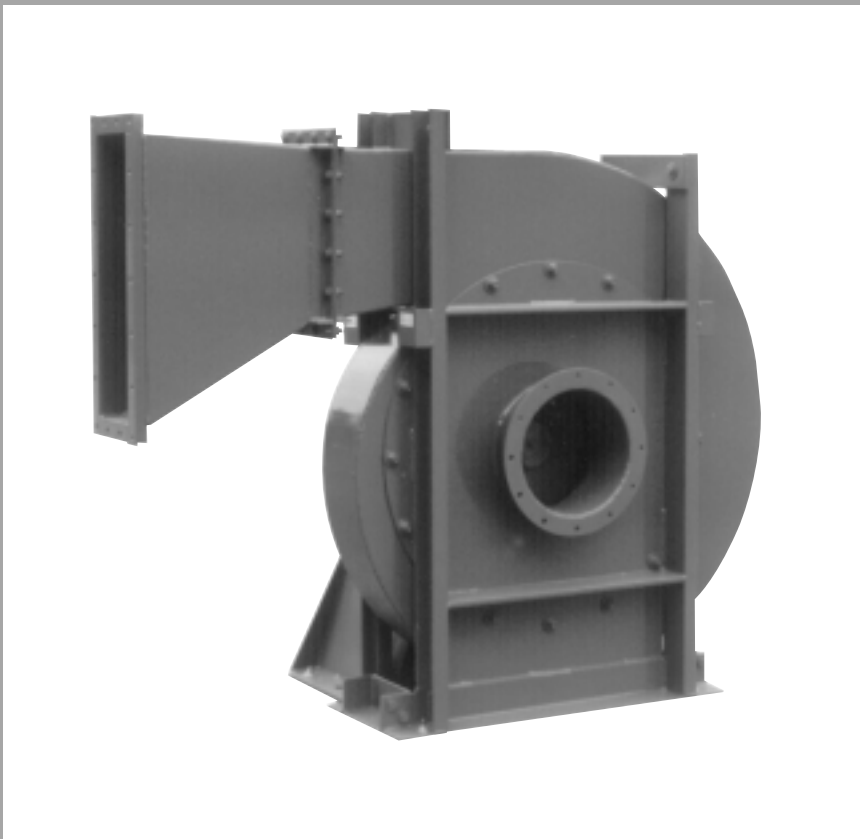
BULLETIN 1450-A

March 2004

# Twin City Fan & Blower

## *BACKWARD CURVED PRESSURE BLOWERS*

TYPE BCN



# BCN Pressure Blowers

The BCN is a lower volume, higher pressure fan which utilizes a high efficiency, backward curved, non-overloading blade design. The BCN offers a lower specific speed design featuring single thickness blades, suitable for industrial processes involving clean as well as light particulate-laden air. Ruggedness of construction, reliability of operation, and stable air performance are the hallmarks of the BCN design.

## Typical Applications

- Combustion air
- Pressure and vacuum drying
- Product cooling
- Primary air supply to ejectors
- Liquid agitation
- Glass blowing and cooling
- Water blow-off
- Air pollution control systems
- Exhausting
- Pneumatic conveying
- Gas boosting

## Choice of Wheels

Twin City Fan offers two wheel designs. Fans designated as sizes 270, 300, 330, etc. feature a narrower wheel for lower volumes with mechanical efficiencies to 80%. Fans designated as sizes 270W, 300W, 330W, etc. feature a wheel with slightly wider blades, a different blade profile and different blade count for relatively higher volumes while boosting mechanical efficiencies to 84%. Both wheels fit in a common BCN housing.

## Capabilities

- Available in arrangements 1, 4 and 8
- Airstream temperatures to 800°F
- Wheel diameters from 27" to 73"

### Design "L"

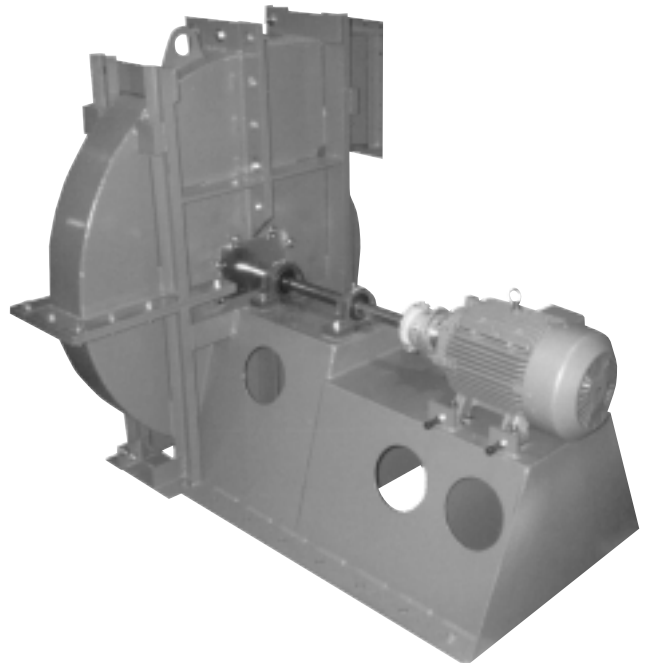
- Speeds to 1800 RPM
- Sizes 270 to 730
- Sizes 270W to 730W
- Static pressures to 65" w.g.
- Capacities to 75,000 CFM

### Design "H"

- Speeds to 3600 RPM
- Sizes 270 to 402
- Sizes 270W to 402W
- Static pressures to 100" w.g.
- Capacities to 35,000 CFM



*Arrangement 4 shown with optional rectangular evasé*



*Arrangement 8 shown with optional pie-shaped split housing*

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# Performance Comparison

Type BCN fans are designed to maximize efficiency and offer non-overloading horsepower characteristics. This is illustrated by the following chart which com-

pares both wheel designs with other manufacturers. Note that the "W" series of BCN sizes allows the use of a one size smaller fan in many cases.

CFM	SP	MANUFACTURER	SIZE / DIA.	RPM	BHP	OV (FPM)	NON-OVERLOADING
9,000	61.4"	TCF-BCN-W	300W / 30"	3550	106	7826	YES
		TCF-BCN	330 / 33"	3550	111	6475	YES
		MFGR. A	28.75"	3550	120	7095	NO - RADIAL
		MFGR. B	29.5"	3550	126	9375	NO - RADIAL
35,000	54"	TCF-BCN-W	600W / 60"	1785	363	7609	YES
		TCF-BCN	660 / 66"	1785	370	6272	YES
		MFGR. A	54"	1785	382	7630	NO - RADIAL

## Construction Features

### Standard Construction

- All welded heavy gauge housing with structural reinforcements to reduce vibration and minimize distortion due to pressure.
- Heavy gauge, continuous welded, backward curved, steel wheel with anti-thrust vanes.
- Shaft seal. Non-asbestos woven fibrous material sandwiched between the fan housing and an aluminum cover plate. Does not make the fan gas tight. Consult the factory for other available shaft seal options.
- Standard construction to 300°F
- Stepped shaft with thrust cap for larger arrangement 1 and 8 fans.
- Anti-friction bearings with a minimum average bearing life (AFBMA L-50) of 200,000 hours for long, reliable performance.
- Flanged inlet and outlet. Punched to TCF&B standard pattern.
- Taper lock hub on most wheels.
- Statically and dynamically balanced rotor.
- Variation in wheel diameter (95% to 105%) to match specified performance.



*Backward Curved BCN Wheel*

### Optional Construction

#### High Temperature Construction

Available on Arrangement 1 and 8 only.

**301°F to 500°F** — Consists of high temperature grease, expansion and non-expansion bearings, shaft seal and shaft cooler.

**501°F to 600°F** — Consists of the modifications above plus high temperature aluminum paint.

**601°F to 800°F** — Consists of the modifications above plus an insulation blanket sandwiched between the fan housing and the pedestal to reduce heat conduction. May require pedestal modification.

#### Spark Resistant Construction

AMCA type B or C. Type B is limited to 250°F. Type C construction is available to 800°F.

#### Split Housing

Fan sizes 365 and larger are available with horizontal or pie-shaped split housing construction.

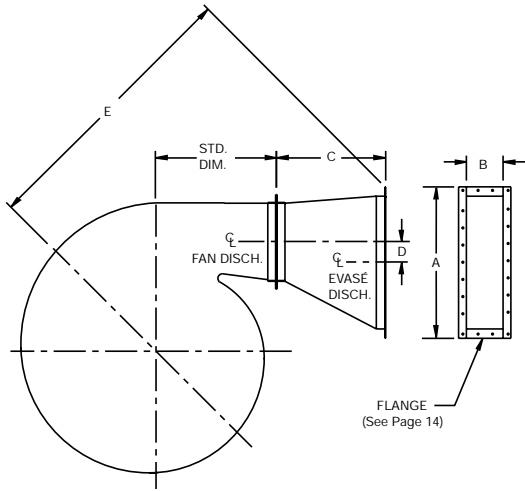
#### Special Materials and Coatings

Construction materials include aluminum, stainless steel, Hastelloy and other alloys. Special coatings of various types are available. Contact the factory for details.

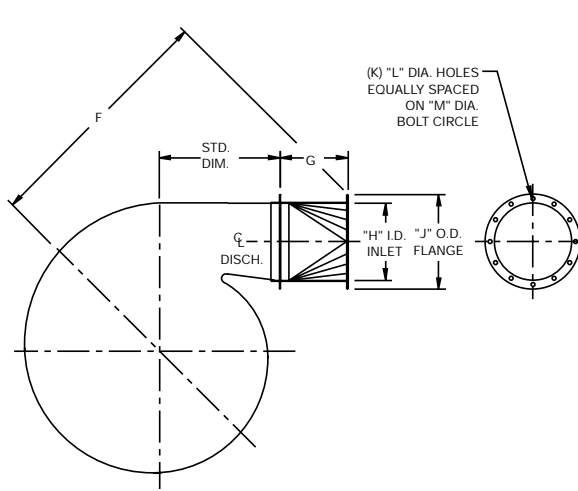
# Accessories

## Evasé (Rectangular or Round)

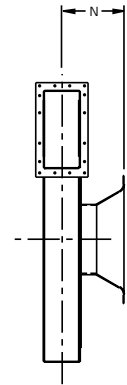
Available in either rectangular or round discharge. The evasé is usually fabricated by the customer as a part of the ductwork. The fan outlet must be expanded to equal the evasé area shown in the catalog to obtain the rated performance. Construction is the same gauge as the fan housing when purchased from the factory.



Optional Rectangular Evasé



Optional Round Evasé



Optional Inlet Bell

### Evasé Dimensions

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	EVASÉ WT.	
														RECT.	ROUND
270	23.50	7.25	14.38	2.69	43.75	43.44	15.00	13.13	16.13	12	0.44	14.63	10.75	57	50
300	25.63	8.00	15.50	2.91	48.13	48.06	16.25	14.50	17.50	12	0.44	16.00	11.44	67	60
330	28.75	8.75	17.69	3.22	53.50	53.25	18.25	15.88	19.88	12	0.44	17.88	12.13	85	76
365	31.38	9.75	19.19	3.56	58.75	58.56	20.00	17.63	21.63	12	0.44	19.63	12.94	101	90
402	35.25	10.69	21.88	3.97	65.44	64.88	22.25	19.50	24.50	16	0.56	22.00	13.94	129	114
445	38.25	11.75	23.50	4.34	71.56	71.31	24.50	21.50	26.50	16	0.56	24.00	15.75	151	137
490	41.50	12.88	25.31	4.72	78.25	78.19	26.75	23.63	28.63	16	0.56	26.13	16.75	176	162
542	45.38	14.19	27.50	5.28	85.94	86.13	29.50	26.25	31.25	16	0.56	28.75	18.06	209	197
600	49.63	15.63	29.88	5.84	94.44	94.94	32.50	29.00	34.00	16	0.56	31.50	20.13	248	234
660	54.25	17.25	32.50	6.41	103.44	103.88	35.25	32.00	37.00	24	0.56	34.50	21.69	353	279
730	59.38	19.00	35.44	7.13	113.81	114.50	38.75	35.25	40.25	24	0.56	37.75	23.06	422	334

Dimensions are in inches except where noted.

Dimensions are not to be used for construction.

BC16127C

## Housing Drain with Optional Plug

3/4" IPS coupling welded to the lowest point in the fan housing.

## Variable Inlet Vanes

Variable inlet vanes provide economical, stable, and efficient air volume control for manual or motorized operation. External type (bolt on) inlet vanes designed for 300°F standard construction and 600°F optional construction. Contact the factory for elevated temperature applications or for applications involving fumes, moisture, and particulate.

## Outlet Damper

Double surface airfoil design blade with enclosed damper rods and flange mounted ball bearings. Dampers with multi blades feature opposed blades as standard.

## Additional Accessories

- Access door – bolted or raised
- Inlet box
- Insulation pins
- Unitary and isolation bases
- OSHA belt guard
- Shaft guard
- Coupling, coupling guard and mounting

# Engineering Data

## Derating Factors For High Temperature

When elevated temperatures are encountered, maximum RPMs allowable as shown in Table 4 must be derated according to Table 1. Standard steel construction is suitable for use in gas temperatures up to 800°F. Aluminum wheels are suitable for temperatures up to 250°F only.

Table 1. High Temperature Derating Factors

TEMP. (°F)	DERATING FACTOR		
	STD. STEEL	304 STAINLESS	316 STAINLESS
70	1.00	CONSULT FACTORY	CONSULT FACTORY
200	0.98		
300	0.96		
400	0.95		
500	0.90		
600	0.86		
700	0.82		
800	0.75		

## High Temperature Construction Requirements

The BCN product line is perfectly suited for high temperature airstream applications. Table 2 refers to fans of carbon steel construction. When aluminum (spark resistant) or stainless steel construction is required, additional fan modifications may be required. Contact the factory in these cases. Arrangement 4 is limited to 180°F.

Table 2. High Temperature Construction Requirements

TEMP. RANGE (°F)	BEARING TYPE	LUBRI-CATION	OTHER REQUIREMENTS	AVAILABLE ARRANGE-MENTS
-22° to 300°	Ball or Roller	Grease	Standard Fan	1, 8 Arr. 4 to 180°F
301° to 500°	Ball or Roller	High Temp Grease	Shaft Cooler, Shaft Seal Expansion & Non-Expansion Bearings	1, 8
501° to 600°	Ball or Roller	High Temp Grease	Same as 301° to 500° With Addition of High Temp Aluminum Paint	1, 8
601° to 800°	Ball or Roller	High Temp Grease	Same as 501° to 600° With Modification of Bearing Pedestal, Insulation Blanket Between Housing and Pedestal	1, 8

## Air Density Factors For Temperature & Altitude

The performance tables in this catalog are based on fans handling standard air at a density of 0.075 pounds per cubic foot. This is equivalent to air at 70°F at sea level (29.92 Hg barometric pressure). Thus, when specified performance is at a density different than standard, it

must be converted to the equivalent standard conditions before entering the performance tables. The equivalent standard conditions can be calculated by using the Temperature and Altitude Density Ratios from Table 3, below.

Table 3. Temperature and Altitude Density Ratios

AIR TEMP. (°F)	ALTITUDE IN FEET ABOVE SEA LEVEL												
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	15000	20000
	BAROMETRIC PRESSURE IN INCHES OF MERCURY												
	29.92	28.86	27.82	26.82	25.84	24.90	23.98	23.09	22.22	21.39	20.58	16.89	13.75
70	1.000	0.964	0.930	0.896	0.864	0.832	0.801	0.772	0.743	0.714	0.688	0.564	0.460
100	0.946	0.912	0.880	0.848	0.818	0.787	0.758	0.730	0.703	0.676	0.651	0.534	0.435
150	0.869	0.838	0.808	0.770	0.751	0.723	0.696	0.671	0.646	0.620	0.598	0.490	0.400
200	0.803	0.774	0.747	0.720	0.694	0.668	0.643	0.620	0.596	0.573	0.552	0.453	0.360
250	0.747	0.720	0.694	0.669	0.645	0.622	0.598	0.576	0.555	0.533	0.514	0.421	0.344
300	0.697	0.672	0.648	0.624	0.604	0.580	0.558	0.538	0.518	0.498	0.480	0.393	0.321
350	0.654	0.631	0.608	0.586	0.565	0.544	0.524	0.505	0.486	0.467	0.450	0.369	0.301
400	0.616	0.594	0.573	0.552	0.532	0.513	0.493	0.476	0.458	0.440	0.424	0.347	0.283
450	0.582	0.561	0.542	0.522	0.503	0.484	0.466	0.449	0.433	0.416	0.401	0.328	0.268
500	0.552	0.532	0.513	0.495	0.477	0.459	0.442	0.426	0.410	0.394	0.380	0.311	0.254
550	0.525	0.506	0.488	0.470	0.454	0.437	0.421	0.405	0.390	0.375	0.361	0.296	0.242
600	0.500	0.482	0.469	0.448	0.432	0.416	0.400	0.386	0.372	0.352	0.344	0.282	0.230
650	0.477	0.460	0.444	0.427	0.412	0.397	0.382	0.368	0.354	0.341	0.328	0.269	0.219
700	0.457	0.441	0.425	0.410	0.395	0.380	0.366	0.353	0.340	0.326	0.315	0.258	0.210
800	0.420	0.404	0.389	0.375	0.362	0.350	0.336	0.323	0.311	0.300	0.290	0.237	0.193

# Engineering Data

Table 4. Maximum RPMs, Wheel Weights and WR<sup>2</sup>

FAN SIZE	DESIGN	MAX. RPM			WHEEL WEIGHT (LBS.)		WR <sup>2</sup> (LB-FT <sup>2</sup> )	
		ARR. 1	ARR. 4	ARR. 8	STD. SIZES	"W" SIZES	STD. SIZES	"W" SIZES
270	L	1890	1890	1890	61	64	36	38
	H	2800	3780	3780	82	85	49	51
300	L	1890	1890	1890	75	78	55	57
	H	2800	3780	3780	100	104	74	77
330	L	1890	1890	1890	92	95	81	84
	H	2800	3780	3780	143	147	120	124
365	L	1890	1890	1890	123	126	122	126
	H	2730	3780	3780	202	206	212	218
402	L	1890	1890	1890	147	151	180	186
	H	2310	—	3780	279	287	362	374
445	L	1890	1890	1890	207	212	321	332
490	L	1890	1890	1890	307	316	598	619
542	L	1890	1890	1890	481	497	1136	1180
600	L	1890	—	1890	712	729	2070	2133
660	L	1890	—	1890	1026	1042	3573	3654
730	L	1575	—	1575	1363	1385	5919	6043

Table 5. Material Specifications

FAN SIZE	DESIGN	WHEEL DIA.	HOUSING		SHAFT DIA.		BEARING CODE*	
			SIDES	SCROLL	ARR. 1	ARR. 8	ARR. 1	ARR. 8
270	L	27.00	0.25	0.25	1.437	1.437	HDB	HDB
	2.187				1.937	RB	HDB	
300	L	30.00	0.25	0.25	1.687	1.687	HDB	HDB
	2.687				2.187	RB	SR	
330	L	33.00	0.25	0.25	1.937	1.687	RB	HDB
	2.937				2.687	RB	HSB	
365	L	36.50	0.31	0.25	2.437	2.187	RB	HDB
	2.937				3.437	SRB	HSB	
402	L	40.25	0.31	0.25	2.687	2.437	RB	HDB
	3.437				3.437	SRB	HSB	
445	L	44.50	0.31	0.25	3.437	2.937	RB	HDB
490	L	49.00	0.31	0.25	3.437	3.437	RB	HDB
542	L	54.25	0.31	0.25	4.437	3.437	RB	RB
600	L	60.00	0.31	0.25	4.437	3.937	SRB	SRB
660	L	66.00	0.38	0.31	4.437	4.437	SRB	SRB
730	L	73.00	0.38	0.31	4.937	4.437	SRB	SRB

\*Due to speeds and load ratings, bearing substitution is not permitted.

**BEARING CODES:**

HDB = Heavy Duty Ball such as Dodge SCMAH or Sealmaster MP Series  
 RB = Roller Bearing such as Dodge S2000 or SKF SYR Series  
 SRB = Split Roller Bearing such as SKF SAF225 or Linkbelt PLB6800 Series  
 HSB = High Speed Ball Bearing

Table 6. Minimum and Maximum Motor Frame Sizes

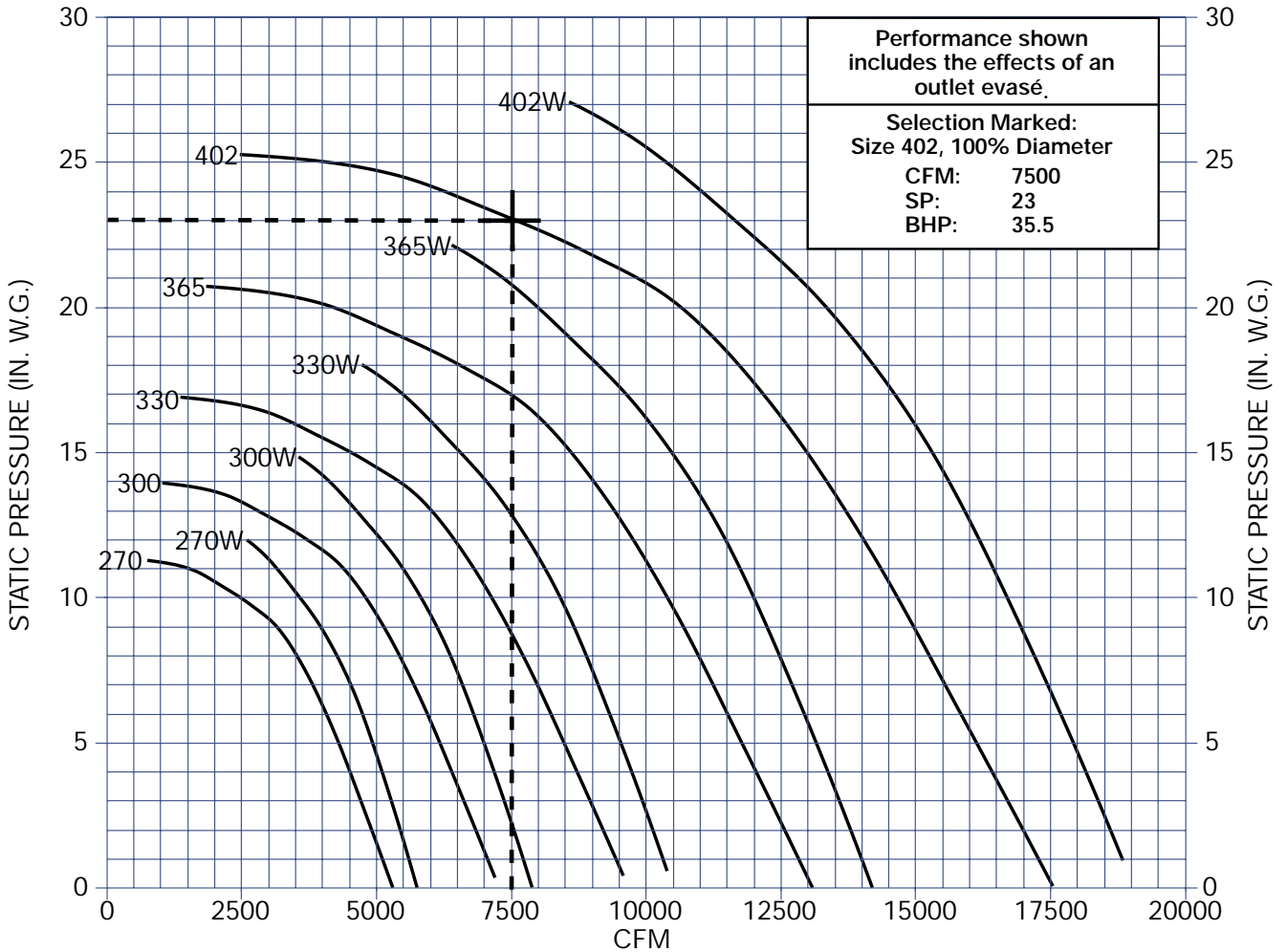
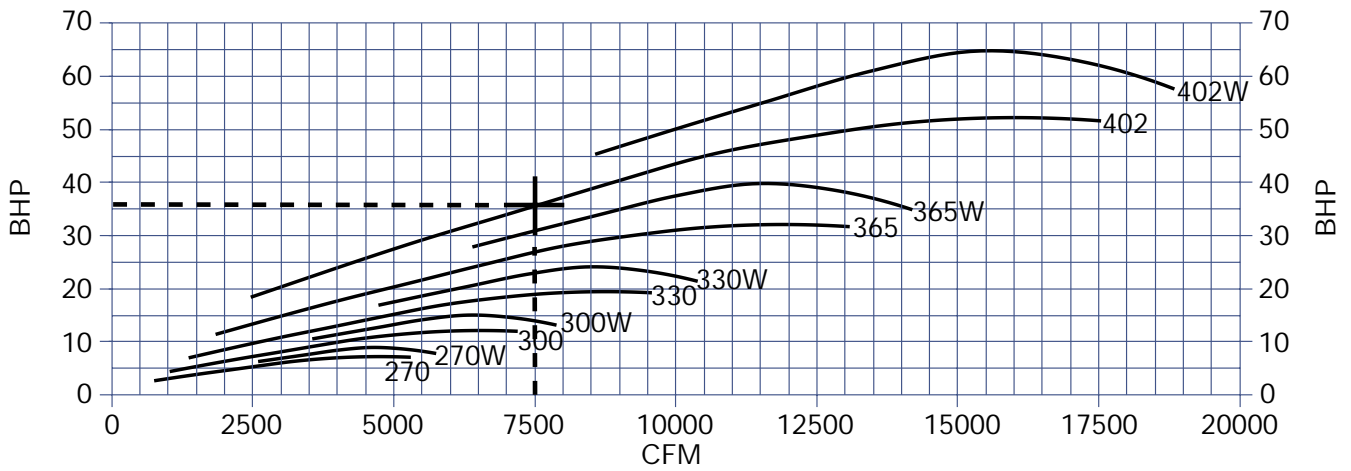
FAN SIZE	DESIGN	MOTOR FRAME SIZE LIMITS			
		ARR. 4		ARR. 8	
		MIN.	MAX.	MIN.	MAX.
270	L	182T	215T	182T	215T
	H	284TS	365TS	284TS	365TS
300	L	182T	256T	182T	256T
	H	284TS	405TS	284TS	405TS
330	L	213T	286T	213T	286T
	H	364TS	445TS	364TS	445TS
365	L	254T	326T	254T	326T
	H	364TS	449TS	364TS	449TS
402	L	284T	365T	284T	365T
	H	—	—	404TS	445TS
445	L	324T	405T	324T	405T
490	L	364T	445T	364T	445T
542	L	404T	449T	404T	449T
600	L	—	—	444T	449T
660	L	—	—	444T	449T
730	L	—	—	444T	449T

Table 7. Bare Fan Weights

FAN SIZE	DESIGN	BARE FAN WEIGHTS (LBS.)		
		ARR. 1	ARR. 4	ARR. 8
270	L	754	672	899
	H	771	827	1230
300	L	860	815	1094
	H	942	988	1475
330	L	1021	963	1290
	H	1212	1230	1892
365	L	1401	1329	1796
	H	1644	1767	2763
402	L	1755	1629	2318
	H	1986	—	3157
445	L	2241	2061	2907
490	L	2640	2514	3547
542	L	3357	3171	4230
600	L	4647	—	5720
660	L	6311	—	7380
730	L	7520	—	8801

# Performance Data

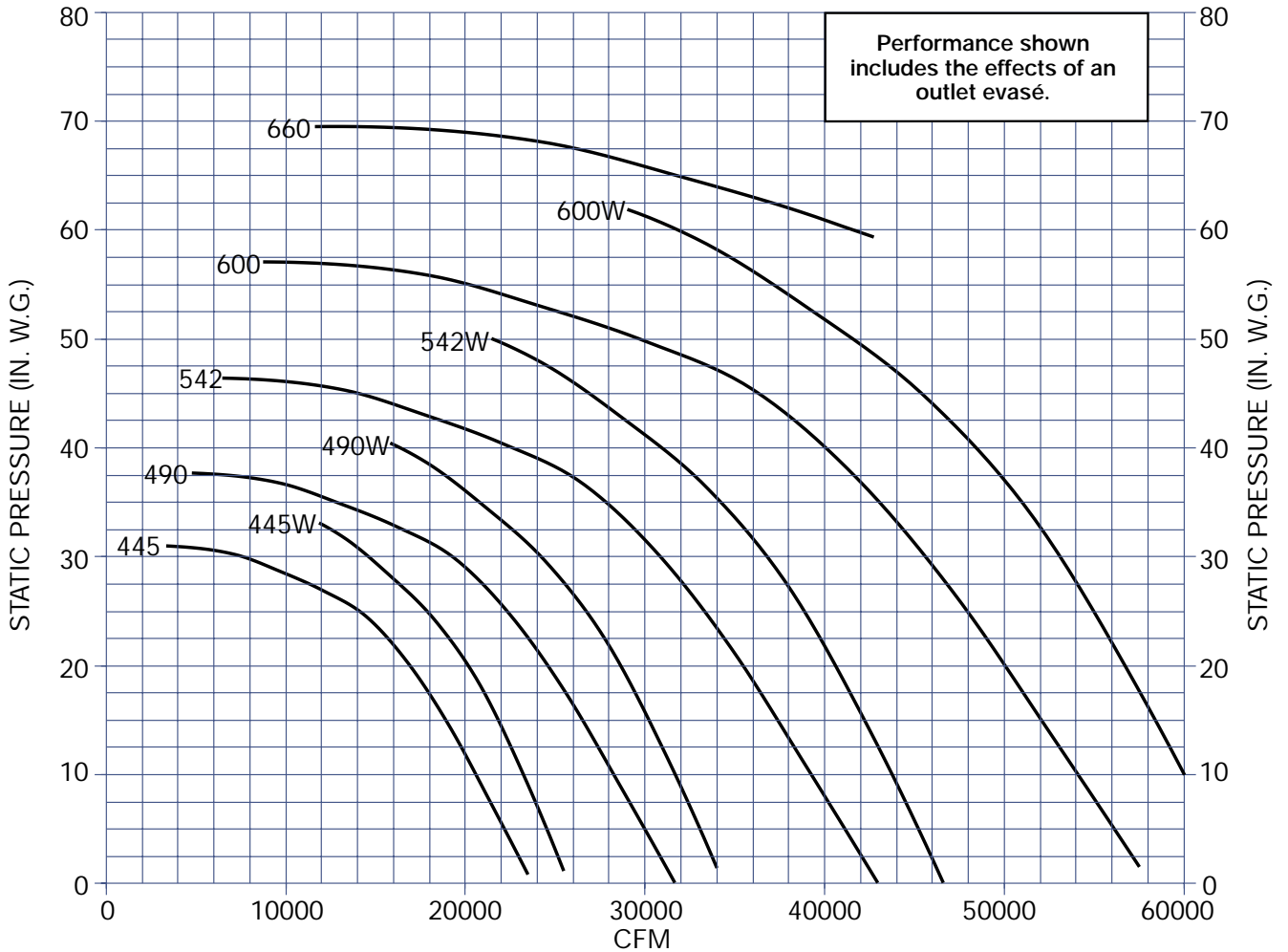
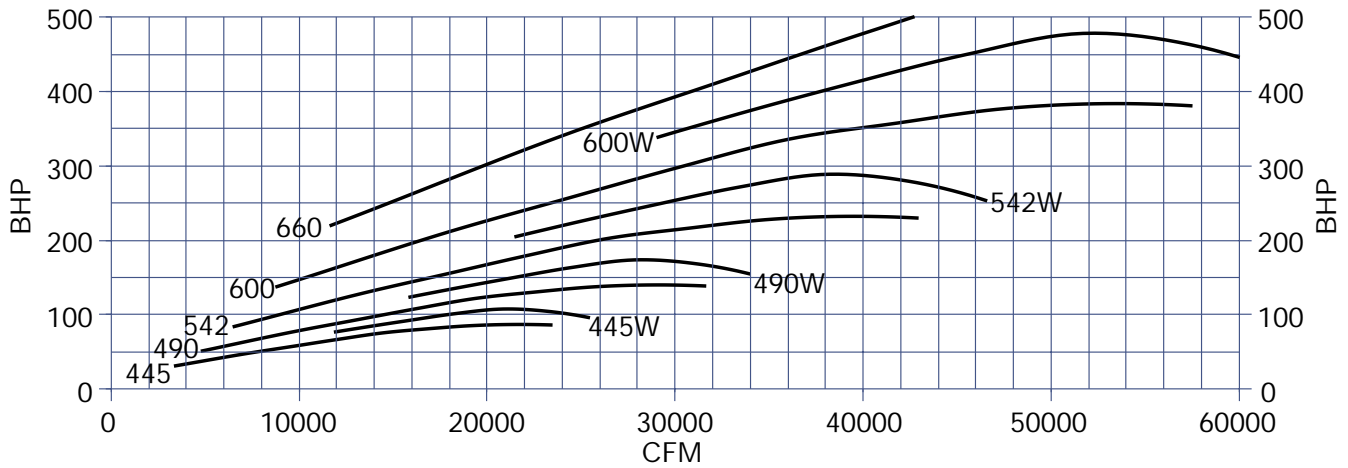
## Design "L" BCN – 1800 RPM (Sizes 270 – 402, 270W – 402W)



Variation in wheel diameter (95 to 105%) is available to match specified performance. See the Twin City Fan Selector Program for assistance in selecting fans with variations in wheel diameter.

# Performance Data

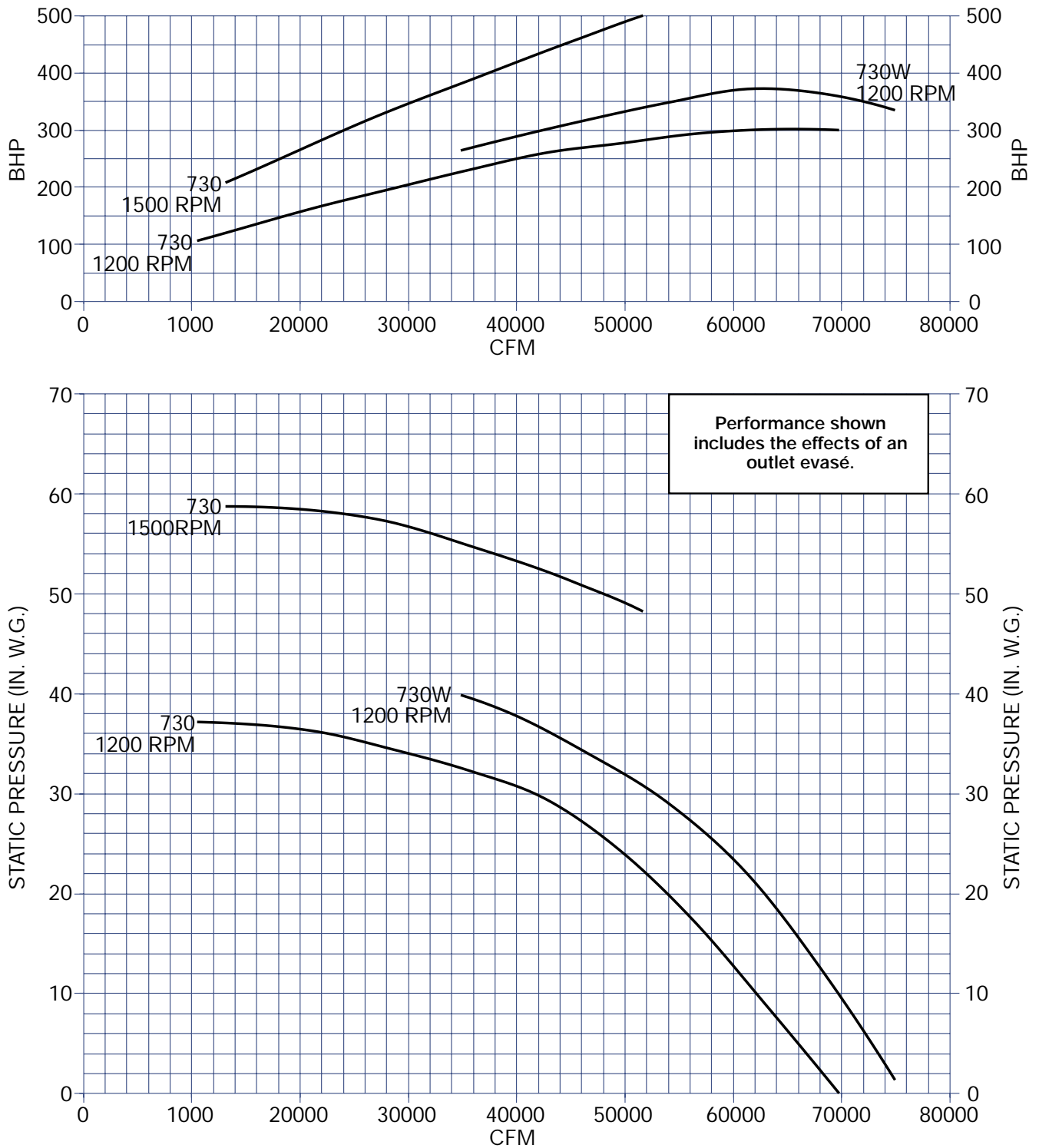
## Design "L" BCN – 1800 RPM (Sizes 445 – 660, 445W – 600W)



Variation in wheel diameter (95 to 105%) is available to match specified performance. See the Twin City Fan Selector Program for assistance in selecting fans with variations in wheel diameter.

# Performance Data

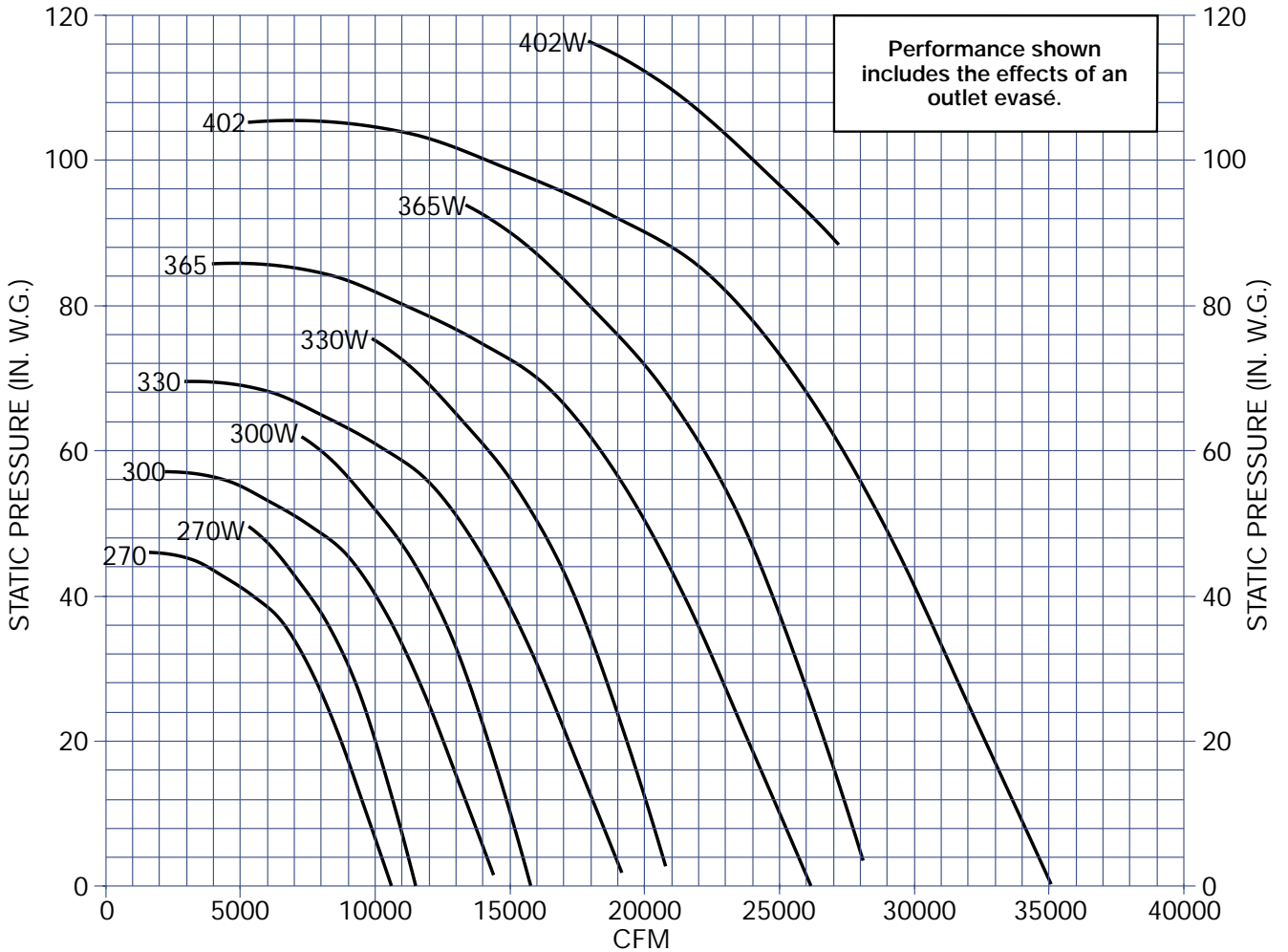
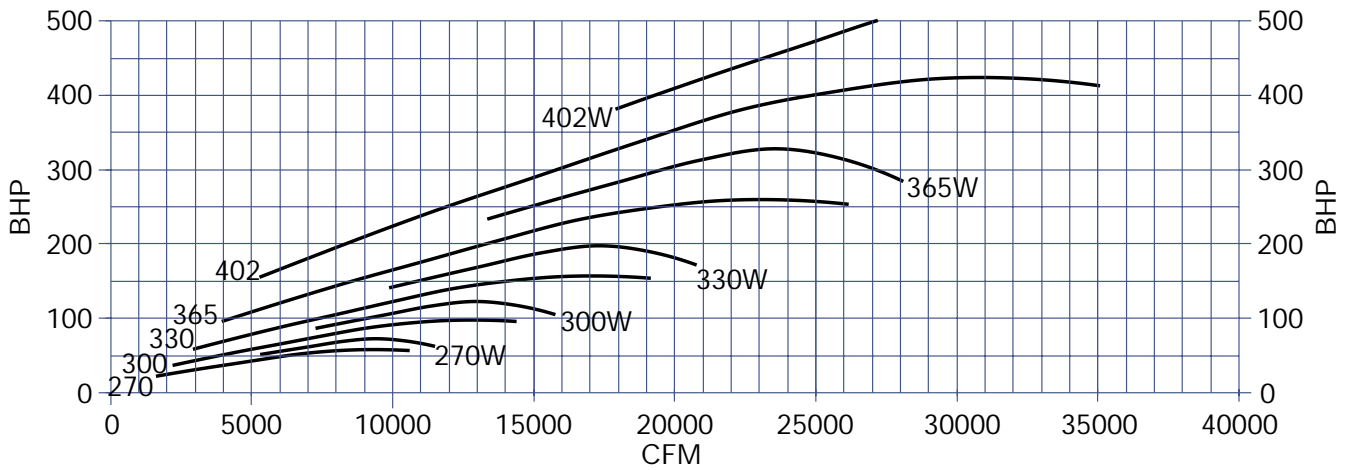
## Design "L" BCN – 1200/1500 RPM (Size 730, 730W)



Variation in wheel diameter (95 to 105%) is available to match specified performance. See the Twin City Fan Selector Program for assistance in selecting fans with variations in wheel diameter.

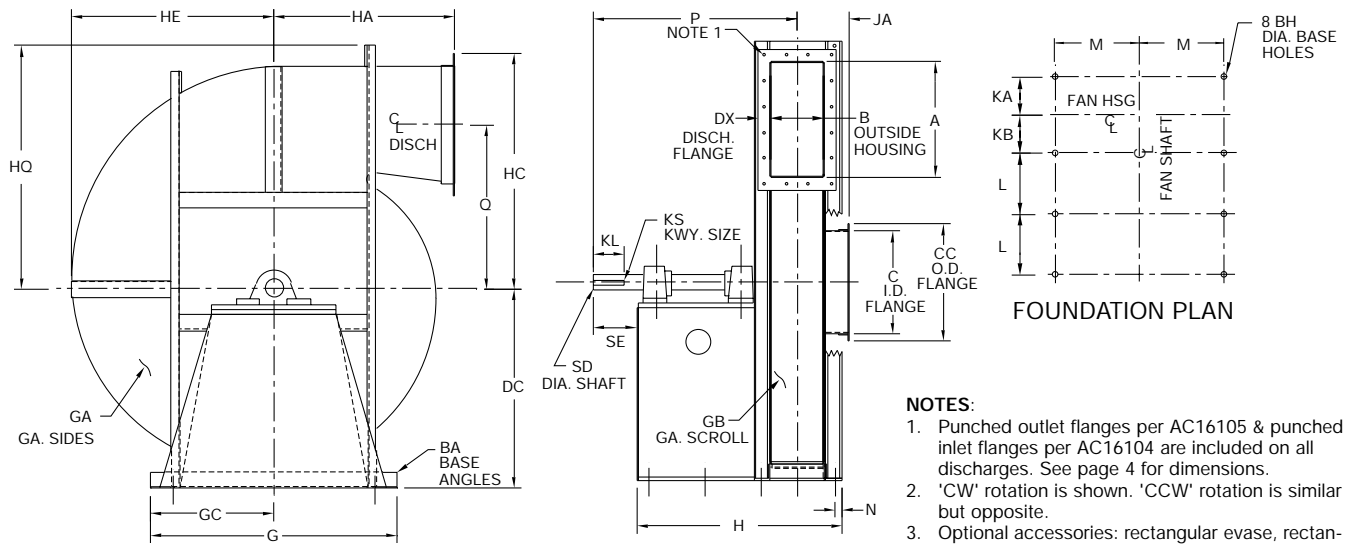
# Performance Data

## Design "H" BCN – 3600 RPM (Sizes 270 – 402, 270W – 402W)



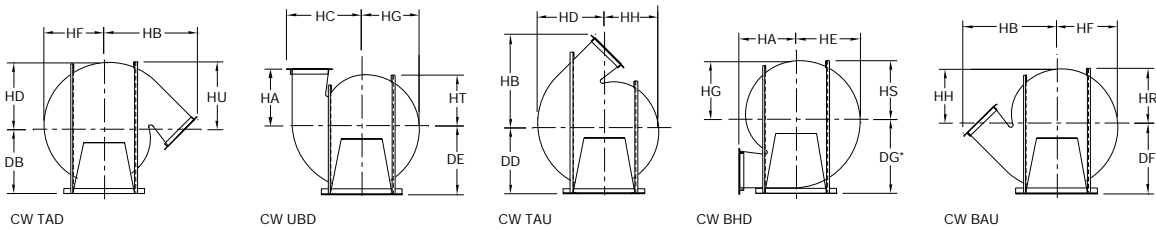
Variation in wheel diameter (95 to 105%) is available to match specified performance. See the Twin City Fan Selector Program for assistance in selecting fans with variations in wheel diameter.

# Dimensional Data – Arr. 1



CLOCKWISE ROTATION, TOP HORIZONTAL DISCHARGE 'CW THD'

- NOTES:**
1. Punched outlet flanges per AC16105 & punched inlet flanges per AC16104 are included on all discharges. See page 4 for dimensions.
  2. 'CW' rotation is shown. 'CCW' rotation is similar but opposite.
  3. Optional accessories: rectangular evase, rectangular to round evase & inlet bell per BC16127. See page 4 and 14 for dimensions.



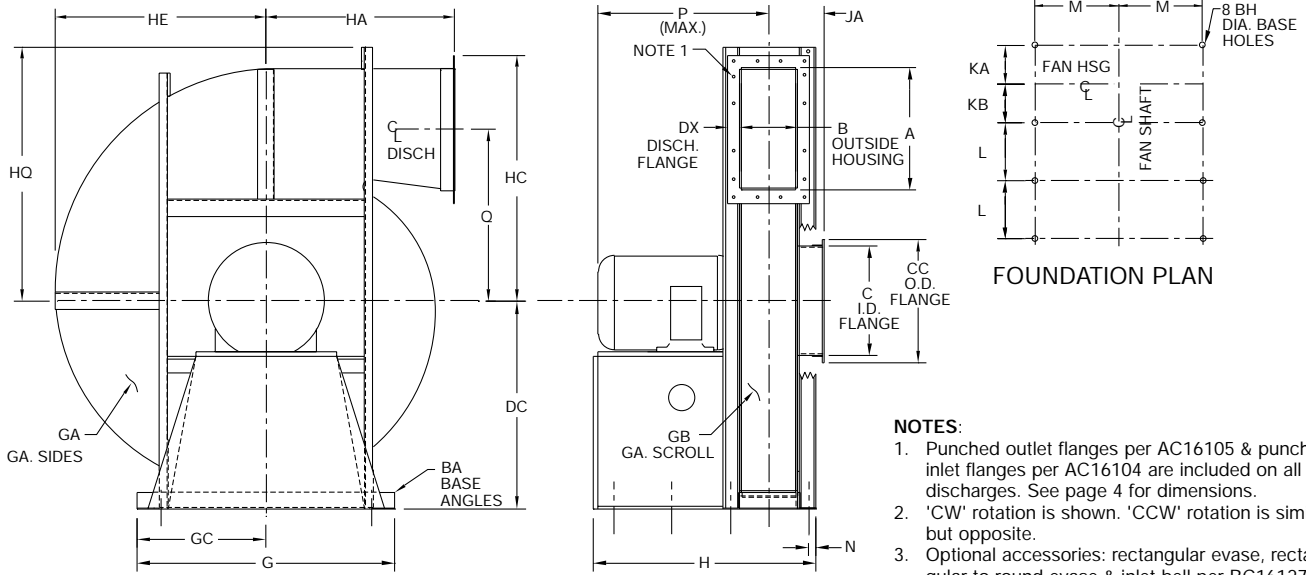
SIZE	A	B	BA	BH	C	CC	DB	DC	DD	DE	DF	DG	DX	G	GA	GB	GC	H		HA	HB	HC	HD	HE	HF
																		DES. L	DES. H						
270	13.38	7.25	3 x 3	0.81	10.88	13.88	21.25	22.25	23.25	24.50	25.50	27.50	1.50	32.00	0.25	0.25	16.00	28.81	29.44	20.38	32.94	26.19	23.56	22.50	21.38
300	14.81	8.00	3 x 3	0.81	12.00	15.00	23.25	24.50	25.75	27.00	28.25	30.25	1.50	34.50	0.25	0.25	17.25	29.94	31.00	22.63	36.44	28.94	26.19	24.94	23.69
330	16.19	8.75	3 x 3	0.81	13.25	16.25	25.25	26.75	28.00	29.25	30.75	33.00	2.00	36.75	0.25	0.25	18.38	32.94	33.75	24.81	40.25	32.13	28.75	27.44	26.06
365	17.88	9.75	3 x 3	0.81	14.63	17.63	27.75	29.25	30.75	32.25	33.75	36.25	2.00	35.50	0.31	0.25	17.75	34.31	36.19	27.38	44.31	35.31	31.81	30.31	28.75
402	19.69	10.69	3 x 3	0.81	16.13	19.13	30.50	32.00	33.75	35.25	37.00	39.50	2.50	39.00	0.31	0.25	19.50	37.75	40.19	30.13	49.06	39.19	35.06	33.38	31.69
445	21.69	11.75	3 x 4	1.06	17.88	20.88	33.50	35.25	37.00	38.75	40.75	43.50	2.50	44.25	0.31	0.25	22.13	40.31	—	33.25	53.94	43.06	38.69	36.88	35.06
490	23.81	12.88	3 x 4	1.06	19.63	22.63	36.50	38.50	40.50	42.50	44.50	47.50	2.50	47.25	0.31	0.25	23.63	41.50	—	36.56	59.19	47.13	42.56	40.63	38.56
542	26.31	14.19	3 x 4	1.06	21.75	24.75	40.25	42.50	44.75	47.00	49.25	52.25	2.50	51.25	0.31	0.25	25.63	46.19	—	40.44	65.25	51.88	47.13	44.94	42.63
600	29.06	15.63	3.5 x 5	1.06	24.13	28.13	44.75	47.25	49.75	52.00	54.50	58.00	2.50	57.50	0.31	0.25	28.75	49.19	—	44.69	71.94	57.06	52.13	49.63	47.13
660	32.06	17.25	3.5 x 5	1.06	26.50	30.50	49.00	51.75	54.50	57.00	60.00	63.50	2.50	62.25	0.38	0.31	31.13	52.94	—	49.13	78.94	62.56	57.31	54.63	51.88
730	35.38	19.00	3.5 x 5	1.06	29.38	33.38	54.00	57.00	60.00	63.00	66.00	69.75	2.50	67.50	0.38	0.31	33.75	54.25	—	54.25	87.06	68.88	63.38	60.44	57.38

SIZE	HG	HH	HQ	HR	HS	HT	HU	JA	KA	KB	KL	KS		L		M	N	P		Q	SD		SE	
												DES. L	DES. H	DES. L	DES. H			DES. L	DES. H		DES. L	DES. H		
270	20.25	19.13	27.69	20.50	21.63	19.13	25.25	7.94	5.56	5.31	7.50	.38 x .19	.50 x .25	6.50	6.50	13.00	1.38	29.44	30.56	18.00	1.437	2.187	7.50	8.00
300	22.50	21.25	30.44	22.44	23.63	20.94	27.75	8.31	5.94	5.69	8.00	.38 x .19	.63 x .31	7.00	7.00	14.25	1.38	30.50	32.44	20.00	1.687	2.687	7.81	8.69
330	24.69	23.31	33.13	24.31	25.63	22.69	30.13	8.69	6.31	6.06	9.00	.50 x .25	.75 x .38	8.00	8.00	15.38	1.38	34.81	35.94	22.00	1.937	2.937	9.50	9.81
365	27.31	25.75	36.31	26.56	28.06	24.81	33.00	9.25	6.88	6.56	9.00	.50 x .25	.75 x .38	8.00	8.50	14.75	1.38	35.81	37.81	24.38	2.437	2.937	9.69	9.81
402	30.06	28.38	39.69	28.75	30.44	26.75	35.94	9.69	7.31	7.00	10.00	.63 x .31	.88 x .44	9.00	10.00	16.50	1.38	39.75	42.50	26.88	2.687	3.437	10.63	10.94
445	33.25	31.38	44.56	32.44	34.31	30.25	40.38	11.19	8.31	8.00	10.00	.88 x .44	—	9.00	—	18.50	1.88	40.94	—	29.69	3.437	—	10.81	—
490	36.56	34.50	48.63	35.38	37.38	32.94	44.06	11.81	8.94	8.63	11.00	.88 x .44	—	9.00	—	20.00	1.88	42.56	—	32.69	3.437	—	11.81	—
542	40.44	38.19	53.38	38.63	40.88	35.94	48.31	12.44	9.56	9.25	11.00	1.0 x .50	—	10.50	—	22.00	1.88	46.75	—	36.19	4.437	—	12.00	—
600	44.69	42.19	59.56	43.31	45.81	40.38	54.00	14.13	10.75	10.44	12.00	1.0 x .50	—	10.50	—	24.00	2.38	49.94	—	40.00	4.437	—	12.88	—
660	49.19	46.44	65.06	47.31	49.81	43.81	58.88	15.06	11.69	11.31	12.00	1.0 x .50	—	11.50	—	26.38	2.38	51.81	—	44.06	4.437	—	12.88	—
730	54.38	51.31	71.38	51.19	54.50	47.88	64.50	15.88	12.50	12.13	12.00	1.25 x .63	—	11.50	—	29.00	2.38	52.38	—	48.75	4.937	—	13.00	—

BC16076C  
BC16079B

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

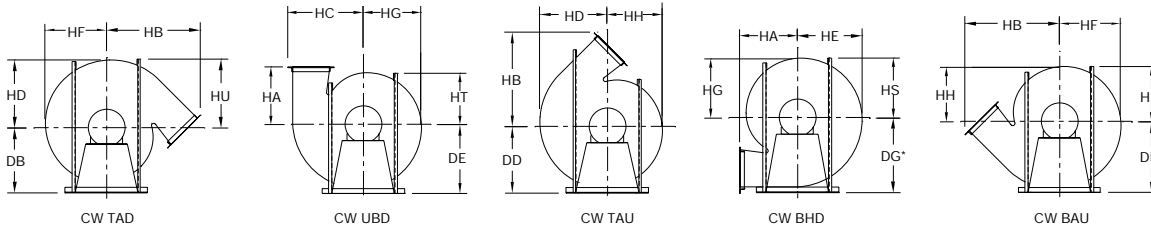
# Dimensional Data – Arr. 4



CLOCKWISE ROTATION, TOP HORIZONTAL DISCHARGE 'CW THD'

**NOTES:**

1. Punched outlet flanges per AC16105 & punched inlet flanges per AC16104 are included on all discharges. See page 4 for dimensions.
2. 'CW' rotation is shown. 'CCW' rotation is similar but opposite.
3. Optional accessories: rectangular evase, rectangular to round evase & inlet bell per BC16127. See page 4 and 14 for dimensions.



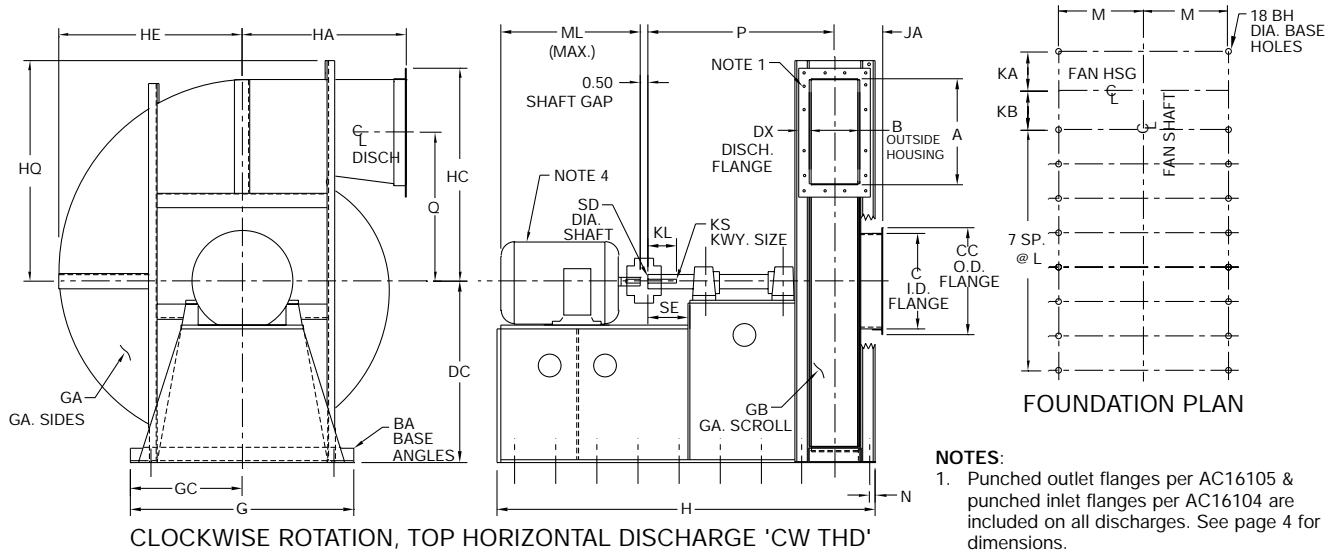
SIZE	A	B	BA	BH	C	CC	DB	DC	DD	DE	DF	DG	DX	FR				G	GA	GB	GC	H	
														DES. L		DES. H						DES. L	DES. H
														MIN.	MAX.	MIN.	MAX.						
270	13.38	7.25	3 x 3	0.81	10.88	13.88	21.25	22.25	23.25	24.50	25.50	27.50	1.50	182T	215T	284TS	365TS	32.00	0.25	0.25	16.00	24.81	34.81
300	14.81	8.00	3 x 3	0.81	12.00	15.00	23.25	24.50	25.75	27.00	28.25	30.25	1.50	182T	256T	284TS	405TS	34.50	0.25	0.25	17.25	30.19	38.69
330	16.19	8.75	3 x 3	0.81	13.25	16.25	25.25	26.75	28.00	29.25	30.75	33.00	2.00	213T	286T	364TS	445TS	36.75	0.25	0.25	18.38	33.19	43.94
365	17.88	9.75	3 x 3	0.81	14.63	17.63	27.75	29.25	30.75	32.25	33.75	36.25	2.00	254T	326T	364TS	449TS	35.50	0.31	0.25	17.75	36.75	49.50
402	19.69	10.69	3 x 3	0.81	16.13	19.13	30.50	32.00	33.75	35.25	37.00	39.50	2.50	284T	365T	—	—	39.00	0.31	0.25	19.50	38.25	—
445	21.69	11.75	3 x 4	1.06	17.88	20.88	33.50	35.25	37.00	38.75	40.75	43.50	2.50	324T	405T	—	—	44.25	0.31	0.25	22.13	43.44	—
490	23.81	12.88	3 x 4	1.06	19.63	22.63	36.50	38.50	40.50	42.50	44.50	47.50	2.50	364T	445T	—	—	47.25	0.31	0.25	23.63	49.13	—
542	26.31	14.19	3 x 4	1.06	21.75	24.75	40.25	42.50	44.75	47.00	49.25	52.25	2.50	404T	449T	—	—	51.25	0.31	0.25	25.63	54.94	—

SIZE	HA	HB	HC	HD	HE	HF	HG	HH	HQ	HR	HS	HT	HU	JA	KA	KB	L		M	N	P		O
																	DES. L	DES. H			DES. L	DES. H	
270	20.38	32.94	26.19	23.56	22.50	21.38	20.25	19.13	27.69	20.50	21.63	19.13	25.25	7.94	5.56	5.31	5.31	10.31	13.00	1.38	20.94	32.56	18.00
300	22.63	36.44	28.94	26.19	24.94	23.69	22.50	21.25	30.44	22.44	23.63	20.94	27.75	8.31	5.94	5.69	7.63	11.88	14.25	1.38	26.19	38.44	20.00
330	24.81	40.25	32.13	28.75	27.44	26.06	24.69	23.31	33.13	24.31	25.63	22.69	30.13	8.69	6.31	6.06	8.75	14.13	15.38	1.38	29.06	45.31	22.00
365	27.38	44.31	35.31	31.81	30.31	28.75	27.31	25.75	36.31	26.56	28.06	24.81	33.00	9.25	6.88	6.56	10.00	16.38	14.75	1.38	32.06	50.31	24.38
402	30.13	49.06	39.19	35.06	33.38	31.69	30.06	28.38	39.69	28.75	30.44	26.75	35.94	9.69	7.31	7.00	10.31	—	16.50	1.38	34.25	—	26.88
445	33.25	53.94	43.06	38.69	36.88	35.06	33.25	31.38	44.56	32.44	34.31	30.25	40.38	11.19	8.31	8.00	11.63	—	18.50	1.88	40.25	—	29.69
490	36.56	59.19	47.13	42.56	40.63	38.56	36.56	34.50	48.63	35.38	37.38	32.94	44.06	11.81	8.94	8.63	13.88	—	20.00	1.88	47.38	—	32.69
542	40.44	65.25	51.88	47.13	44.94	42.63	40.44	38.19	53.38	38.63	40.88	35.94	48.31	12.44	9.56	9.25	16.13	—	22.00	1.88	52.50	—	36.19

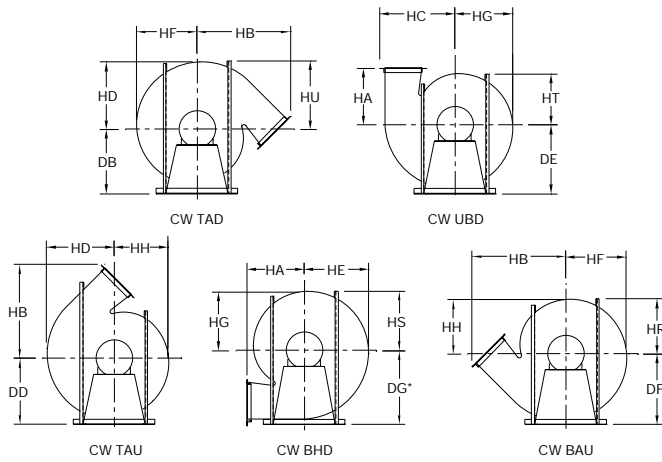
BC16077A  
BC16080A

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

# Dimensional Data – Arr. 8



CLOCKWISE ROTATION, TOP HORIZONTAL DISCHARGE 'CW THD'



**NOTES:**

1. Punched outlet flanges per AC16105 & punched inlet flanges per AC16104 are included on all discharges. See page 4 for dimensions.
2. 'CW' rotation is shown. 'CCW' rotation is similar but opposite.
3. Optional accessories: rectangular evase, rectangular to round evase & inlet bell per BC16127. See page 4 and 14 for dimensions.

SIZE	A	B	BA	BH	C	CC	DB	DC
270	13.38	7.25	3 x 3	0.81	10.88	13.88	21.25	22.25
300	14.81	8.00	3 x 3	0.81	12.00	15.00	23.25	24.50
330	16.19	8.75	3 x 3	0.81	13.25	16.25	25.25	26.75
365	17.88	9.75	3 x 3	0.81	14.63	17.63	27.75	29.25
402	19.69	10.69	3 x 3	0.81	16.13	19.13	30.50	32.00
445	21.69	11.75	3 x 4	1.06	17.88	20.88	33.50	35.25
490	23.81	12.88	3 x 4	1.06	19.63	22.63	36.50	38.50
542	26.31	14.19	3 x 4	1.06	21.75	24.75	40.25	42.50
600	29.06	15.63	3.5 x 5	1.06	24.13	28.13	44.75	47.25
660	32.06	17.25	3.5 x 5	1.06	26.50	30.50	49.00	51.75
730	35.38	19.00	3.5 x 5	1.06	29.38	33.38	54.00	57.00

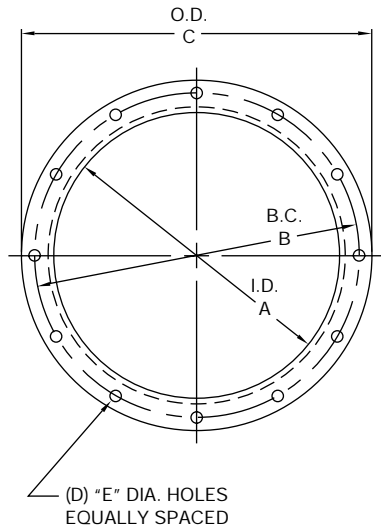
SIZE	DD	DE	DF	DG	DX	FR		G	GA	GB	GC	H		HA	HB	HC	HD	HE	HF	HG	HH	HQ	HR
						DES. L	DES. H					DES. L	DES. H										
270	23.25	24.50	25.50	27.50	1.50	215T	365TS	32.00	0.25	0.25	16.00	53.81	65.19	20.38	32.94	26.19	23.56	22.50	21.38	20.25	19.13	27.69	20.50
300	25.75	27.00	28.25	30.25	1.50	256T	405TS	34.50	0.25	0.25	17.25	60.50	70.19	22.63	36.44	28.94	26.19	24.94	23.69	22.50	21.25	30.44	22.44
330	28.00	29.25	30.75	33.00	2.00	286T	445TS	36.75	0.25	0.25	18.38	67.13	79.63	24.81	40.25	32.13	28.75	27.44	26.06	24.69	23.31	33.13	24.31
365	30.75	32.25	33.75	36.25	2.00	326T	449TS	35.50	0.31	0.25	17.75	72.50	87.06	27.38	44.31	35.31	31.81	30.31	28.75	27.31	25.75	36.31	26.56
402	33.75	35.25	37.00	39.50	2.50	365T	449TS	39.00	0.31	0.25	19.50	78.25	90.94	30.13	49.06	39.19	35.06	33.38	31.69	30.06	28.38	39.69	28.75
445	37.00	38.75	40.75	43.50	2.50	405T	—	44.25	0.31	0.25	22.13	85.31	—	33.25	53.94	43.06	38.69	36.88	35.06	33.25	31.38	44.56	32.44
490	40.50	42.50	44.50	47.50	2.50	445T	—	47.25	0.31	0.25	23.63	94.00	—	36.56	59.19	47.13	42.56	40.63	38.56	36.56	34.50	48.63	35.38
542	44.75	47.00	49.25	52.25	2.50	449T	—	51.25	0.31	0.25	25.63	95.88	—	40.44	65.25	51.88	47.13	44.94	42.63	40.44	38.19	53.38	38.63
600	49.75	52.00	54.50	58.00	2.50	449T	—	57.50	0.31	0.25	28.75	103.06	—	44.69	71.94	57.06	52.13	49.63	47.13	44.69	42.19	59.56	43.31
660	54.50	57.00	60.00	63.50	2.50	449T	—	62.25	0.38	0.31	31.13	106.81	—	49.13	78.94	62.56	57.31	54.63	51.88	49.19	46.44	65.06	47.31
730	60.00	63.00	66.00	69.75	2.50	449T	—	67.50	0.38	0.31	33.75	108.50	—	54.25	87.06	68.88	63.38	60.44	57.38	54.38	51.31	71.38	51.19

SIZE	HS	HT	HU	JA	KA	KB	KL	KS		L		M	ML		N	P		Q		SD		SE	
								DES. L	DES. H	DES. L	DES. H		DES. L	DES. H		DES. L	DES. H	DES. L	DES. H	DES. L	DES. H	DES. L	DES. H
270	21.63	19.13	25.25	7.94	5.56	5.31	7.50	.38 x .19	.50 x .25	5.50	7.00	13.00	20.25	32.25	1.38	29.44	30.44	18.00	1.437	1.937	7.50	7.75	
300	23.63	20.94	27.75	8.31	5.94	5.69	8.00	.38 x .19	.50 x .25	6.50	7.50	14.25	25.75	38.25	1.38	30.50	31.44	20.00	1.687	2.187	7.81	8.38	
330	25.63	22.69	30.13	8.69	6.31	6.06	9.00	.38 x .19	.63 x .31	7.00	9.00	15.25	28.88	45.25	1.38	33.88	35.50	22.00	1.687	2.687	8.81	10.19	
365	28.06	24.81	33.00	9.25	6.88	6.56	9.00	.50 x .25	.88 x .44	7.50	10.00	14.75	32.00	49.75	1.38	35.56	37.88	24.38	2.187	3.437	9.44	9.75	
402	30.44	26.75	35.94	9.69	7.31	7.00	10.00	.63 x .31	.88 x .44	8.50	10.00	16.50	34.38	49.75	1.38	39.63	41.31	26.88	2.437	3.437	10.63	10.75	
445	34.31	30.25	40.38	11.19	8.31	8.00	10.00	.75 x .38	—	9.00	—	18.50	41.25	—	1.88	40.63	—	29.69	2.937	—	10.75	—	
490	37.38	32.94	44.06	11.81	8.94	8.63	11.00	.88 x .44	—	10.00	—	20.00	49.00	—	1.88	43.00	—	32.69	3.437	—	11.88	—	
542	40.88	35.94	48.31	12.44	9.56	9.25	11.00	.88 x .44	—	10.00	—	22.00	49.00	—	1.88	44.19	—	36.19	3.437	—	11.81	—	
600	45.81	40.38	54.00	14.13	10.75	10.44	12.00	1.0 x .50	—	11.00	—	24.00	49.00	—	2.38	49.69	—	40.00	3.937	—	12.88	—	
660	49.81	43.81	58.88	15.06	11.69	11.31	12.00	1.0 x .50	—	11.00	—	26.38	49.00	—	2.38	52.56	—	44.06	4.437	—	12.88	—	
730	54.50	47.88	64.50	15.88	12.50	12.13	12.00	1.0 x .50	—	11.00	—	29.00	49.00	—	2.38	53.38	—	48.75	4.437	—	12.88	—	

BC16078C  
BC16081B

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

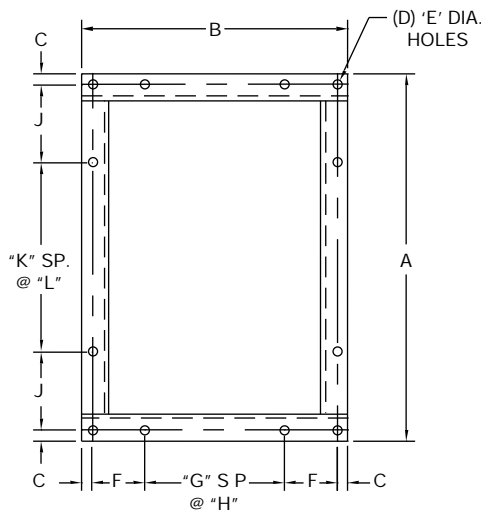
# Dimensional Data – Flanges



## Inlet Flange

SIZE	A	B	C	D	E	ANGLE SIZE
270	10.88	12.63	13.88	12	0.44	1.5 x 1.5
300	12.00	13.75	15.00	12	0.44	1.5 x 1.5
330	13.25	15.00	16.25	12	0.44	1.5 x 1.5
365	14.63	16.38	17.63	12	0.44	1.5 x 1.5
402	16.13	17.88	19.13	12	0.44	1.5 x 1.5
445	17.88	19.63	20.88	12	0.44	1.5 x 1.5
490	19.63	21.38	22.63	16	0.56	1.5 x 1.5
542	21.75	23.50	24.75	16	0.56	1.5 x 1.5
600	24.13	26.38	28.13	16	0.56	2.0 x 2.0
660	26.50	28.75	30.50	16	0.56	2.0 x 2.0
730	29.38	31.63	33.38	16	0.56	2.0 x 2.0

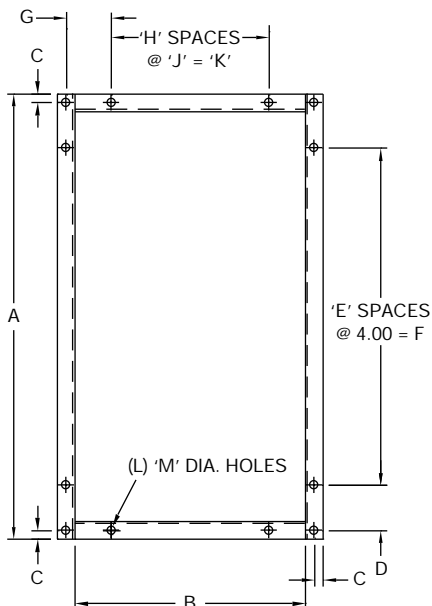
AC16104



## Outlet Flange

SIZE	A	B	C	D	E	F	G	H	J	K	L	ANGLE SIZE
270	16.38	10.25	0.63	16	0.44	3.00	1	3.00	3.06	3	3.00	1.5 x 1.5
300	17.81	11.00	0.63	16	0.44	3.25	1	3.25	3.31	3	3.31	1.5 x 1.5
330	20.19	12.75	0.88	16	0.44	3.63	1	3.75	3.69	3	3.69	2.0 x 2.0
365	21.88	13.75	0.88	18	0.44	4.00	1	4.00	3.06	4	3.50	2.0 x 2.0
402	24.69	15.69	1.13	20	0.44	4.50	1	4.44	3.25	5	3.19	2.5 x 2.5
445	26.69	16.75	1.13	24	0.44	3.63	2	3.63	3.63	5	3.44	2.5 x 2.5
490	28.81	17.88	1.13	24	0.56	3.13	3	3.13	3.75	5	3.81	2.5 x 2.5
542	31.31	19.19	1.13	28	0.56	3.13	3	3.56	3.38	7	3.19	2.5 x 2.5
600	34.06	20.63	1.13	28	0.56	3.56	3	3.75	3.44	7	3.56	2.5 x 2.5
660	37.06	22.25	1.13	28	0.56	4.00	3	4.00	3.63	7	3.94	2.5 x 2.5
730	40.38	24.00	1.13	30	0.56	4.31	3	4.38	3.81	8	3.81	2.5 x 2.5

AC16105C



## Optional Rectangular Evasé Flange (For optional round evasé dimensions see page 4)

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	ANGLE SIZE
270	23.50	7.25	0.63	3.13	4	16.00	3.00	1	3.00	3.00	18	0.44	1.5 x 1.5
300	25.63	8.00	0.63	2.19	5	20.00	3.25	1	3.25	3.25	20	0.44	1.5 x 1.5
330	28.75	8.75	0.88	3.50	5	20.00	3.63	1	3.75	3.75	20	0.44	2.0 x 2.0
365	31.38	9.75	0.88	2.81	6	24.00	4.00	1	4.00	4.00	22	0.44	2.0 x 2.0
402	35.25	10.69	1.13	2.50	7	28.00	3.34	2	3.38	6.75	26	0.44	2.5 x 2.5
445	38.25	11.75	1.13	4.00	7	28.00	3.63	2	3.63	7.25	26	0.44	2.5 x 2.5
490	41.50	12.88	1.13	3.63	8	32.00	3.88	2	3.94	7.88	28	0.56	2.5 x 2.5
542	45.38	14.19	1.13	3.56	9	36.00	4.22	2	4.25	8.50	30	0.56	2.5 x 2.5
600	49.63	15.63	1.13	3.69	10	40.00	3.75	3	3.63	10.88	34	0.56	2.5 x 2.5
660	54.25	17.25	1.13	4.00	11	44.00	4.00	3	4.00	12.00	36	0.56	2.5 x 2.5
730	59.38	19.00	1.13	2.56	13	52.00	4.22	3	4.44	13.31	40	0.56	2.5 x 2.5

AC16121B

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

# Typical Specifications

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Furnish and install as shown on the plans, Type BCN high efficiency industrial fans with backward curved, non-overloading blade design and of the arrangement indicated, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

**HOUSING** — Fan housings shall be of heavy gauge steel with continuously welded construction and braced with structural reinforcements to eliminate any resonant vibration and provide smooth operation. Housings with partially welded construction are not acceptable. Flanged inlets and outlets shall be provided as standard equipment for rigidity and duct connection.

**WHEEL** — Blade design shall be backward curved for high efficiency and have non-overloading performance characteristics. Blades shall be die-formed of special alloy steel material for strength and accuracy of contour, and continuously welded to the wheel inlet cone and backplate. Partial welding of blades will not be acceptable. A conical fabricated steel (not cast iron) hub shall be provided. Wheels shall be statically and dynamically balanced on precision electronic machines as well as trim balanced after complete assembly.

**SHAFTS** — Shafts are to be solid material selected for AISI 1040 or 1045 hot rolled steel, accurately turned, ground, polished, and ring-gauged for accuracy. Shafts are to be sized for the first critical speed of at least 1.43 times the maximum speed for the class.

**BEARINGS** — Bearings are to be heavy duty, grease lubricated, anti-friction ball or roller, self-aligning, pillow block type and selected for minimum average bearing life (AFBMA L-50) in excess of 200,000 hours at the maximum fan RPM.

**FACTORY TEST RUN UNITS** — All fans up to 200 HP shall be completely assembled and test run as a unit at operating speed at the factory. The fans are to be balanced and records maintained of the readings in the axial, vertical, and horizontal direction on each of the bearings. A written copy of this record shall be available upon request by the customer. Fans larger than 200 HP shall be assembled at the factory and should be field checked for vibration by the customer.

**FINISH AND COATINGS** — The entire fan assembly, excluding the shaft, shall be thoroughly degreased and deburred before application of a rust-preventative blue primer. After the fan is completely assembled, a top coat of blue primer is applied to the entire unit. The fan shaft is coated with a petroleum-based rust protectant. The fan shall be coated with the following optional finish:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> TCF Blue - Extra Coat        | <input type="checkbox"/> Zinc             | <input type="checkbox"/> Straight Epoxy         |
| <input type="checkbox"/> High Temperature Aluminum    | <input type="checkbox"/> Epoxy            | <input type="checkbox"/> Phenolic Epoxy         |
| <input type="checkbox"/> Asphaltum                    | <input type="checkbox"/> Synthetic Resin  | <input type="checkbox"/> Baked Phenolic         |
| <input type="checkbox"/> Vinyl (PVC)                  | <input type="checkbox"/> Air Dry Phenolic | <input type="checkbox"/> Coal Tar Epoxy         |
| <input type="checkbox"/> Enamel - Special Color Group | <input type="checkbox"/> Vinyl            | <input type="checkbox"/> High Build Baked Epoxy |

**ACCESSORIES** — Where required the fans shall be provided with:

- |   |  |
|---|--|
| <input type="checkbox"/> Bolted Access Door                   | <input type="checkbox"/> Coupling Guard                |
| <input type="checkbox"/> Raised Access Door                   | <input type="checkbox"/> Horizontal Split Housing      |
| <input type="checkbox"/> Drain                                | <input type="checkbox"/> Pie-Shaped Housing            |
| <input type="checkbox"/> Plug                                 | <input type="checkbox"/> Special Diameter Construction |
| <input type="checkbox"/> Flanged & Punched Inlet/Outlet       | <input type="checkbox"/> Inlet Bell With Screen        |
| <input type="checkbox"/> Inlet/Outlet Companion Flange        | <input type="checkbox"/> Stainless Steel Nameplate     |
| <input type="checkbox"/> OSHA Belt Guard                      | <input type="checkbox"/> Evasé                         |
| <input type="checkbox"/> Shaft Guard                          | <input type="checkbox"/> Spark Resistant Construction  |
| <input type="checkbox"/> Outlet Damper                        | <input type="checkbox"/> High Temperature Construction |
| <input type="checkbox"/> Inlet Screen                         | <input type="checkbox"/> Shaft Seal                    |
| <input type="checkbox"/> Variable Inlet Vanes - External Type | <input type="checkbox"/> Insulation Pins               |
| <input type="checkbox"/> Coupling                             | <input type="checkbox"/> Unitary & Isolation Bases     |
|   | <input type="checkbox"/> Special Coatings              |

**SUBMITTALS** — Submittals for approval of equipment shall include copies of outline drawings and pressure-volume performance curves showing point of operation.