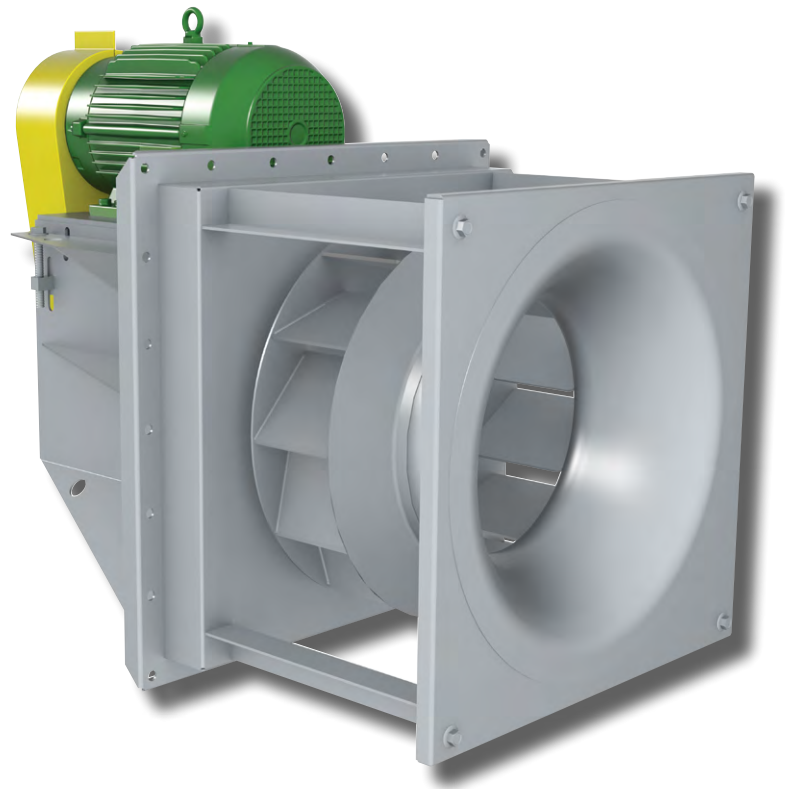




INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

PLUG FANS

MODEL BCPL



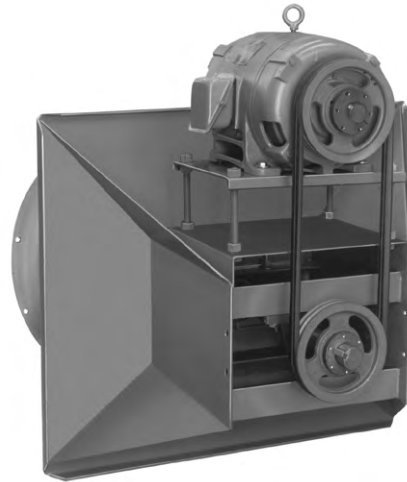
BCPL Plug Fans

BCPL plug fans from Twin City Fan & Blower are compact and versatile. Their versatility allows them to be used for air circulation in a variety of commercial and industrial applications including air curtains, air heaters, ceiling, wall, and floor panel plenums, degreasers, dryers, dust collectors, evaporators, freezers, kilns, ovens, packaged air handlers, parts washers, penthouses, smoke houses, space heaters, spray booths, and other high temperature applications.

Plug fans are housed in the customer's enclosure in applications where the system plenum acts as the fan housing. This configuration saves space since connecting ductwork and motor support pedestals are generally not needed. More space savings can be obtained by utilizing the wheel compartment as a pressurized chamber in lieu of a fan scroll. The use of multiple discharges from the pressurized chamber allows for additional savings by reducing ducting requirements.

BCPL plug fans feature SWSI flat-blade backward inclined, non-overloading wheels. An airfoil wheel (model AFPL) is available as an option. For AFPL performance refer to the Twin City Fan Selector Program.

The unit's welded construction can withstand most industrial applications. The plug fan's motor and drive are protected from high temperatures by the customer's



chamber wall or the optional insulated plug. The motor and drive are mounted to the plug panel which may be bolted or welded in place. The plug assembly may be mounted with the shaft in either the vertical or horizontal position for maximum flexibility. An all welded housing is available as an option. Standard fan is suitable for both horizontal and vertical mounting.

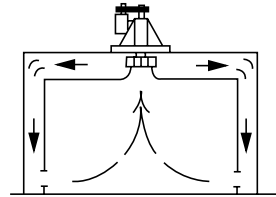
Typical Installations

Mounting is accomplished by providing a hole larger than the wheel diameter through the chamber wall. The wheel, shaft, motor, and drive assembly is then positioned to the inlet cone (mounted in opposite wall) and secured in place. See Figure A.

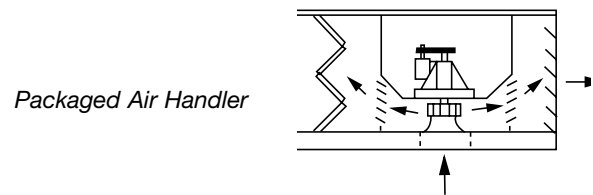
Another method is to provide a hole sized only for the wheel drive shaft. The wheel is then positioned through the opening for the inlet cone after the drive and panel assembly has been securely mounted. See Figure B.

Plug fans may be applied with open wheel (unhoused) or with a housing as shown in Figure C. Performance data in this catalog is for unhoused wheel application. For housed performance data refer to Catalog 300.

Walls must be designed to support the dynamic loads of the fan without resonance.



Plenum System



Packaged Air Handler

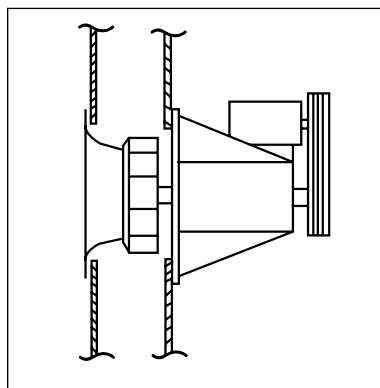


Figure A

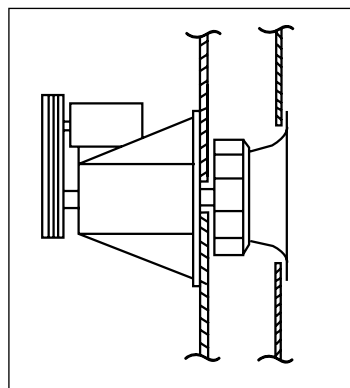


Figure B

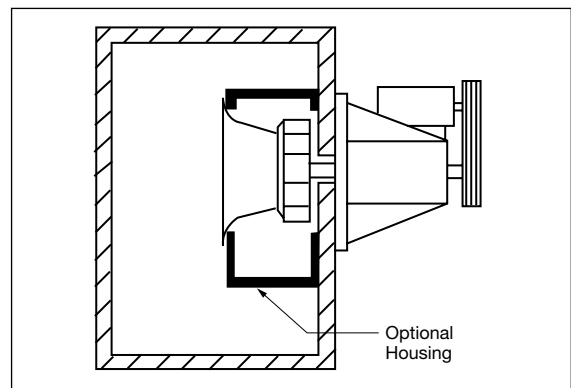


Figure C

Construction Features

Plug Panel

Constructed of minimum 7-gauge steel with formed flanges to maintain flatness and rigidity. Panel is pre-punched for bolt mounting. Panel assembly may also be welded in place. The “cross frame” bearing support is designed for maximum stability and load spreading. Bearings are serviceable without disassembly of panel or frame.

Plug Assembly

Available for both horizontal and vertical applications. Horizontal and vertical up construction is standard. Vertical down construction must be specified.

Adjustable Motor Base

The motor base is standard with four point leveling and positive tension adjustment to ensure proper drive belt alignment. The motor base is heavy-gauge steel and pre-punched to accept the standard motor frame specified.

Optional Construction

High Temperature Construction

301-500°F: Includes a shaft seal, shaft cooler, high temperature grease, and high temperature bearings.

501-800°F: Includes the modifications above plus high temperature aluminum paint.

801-1000°F: Consult factory.

Insulated Plug

Protects motor and drive components from heat. An insulated plug is recommended for temperatures above 300°F. Available in 4" and 6" thicknesses. Special thicknesses to match customer's insulated wall are available. Plug is assembled to mounting panel when ordered. See the table on page 6 for maximum RPMs.

All Welded Housing

Heavy-gauge steel housing is provided with wheel opening on each side and weld studs on the inlet side for cone mounting. Specify rotation and discharge as viewed from drive side to insure proper stud placement. Housing supports and attachments for wall mounting to be provided by others. See page 14 for dimensions.

Variable Inlet Vanes

Vane blades are cantilever design with supports equipped with permanently lubricated needle bearings and ball joints for smooth and easy operation. Vane assemblies are external type for sizes 122 through 150 and nested for sizes 165 through 490. Standard inlet vanes are applicable to 300°F. Consult factory for dimensions and higher temperatures.

Wheels

Wheels are constructed of heavy gauge steel using flat single thickness blades, solid welded to both back plate and rim. Wheels are statically and dynamically balanced. Both backward inclined and airfoil type wheels are available. Performance shown on pages 7 through 11 is for backward inclined wheels, model BCPL. Clockwise (standard) or counterclockwise rotation is available. Specify rotation as viewed from drive side.

Inlet Cones

Heavy-gauge and spun to match the wheel intake rim to insure smooth airflow. Inlet cone flange is pre-punched for mounting. Inlet cones are shipped loose as standard. An integral inlet cone with mounting panel is optional.

Bearings

Either ball or spherical roller, heavy duty, self-aligning, pillow block type bearings are provided. Bearing selection is based on L-10 minimum life of 40,000 hours or average life of 200,000 hours.

Spark Resistant Construction

Fan applications may involve the handling of potentially explosive or flammable particles, fumes or vapors. Such applications require careful consideration by the system designer to insure the safe handling of such gases. Twin City Fan & Blower offers the following classifications of spark resistant construction per AMCA Standard 99-0401-86. It is the specifier or the user's responsibility to specify the type of spark resistant construction with full recognition of the potential hazards and the degree of protection required.

Type A: All parts of the fan in contact with the airstream must be made of non-ferrous material – usually aluminum and limited to 250° F.

Type B: The fan shall have a non-ferrous wheel and non-ferrous ring about the opening through which the shaft passes – usually aluminum wheel and rub ring and limited to 250°F.

Type C: The fan shall be so constructed that a shift of the wheel or shaft will not permit two ferrous parts of the fan to rub or strike. This is accomplished with an aluminum inlet cone and rub ring and is limited to 500°F. Construction to 800°F is available using a steel inlet cone with copper/bronze lining. Contact factory for construction to 1000°F.

Additional Options

- Airfoil wheel (AFPL)
- OSHA type belt guard
- OSHA shaft and bearing guard
- Integral inlet cone with mounting panel
- Stainless steel construction
- Fan sizes larger than 490

Plug Fan Selection

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). When specified performance is at a density different than standard, it must be converted to the equivalent standard conditions before the fan can be selected from the performance tables. The performance data and examples in this catalog are for unhooded BCPL plug fans.

Example 1. Standard Density

Given: 10894 CFM at 2.5" TSP (system). Installation is a two-wall arrangement with a wheel-to-wall clearance of 6¾".

Step 1. Entering the performance tables we find that a 270 BCPL plug fan will deliver 10894 CFM at 2.5" SP operating at 1178 RPM with 6.84 BHP.

Step 2. Catalog performance must be corrected for wheel-to-wall arrangement. Determine the wheel and plenum type from the arrangements shown in Figure 1 on page 5. Determine the clearance "C" based upon the closest wall. Performance will not be affected by any additional walls spaced greater than C x 3 from the wheel.

The selected 270 BCPL fan has a wheel diameter of 27" ("D"). Application is two walls with 6¾" clearance ("C"). Therefore, $C \div D = 6.75 \div 27 = 0.25$ or ¼" which is equivalent to $D \div 4$.

Step 3. Next, determine the Percent of Wide Open Volume (% WOV) at which the fan is to operate. From Table 2 on page 5 find that the WOV factor is 12.58 for a 270 BCPL fan.

$$\% \text{ WOV} = \frac{10894 \times 100}{1178 \times 12.48} = 73.5$$

Step 4. By interpolation from Table 1 on page 5, for the two wall column of $D \div 4$ at 73.5% WOV, we find the RPM factor of 1.02 and the BHP factor of 1.05.

Corrected unhooded performance for 10894 CFM at 2.5" SP standard air is:

$$\begin{aligned} \text{RPM} &= 1178 \times 1.02 = 1201 \\ \text{BHP} &= 6.84 \times 1.05 = 7.18 \end{aligned}$$

Example 2. Nonstandard Density

Given: 10894 CFM at 2.5" TSP (system), 300°F, 3000 ft. altitude. Installation is a two-wall arrangement with a wheel-to-wall clearance of 6¾".

Step 1. To enter the performance tables the operating SP must be corrected to equivalent standard conditions. From Table 3 on page 5 find the correction factor of 0.624 for 300°F and 3000 feet altitude. The corrected equivalent static pressure is equal to:

$$\text{SP (Catalog)} = \frac{2.5" \text{ TSP (system)}}{0.624} = 4.0$$

Fan selection is then made for 10894 CFM at 4" SP. Entering the performance tables, we find that a 270 BCPL fan will deliver 10894 CFM at 1355 RPM with 10.18 BHP. It must be remembered that this BHP is cataloged at standard 70°F air at sea level.

Steps 2, 3, & 4. Continue the correction procedure with Steps 2, 3 and 4 as shown in Example 1. Wall arrangement = $D \div 4$, % WOV = 63.9, RPM = 1368, and BHP = 10.58.

Step 5. Standard air BHP must now be converted to the design conditions BHP. The BHP at 300°F and 3000 ft. altitude equals 10.58 x the density factor of 0.624 = 6.6 BHP.

It must be remembered to provide consideration to motor HP for 70°F air at 3000 ft. altitude to avoid motor overload at startup. Multiplying the altitude factor of 0.896 (for 70°F at 3000 ft.) x BHP (10.58) gives us 9.47.

Therefore, performance for the 270 BCPL fan for 10894 CFM at 2.5" SP, 300°F, and 3000 ft. altitude is 1368 RPM, 6.6 operating BHP, and 9.47 startup BHP.

Step 6. Maximum wheel RPMs must be checked for all elevated temperature applications. The derating factors for high temperature listed in Table 4 on page 5 must be applied to the maximum Class I and Class II RPMs listed in Table 5 on page 6. In this example the derating factor for 300°F is 0.96 and the maximum RPM for a Class I Size 270 BCPL is 1397 RPM. Therefore, the maximum RPM for this wheel is $1397 \times 0.96 = 1341$ RPM. The fan as selected is to operate at 1368 RPM which does not fall within this derated Class I maximum RPM, so a Class II fan must be considered. The maximum speed for a Class II size 270 BCPL is 1803 RPM. $1803 \times \text{the derating factor of } 0.96 = 1730$ RPM. 1368 RPM falls within this range so a Class II fan may be used.

Engineering Data

Figure 1. Wheel and Plenum Arrangement

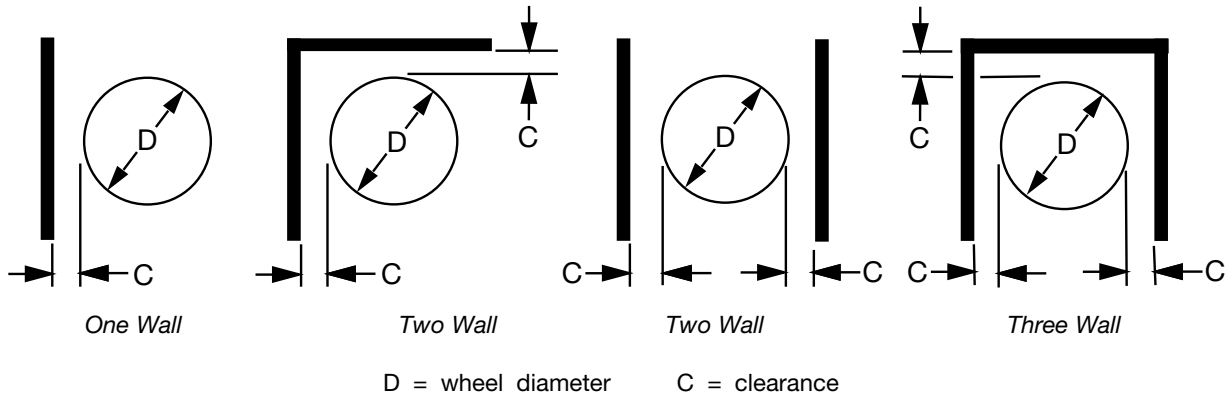


Table 1. Wall Proximity Factors

% WOV	FACTOR	C = D/8			C = D/4			C = D/2		
		ONE WALL	TWO WALL	THREE WALL	ONE WALL	TWO WALL	THREE WALL	ONE WALL	TWO WALL	THREE WALL
95	RPM	1.02	1.03	1.09	1.01	1.02	1.06	1.01	1.01	1.03
	BHP	1.06	1.08	1.29	1.04	1.06	1.20	1.02	1.02	1.08
85	RPM	1.02	1.02	1.08	1.01	1.02	1.06	1.01	1.01	1.03
	BHP	1.05	1.07	1.26	1.03	1.05	1.18	1.02	1.02	1.08
75	RPM	1.01	1.02	1.07	1.01	1.02	1.05	1.00	1.01	1.02
	BHP	1.04	1.06	1.23	1.03	1.05	1.16	1.01	1.02	1.07
65	RPM	1.01	1.02	1.06	1.01	1.01	1.04	1.00	1.01	1.02
	BHP	1.04	1.06	1.19	1.03	1.04	1.14	1.01	1.02	1.06
55	RPM	1.01	1.02	1.05	1.01	1.01	1.04	1.00	1.01	1.02
	BHP	1.03	1.05	1.16	1.02	1.03	1.12	1.01	1.02	1.05
45	RPM	1.01	1.01	1.04	1.01	1.01	1.03	1.00	1.00	1.01
	BHP	1.02	1.04	1.13	1.02	1.03	1.09	1.01	1.01	1.04

Table 2. WOV Factors

SIZE	WOV FACTOR	D
122	1.18	12.25
135	1.58	13.50
150	2.16	15.00
165	2.88	16.50
182	3.87	18.25
200	5.09	20.00
222	7.01	22.25
245	9.36	24.50
270	12.58	27.00
300	17.26	30.00
330	22.97	33.00
365	31.40	36.50
402	42.11	42.25
445	56.91	44.50
490	75.97	49.00

Table 3. Temperature and Altitude Correction Factors

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

Table 4. Derating Factors For High Temperature

TEMP. (°F)	DERATING FACTOR	
	STANDARD STEEL	STAINLESS STEEL
70	1.00	1.00
200	0.98	0.95
300	0.96	0.91
400	0.95	0.88
500	0.90	0.84
600	0.86	0.81
700	0.82	0.78
800	0.75	0.75

When operating fans at elevated temperatures, the maximum RPMs of the fan from Table 5 on page 6 must be corrected to the safe operating RPM limit for the application using the factors listed in the Table 4.

Engineering Data

To insure proper motor selection, consideration must be given to starting torque requirements (fan wheel inertia WR^2) along with the operating BHP. Table 5 lists the WR^2 factors for different wheel sizes to be used in

evaluating the capability of a selected motor. In some cases it may be necessary to provide a larger horsepower motor, even though it may not be dictated by the operating BHP, to bring the fan to speed.

Table 5. Maximum RPMs, Wheel Weights and WR^2

FAN SIZE	CLASS I					CLASS II				
	MAXIMUM RPM			WHEEL WT. (LBS.)	WR^2 (LBS-FT ²)	MAXIMUM RPM			WHEEL WT. (LBS.)	WR^2 (LBS-FT ²)
	STD.	4" PLUG	6" PLUG			STD.	4" PLUG	6" PLUG		
122	3167	3167	2512	15	1.7	4119	4119	3087	15	1.7
135	2874	2874	2364	17	2.4	3738	3738	2899	18	2.7
150	2587	2587	1908	20	3.7	3364	3364	2316	21	4.1
165	2352	2352	1779	24	5.7	3058	3058	2090	28	7.0
182	2118	2118	1520	31	8.8	2729	2729	2180	39	10.8
200	1932	1932	1800	38	12.5	2490	2490	2045	49	17.4
222	1737	1737	1419	66	23.6	2238	2238	1659	74	28.8
245	1577	1577	1247	81	38.3	2033	2033	1523	87	42.9
270	1397	1397	1397	94	56.4	1803	1803	1668	103	64.6
300	1257	1257	1257	113	88.8	1623	1623	1496	125	101
330	1143	1143	1097	151	149	1475	1475	1303	167	158
365	995	995	967	198	245	1283	1283	1283	214	260
402	903	903	903	244	361	1163	1163	1163	254	382
445	817	817	817	340	566	1052	1052	1052	392	692
490	742	742	742	393	816	956	956	956	455	1001

Table 6. Bare Fan and Accessory Weights

FAN SIZE	APPROXIMATE WEIGHTS (LBS.)				
	BARE FAN		INSULATED PLUG	HOUSING	INLET VANES
	CLASS I	CLASS II			
122	140	151	25	24	45
135	145	156	25	30	45
150	151	162	25	37	52
165	185	196	32	44	24
182	208	230	32	65	29
200	221	233	32	79	33
222	235	247	35	97	38
245	240	252	35	117	40
270	323	341	40	143	45
300	330	348	40	236	45
330	388	406	55	287	50
365	430	478	55	350	50
402	575	636	75	428	55
445	639	710	75	522	60
490	950	1040	95	634	65

Table 7. High Temperature Applications

TEMP. RANGE	BEARING TYPE	LUBRICATION	OTHER REQUIREMENTS
TO 300°F	BALL OR ROLLER	GREASE	STANDARD CONSTRUCTION
301 TO 500°F	EXPANSION AND NON-EXPANSION	HIGH TEMPERATURE GREASE	SHAFT SEAL, SHAFT COOLER
501 TO 800°F	EXPANSION AND NON-EXPANSION	HIGH TEMPERATURE GREASE	HIGH TEMP. ALUMINUM PAINT SHAFT SEAL, SHAFT COOLER
801 TO 1000°F	CONSULT FACTORY		

Performance Data

122 BCPL 12.25" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP																								
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP																					
688	<u>1064</u>	0.09	1393	0.19																																													
860	1140	0.12	<u>1456</u>	<u>0.23</u>	1711	0.36	1941	0.50																																									
1032	1234	0.15	<u>1530</u>	<u>0.28</u>	<u>1774</u>	<u>0.42</u>	1988	0.57	2187	0.73	2373	0.91																																					
1204	1338	0.19	1606	0.33	<u>1848</u>	<u>0.49</u>	<u>2054</u>	<u>0.65</u>	2240	0.82	2416	1.01	2583	1.20	2742	1.41	2895	1.62																															
1376	1448	0.24	1697	0.39	<u>1922</u>	<u>0.56</u>	<u>2128</u>	<u>0.74</u>	<u>2309</u>	<u>0.93</u>	2475	1.12	2634	1.33	2786	1.54	2932	1.76	3072	1.99																													
1548	1563	0.30	1797	0.47	2004	0.64	2201	0.84	<u>2383</u>	<u>1.04</u>	<u>2547</u>	<u>1.25</u>	<u>2699</u>	<u>1.47</u>	2843	1.69	2982	1.92	3117	2.16	3375	2.67	3619	3.20																									
1720	1683	0.37	1904	0.55	2098	0.74	2280	0.94	<u>2456</u>	<u>1.16</u>	<u>2621</u>	<u>1.39</u>	<u>2772</u>	<u>1.62</u>	<u>2912</u>	<u>1.86</u>	<u>3045</u>	<u>2.10</u>	3174	2.35	3422	2.87	3658	3.43	3882	4.01																							
1892	1809	0.46	2013	0.65	2199	0.85	2369	1.06	2534	1.29	<u>2694</u>	<u>1.53</u>	<u>2846</u>	<u>1.78</u>	<u>2987</u>	<u>2.04</u>	<u>3118</u>	<u>2.29</u>	<u>3243</u>	<u>2.56</u>	3480	3.10	3707	3.67	3924	4.27																							
2064	1938	0.56	2126	0.76	2305	0.98	2467	1.21	2621	1.44	2772	1.69	2919	1.95	<u>3060</u>	<u>2.22</u>	<u>3192</u>	<u>2.50</u>	3317	2.78	3549	3.35	3767	3.94	3976	4.56																							
2236	2069	0.68	2242	0.89	2414	1.13	2570	1.36	2717	1.61	2858	1.87	2997	2.14	<u>3133</u>	<u>2.42</u>	<u>3265</u>	<u>2.71</u>	3391	3.01	3623	3.61	3836	4.23	4038	4.87																							
2408	2203	0.82	2363	1.04	2525	1.28	2677	1.54	2818	1.80	2953	2.07	3083	2.34	3213	2.63	3340	2.94	3463	3.25	3697	3.89	3910	4.54	4108	5.20																							
2580	2339	0.98	2487	1.20	2639	1.46	2786	1.73	2923	2.01	3052	2.28	3177	2.57	3299	2.87	3420	3.18	3539	3.50	<u>3769</u>	<u>4.17</u>	<u>3984</u>	<u>4.86</u>																									
2752	2475	1.15	2615	1.39	2756	1.65	2897	1.94	3031	2.23	3156	2.53	3277	2.83	3393	3.13	3508	3.45	3621	3.78	<u>3844</u>	<u>4.47</u>	<u>4057</u>	<u>5.19</u>																									
2924	2613	1.35	2744	1.60	2876	1.87	3010	2.17	3140	2.48	3263	2.79	3380	3.10	3492	3.42	3602	3.75	3710	4.08	3922	4.78	4008	5.14																									
3096	2752	1.57	2876	1.83	3000	2.11	3126	2.42	3251	2.74	3371	3.07	3485	3.40	3595	3.73	3701	4.07	3805	4.42	4008	5.14																											
3268	2891	1.82	3009	2.09	3126	2.38	3245	2.69	3365	3.03	3482	3.37	3593	3.72	3700	4.07	3803	4.42	3904	4.78	4099	5.51																											
3440	3032	2.10	3143	2.37	3254	2.67	3366	2.99	3480	3.33	3593	3.70	3703	4.06	3808	4.43	3908	4.80	4006	5.17																													
3612	3172	2.40	3278	2.69	3384	2.99	3491	3.32	3599	3.67	3707	4.04	3814	4.43	3917	4.81	4015	5.20	4111	5.58																													

135 BCPL 13.5" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP																								
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP																					
840	<u>967</u>	0.11	1265	0.23	1516	0.38																																											
1050	1036	0.14	<u>1323</u>	<u>0.28</u>	1554	0.44	1762	0.61																																									
1260	1122	0.18	<u>1390</u>	<u>0.34</u>	<u>1612</u>	<u>0.51</u>	1806	0.69	1986	0.89	2154	1.11																																					
1470	1218	0.24	1460	0.40	<u>1680</u>	<u>0.59</u>	<u>1866</u>	<u>0.79</u>	2035	1.00	2194	1.23	2345	1.47	2490	1.72	2628	1.98																															
1680	1319	0.30	1543	0.48	<u>1747</u>	<u>0.68</u>	<u>1934</u>	<u>0.90</u>	<u>2098</u>	<u>1.13</u>	2249	1.37	2392	1.62	2530	1.88	2662	2.15	2789	2.43	3033	3.03	3285	3.90																									
1890	1423	0.37	1635	0.57	1822	0.78	2001	1.02	<u>2166</u>	<u>1.27</u>	<u>2315</u>	<u>1.53</u>	<u>2452</u>	<u>1.79</u>	2582	2.06	2709	2.35	2831	2.64	3064	3.25	3321	4.18	3524	4.88																							
2100	1533	0.46	1733	0.68	1908	0.91	2073	1.15	<u>2233</u>	<u>1.42</u>	<u>2382</u>	<u>1.69</u>	<u>2519</u>	<u>1.98</u>	<u>2646</u>	<u>2.27</u>	<u>2767</u>	<u>2.56</u>	2883	2.86	3108	3.51	3321	4.18	3524	4.88																							
2310	1648	0.57	1833	0.80	2001	1.05	2155	1.30	2304	1.58	<u>2449</u>	<u>1.87</u>	<u>2586</u>	<u>2.18</u>	<u>2714</u>	<u>2.49</u>	<u>2833</u>	<u>2.80</u>	<u>2946</u>	<u>3.12</u>	3161	3.78	3367	4.48	3563	5.21																							
2520	1766	0.69	1936	0.94	2098	1.21	2245	1.48	2384	1.76	2520	2.06	<u>2653</u>	<u>2.38</u>	<u>2781</u>	<u>2.71</u>	<u>2901</u>	<u>3.05</u>	<u>3014</u>	<u>3.39</u>	<u>3224</u>	<u>4.08</u>	<u>3422</u>	<u>4.81</u>	3611	5.56																							
2730	1886	0.84	2042	1.09	2197	1.38	2339	1.67	2472	1.97	2599	2.28	2725	2.61	<u>2848</u>	<u>2.95</u>	<u>2967</u>	<u>3.31</u>	<u>3081</u>	<u>3.67</u>	<u>3292</u>	<u>4.41</u>	<u>3485</u>	<u>5.16</u>	3668	5.93																							
2940	2008	1.01	2152	1.27	2299	1.57	2436	1.89	2564	2.20	2686	2.53	2804	2.86	2921	3.22	<u>3036</u>	<u>3.59</u>	<u>3148</u>	<u>3.97</u>	<u>3359</u>	<u>4.74</u>	<u>3553</u>	<u>5.54</u>	3733	6.35																							
3150	2132	1.20	2266	1.47	2403	1.79	2536	2.12	2660	2.46	2777	2.80	2890	3.15	3000	3.51	3109	3.88	3217	4.28	<u>3426</u>	<u>5.09</u>	<u>3620</u>	<u>5.93</u>																									
3360	2257	1.42	2382	1.70	2510																																												

Performance Data

165 BCPL 16.5" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
1256	791	<u>0.17</u>	1035	0.35	1241	0.57																					
1570	848	0.22	<u>1083</u>	<u>0.42</u>	1272	0.66																					
1884	919	0.28	<u>1138</u>	<u>0.51</u>	<u>1319</u>	<u>0.76</u>																					
2198	997	0.35	1195	0.60	<u>1375</u>	<u>0.89</u>				1625	1.34	1763	1.66														
2512	1079	0.44	1263	0.72	<u>1430</u>	<u>1.02</u>	<u>1583</u>	<u>1.35</u>	<u>1717</u>	<u>1.69</u>	1840	2.05	1957	2.42	2070	2.81	2178	3.21	2283	3.64	2481	4.52					
2826	1165	0.55	1339	0.86	1491	1.17	<u>1637</u>	<u>1.53</u>	<u>1773</u>	<u>1.90</u>	<u>1894</u>	<u>2.28</u>	<u>2006</u>	<u>2.67</u>	2113	3.08	2216	3.50	2317	3.95	2508	4.87	2688	5.83			
3140	1255	0.69	1418	1.01	1562	1.36	1697	1.72	<u>1827</u>	<u>2.12</u>	<u>1949</u>	<u>2.53</u>	<u>2062</u>	<u>2.96</u>	<u>2166</u>	<u>3.39</u>	<u>2264</u>	<u>3.83</u>	2360	4.29	2543	5.24	2718	6.25	2884	7.30	
3454	1349	0.85	1500	1.20	1638	1.57	1764	1.95	1886	2.36	<u>2004</u>	<u>2.80</u>	<u>2116</u>	<u>3.25</u>	<u>2221</u>	<u>3.72</u>	<u>2319</u>	<u>4.19</u>	<u>2411</u>	<u>4.66</u>	2587	5.65	2755	6.69	2916	7.79	
3768	1446	1.04	1585	1.40	1717	1.80	1837	2.21	1951	2.63	2063	3.09	<u>2171</u>	<u>3.56</u>	<u>2276</u>	<u>4.06</u>	<u>2374</u>	<u>4.56</u>	<u>2467</u>	<u>5.07</u>	<u>2639</u>	<u>6.11</u>	2800	7.18	2955	8.31	
4082	1544	1.25	1637	1.63	1799	2.07	1915	2.50	2023	2.95	2128	3.41	<u>2230</u>	<u>3.90</u>	<u>2331</u>	<u>4.42</u>	<u>2428</u>	<u>4.95</u>	<u>2522</u>	<u>5.49</u>	<u>2694</u>	<u>6.59</u>	<u>2852</u>	<u>7.71</u>	3002	8.88	
4396	1644	1.51	1762	1.90	1882	2.35	1994	2.82	2099	3.30	2198	3.78	2295	4.28	2390	4.81	2485	5.36	2576	5.93	<u>2749</u>	<u>7.09</u>	<u>2908</u>	<u>8.28</u>	<u>3055</u>	<u>9.49</u>	
4710	1746	1.80	1855	2.21	1967	2.67	2076	3.18	2178	3.68	2273	4.18	2366	4.71	2456	5.25	2545	5.81	2633	6.40	<u>2804</u>	<u>7.62</u>	<u>2963</u>	<u>8.87</u>			
5024	1848	2.12	1951	2.55	2055	3.03	2159	3.56	2258	4.09	2351	4.63	2440	5.18	2526	5.73	2611	6.31	2695	6.91	2859	8.16	<u>3017</u>	<u>9.47</u>			
5338	1951	2.49	2048	2.94	2145	3.43	2244	3.98	2340	4.54	2431	5.11	2517	5.68	2601	6.27	2682	6.86	2762	7.47	2919	8.75					
5652	2055	2.90	2146	3.37	2237	3.88	2331	4.44	2423	5.03	2512	5.63	2597	6.24	2678	6.84	2756	7.46	2833	8.09	2983	9.39					
5966	2159	3.36	2245	3.85	2332	4.37	2420	4.94	2508	5.55	2593	6.19	2677	6.82	2756	7.46	2833	8.10	2907	8.75	3052	10.09					
6280	2264	3.87	2346	4.38	2428	4.92	2511	5.50	2595	6.13	2678	6.78	2759	7.45	2837	8.12	2912	8.80	2984	9.47							
6594	2369	4.42	2447	4.95	2525	5.51	2604	6.11	2683	6.74	2763	7.42	2842	8.12	2918	8.82	2992	9.53									

182 BCPL 18.25" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
1536	706	0.19																									
1920	743	0.23																									
2304	800	0.30	<u>979</u>	<u>0.48</u>	1174	0.75																					
2688	870	0.38	<u>1047</u>	<u>0.65</u>	1224	0.98	1382	1.33	1525	1.71	1659	2.10															
3072	948	0.49	1101	0.78	<u>1257</u>	<u>1.11</u>	1411	1.50	1550	1.90	1678	2.32	1799	2.75													
3456	1030	0.62	1166	0.93	1304	1.27	<u>1443</u>	<u>1.67</u>	1579	2.10	1705	2.56	1821	3.02	1932	3.50	2038	3.99	2141	4.50							
3840	1116	0.77	1238	1.11	1361	1.47	1486	1.87	<u>1611</u>	<u>2.32</u>	<u>1734</u>	<u>2.80</u>	1849	3.30	1957	3.81	2060	4.33	2159	4.87	2347	5.97					
4224	1204	0.96	1315	1.31	1426	1.70	1539	2.11	<u>1653</u>	<u>2.57</u>	<u>1766</u>	<u>3.06</u>	1879	3.59	1986	4.13	2087	4.69	2183	5.25	2366	6.42	2538	7.63			
4608	1294	1.17	1396	1.55	1497	1.96	1600	2.40	1704	2.86	<u>1808</u>	<u>3.36</u>	<u>1912</u>	<u>3.89</u>	<u>2016</u>	<u>4.47</u>	2117	5.06	2212	5.66	2390	6.87	2558	8.14	2718	9.46	
4992	1386	1.42	1480	1.83	1574	2.26	1667	2.71	1763	3.20	1859	3.71	<u>1955</u>	<u>4.25</u>	<u>2051</u>	<u>4.83</u>	<u>2147</u>	<u>5.43</u>	<u>2241</u>	<u>6.06</u>	2418	7.36	2583	8.69			
5376	1478	1.71	1566	2.14	1653	2.59	1740	3.07	1827	3.57	1916	4.10	2006	4.66	2095	5.24	<u>2183</u>	<u>5.84</u>	<u>2273</u>	<u>6.49</u>	2448	7.85	2611	9.25			
5760	1571	2.04	1654	2.50	1735	2.97	1816	3.47	1897	3.99	1979	4.54	2063	5.11	2146	5.70	2229	6.32	<u>2312</u>	<u>6.97</u>	<u>2479</u>	<u>8.36</u>	2641	9.83			
6144	1665	2.41	1743	2.89	1820	3.40	1896	3.92	1971	4.46	2047	5.02	2125	5.62	2203	6.22	2281	6.85	2359	7.51	<u>2514</u>	<u>8.90</u>	<u>2671</u>	<u>10.41</u>			
6528	1760	2.82	1833	3.33	1905	3.86	1977	4.41	2048	4.97	2120	5.56	2192	6.17	2265	6.80	2338	7.44	2412	8.11	2558	9.51	<u>2705</u>	<u>11.03</u>			
6912	1855	3.29	1924	3.82	1993	4.38	2061	4.95	2128	5.54	2196	6.15	2263	6.77	2331	7.42	2400	8.09	2470	8.78	2609	10.21					
7296	1951	3.80	2016	4.36	2081	4.94	2146	5.54	2214	6.16	2274	6.79	2338	7.44	2402	8.10	2466	8.78	2532	9.50	2663	10.95					
7680	2047	4.38	2109	4.96	2171	5.57	2232	6.19	2294	6.83	2354	7.48	2415	8.15	2475	8.83	2536	9.54	2598	10.27	2722	11.76					
8064	2143	5.00	2202	5.61	2261	6.25	2320	6.90	2378	7.56	2436	8.23	2494	8.93	2552	9.64	2610	10.37	2668	11.11							

200 BCPL 20" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1840	644	0.22																								
2300	677	<u>0.28</u>																								
2760	729	0.36	<u>893</u>	<u>0.57</u>	1071	0.90																				
3220	793	0.46	<u>919</u>	<u>0.67</u>	1090	1.03	1240	1.42	1411	1.80																
3680	863	0.58	1004	0.93	<u>1146</u>	<u>1.33</u>	1287	1.79	1414	2.28	1531	2.78	1641	3.30												
4140	938	0.74	1062	1.11	1189	1.53	<u>1316</u>	<u>2.00</u>	1440	2.52	1555	3.06	1662	3.62	1763	4.19	1860	4.79	1953	5.39						
4600	1017	0.93	1128	1.32	1241	1.76	1355	2.24	<u>1469</u>	<u>2.78</u>	1582	3.36	1687	3.96	1785	4.56	1879	5.19	1970	5.84	2142	7.17				
5060	1097	1.14	1198	1.57	1299	2.03	1403	2.53	<u>1507</u>	<u>3.08</u>	<u>1611</u>	<u>3.67</u>	<u>1714</u>	<u>4.30</u>	1812	4.										

Performance Data

222 BCPL 22.25" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP							
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP				
2280	579	0.28																														
2850	609	0.35																														
3420	656	0.44	827	0.83	980	1.28	1115	1.76																								
3990	713	0.57	859	0.97	1004	1.46	1133	1.98	1251	2.54	1360	3.11																				
4560	777	0.73	903	1.15	1031	1.65	1157	2.22	1271	2.82	1376	3.44	1475	4.09																		
5130	844	0.92	955	1.37	1069	1.89	1183	2.48	1295	3.12	1398	3.80	1494	4.49	1585	5.20	1672	5.93	1756	6.68												
5700	915	1.15	1014	1.64	1116	2.18	1218	2.78	1321	3.44	1422	4.16	1516	4.89	1605	5.65	1690	6.43	1771	7.23	1925	8.87										
6270	987	1.42	1078	1.95	1169	2.52	1262	3.14	1355	3.81	1448	4.54	1541	5.33	1629	6.14	1711	6.95	1791	7.80	1941	9.53	2082	11.33								
6840	1060	1.74	1144	2.30	1227	2.90	1312	3.56	1397	4.24	1482	4.98	1568	5.78	1653	6.63	1736	7.51	1814	8.40	1960	10.21	2098	12.10	2229	14.05						
7410	1135	2.11	1213	2.71	1290	3.35	1367	4.03	1445	4.74	1524	5.50	1603	6.31	1681	7.15	1761	8.07	1838	9.01	1983	10.92	2118	12.90								
7980	1211	2.53	1283	3.17	1355	3.85	1426	4.56	1498	5.30	1571	6.09	1644	6.90	1717	7.76	1790	8.67	1864	9.64	2008	11.67	2141	13.73								
8550	1287	3.02	1355	3.70	1422	4.41	1488	5.14	1555	5.92	1622	6.73	1691	7.58	1759	8.46	1828	9.39	1895	10.34	2033	12.42	2166	14.60								
9120	1364	3.56	1428	4.28	1491	5.03	1553	5.80	1615	6.61	1678	7.45	1742	8.33	1806	9.24	1870	10.17	1934	11.14	2062	13.22	2190	15.45								
9690	1442	4.18	1502	4.94	1561	5.72	1620	6.53	1679	7.38	1737	8.24	1796	9.14	1856	10.07	1917	11.05	1977	12.03	2097	14.12	2218	16.38								
10260	1520	4.87	1576	5.66	1633	6.49	1689	7.34	1744	8.21	1799	9.11	1855	10.05	1911	11.01	1967	11.99	2024	13.01	2139	15.15										
10830	1598	5.63	1652	6.47	1705	7.33	1758	8.21	1811	9.13	1863	10.05	1916	11.03	1968	12.01	2021	13.02	2075	14.08	2183	16.25										
11400	1677	6.48	1728	7.35	1778	8.24	1829	9.17	1879	10.12	1929	11.09	1979	12.09	2029	13.11	2079	14.16	2129	15.23	2232	17.47										
11970	1756	7.41	1804	8.32	1853	9.26	1901	10.22	1949	11.21	1997	12.22	2044	13.24	2091	14.29	2139	15.37	2186	16.46												

245 BCPL 24.5" Wheel Diameter

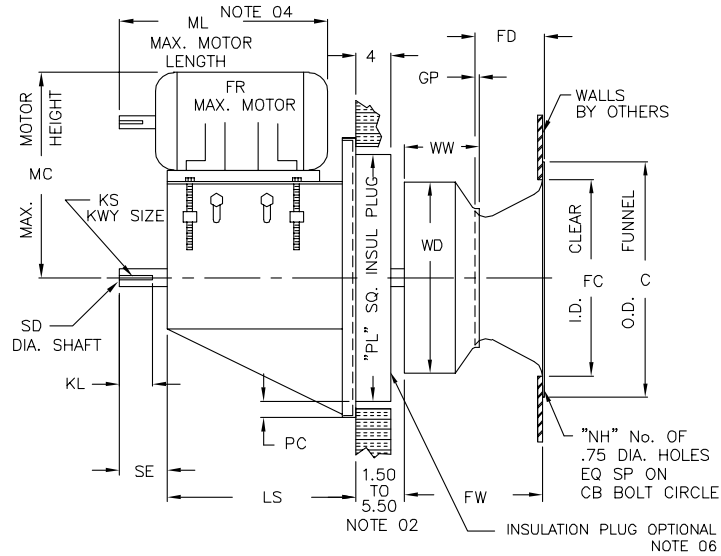
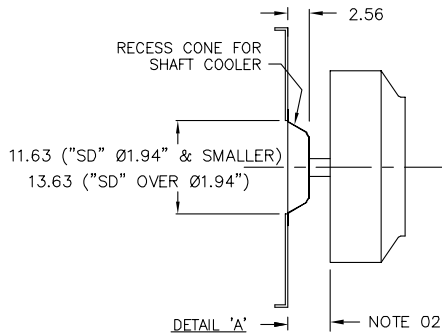
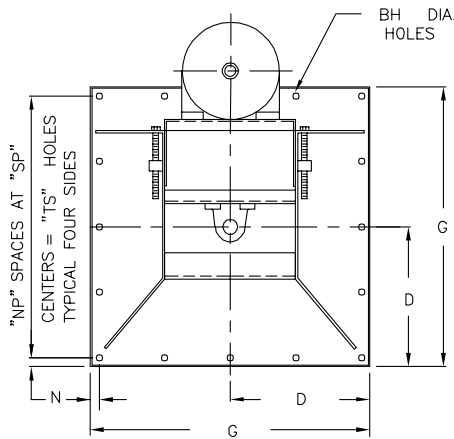
CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP							
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP				
2760	525	0.34																														
3450	553	0.42																														
4140	595	0.54	729	0.86	874	1.34																										
4830	647	0.69	750	1.00	890	1.55	1012	2.13																								
			779	1.17	911	1.76	1029	2.40	1136	3.07	1235	3.77																				
5520	705	0.88	819	1.39	936	2.00	1051	2.70	1154	3.42	1250	4.17	1340	4.96																		
6210	766	1.11	867	1.66	971	2.29	1074	3.00	1176	3.79	1269	4.59	1356	5.42	1439	6.29	1518	7.18	1594	8.08												
6900	830	1.39	920	1.98	1013	2.64	1106	3.36	1199	4.17	1291	5.04	1377	5.93	1457	6.84	1534	7.78	1608	8.75	1748	10.74										
7590	895	1.71	978	2.35	1061	3.05	1145	3.80	1230	4.61	1315	5.50	1399	6.45	1479	7.43	1554	8.43	1626	9.44	1762	11.54	1890	13.71								
8280	962	2.10	1038	2.78	1113	3.51	1190	4.30	1268	5.14	1345	6.02	1423	6.99	1501	8.03	1576	9.09	1647	10.17	1780	12.37	1905	14.65	2024	17.01						
8970	1029	2.54	1100	3.27	1170	4.05	1240	4.87	1311	5.73	1383	6.65	1455	7.63	1526	8.66	1598	9.76	1669	10.91	1801	13.24	1923	15.61								
9660	1098	3.06	1164	3.83	1229	4.65	1294	5.51	1359	6.41	1426	7.37	1492	8.35	1559	9.40	1625	10.50	1692	11.67	1823	14.12	1944	16.63								
10350	1167	3.64	1229	4.47	1290	5.33	1350	6.22	1411	7.16	1472	8.14	1534	9.16	1597	10.24	1659	11.35	1721	12.53	1845	15.02	1966	17.66								
11040	1237	4.30	1295	5.17	1352	6.07	1409	7.02	1466	8.00	1523	9.02	1580	10.06	1639	11.17	1697	12.30	1756	13.50	1872	16.01	1988	18.70								
11730	1308	5.05	1362	5.96	1416	6.91	1470	7.90	1523	8.91	1576	9.96	1630	11.06	1685	12.20	1740	13.37	1795	14.57	1904	17.10	2014	19.84								
12420	1378	5.88	1430	6.85	1481	7.84	1532	8.87	1582	9.92	1632	11.01	1683	12.15	1734	13.32	1785	14.50	1837	15.74	1941	18.32										
13110	1449	6.80	1498	7.81	1547	8.86	1595	9.93	1643	11.03	1690	12.15	1738	13.32	1786	14.53	1834	15.76	1883	17.03	1982	19.68										
13800	1520	7.81	1567	8.88	1613	9.96	1659	11.09	1705	12.24	1750	13.41	1795	14.60	1841	15.86	1886	17.11	1932	18.42	2025	21.12										
14490	1592	8.94	1636	10.04	1680	11.18	1724	12.35	1768	13.55	1811	14.76	1854	16.00	1897	17.27	1940	18.57	1984	19.92												

270 BCPL 27" Wheel Diameter

CFM	0.5" SP		1" SP		1.5" SP		2" SP		2.5" SP		3" SP		3.5" SP		4" SP		4.5" SP		5" SP		6" SP		7" SP		8" SP						
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP			
3352	462	0.39																													
4190	493	0.50	636	0.98	755	1.54																									
5028	535	0.64	662	1.17	776	1.78	874	2.42																							
5866	584	0.83	695	1.39	802	2.05	898	2.76	983	3.50	1068	4.34																			
6704	637	1.06	736	1.67	831	2.35	924	3.12	1008	3.93	1084	4.76	1158	5.66																	
7542	692	1.34	781	1.99	868	2.72	952	3.52	1034	4.38	1111	5.30	1181	6.23	1247	7.19	1312	8.20	1378	9.31											
8380	750	1.68	831	2.38	910	3.15	987	3.98	1062	4.88	1137	5.85	1207	6.85	1272	7.87	1333	8.90	1392	9.98	1510	12.32									
9218	809	2.07	883	2.83	956	3.65	1027	4.52	1097	5.46	1165	6.44	1233	7.50	1299	8.61	1360	9.72	1418	10.85	1526	13.16	1633	15.70							
10056	870	2.55	938	3.36	1005	4.22	1071	5.14	1136	6.11	1199	7.12	1262	8.20	1325	9.35	1386	10.54	1444	11.74	1552	14.21	1651	16.72	1749	19.43					
10894	931																														

Dimensional Data

Arrangement 9



NOTES:

1. Dimensions apply to unboxed assembly only.
2. The minimum clearance between the wheel and insulated plug or mounting panel is 1.50" shaft is selected to include up to a 4" thick insulated plug without shaft change. Consult factory for larger than 4" thick insulated plug. See Detail "A" for shaft cooler recess cone and shaft seal on fans over 300°F with 4" or larger insulation plug or wall thickness.
3. CW rotation is standard. CCW rotation is optional.
4. To ensure selected motor will fit standard assembly, compare the maximum motor length, dimension "ML," to overall motor length.
5. Type BC wheel is standard on all sizes. Type BAF wheel is optional on sizes 182-490.
6. Customer to provide wall opening with adequate clearance for installation of wheel and insulation plug when provided.

FAN SIZE	BH	C	CB	D	FC	FD	FR	FW	G	GP	KL	KS	
												CL I	CL II
122	0.56	15.75	14.75	11.38	13.25	4.38	213T	8.69	22.75	0.31	4.00	.38x.19	.38x.19
135	0.56	16.75	15.75	11.38	14.56	4.81	213T	9.69	22.75	0.38	4.00	.38x.19	.38x.19
150	0.56	18.25	17.25	11.38	16.19	5.38	215T	10.81	22.75	0.38	4.00	.38x.19	.38x.19
165	0.56	20.00	19.00	14.81	17.75	5.94	215T	11.81	29.63	0.44	4.00	.38x.19	.38x.19
182	0.56	22.00	21.00	14.81	19.50	6.56	254T	13.06	29.63	0.56	4.50	.38x.19	.50x.25
200	0.56	24.38	23.38	14.81	21.38	7.19	254T	14.25	29.63	0.63	4.50	.38x.19	.50x.25
222	0.56	26.63	25.50	16.00	23.75	8.00	256T	15.94	32.00	0.69	4.50	.38x.19	.50x.25
245	0.56	28.63	27.75	16.00	27.00	8.81	256T	17.50	32.00	0.75	4.50	.38x.19	.50x.25
270	0.69	31.00	29.75	18.31	29.00	9.69	284T	19.31	36.63	0.88	5.00	.50x.25	.50x.25
300	0.69	34.88	33.63	18.31	31.62	10.75	284T	21.44	36.63	1.00	5.00	.50x.25	.50x.25
330	0.69	38.50	37.25	21.81	34.75	11.81	286T	23.56	43.63	1.06	5.00	.50x.25	.50x.25
365	0.69	42.00	40.75	21.81	39.50	13.06	286T	26.25	43.63	0.94	5.50	.50x.25	.63x.31
402	0.69	45.38	44.13	27.50	42.50	14.44	326T	28.94	55.00	1.06	5.50	.50x.25	.63x.31
445	0.69	49.88	48.63	27.50	47.25	15.94	326T	32.00	55.00	1.13	5.50	.63x.31	.63x.31
490	0.69	54.38	53.13	27.50	52.00	17.56	326T	35.31	55.00	1.25	5.50	.63x.31	.63x.31

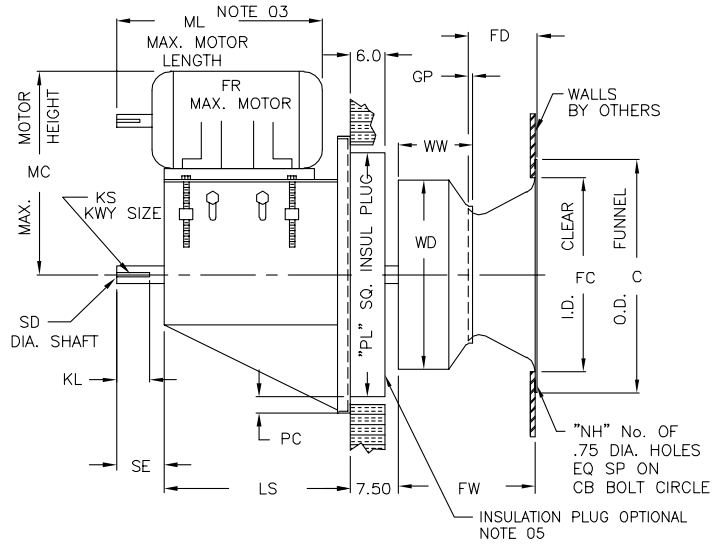
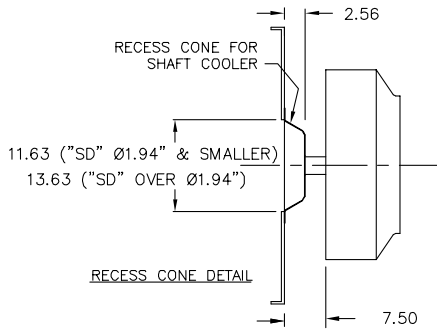
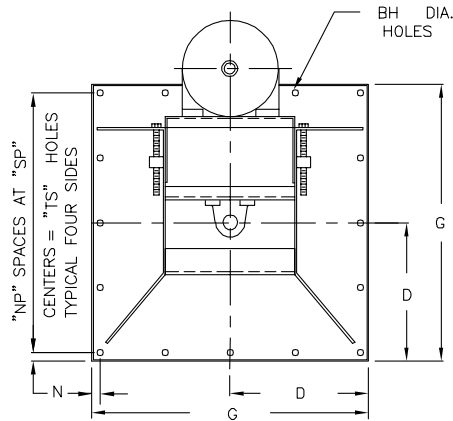
FAN SIZE	LS	MC	ML	N	NH	NP	PC	PL	SD		SE	SP	TS	WD	WW
									CL I	CL II					
122	17.50	24.25	19.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	12.25	4.69
135	17.50	24.25	19.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	13.50	5.31
150	18.50	24.25	20.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	15.00	5.88
165	18.50	24.25	20.13	1.06	8	4	1.81	26.00	1.437	1.687	5.00	6.88	27.50	16.50	6.38
182	21.00	27.50	24.13	1.06	8	4	1.81	26.00	1.437	1.937	5.50	6.88	27.50	18.25	7.13
200	21.00	27.50	24.13	1.06	8	4	1.81	26.00	1.687	1.937	5.50	6.88	27.50	20.00	7.75
222	22.50	27.50	25.50	1.13	8	4	1.88	28.25	1.687	1.937	5.50	7.44	29.75	22.25	8.69
245	22.50	27.50	25.50	1.13	8	4	1.88	28.25	1.687	1.937	5.50	7.44	29.75	24.50	9.50
270	23.00	29.50	26.63	1.25	8	6	2.25	32.13	1.937	2.187	6.00	5.69	34.13	27.00	10.56
300	23.00	29.50	26.63	1.25	16	6	2.25	32.13	1.937	2.187	6.00	5.69	34.13	30.00	11.75
330	24.50	29.50	28.13	1.38	16	6	2.38	38.88	1.937	2.187	6.00	6.81	40.88	33.00	12.88
365	24.50	29.50	28.13	1.38	16	6	2.38	38.88	1.937	2.437	6.50	6.81	40.88	36.50	14.19
402	27.50	33.00	31.25	1.25	16	6	3.38	48.25	2.187	2.437	6.50	8.75	52.50	40.25	15.63
445	27.50	33.00	31.25	1.25	16	6	3.38	48.25	2.437	2.687	6.50	8.75	52.50	44.50	17.25
490	27.50	33.00	31.25	1.25	16	6	2.50	50.00	2.437	2.687	6.50	8.75	52.50	49.00	19.00

Dimensions are not to be used for construction. Certified drawings are available upon request.

AC11107J

Dimensional Data

Arrangement 9



NOTES:

1. Dimensions apply to unboxed assembly only.
2. CW rotation is standard. CCW rotation is optional.
3. To ensure selected motor will fit standard assembly, compare the maximum motor length, dimension "ML," to overall motor length.
4. Type BC wheel is standard on all sizes. Type BAF wheel is optional on sizes 182-490.
5. Customer to provide wall opening with adequate clearance for installation of wheel and insulation plug when provided.

FAN SIZE	BH	C	CB	D	FC	FD	FR	FW	G	GP	KL	KS		LS
												CL I	CL II	
122	0.56	15.75	14.75	11.38	13.25	4.38	213T	8.69	22.75	0.31	4.00	.38x.19	.38x.19	17.50
135	0.56	16.75	15.75	11.38	14.56	4.81	213T	9.69	22.75	0.38	4.00	.38x.19	.38x.19	17.50
150	0.56	18.25	17.25	11.38	16.19	5.38	215T	10.81	22.75	0.38	4.00	.38x.19	.38x.19	18.50
165	0.56	20.00	19.00	14.81	17.75	5.94	215T	11.81	29.63	0.44	4.00	.38x.19	.38x.19	18.50
182	0.56	22.00	21.00	14.81	19.50	6.56	254T	13.06	29.63	0.56	4.50	.38x.19	.50x.25	21.00
200	0.56	24.38	23.38	14.81	21.38	7.19	254T	14.25	29.63	0.63	4.50	.38x.19	.50x.25	21.00
222	0.56	26.63	25.50	16.00	23.75	8.00	256T	15.94	32.00	0.69	4.50	.38x.19	.50x.25	22.50
245	0.56	28.63	27.75	16.00	27.00	8.81	256T	17.50	32.00	0.75	4.50	.38x.19	.50x.25	22.50
270	0.69	31.00	29.75	18.31	29.00	9.69	284T	19.31	36.63	0.88	5.00	.50x.25	.50x.25	23.00
300	0.69	34.88	33.63	18.31	31.62	10.75	284T	21.44	36.63	1.00	5.00	.50x.25	.50x.25	23.00
330	0.69	38.50	37.25	21.81	34.75	11.81	286T	23.56	43.63	1.06	5.00	.50x.25	.50x.25	24.50
365	0.69	42.00	40.75	21.81	39.50	13.06	286T	26.25	43.63	0.94	5.50	.50x.25	.63x.31	24.50
402	0.69	45.38	44.13	27.50	42.50	14.44	326T	28.94	55.00	1.06	5.50	.50x.25	.63x.31	27.50
445	0.69	49.88	48.63	27.50	47.25	15.94	326T	32.00	55.00	1.13	5.50	.63x.31	.63x.31	27.50
490	0.69	54.38	53.13	27.50	52.00	17.56	326T	35.31	55.00	1.25	5.50	.63x.31	.63x.31	27.50

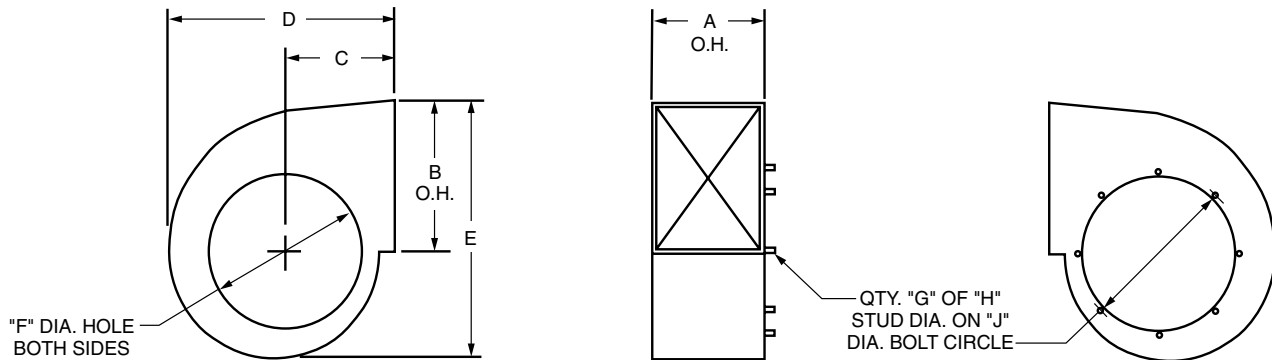
FAN SIZE	MC	ML	N	NH	NP	PC	PL	SD		SE	SP	TS	WD	WW	MAX. SAFE SHAFT SPEED	
								CL I	CL II						CL I	CL II
122	24.25	19.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	12.25	4.69	2512	3087
135	24.25	19.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	13.50	5.31	2364	2899
150	24.25	20.13	1.00	8	4	1.75	19.25	1.437	1.687	5.00	5.19	20.75	15.00	5.88	1908	2316
165	24.25	20.13	1.06	8	4	1.81	26.00	1.437	1.687	5.00	6.88	27.50	16.50	6.38	1779	2090
182	27.50	24.13	1.06	8	4	1.81	26.00	1.437	1.937	5.50	6.88	27.50	18.25	7.13	1520	2180
200	27.50	24.13	1.06	8	4	1.81	26.00	1.687	1.937	5.50	6.88	27.50	20.00	7.75	1800	2045
222	27.50	25.50	1.13	8	4	1.88	28.25	1.687	1.937	5.50	7.44	29.75	22.25	8.69	1419	1659
245	27.50	25.50	1.13	8	4	1.88	28.25	1.687	1.937	5.50	7.44	29.75	24.50	9.50	1247	1523
270	29.50	26.63	1.25	8	6	2.25	32.13	1.937	2.187	6.00	5.69	34.13	27.00	10.56	1397	1668
300	29.50	26.63	1.25	16	6	2.25	32.13	1.937	2.187	6.00	5.69	34.13	30.00	11.75	1257	1496
330	29.50	28.13	1.38	16	6	2.38	38.88	1.937	2.187	6.00	6.81	40.88	33.00	12.88	1097	1303
365	29.50	28.13	1.38	16	6	2.38	38.88	1.937	2.437	6.50	6.81	40.88	36.50	14.19	967	1283
402	33.00	31.25	1.25	16	6	3.38	48.25	2.187	2.437	6.50	8.75	52.50	40.25	15.63	903	1163
445	33.00	31.25	1.25	16	6	3.38	48.25	2.437	2.687	6.50	8.75	52.50	44.50	17.25	817	1052
490	33.00	31.25	1.25	16	6	2.50	50.00	2.437	2.687	6.50	8.75	52.50	49.00	19.00	742	956

Dimensions are not to be used for construction. Certified drawings are available upon request.

AC15384C

Dimensional Data

Fan Housing Details



NOTE: Rotation must be specified as viewed from drive side to insure proper location of inlet cone mounting studs. Studs provided on inlet side only.

FAN SIZE	HOUSING DIMENSIONS (IN.)								
	A	B	C	D	E	F	G	H	J
122	9 ³ / ₄	13	9 ¹ / ₄	19 ¹³ / ₁₆	22 ¹ / ₄	13 ³ / ₄	8	³ / ₈	14 ³ / ₄
135	10 ¹³ / ₁₆	14 ⁵ / ₁₆	10 ¹ / ₄	21 ⁷ / ₈	24 ¹ / ₂	14 ⁹ / ₁₆	8	³ / ₈	15 ³ / ₄
150	11 ¹⁵ / ₁₆	15 ⁷ / ₈	11 ⁷ / ₁₆	24 ⁵ / ₁₆	27 ⁹ / ₁₆	16 ⁹ / ₁₆	8	³ / ₈	17 ¹ / ₄
165	13 ³ / ₁₆	17 ⁷ / ₁₆	12 ⁵ / ₈	26 ³ / ₄	29 ⁷ / ₈	17 ³ / ₄	8	³ / ₈	19
182	14 ³ / ₁₆	19 ³ / ₈	14	29 ¹¹ / ₁₆	33 ³ / ₈	19 ¹ / ₂	8	³ / ₈	21
200	15 ¹⁵ / ₁₆	21 ³ / ₁₆	15 ⁹ / ₁₆	32 ⁵ / ₈	36 ⁹ / ₁₆	21 ³ / ₈	8	³ / ₈	23 ³ / ₈
222	17 ¹¹ / ₁₆	23 ³ / ₁₆	17 ⁹ / ₁₆	36 ¹ / ₄	40 ⁹ / ₁₆	23 ³ / ₄	8	³ / ₈	25 ¹ / ₂
245	19 ⁷ / ₁₆	25 ¹⁵ / ₁₆	19	40	44 ³ / ₈	27	8	³ / ₈	27 ³ / ₄
270	21 ³ / ₈	28 ⁵ / ₈	20 ⁹ / ₁₆	44 ⁷ / ₈	49	29	8	³ / ₈	29 ³ / ₄
300	23	31 ¹³ / ₁₆	23 ³ / ₁₆	49 ¹ / ₁₆	54 ⁷ / ₁₆	31 ⁵ / ₈	16	³ / ₈	33 ⁵ / ₈
330	25 ¹ / ₄	35 ¹ / ₈	25 ³ / ₄	54 ⁷ / ₈	60	34 ³ / ₄	16	³ / ₈	37 ¹ / ₄
365	27 ³ / ₄	38 ¹¹ / ₁₆	28 ¹ / ₂	60	66 ⁹ / ₁₆	39 ¹ / ₂	16	³ / ₈	40 ³ / ₄
402	30 ³ / ₈	42 ⁵ / ₈	31 ¹ / ₂	66 ³ / ₁₆	73 ¹ / ₁₆	42 ¹ / ₂	16	³ / ₈	44 ¹ / ₈
445	33 ⁷ / ₁₆	47 ¹ / ₈	34 ⁷ / ₈	73 ³ / ₈	80 ³ / ₄	47 ¹ / ₄	16	³ / ₈	48 ⁵ / ₈
490	36 ⁷ / ₁₆	51 ¹⁵ / ₁₆	38 ¹ / ₂	80 ¹¹ / ₁₆	89	52	16	³ / ₈	53 ¹ / ₈

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

Belt Centers

MOTOR FRAME SIZE	FAN SIZE							
	122-165		182-245		270-365		402-490	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
143T								
145T	13	16 ¹ / ₂	14	17 ¹ / ₂	14 ¹ / ₂	18	16	19 ¹ / ₂
182T								
184T	14	17 ¹ / ₂	15	18 ¹ / ₂	15 ¹ / ₂	19	17	20 ¹ / ₂
213T								
215T	14 ³ / ₄	18 ¹ / ₄	15 ³ / ₄	19 ¹ / ₄	16 ¹ / ₄	19 ³ / ₄	17 ³ / ₄	21 ¹ / ₄
254T								
256T			16 ³ / ₄	20 ¹ / ₄	17 ¹ / ₄	20 ³ / ₄	18 ³ / ₄	22 ¹ / ₄
284T								
286T					18	21 ¹ / ₂	19 ¹ / ₂	23
324T								
326T							20 ¹ / ₂	24

Typical Specifications

Fans shall be Type BCPL Flat Blade BI SWSI Plug Fans, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE — Fans shall be tested and rated in accordance with industry accepted test codes and shall be guaranteed by the manufacturer to deliver rated published performance levels.

PLUG PANEL — Plug panel shall be of minimum 7 gauge steel with formed flanges to maintain flatness and rigidity. Panel shall be prepunched for bolt mounting. Panel assembly may also be welded in place. The “Cross Frame” bearing support is designed for maximum stability and load spreading. Bearings are serviceable without disassembly of panel or frame. Plug assembly is available for both horizontal and vertical application. Horizontal construction is standard. Vertical construction must be specified.

WHEEL — BCPL wheels shall be backward inclined, non-overloading, single thickness plate type, designed for maximum efficiency and quiet operation. Wheels shall be constructed of heavy gauge steel, solid welded to both the back plate and rim. Wheels shall have tapered spun wheel cones or shrouds, providing stable flow and high rigidity.

Optional backward inclined airfoil blade wheels shall use die-formed airfoil blades continuously welded to the rim and back plate. Partial welding will not be acceptable.

Clockwise or counterclockwise rotation is available. Specify rotation as viewed from drive side.

SHAFT — Shafts shall be AISI 1040 or 1045 hot rolled steel accurately turned, ground, polished, and ring gauged for accuracy. Shafts shall be sized for a first critical speed of at least 1.43 times the maximum speed for the class.

BEARINGS — Bearings shall be either ball or spherical roller, heavy duty, self-aligning, pillow block type. Bearing selection is based upon L-10 minimum life of 40,000 hours or average life of 200,000 hours.

OPTIONAL ALL WELDED HOUSING — Housing shall be of heavy gauge steel. Housing shall be provided with wheel opening on each side and weld studs on inlet side for cone mounting. Specify rotation and discharge as viewed from drive side to insure proper stud placement. Housing supports and attachments for wall mounting to be provided by others.

ADJUSTABLE MOTOR BASE — Adjustable motor base is standard and shall have a four point leveling and tension adjustment to insure proper drive belt alignment. The motor base shall be heavy gauge steel and prepunched to accept standard motor frame specified.

OPTIONAL INLET VANES — Inlet vane blades are cantilever design with supports equipped with permanently lubricated needle bearings and ball joints for smooth and easy operation. Vane assemblies are external type for sizes 122 through 150 and nested for sizes 165 through 490. Standard inlet vanes are applicable to 300°F. Consult factory for higher temperatures and dimensions.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at the specified operating speed or maximum RPM allowed for the particular construction type. Each wheel shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 “Balance Quality and Vibration Levels for Fans” to Fan Application Category BV-3, Balance Quality Grade G6.3. Balance readings shall be taken by electronic type equipment in the axial, vertical, and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.

GUARANTEE — The manufacturer shall guarantee the workmanship and materials for its BCPL Flat Blade BI SWSI Plug Fans for at least one (1) year from startup or eighteen (18) months from shipment, whichever occurs first.

INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS
MIXED FLOW FANS | TUBEAXIAL & VANEAXIAL FANS | PROPELLER WALL FANS | PROPELLER ROOF VENTILATORS
CENTRIFUGAL ROOF & WALL EXHAUSTERS | CEILING VENTILATORS | GRAVITY VENTILATORS | DUCT BLOWERS
RADIAL BLADED FANS | RADIAL TIP FANS | HIGH EFFICIENCY INDUSTRIAL FANS | PRESSURE BLOWERS
LABORATORY EXHAUST FANS | FILTERED SUPPLY FANS | MANCOOLERS | FIBERGLASS FANS | CUSTOM FANS



TWIN CITY FAN & BLOWER
WWW.TCF.COM

5959 TRENTON LANE N | MINNEAPOLIS, MN 55442 | PHONE: 763-551-7600 | FAX: 763-551-7601

©2018 Twin City Fan Companies, Ltd., Minneapolis, MN. All rights reserved. Catalog illustrations cover the general appearance of Twin City Fan & Blower products at the time of publication and we reserve the right to make changes in design and construction at any time without notice.