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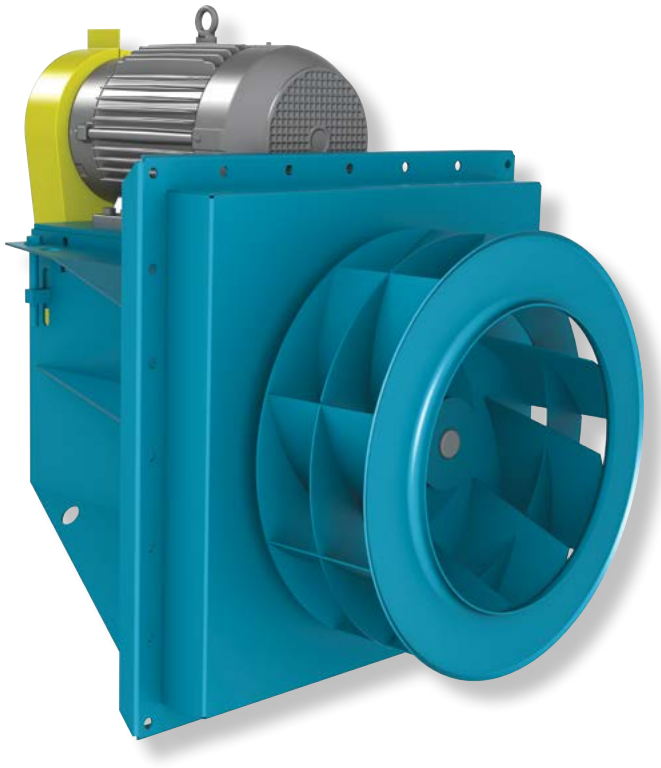
TWIN CITY FAN

INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

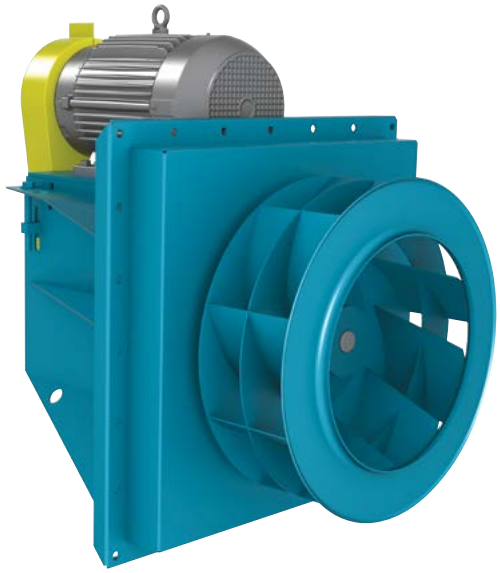
HIGH EFFICIENCY PLUG FANS

Model BEPL

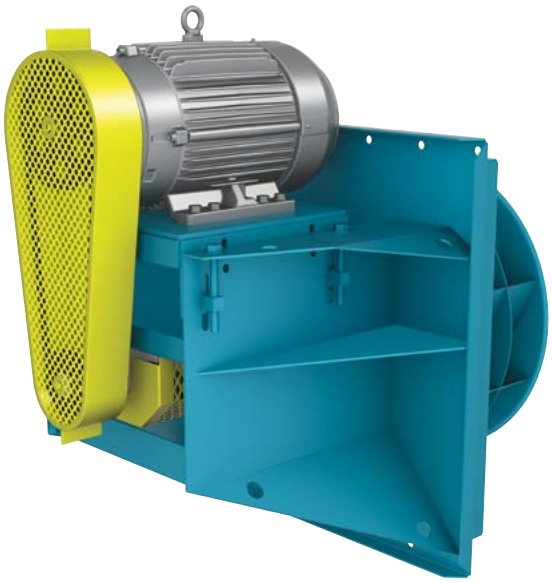


Overview

BEPL



BEPL Plug Fan,
Arrangement 9



Plug fans offer great versatility for complex system configurations. Equipped with a gusseted mounting panel, they are mounted directly to the plenum wall separating the motor and drive components from the process air. Plug fans provide high efficiency recirculation air with the benefit of easy installation and removal.

Typical Applications Include

Air Curtains, Dyers, Freezers, High Temperature, Kilns, Ovens, Process Applications, Product Cooling, Re-Circulation, Air Heaters, Ceiling, Wall and Floor Panel Plenums, Degreasers, Dryers, Dust Collectors, Evaporators, Packaged Air Handlers, Parts Washers, Penthouses, Smoke Houses, Space Heaters, Spray Booths and other High Temperature Applications

Impeller Types

Backward Curved

Arrangements

Available in Arrangement 1P, 9 and 9P (Belt Driven) and Arrangement 4, 4P and 8P (Direct Drive) configurations

Optional Construction

High Temperature, Insulated Plug, Spark Resistant, All-Welded Housing, Variable Inlet Vanes, Integral Inlet Cone Assembly

Sizes and Performance

12" to 49" impeller diameters (305 mm to 1,245 mm)
Airflow to 76,000 CFM (129,100 m^3/hour)
Static pressure to 12" w.g. (2,980 Pa)

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For complete product performance, drawings and available accessories, download our Fan Selector software at *tcf.com*.

Overview

BEPL

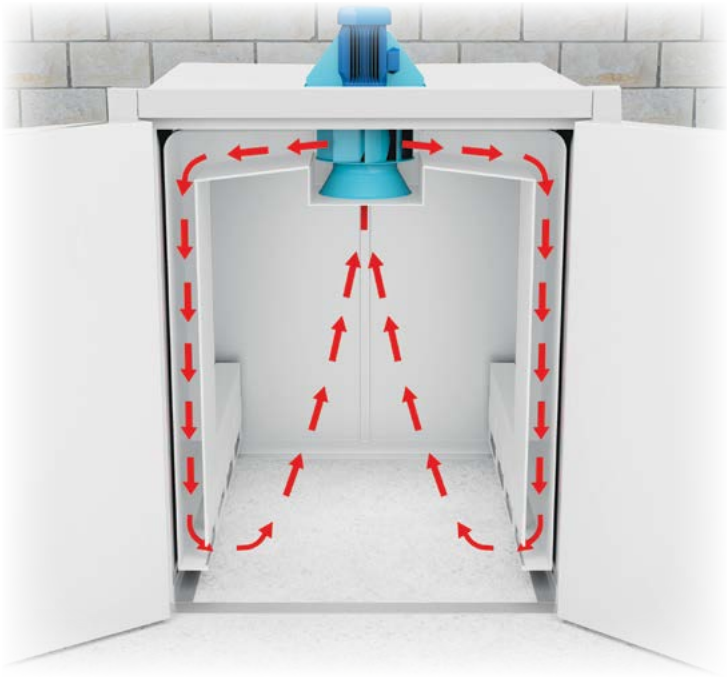
Model BEPL plug fans from Twin City Fan & Blower are compact, versatile and offer the highest efficiency in the industry. Their versatility allows them to be used for air circulation in a variety of industrial applications including air heaters, degreasers, dryers, dust collectors, kilns, ovens, parts 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 impeller 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.

Model BEPL plug fans feature SWSI backward curved, non-overloading, single thickness airfoil type impellers. The unique impeller design offers increased efficiency over competitor's airfoil blade designs yet can handle airstreams not conducive to traditional hollow airfoil shapes.

The plug fan's motor and drive are protected from high temperatures by the customer's chamber wall or the optional 4" or 6" 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. Horizontal construction is standard. Vertical mounting can be provided when specified. An all-welded housing and an integral inlet cone are available as options.

Paint Booth Ventilation

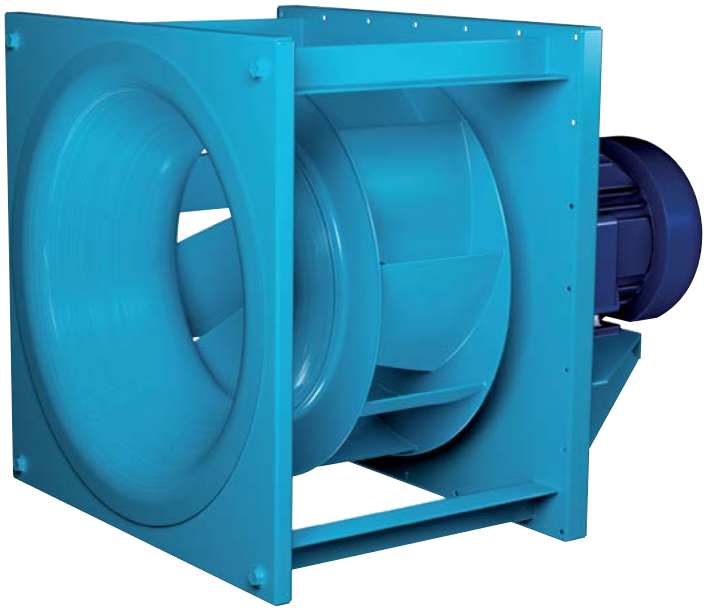


Oven Airflow

Energy Regulations

Twin City Fan & Blower supports energy efficiency regulations enacted by the U.S. Department of Energy (DOE) and specific states. The selection and application of fan products is a significant part of these regulations. Engineers and specifiers must understand how to apply TCF products to their specific applications to meet applicable DOE and state regulatory requirements. Twin City Fan & Blower has made significant investments in product testing and development to provide efficient products. Developments in Twin City Fan & Blower's Fan Selector software are in place to aid your decision in product selection to assist with meeting the efficiency requirements as stipulated in the applicable regulations.

CONSTRUCTION FEATURES



Non-Insulated,
Arrangement 4 BEPL

Adjustable Motor Base

The motor base is standard in Arrangement 9 with leveling and tension adjustment to ensure proper drive belt alignment. The motor base is heavy-gauge steel and prepunched to accept the standard motor frame specified.

Plug Panel

Constructed of steel with formed flanges to maintain flatness and rigidity. Panel is 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

Available for both horizontal and vertical applications. Horizontal construction is standard. Vertical construction will be provided when specified.

Inlet Cones

Heavy-gauge and spun to match the impeller intake rim to ensure smooth airflow. Inlet cone flange is prepunched for mounting. Inlet cones are shipped loose as standard. An integral inlet cone is optional.

Impellers

Impellers are assembled of formed blades, welded to both back plate and rim. Impellers are statically and dynamically balanced.

Shafts

Shafts are AISI Grade 1040 or 1045 hot-rolled steel accurately turned, ground, polished and ring-gauged for verification. Shafts are sized for a first critical speed of at least 1.43 times the maximum speed of the class.

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. Split roller bearings are not recommended.

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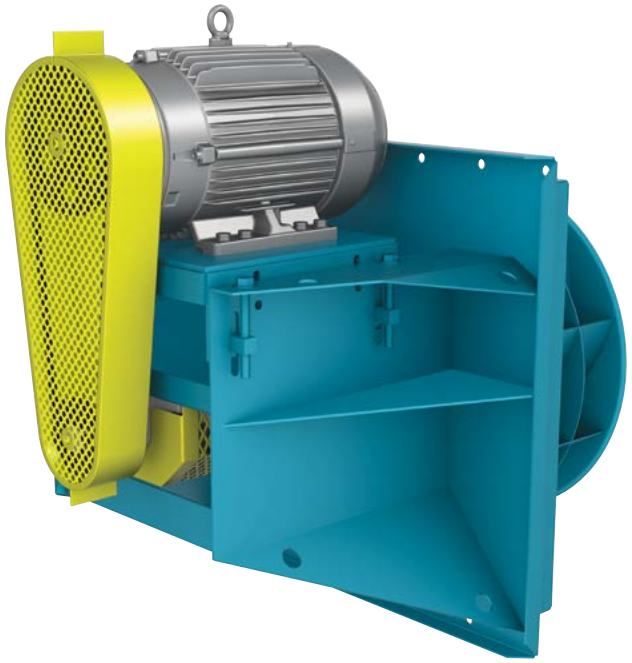

High Temperature Construction

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

501-800°F: Includes the modifications above with the addition of high temperature aluminum paint. Minimum 4" insulation is required and is available as an optional item from TCF. Be sure to apply derating factors for high temperature construction. See Table 7 on page 11.

801-1000°F: Includes the modifications above with the addition of 316 stainless steel impeller and shaft. Also includes shaft extension for the required 6" insulation. 6" insulated plug is available as an optional item. Be sure to apply stainless steel derating factors for temperature. See Table 7 on page 11.

Insulated Plug

Protects motor and drive components from heat. An insulated plug is recommended for temperatures above 500°F. Available in 2", 4" and 6" thicknesses. Special thicknesses to match customer's insulated wall are available. Plug is assembled to mounting panel when ordered. See Table 1 on page 10 for maximum RPMs based on different thicknesses of the plug.

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 ensure the safe handling of such gases. Twin City Fan & Blower offers the following classifications of spark resistant construction per AMCA Standard 99. 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 B - BEPL impellers employ high strength steel, therefore construction in aluminum must be reviewed by the factory for availability. The maximum temperature is not to exceed 200°F. Pricing available upon application review with substantial reduction in speed.

Type C - The fan shall be so constructed that a shift of the impeller or shaft will not permit two ferrous parts of the fan to rub or strike.

All-Welded Housing

Heavy-gauge steel housing is provided with impeller opening on each side and weld studs on the inlet side for cone mounting. Specify rotation and discharge as viewed from drive side to ensure proper stud placement. Housing supports and attachments for wall mounting to be provided by others. See page 13 for dimensions.

Variable Inlet Vanes

Vane blades are cantilever design or center supported, equipped with permanently lubricated bearings and ball joints for smooth and easy operation. Vane assemblies are external type for sizes 122 through 165 and nested for sizes 182 through 490. Standard inlet vanes are applicable to 300°F. Consult factory for higher temperatures.

Integral Inlet Cone Assembly

Includes four pieces of angle, welded to the insulated plug or mounting panel, which serve to pre-align the inlet funnel within the impeller. The entire unit can be installed or removed through the same hole in the customer's enclosure, without the need for additional mounting or alignment of the inlet cone.

Arrangement 1P

Belt driven arrangement where the fan is mounted to grade and the motor is mounted separate from the fan. Typically used on larger fans and/or larger HP motors where the customer's wall may not be sufficient by itself. Mounting to the foundation also makes it better for meeting lower vibration requirements. Mounting panel is optional on arrangement 1P.

Arrangement 4

Direct drive arrangement where the impeller is mounted to the motor shaft. The design is more compact and requires less maintenance due to not having fan shaft, bearings or belts. High airstream temperatures may limit the use of this arrangement.

Arrangement 4P

Same as the arrangement 4 fan except the fan is mounted to grade. Typically used where the customer's wall may not be sufficient by itself. Mounting to the foundation also makes it better for meeting lower vibration requirements. Mounting panel is optional.

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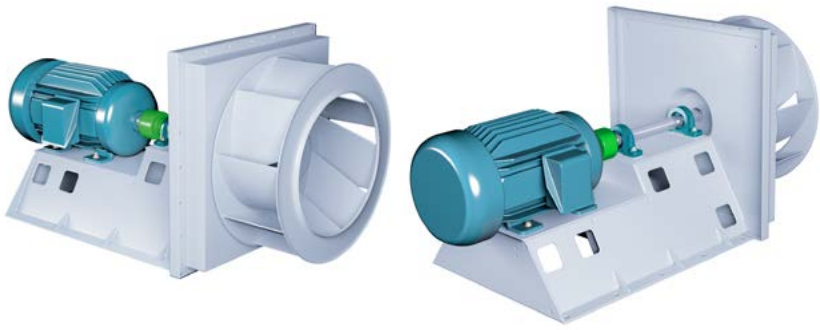
Arrangement 8P

Direct drive arrangement where the motor shaft is coupled to the fan shaft. The entire assembly is mounted to grade. Typically used on larger fans and/or larger HP motors where the customer's wall may not be sufficient by itself. Mounting to the foundation also makes it better for meeting lower vibration requirements. Mounting panel is optional.

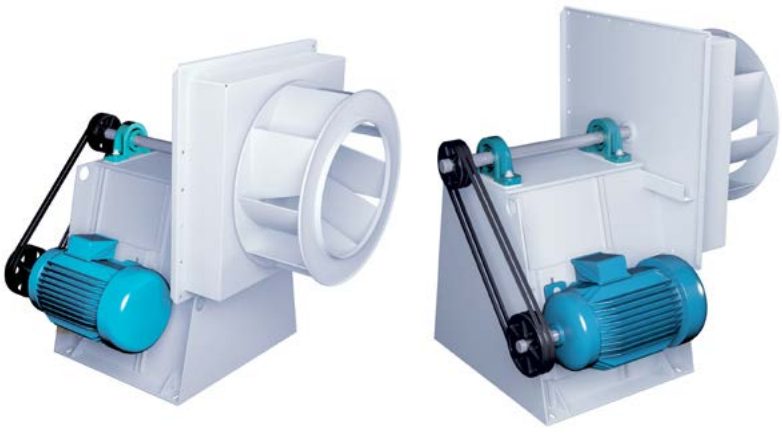


Arrangement 9

Arrangement 9 is the most common plug fan arrangement. It is fully supported by the customer's wall. Plug fans are housed in the customer's enclosure in applications where the system plenum acts as the fan housing. Unlike the plenum fan, motor, shaft and bearings are outside of the process airstream.

Arrangement 9P

Same as the arrangement 9 fan except the fan is mounted to grade. Typically used on larger fans and/or larger HP motors where the customer's wall may not be sufficient by itself. Mounting to the foundation also makes it better for meeting lower vibration requirements. Mounting panel is optional.



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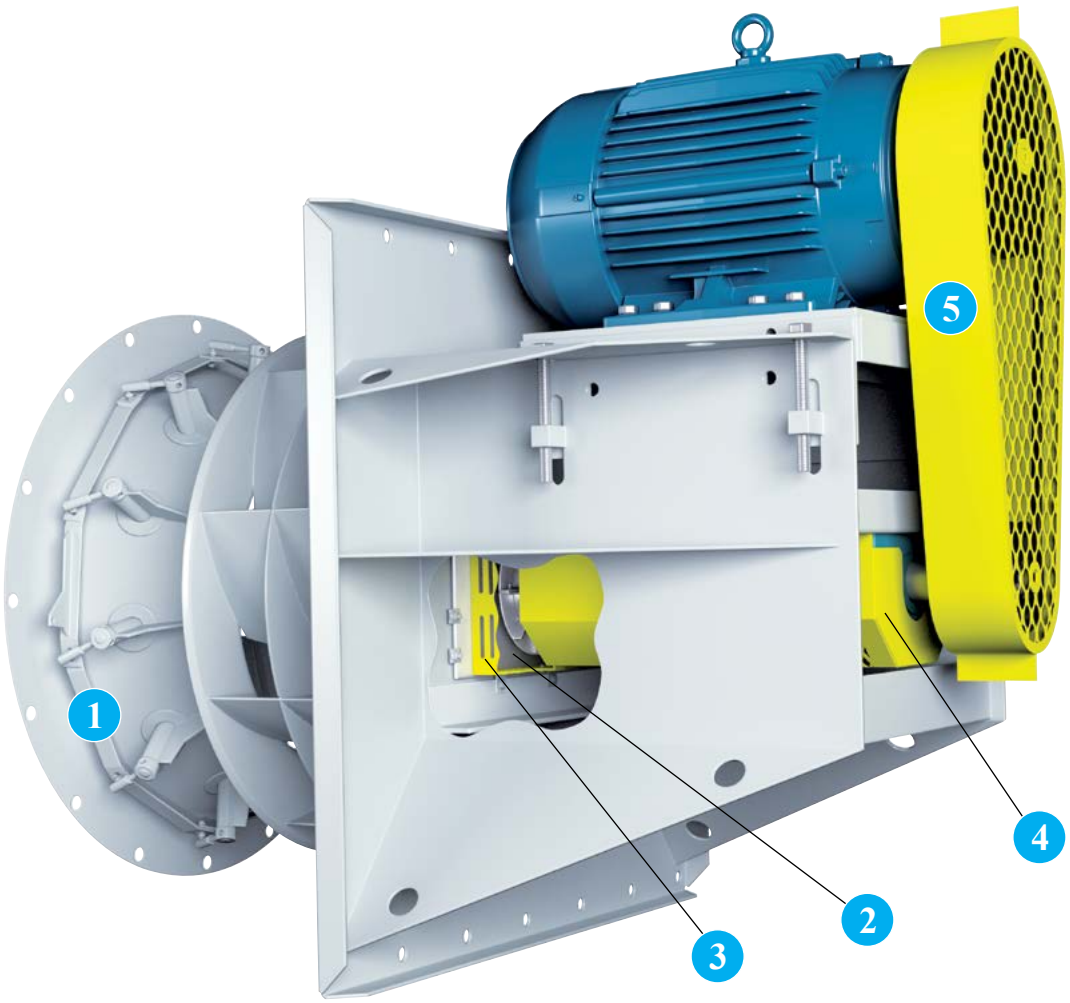
OPTIONS/ACCESSORIES



1 **Inlet Vanes** For reduced flow situations with relatively clean air, inlet vane type dampers are available to maintain fan efficiency. The inlet vanes are external type attached to the inlet of the fan. Standard construction inlet vanes are suitable in applications up to 300°F. High temperature inlet vanes are also available for temperatures up to 600°F.

2 **Shaft Coolers** Cast aluminum shaft cooler dissipates the heat transferred to the shaft from the airstream protecting the fan bearings. Recommended for applications over 300°F.

3 **Shaft Seals** reduce leakage and protect the bearings from a contaminated airstream. Standard seals are constructed of Tetraglas compressed between an aluminum cover plate and the fan housing. The standard shaft seal is not gas tight. Special seals are available for low leakage applications requiring more protection.

4 **Shaft and Bearing Guards** Sheet metal guards cover shaft and bearings and come with extended lube lines to a common point outside of the guard. A guard spanning the shaft between the bearings is available to provide open access to bearings for lubrication and vibration monitoring.

5 **Belt Guards** Belt guard protects personnel from the moving drive parts. OSHA and quick access guards are available.

Other Accessories Include:

- Piezometer Ring
- Inlet Screens
- Special Impeller Widths

Mounting is accomplished by providing a hole larger than the impeller diameter through the chamber wall. The impeller, 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 impeller drive shaft. The impeller 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 impeller (unhoused) or with a housing as shown in Figure C. Performance data in this catalog is for unhoused impeller application.

Walls must be designed by the users to support the dynamic loads of the fan without resonance to eliminate vibration and bearing failure.

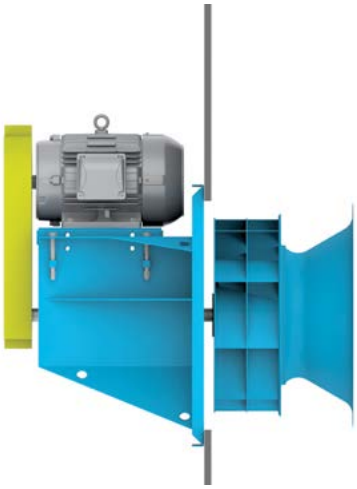


Figure A

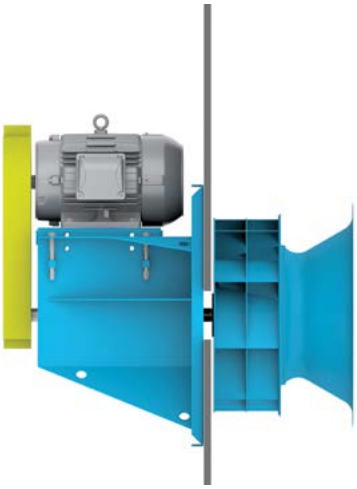


Figure B

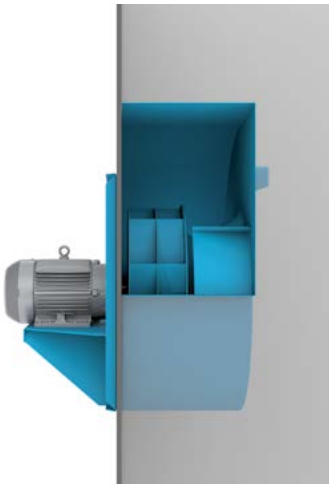
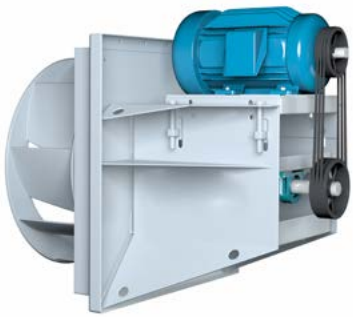


Figure C
(shown with optional housing)

MOUNTING ARRANGEMENTS



Horizontal

Vertical Down

Vertical Up

To ensure proper motor selection, consideration must be given to starting torque requirements (fan impeller inertia WR^2) along with the operating BHP. Table 1 lists the WR^2 factors for different impeller 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 1. Maximum Fan RPMs, Impeller Weights and WR^2

FAN SIZE	CLASS II					CLASS III				
	MAXIMUM RPM			IMPELLER WT. (LBS.)	WR^2 (LBS-FT^2)	MAXIMUM RPM			IMPELLER WT. (LBS.)	WR^2 (LBS-FT^2)
	NO PLUG	4" PLUG	6" PLUG			NO PLUG	4" PLUG	6" PLUG		
122	3777	3777	3000	21	3	-	-	-	-	-
150	3352	3352	2875	24	4	-	-	-	-	-
165	2975	2975	2425	32	7	-	-	-	-	-
182	2566	2566	2566	37	12	3453	3453	3230	46	12
200	2341	2341	2341	42	17	3151	3151	2965	52	17
222	2105	2105	1905	67	28	2833	2833	2833	78	29
245	1911	1911	1765	79	42	2572	2572	2435	98	49
270	1734	1734	1734	105	64	2334	2334	2334	111	70
300	1561	1561	1561	119	93	2101	2101	2101	139	116
330	1419	1419	1419	136	134	1910	1910	1910	165	155
365	1283	1283	1283	175	226	1727	1727	1550	211	264
402	1163	1163	1163	204	330	1566	1566	1566	245	385
445	1052	1052	1052	334	542	1416	1416	1416	367	621
490	956	956	956	377	772	1286	1286	1286	458	1015

Table 2. Bare Fan and Accessory Weights

FAN SIZE	CLASS III				
	BARE FAN		INSULATED PLUG	HOUSING	INLET VANES
	CLASS II	CLASS III			
122	140	-	25	24	45
150	145	-	25	30	52
165	185	-	32	44	58
182	230	428	32	65	29
200	233	452	32	79	33
222	247	507	35	97	38
245	252	581	35	117	40
270	341	711	40	143	45
300	348	756	40	236	45
330	376	960	55	287	50
365	438	1093	55	350	50
402	586	1427	75	428	55
445	652	1630	75	522	60
490	962	1745	95	634	65

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Table 3. 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	CERAMIC SHAFT SEAL, SHAFT COOLER
501 TO 800°F	EXPANSION AND NON-EXPANSION	HIGH TEMPERATURE GREASE	HIGH TEMPERATURE ALUMINUM PAINT 4" MINIMUM INSULATION REQUIRED BY TCF OR CUSTOMER CERAMIC SHAFT SEAL, SHAFT COOLER
801 TO 1000°F	EXPANSION AND NON-EXPANSION	HIGH TEMPERATURE GREASE	316 STAINLESS STEEL IMPELLER AND SHAFT 6" MINIMUM INSULATION REQUIRED BY TCF OR CUSTOMER HIGH TEMPERATURE ALUMINUM PAINT CERAMIC SHAFT SEAL, SHAFT COOLER

Figure 1. Impeller and Plenum Arrangement

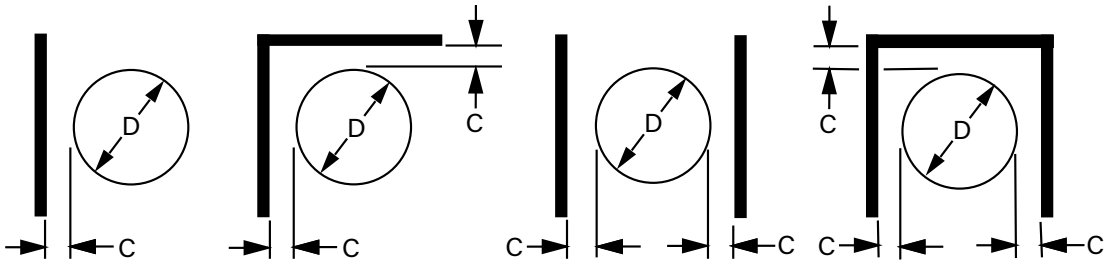

Table 4. Wall Proximity Factors

% 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 5. WOV Factors

SIZE	WOV FACTOR	D
122	1.04	12.40
150	1.92	13.98
165	2.55	15.75
182	3.65	18.25
200	4.81	20.00
222	6.81	22.25
245	9.09	24.50
270	12.63	27.00
300	17.32	30.00
330	23.05	33.00
365	30.62	36.50
402	41.06	40.25
445	55.49	44.50
490	74.09	49.00

Table 6. 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
	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
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
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
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
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
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
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
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
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
600	0.500	0.482	0.465	0.448	0.432	0.416	0.400	0.386	0.372	0.352	0.344	0.282
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
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
900	0.389	0.376	0.363	0.349	0.336	0.324	0.312	0.300	0.289	0.279	0.268	0.220
1000	0.363	0.350	0.338	0.325	0.314	0.302	0.291	0.280	0.270	0.259	0.250	0.205

Table 7. Derate Values

TEMP. (°F)	STEEL	304/316 SS
70	1.00	1.00
200	0.97	0.95
300	0.94	0.92
400	0.92	0.88
500	0.92	0.84
600	0.91	0.81
700	0.89	0.78
800	0.86	0.75
900	NA	0.73
1000	NA	0.70

NOTE: For aluminum construction, consult factory for maximum speeds.

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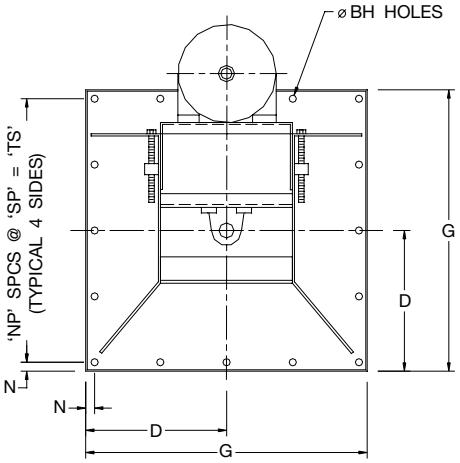
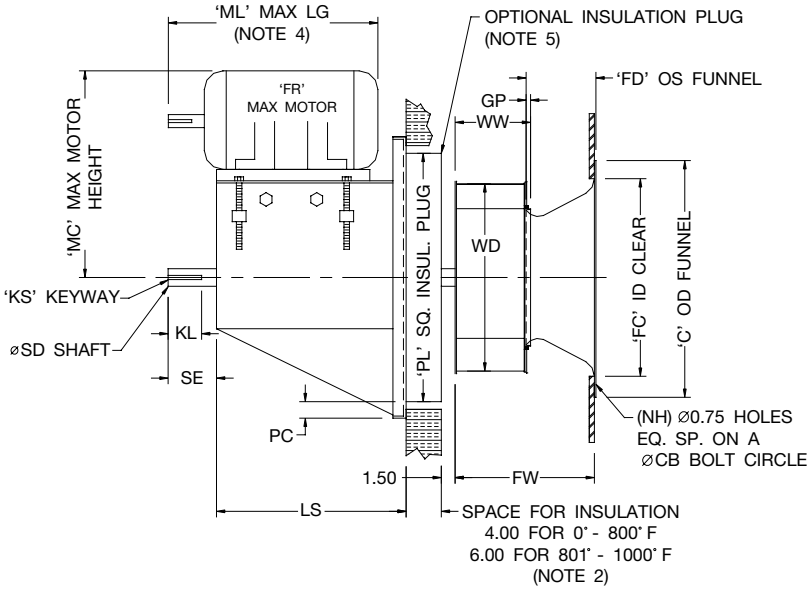
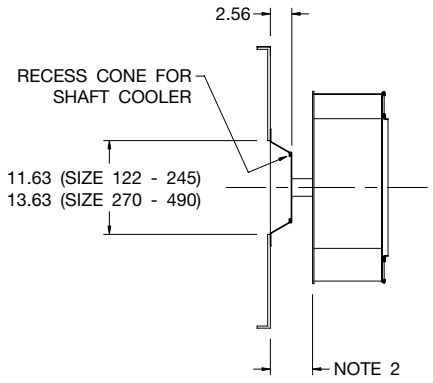
Class II







DETAIL 'A'

NOTES:

1. Dimensions apply to unhoused assembly only.
2. When specified, the shaft length can be extended an additional 2 inches for 6 inches of insulation, for operation to 800°F, without changes to the shaft diameter. 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. Dimensions are subject to change based on accessories. See page 14 for accessory options.
6. Customer to provide wall opening with adequate clearance for installation of impeller and insulation plug when provided.
7. Dimensions shown are in inches unless otherwise indicated.

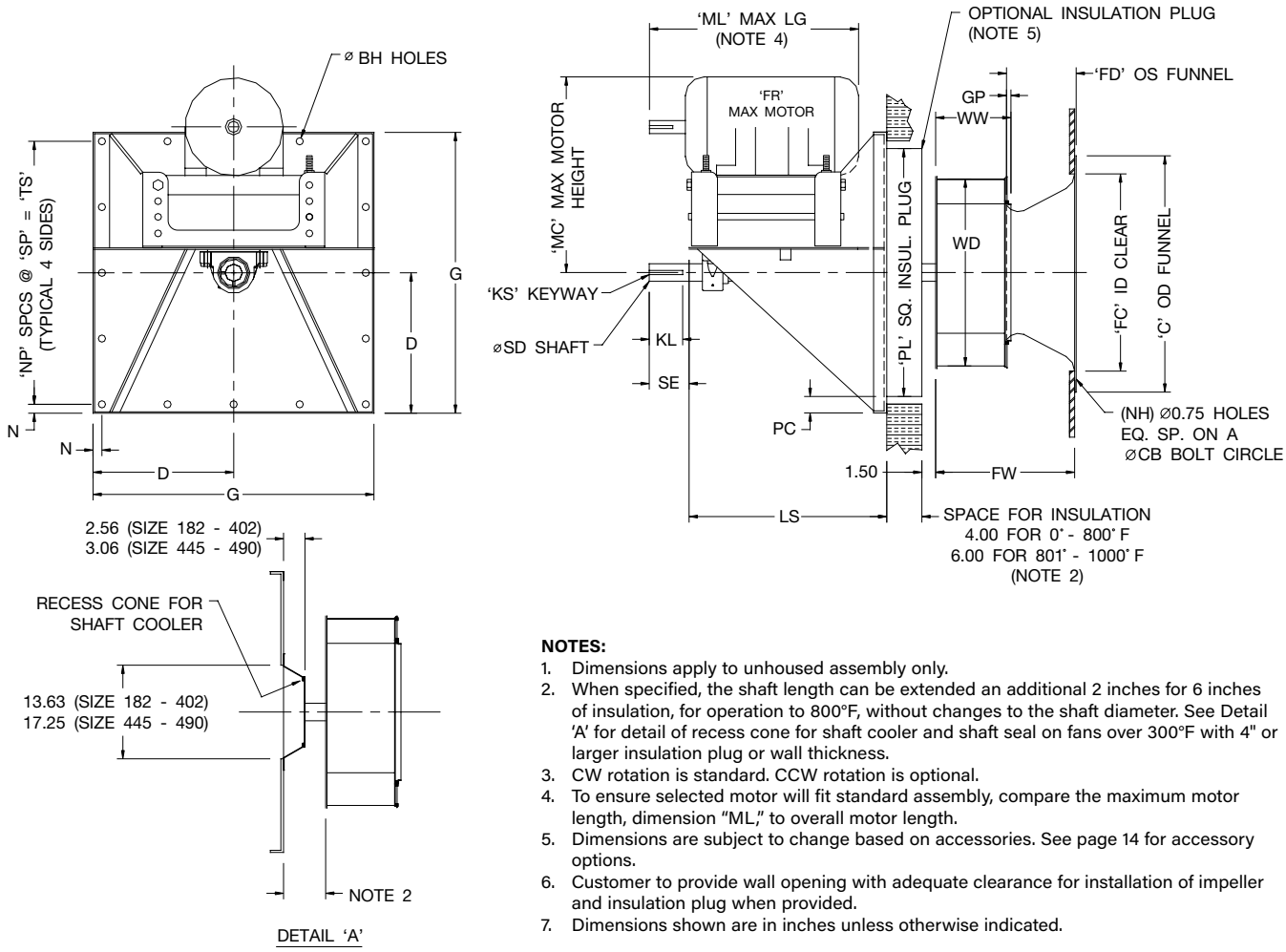
SIZE	BH	C	CB	D	FC	FD	FR	FW	G	GP	KL	KS	LS
122	0.56	15.75	15.88	11.38	13.25	3.72	213T	8.54	22.75	0.25	4.00	.38x.19	17.50
150	0.56	18.25	17.63	11.38	16.19	4.19	215T	9.61	22.75	0.25	4.00	.38x.19	18.50
165	0.56	20.00	19.59	14.81	17.75	4.72	215T	10.81	29.63	0.25	4.00	.38x.19	18.50
182	0.56	22.00	21.00	14.81	19.50	6.44	254T	12.75	29.63	0.38	4.50	.50x.25	21.00
200	0.56	24.38	23.38	14.81	21.38	7.05	254T	14.01	29.63	0.41	4.50	.50x.25	21.00
222	0.56	26.63	25.50	16.00	23.75	7.83	256T	15.53	32.00	0.45	4.50	.50x.25	22.50
245	0.56	29.00	27.75	16.00	27.00	8.62	256T	17.08	32.00	0.50	4.50	.50x.25	22.50
270	0.69	31.00	29.75	18.31	29.00	9.45	284T	18.77	36.63	0.55	5.00	.50x.25	23.00
300	0.69	34.88	33.63	18.31	31.62	10.50	284T	20.80	36.63	0.61	5.00	.50x.25	23.00
330	0.69	38.50	37.25	21.81	34.75	11.57	286T	22.92	43.63	0.67	5.00	.50x.25	24.50
365	0.69	42.00	40.75	21.81	39.50	12.84	286T	25.44	43.63	0.75	5.50	.50x.25	24.50
402	0.69	45.38	44.13	27.50	42.50	14.28	326T	28.20	55.00	0.82	5.50	.50x.25	27.50
445	0.69	49.88	48.63	27.50	47.25	15.81	326T	31.18	55.00	0.91	5.50	.63x.31	27.50
490	0.69	54.38	53.13	28.50	52.00	17.38	326T	34.27	57.00	1.00	5.50	.63x.31	27.50

SIZE	MC	ML	N	NH	NP	PC	PL	SD	SE	SP	TS	WD	WW
122	24.25	19.13	1.00	8.00	4.00	1.75	19.25	1.687	5.00	5.19	20.75	12.40	5.07
150	24.25	20.13	1.00	8.00	4.00	1.75	19.25	1.687	5.00	5.19	20.75	13.98	5.67
165	24.25	20.13	1.00	8.00	4.00	1.81	26.00	1.687	5.00	6.91	27.63	15.75	6.34
182	27.50	24.13	1.00	8.00	4.00	1.81	26.00	1.937	5.50	6.91	27.63	18.25	6.74
200	27.50	24.13	1.00	8.00	4.00	1.81	26.00	1.937	5.50	6.91	27.63	20.00	7.43
222	27.50	25.50	1.00	8.00	4.00	1.88	28.25	1.937	5.50	7.50	30.00	22.25	8.21
245	27.50	25.50	1.00	8.00	4.00	1.88	28.25	1.937	5.50	7.50	30.00	24.50	9.04
270	29.50	26.63	1.00	8.00	6.00	2.25	32.13	2.187	6.00	5.77	34.63	27.00	9.94
300	29.50	26.63	1.00	16.00	6.00	2.25	32.13	2.187	6.00	5.77	34.63	30.00	10.99
330	29.50	28.13	1.00	16.00	6.00	2.38	38.88	2.187	6.00	6.94	41.63	33.00	12.11
365	29.50	28.13	1.00	16.00	6.00	2.38	38.88	2.187	6.50	6.94	41.63	36.50	13.44
402	33.00	31.25	1.00	16.00	6.00	3.38	48.25	2.187	6.50	8.83	53.00	40.25	14.83
445	33.00	31.25	1.00	16.00	6.00	3.38	48.25	2.437	6.50	8.83	53.00	44.50	16.37
490	33.00	31.25	1.00	16.00	6.00	2.50	52.00	2.437	6.50	9.17	55.00	49.00	17.98

AC1001435C

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

Class III



NOTES:

1. Dimensions apply to unhoused assembly only.
2. When specified, the shaft length can be extended an additional 2 inches for 6 inches of insulation, for operation to 800°F, without changes to the shaft diameter. See Detail 'A' for detail of recess cone for shaft cooler 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. Dimensions are subject to change based on accessories. See page 14 for accessory options.
6. Customer to provide wall opening with adequate clearance for installation of impeller and insulation plug when provided.
7. Dimensions shown are in inches unless otherwise indicated.

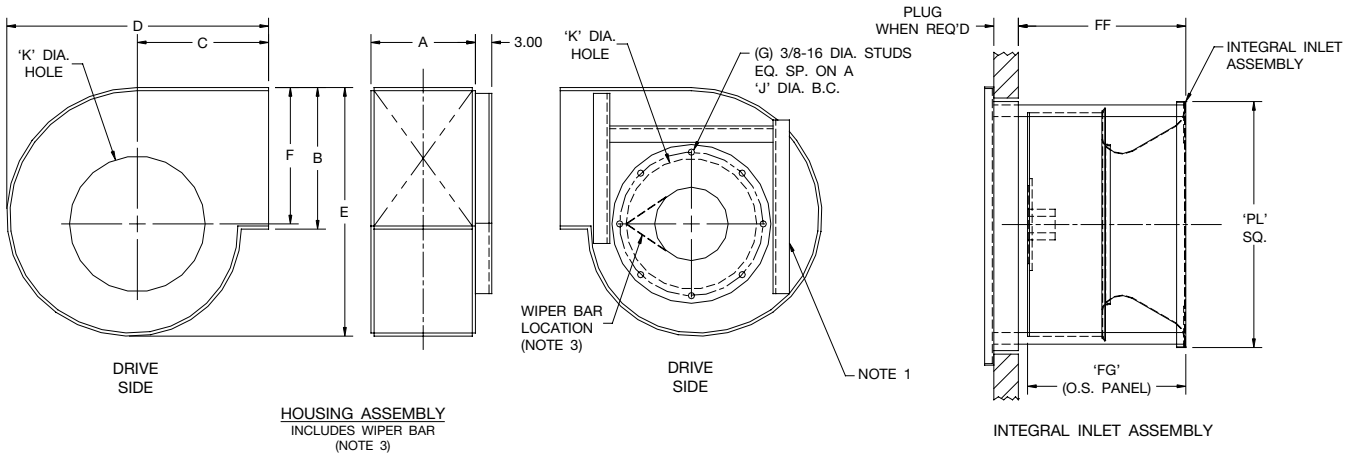
SIZE	BH	C	CB	D	FC	FD	FR	FW	G	GP	KL	KS	LS
182	0.56	22.00	21.00	14.81	19.50	6.44	256T	12.75	29.63	0.38	4.50	.63x.31	25.00
200	0.56	24.38	23.38	14.81	21.38	7.05	284T	14.01	29.63	0.41	5.50	.63x.31	27.50
222	0.56	26.63	25.50	16.00	23.75	7.83	286T	15.53	32.00	0.45	5.50	.63x.31	27.50
245	0.56	29.00	27.75	16.00	26.00	8.62	324T	17.16	32.00	0.50	6.00	.63x.31	30.50
270	0.69	31.00	29.75	18.31	28.50	9.45	326T	18.85	36.63	0.55	6.00	.63x.31	30.63
300	0.69	34.88	33.63	18.31	31.63	10.50	326T	20.87	36.63	0.61	6.00	.63x.31	30.63
330	0.69	38.50	37.25	21.81	34.75	11.57	365T	22.99	43.63	0.67	6.50	.63x.31	32.38
365	0.69	42.00	40.75	21.81	39.00	12.84	405T	25.50	43.63	0.75	8.00	.63x.31	37.88
402	0.69	45.38	44.13	27.50	42.50	14.28	405T	28.26	55.00	0.82	8.00	.75x.38	38.38
445	0.69	49.88	48.63	27.50	47.25	15.81	405T	31.24	55.00	0.91	8.00	.88x.44	38.38
490	0.69	54.38	53.13	28.50	52.00	17.38	405T	34.33	57.00	1.00	8.00	.88x.44	38.38

SIZE	MC	ML	N	NH	NP	PC	PL	SD	SE	SP	TS	WD	WW
182	26.50	25.75	1.00	8.00	4.00	1.81	26.00	2.437	4.50	6.91	27.63	18.25	6.74
200	28.00	28.88	1.00	8.00	4.00	1.81	26.00	2.437	5.50	6.91	27.63	20.00	7.43
222	28.00	28.88	1.00	8.00	4.00	1.88	28.25	2.687	5.50	7.50	30.00	22.25	8.21
245	32.00	32.00	1.00	8.00	4.00	1.88	28.25	2.687	6.00	7.50	30.00	24.50	9.11
270	32.00	32.00	1.00	8.00	6.00	2.25	32.13	2.687	6.00	5.77	34.63	27.00	10.02
300	32.00	32.00	1.00	16.00	6.00	2.25	32.13	2.687	6.00	5.77	34.63	30.00	11.06
330	34.00	34.38	1.00	16.00	6.00	2.38	38.88	2.687	6.50	6.94	41.63	33.00	12.18
365	38.00	41.25	1.00	16.00	6.00	2.38	38.88	2.687	8.00	6.94	41.63	36.50	13.50
402	38.00	41.25	1.00	16.00	6.00	3.38	48.25	2.937	8.00	8.83	53.00	40.25	14.89
445	38.00	41.25	1.00	16.00	6.00	3.38	48.25	3.437	8.00	8.83	53.00	44.50	16.43
490	38.00	41.25	1.00	16.00	6.00	2.50	52.00	3.437	8.00	9.17	55.00	49.00	18.04

AC1001436D

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

Accessories



NOTES:

1. Inlet side frame angle on sizes 402, 445 and 490 only.
2. CW rotation is shown. CCW is similar but opposite.
3. Wiper bar mounted on inlet cone on sizes 122-165. Orient with respect to discharge as shown. Not supplied with spark resistant construction. Sizes 182-490 use cutoff (no wiper bar). Wiper bar is required to prevent re-circulation of air.
4. Dimensions shown are in inches unless otherwise indicated.

SIZE	A		B		C	D		E		F		G	J	K	PL	FF	FG	
	CL 2	CL 3	CL 2	CL 3		CL 2	CL 3	CL 2	CL 3	CL 2	CL 3						CL 2	CL 3
122	10.00	10.00	13.81	13.81	12.56	25.13	25.13	23.69	23.69	13.19	13.19	8	15.88	14.13	19.25	10.13	8.63	—
150	11.00	11.00	15.63	15.63	13.69	27.88	27.88	26.69	26.69	14.88	14.88	8	17.63	15.94	19.25	11.19	9.69	—
165	12.19	12.19	17.56	17.56	14.81	30.81	30.81	30.00	30.00	16.75	16.75	8	19.59	17.88	26.00	12.38	10.88	—
182	14.31	14.31	19.38	19.50	14.00	29.69	29.75	33.13	33.25	19.31	19.38	8	21.00	19.50	26.00	14.50	13.00	13.00
200	15.63	15.63	21.19	21.31	15.31	32.63	32.69	36.31	36.44	21.13	21.19	8	23.38	21.38	26.00	15.75	14.25	14.25
222	17.13	17.13	23.56	23.69	17.19	36.25	36.31	40.31	40.44	23.50	23.56	8	25.50	23.75	28.25	17.31	15.81	15.81
245	18.75	18.81	25.94	26.19	19.00	40.00	40.13	44.38	44.63	25.88	26.00	8	27.75	27.00	28.25	18.88	17.38	17.44
270	20.44	20.56	28.63	28.88	20.94	44.13	44.25	49.00	49.25	28.56	28.69	16	29.75	29.00	32.13	20.69	19.19	19.25
300	22.50	22.63	31.81	32.00	23.31	49.06	49.13	54.44	54.63	31.75	31.81	16	33.63	31.63	32.13	22.69	21.19	21.31
330	24.63	24.75	35.13	35.31	25.75	54.13	54.19	60.00	60.19	35.06	35.13	16	37.25	34.75	38.88	24.88	23.38	23.44
365	27.13	27.25	38.69	38.88	28.50	60.00	60.06	66.31	66.50	38.63	38.69	16	40.75	39.50	38.88	27.38	25.88	25.94
402	29.81	29.94	42.63	42.81	31.50	66.19	66.25	73.06	73.25	42.56	42.63	16	44.13	42.50	48.25	30.06	28.56	28.63
445	32.81	32.88	47.13	47.31	34.88	73.13	73.19	80.75	80.94	47.06	47.13	16	48.63	47.25	48.25	33.06	31.63	31.63
490	35.88	36.00	51.94	52.13	38.50	80.69	80.75	89.00	89.19	51.88	51.94	16	53.13	52.00	50.00	36.13	34.69	34.69

AC1001437C

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

TCF
TWIN CITY FAN

Belt Centers

MOTOR FRAME SIZE	CLASS II								CLASS III											
	122-165		182-245		270-365		402-490		182		200-222		245-270		300		365-402		445-490	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
56	13	16.5	14	17.5	14.5	18	16	19.5	9.4	13.4	9.4	13.4	9.3	13.3	9.3	13.3	9.3	13.3	9.8	13.8
143-145	13	16.5	14	17.5	14.5	18	16	19.5	9.4	13.4	9.4	13.4	9.3	13.3	9.3	13.3	9.3	13.3	9.8	13.8
182-184	14	17.5	15	18.5	15.5	19	17	20.5	10.4	14.4	10.4	14.4	10.3	14.3	10.3	14.3	10.3	14.3	10.8	14.8
213-215	14.8	18.3	15.8	19.3	16.3	19.8	17.8	21.3	11.2	15.2	11.2	15.2	11	15	11.1	15.1	11.1	15.1	11.6	15.6
254-256	—	—	16.8	20.3	17.3	20.8	18.8	22.3	14.8	18.8	14.8	18.8	14.6	18.6	14.7	18.7	14.7	18.7	15.2	19.2
284-286	—	—	—	—	18	21.5	19.5	23	—	—	15.6	19.6	15.4	19.4	15.4	19.4	15.4	19.4	15.9	19.9
324-326	—	—	—	—	—	—	20.5	24	—	—	—	—	17.6	22.6	17.6	22.6	17.6	22.6	18.1	23.1
364-365	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18.6	23.6	18.6	23.6	19.1	24.1
404-405	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.8	25.8	21.3	26.3

Model BEPL in Paint Booth

TCF
TWIN CITY FAN

Model

BEPL

Fans shall be Model BEPL Single Thickness Airfoil, 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 constructed of steel with formed flanges to maintain flatness and rigidity. Panel shall be prepunched for bolt mounting. The "Cross Frame" bearing support shall be designed for maximum stability and load spreading. Bearings shall be 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.

IMPELLER — BEPL impellers shall be backward curved, non-overloading, single thickness airfoil type, designed for maximum efficiency and quiet operation. Impellers shall be constructed of heavy-gauge steel, with blades welded to a flat impeller cone and back plate.

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 L-50 minimum life of 200,000 hours.

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

ADJUSTABLE MOTOR BASE — Adjustable motor base is standard in Arrangement 4 and shall have a four point leveling and tension adjustment to ensure 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 or with centered supports equipped with permanently lubricated needle bearings and ball joints for smooth and easy operation. Vane assemblies are external type for sizes 122 through 165 and nested for sizes 182 through 490. Standard inlet vanes are applicable to 300°F. Consult factory for higher temperatures.

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 impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204 "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.

Model

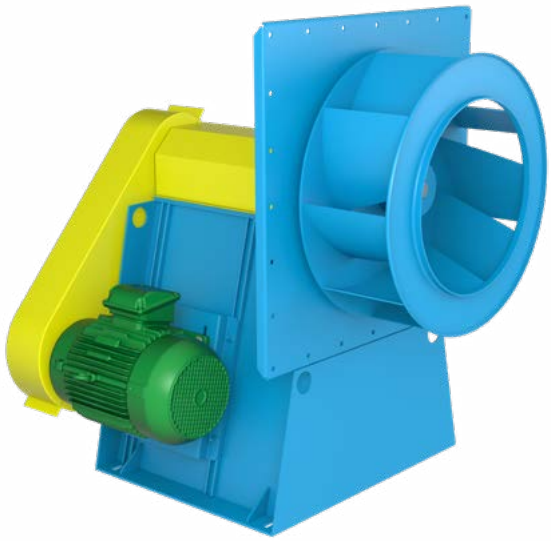
BFPL (High Efficiency Plug Fans)

Sizes
12" to 49" impeller diameters (305 mm to 1,245 mm)

Performance
Airflow to 76,000 CFM (129,100 m^3/hour)
Static pressure to 12" w.g. (2,980 Pa)

Features
SWSI backward curved, non-overloading, single thickness airfoil type impellers

See Catalog 360 for more information



BFPL Arrangement 9P – Pedestal Plug Fan

Model

BCPL (Plug Fans)

Sizes
12.25" to 49" impeller diameters (311 mm to 1,245 mm)

Performance
Airflow to 57,900 CFM (98,400 m^3/hour)
Static pressure to 8" w.g. (1,990 Pa)

Features
SWSI flat-blade backward inclined, non-overloading impellers

See Catalog 350 for more information

BCPL Shown with Optional Integral Inlet Cone Assembly

TCF
TWIN CITY FAN

INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS
MIXED FLOW FANS | TUBEAXIAL & VANEAXIAL FANS | WALL MOUNTED FANS | 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

TCF
TWIN CITY FAN

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