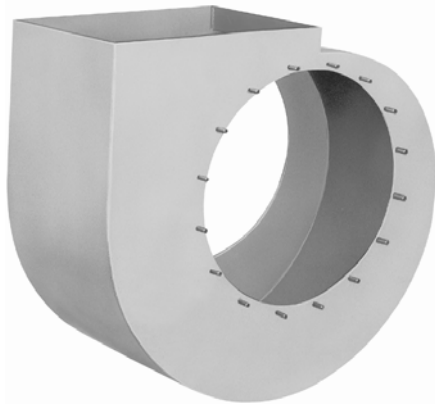


# FAN COMPONENTS

The New York Blower Company has provided air-handling equipment to the construction and process industries for over 125 years. The same housings, wheels, and inlet cones used in AcoustaFoil and PLR Fans are available to original-equipment manufacturers to meet a full range of air-flow and pressure requirements. These components offer system designers a variety of configurations limited only by the needs of the system and good engineering practice.



## HOUSINGS

Housings are designed to maximize performance with either AcoustaFoil or PLR wheels. Housings are continuously welded and furnished with mounting studs on both sides of the housing for easy installation.

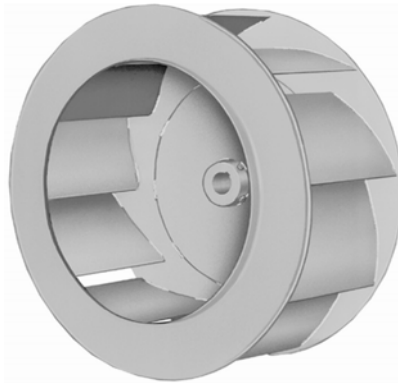
- 13 sizes from 10" to 36".
- AMCA Class I, II, and III construction.
- Rotatable
- Clockwise or counterclockwise.



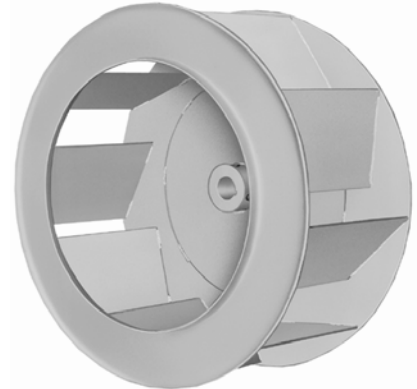
## INLET CONES

Aerodynamically designed, spun inlet cones are matched for optimum efficiency with wheel and housing components. Reduced depth inlet cones, for space restricted applications, are also available in a limited size range.

- 22 sizes from 10" to 89".
- Available with or without diverters.
- Reduced depth cones Sizes 18 to 49.
- Mounting holes for ease of installation.



AcoustaFoil®



PLR

## WHEELS

Two backwardly inclined wheel designs are available to match a broad range of application requirements. AcoustaFoil wheels are available for clean, dry airstreams requiring superior efficiency and low sound levels. PLR wheels are provided for moist or mildly contaminated airstreams.

- 22 sizes from 10" to 89" in diameter
- AMCA Class I, II, III, and IV construction.
- Capacities to 350,000 CFM.
- Static pressures to 20" WG.
- Temperatures to 800°F.

## TEMPERATURE AND CORROSIVES

Special alloys and protective coatings are available for high-temperature or corrosive applications.

**Alloy construction:** AcoustaFoil/PLR wheels, housings, and inlet cones can be constructed of aluminum or stainless steel in addition to standard carbon steel construction.

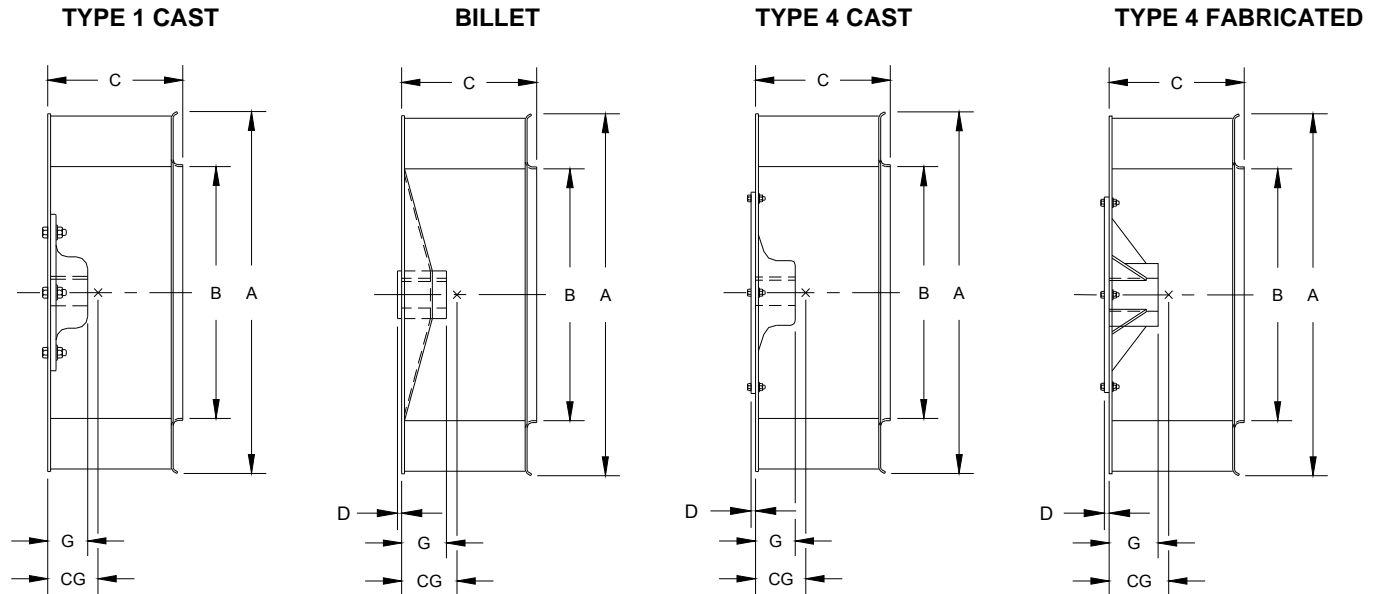
**Coatings** (up to 12 mils thickness): Special paints and spray coatings are available under a variety of trade names. New York Blower works with experienced coating applicators who can apply coatings to meet a wide range of requirements.



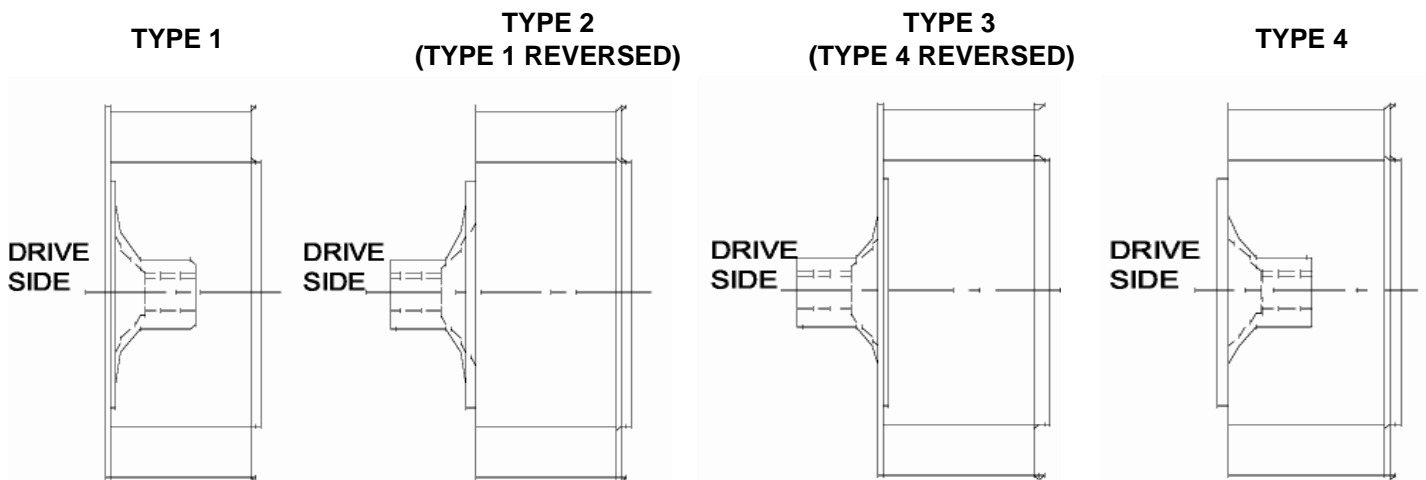
THE NEW YORK BLOWER COMPANY  
7660 Quincy Street  
Willowbrook, IL 60527-5530

Visit us on the Web: <http://www.nyb.com>  
Phone: (800) 208-7918 Email: [nyb@nyb.com](mailto:nyb@nyb.com)

# AcoustaFoil/PLR WHEEL DESIGN



## HUB CONFIGURATION



**NOTE: Reverse mounting is available as an option with cast or fabricated hubs. Wheels with billet style hubs are only available as shown above.**

Copyright © 2015 by The New York Blower Company.  
 ® AcoustaFoil is a registered trademark of The New York Blower Company.

# WHEEL DIMENSIONS

## CLASS I AND II WHEEL DIMENSIONS [inches]

Size	Hub		Wheel Diameter at Blades	Blade width†	A O.D.	B I.D.	C	D	G*				CG*		Backplate Gauge
	Class I	Class II							Type 1		Type 4		Type 1,4		
									Class I	Class II	Class I	Class II	Class I	Class II	
10	•Cast 1808		10	3 1/4 ‡	10 3/8	7 3/16	3 11/16	--	1 11/16		1 3/8		1.10		12
12	•Cast 1808		12 1/4	4 1/4	12 13/16	8 13/16	4 3/4	--	1 11/16		1 3/8		1.46		12
13	•Cast 1808		13 1/2	4 3/4	14 1/8	9 9/16	5 5/16	--	1 11/16		1 3/8		1.63		12
15	•Cast 1808		15	5 1/4	15 7/16	10 5/8	5 7/8	--	1 11/16		1 3/8		1.95		12
16	•Cast 1808		16 1/2	6 1/8	16 15/16	11 5/8	6 13/16	--	1 11/16		1 5/16		2.19		10
18	•Cast 1808		18 1/4	6 11/16	18 13/16	12 7/8	7 3/8	--	1 11/16		1 5/16		2.40		10
20	•Cast 1808		20 1/8	7 1/8	20 9/16	14 5/16	8	--	1 11/16		1 5/16		2.73		10
22	•Cast 1808	•Cast 2209	22 1/4	7 7/8	22 15/16	15 7/8	8 3/4	--	1 11/16	2 5/8	1 5/16	2 1/8	3.05	2.76	10
24	•Cast 2209		24 1/2	8 7/8	25 1/16	17 1/4	9 13/16	1/4	2 11/16		2 3/16		3.16		10
27	•Cast 2209		27	9 3/4	27 9/16	19 1/16	10 3/4	1/4	2 11/16		2 3/16		3.53		10
30	•Cast 2209		30	10 3/4	30 5/8	21 3/8	11 7/8	1/4	2 11/16		2 3/16		3.95		10
33	•Cast 1806		33	11 5/8	33 5/8	23 5/16	12 13/16	1/4	2 11/16		2 1/16		4.25	4.40	10
36	•Cast 1806		36 1/2	12 3/4	37 1/4	26	14 1/8	1/4	2 13/16		2 3/16		4.08	4.45	7
40	■ Billet		40 1/4	14 1/8	41 1/16	28 3/4	15 5/8	1/4	4		--		5.18	5.40	7
44	■ Billet		44 1/2	15 1/2	45 1/2	31 3/4	17 1/8	1/4	5		--		5.90	6.19	7
49	■ Billet		49	17 1/8	50 1/16	35	19	1/4	5		--		6.21	6.21	1/4
54	■ Billet		54 1/4	18 7/8	55 5/16	38 11/16	20 7/8	1/4	5		--		6.91	7.30	1/4
60	■ Billet		60	20 3/4	61 1/4	42 13/16	22 15/16	1/4	7		--		7.62	7.76	1/4
66	■ Billet		66	22 7/8	67 1/4	47	25 3/8	3/8	7		--		7.44	7.61	3/8
73	■ Billet		73	25 5/16	74 7/16	52	28 1/16	3/8	7 3/4		--		9.21	9.21	3/8
80	▲ Fab		80 3/4	28 1/8	81 3/4	57 7/16	30 1/2	11/16	--		8 9/16		9.03	9.03	3/8
89	▲ Fab		89	31	90	63 1/4	33 1/2	11/16	--		9 9/16		10.25	10.25	3/8

† See footnote below.

\* G (hub length) and CG (center of gravity) dimensions will vary on wheel sizes 40 and larger, depending on bore size.

‡ Dimension shown is for an AcoustaFoil wheel; blade width for a Size 10 PLR wheel is 3 1/2".

Dimension shown is for an AcoustaFoil wheel: C dimension for a Size 10 PLR wheel is 3 15/16".

● Hub configuration is available in Type 1, 2, 3, or 4.

■ Hub configuration is available in Type 1 only.

▲ Hub configuration is available in Type 4 only.

See Page 5 for Wheel Bore Dimensions.

## CLASS III AND IV WHEEL DIMENSIONS [inches]

Size	Hub		Wheel Dia. at Blades	Blade Width†	A O.D.	B I.D.	C	D	G		CG		Backplate Gauge
	Class III,IV	Class III,IV							Type 1,4		Type 1,4		
									Type 1	Type 4	Class III	Class IV	
16	•Cast 1808		16 1/2	6 1/8	16 15/16	11 5/8	6 13/16	--	1 11/16	1 5/16	2.27	--	10
18	•Cast 2209		18 1/4	6 11/16	18 13/16	12 7/8	7 3/8	--	2 5/8	2 1/8	2.28		10
20	•Cast 2209		20 1/8	7 1/8	20 9/16	14 5/16	8	--	2 5/8	2 1/8	2.50		10
22	•Cast 2209		22 1/4	7 7/8	22 13/16	15 7/8	8 3/4	--	2 5/8	2 1/8	2.89		10
24	•Cast 1806 *		24 1/2	8 7/8	25 1/16	17 1/4	9 13/16	--	2 5/8	2	3.05		10
27	•Cast 1806 *		27	9 3/4	27 9/16	19 1/16	10 3/4	--	2 5/8	2	3.25		10
30	•Cast 1806 *		30	10 3/4	30 5/8	21 3/8	11 5/16	--	2 11/16	2	3.54		7
33	•Cast 1806 *		33	11 5/8	33 5/8	23 5/16	12 7/8	--	2 11/16	2	3.95		7
36	▲ Cast 1602		36 1/2	12 3/4	37 1/4	26	14 1/8	7/16	--	4 9/16	3.93		7
40	▲ Cast 1602		40 1/4	14 1/8	41 1/16	28 3/4	15 11/16	7/16	--	4 9/16	4.31	4.65	1/4
44	▲ Cast 1602		44 1/2	15 1/2	45 1/2	31 3/4	17 3/16	7/16	--	4 9/16	5.00	5.60	1/4
49	▲ Cast 1604		49	17 1/8	50 1/16	35	19	9/16	--	6 7/16	4.53	5.27	1/4
54	▲ Cast 1604		54 1/4	18 7/8	55 5/16	38 11/16	21	9/16	--	6 7/16	5.53	5.85	3/8
60	▲ Cast 1604		60	20 3/4	61 1/4	42 13/16	23 1/16	9/16	--	6 7/16	6.77	7.12	3/8
66	▲ Fab		66	22 7/8	67 1/4	47	25 3/8	11/16	--	6 9/16	7.45	7.28	3/8
73	▲ Fab		73	25 5/16	74 7/16	52	28 1/16	11/16	--	6 9/16	8.29	8.29	3/8
80	▲ Fab		80 3/4	28 1/8	81 3/4	57 7/16	30 1/2	11/16	--	8 9/16	9.03	9.03	3/8
89	▲ Fab		89	31	90	63 1/4	33 1/2	11/16	--	9 9/16	10.25	10.25	3/8

† When calculating narrow-width wheel dimensions, the percentage of narrow width should be applied to the blade width, not the C dimension. Refer to sales bulletin for limitations on narrow-width construction.

\* Applies to 1806 castings with bores up to 2 3/16"; for bores greater than 2 3/16", G dimension is 3", and hub is 1806-Q.

● Hub configuration is available in Type 1, 2, 3, or 4.

▲ Hub configuration is available in Type 4 only.

# AcoustaFoil/PLR WHEEL SPECIFICATIONS

## WHEEL WEIGHTS [lbs.]

Size	AcoustaFoil			
	Class I	Class II	Class III	Class IV
105*	5	5	NA	NA
125*	8	8	NA	NA
135*	10	10	NA	NA
155*	12	12	NA	NA
165	27	27	32	NA
185	31	31	47	49
205	38	47	56	56
225	44	53	63	73
245	62	61	100	100
275	72	71	115	115
305	91	90	151	151
335	119	118	173	180
365	159	158	260	268
405	188	199	302	310
445	259	258	387	410
495	344	362	614	631
545	409	450	765	788
605	527	568	888	916
665	819	866	1185	1262
735	1052	1101	1460	1536
805	2050	2050	2050	2050
895	2420	2420	2420	2420

Size	PLR			
	Class I	Class II	Class III	Class IV
106	11	11	NA	NA
126	15	15	NA	NA
136	20	20	NA	NA
156	21	21	NA	NA
166	27	27	33	NA
186	32	32	46	48
206	41	50	58	58
226	49	58	67	67
246	66	65	100	100
276	77	76	114	117
306	97	103	139	152
336	126	136	173	173
366	162	174	257	261
406	191	226	302	339
446	263	302	368	438
496	380	384	578	661
546	453	546	824	824
606	641	681	953	953
666	892	940	1209	1209
736	1144	1198	1465	1465
805	1800	1800	1800	1800
895	2100	2100	2100	2100

\* Standard construction is aluminum, not available in steel or other alloy construction.

NA - Not Available

## WHEEL WR<sup>2</sup> [lb.-ft.<sup>2</sup>]

Size	AcoustaFoil			
	Class I	Class II	Class III	Class IV
106	1	1	NA	NA
126	2	2	NA	NA
136	3	3	NA	NA
156	3	3	NA	NA
166	8	8	10	NA
186	11	11	13	14
206	17	17	21	21
226	24	24	29	36
246	38	38	54	54
276	55	55	78	78
306	87	87	120	120
336	130	130	172	185
366	219	219	301	316
406	321	321	441	503
446	523	523	747	814
496	843	891	1238	1307
546	1252	1330	2017	2125
606	1926	2046	2941	3103
666	3715	3899	4808	5337
736	5873	6122	7637	8172
805	13170	13170	13170	13170
895	19180	19180	19180	19180

Size	PLR			
	Class I	Class II	Class III	Class IV
106	1	1	NA	NA
126	2	2	NA	NA
136	4	4	NA	NA
156	5	5	NA	NA
166	8	8	10	NA
186	11	11	12	12
206	19	19	24	24
226	27	28	32	32
246	42	42	53	53
276	60	60	75	78
306	95	103	105	120
336	142	158	170	170
366	225	249	291	298
406	330	382	432	514
446	537	645	678	860
496	964	964	1100	1362
546	1434	1723	2200	2200
606	2508	2620	3205	3205
666	4163	4344	4831	4831
736	6560	6838	7480	7480
805	10870	10870	10870	10870
895	15630	15630	15630	15630

NA - Not Available

# AcoustaFoil/PLR WHEEL DIMENSIONS

## BORE RANGE BY WHEEL SIZE

Size	Bore Size Range [in.]	
	Class I	Class II
10-20	1/2 - 1 15/16	
22	1/2 - 1 15/16	1/2 - 2 11/16
24-30	1/2 - 2 11/16	
33,36	1 - 2 3/16	
40	1 15/16 - 2 7/16	
44	2 3/16 - 2 11/16	
49	2 7/16 - 2 15/16	
54,60	2 7/16 - 3 7/16	
66	2 11/16 - 3 7/16	
73	2 15/16 - 3 15/16	
80,89	3 15/16 - 5 7/16†	

Size	Bore Size Range [in.]
	Class III,IV
16	1/2 - 1 15/16
18-22	1/2 - 2 11/16
24-33	1 - 2 15/16
36-44	1 15/16 - 4 7/16
49-60	2 7/16 - 5 7/16†
66,73	2 15/16 - 5 7/16†
80,89	3 15/16 - 5 7/16†

† Bores based on standard size ASME keyways except size 57/16" which has a 11/4" x 5/8" keyway with 1" diameter set screws.

## STANDARD BORE SIZES

Fan Shaft	NEMA Motor	Metric (mm)
1	1/2	19
1 3/16	5/8	24
1 7/16	7/8	28
1 11/16	1 1/8	35
1 15/16	1 1/4	38
2 3/16	1 3/8	45
2 7/16	1 5/8	48
2 11/16	1 7/8	55
2 15/16	2 1/8	65
3 3/16	2 3/8	70
3 7/16	2 7/8	85
3 15/16	3 3/8	90
4 7/16		
4 15/16		
5 7/16		

**NOTE:** Straight bores to fit shafts for NEMA motor frames 143T through 445T, metric bores, and taper bores are available, provided bore size does not exceed largest bore as shown above. Contact **nyb** for special bore sizes and for taper bores.

# AcoustaFoil/PLR WHEEL SPECIFICATIONS

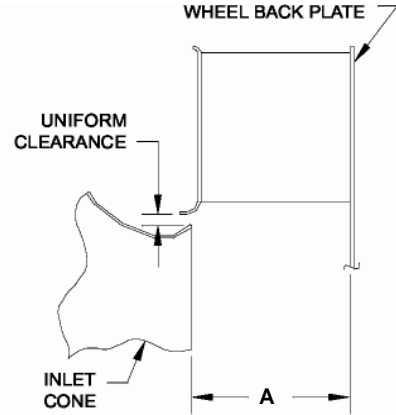
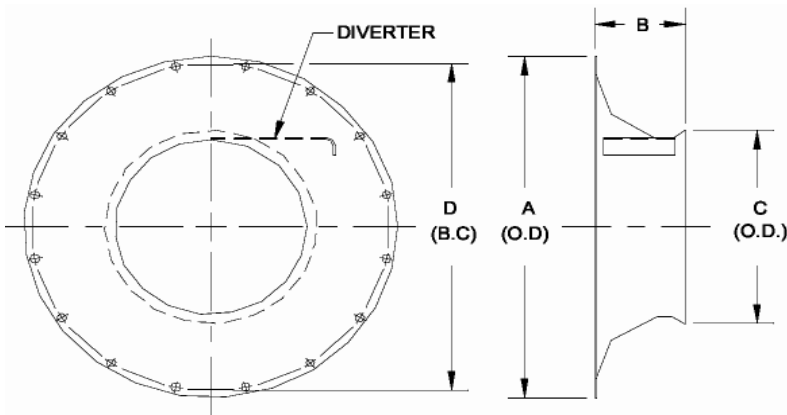
## MAXIMUM WHEEL SAFE SPEEDS [RPM] AT 70°F. †

Size	Class I		Class II		Class III		Class IV	
	AcF	PLR	AcF	PLR	AcF	PLR	AcF	PLR
10	4570	3990	4900	5195	NA	NA	NA	NA
12	3755	3280	4900	4270	NA	NA	NA	NA
13	3320	2920	4330	3800	NA	NA	NA	NA
15	2910	2580	3800	3360	NA	NA	NA	NA
16	2595	2330	3385	3090	4100	3830	NA	NA
18	2305	2100	3005	2735	3790	3525	4300	4300
20	2125	1930	2780	2510	3510	3200	3895	3895
22	1970	1770	2570	2305	3240	2900	3520	3520
24	1790	1605	2335	2090	2940	2635	3205	3205
27	1540	1420	2010	1850	2530	2325	2905	2905
30	1385	1280	1805	1665	2275	2095	2610	2610
33	1265	1175	1650	1515	2080	1905	2375	2375
36	1110	1045	1450	1360	1825	1715	2145	2145
40	1005	950	1315	1235	1655	1555	1945	1945
44	910	880	1190	1120	1495	1410	1800	1800
49	850	780	1105	1020	1395	1280	1600	1600
54	750	710	975	920	1230	1175	1445	1445
60	675	640	880	830	1110	1045	1305	1305
66	615	585	800	755	1010	950	1185	1185
73	555	530	725	685	915	880	1075	1075
80	500	475	650	615	825	780	970	970
89	450	430	590	560	750	705	880	880

† Maximum safe speeds apply only to wheels operated at or below 70°F. and free of material build-up, corrosion, or wear.

NA - Not Available

# AcustaFoil/PLR Inlet Cone



**STANDARD DEPTH INLET CONE DIMENSIONS [inches]**

Size	A	B	C	D	Number and size holes
10	13 1/8	39/16	6 15/16	1 17/8	8 - 11/16
12	15 7/8	37/8	8 17/32	1 45/8	8 - 11/16
13	17 1/8	37/8	9 5/16	1 57/8	8 - 11/16
15	19 1/8	4	10 3/8	1 77/8	8 - 11/16
16	20 7/8	4 5/8	1 13/8	1 95/8	8 - 11/16
18	23 3/16	5 5/16	1 25/8	2 13/4	16 - 7/8
20	24 15/16	6 1/32	1 41/32	2 3 1/2	16 - 7/8
22	27 9/16	6 11/16	1 57/16	2 6 1/8	16 - 7/8
24	30 1/2	7 3/16	1 613/16	2 9 1/8	16 - 1
27	33 1/8	7 15/16	1 85/8	3 1 3/4	16 - 1
30	36 1/2	8 15/16	2 0 15/16	3 5 1/8	16 - 1
33	39 3/4	9 15/16	2 27/8	3 8 3/8	16 - 1
36	44 1/8	1 13/16	2 59/16	4 2 3/8	16 - 1
40	47 1/2	1 23/8	2 83/8	4 6 1/8	24 - 1
44	52 1/2	1 33/4	3 13/8	5 1 1/8	24 - 1
49	57 1/2	1 5 1/8	3 45/8	5 6 1/8	24 - 1
54	63	1 6 11/16	3 83/16	6 1 5/8	24 - 1
60	69 3/4	1 8 1/2	4 25/16	6 8 3/8	32 - 1
66	76 1/4	2 0 3/8	4 6 1/2	7 4 7/8	32 - 1
73	84 1/4	2 2 1/2	5 1 1/2	8 2 7/8	32 - 1
80	95 1/4	2 4 15/16	5 6 15/16	9 0 7/8	32 - 1
89	105	2 7 1/2	6 2 3/4	9 9 7/8	32 - 1

When cones are furnished with diverters, bolt holes straddle the centerline on all sizes except 10, 12, 13, 15, and 16 which are on the centerline.

**WHEEL-TO-INLET CONE CLEARANCES**

Size	A dimension [in.]
10	3 1/2
12	4 1/2
13	5
15	5 1/2
16	6 1/2
18	7
20	7 3/8
22	8 1/4
24	9 1/4
27	10 1/8
30	11 1/4
33	12 1/4
36	13 3/8
40	14 3/4
44	16 1/4
49	17 7/8
54	19 3/4
60	21 3/4
66	24
73	26 1/2
80	28 3/4
89	31 5/8

Above dimensions apply to full-width wheels only.

**REDUCED DEPTH INLET CONE DIMENSIONS [inches]**

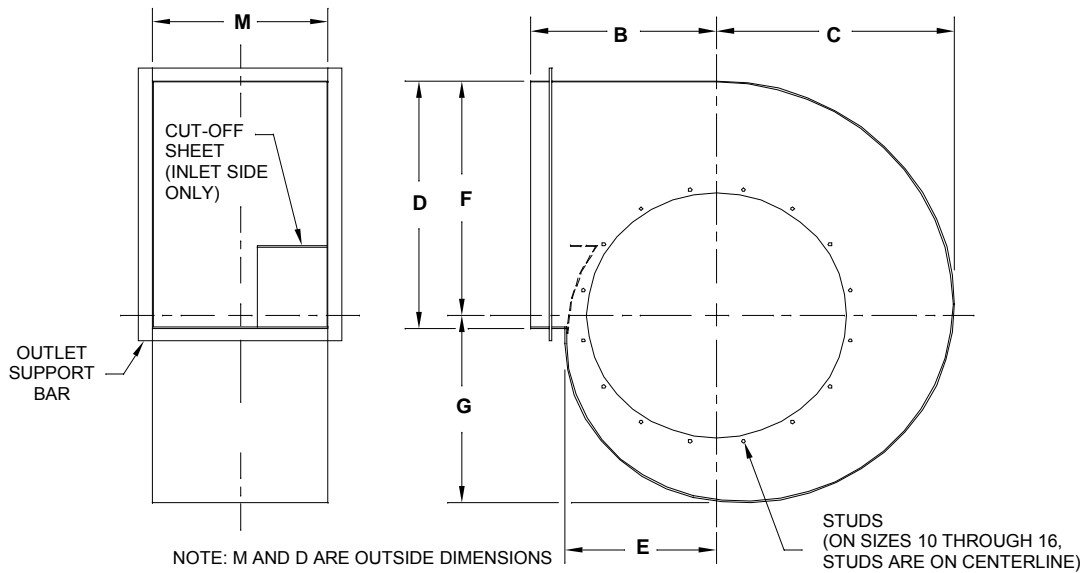
Reduced depth inlet cones are designed for applications with space restrictions and are not available with diverters.

Size	A	B	C	D	Number and size holes	% Derate	RPM factor
18■	2 1 3/4	3 3/8	1 25/8	1 9 3/4	16 - 7/8	8	1.043
22■	2 5 3/4	4 1/8	1 55/8	2 4	16 - 7/8	4.5	1.025
24■	2 7 1/8	4 1/2	1 7	2 6 1/8	16 - 7/8	3	1.015
27	3 0 1/2	5	1 8 3/4	2 9 1/8	16 - 1	0	1
30	3 3 1/8	5 1/2	2 1 1/8	3 1 3/4	16 - 1	0	1
33	3 6 1/2	6 1/8	2 3	3 5 1/8	16 - 1	0	1
36	3 9 3/4	6 3/4	2 5 3/4	3 8 3/8	16 - 1	0	1
40	4 4 1/8	7 3/8	2 8 3/8	4 2 3/8	16 - 1	0	1
44	4 8	8 1/4	3 1 3/8	4 6 5/8	24 - 1	0	1
49	5 2 1/2	9 1/8	3 4 5/8	5 1 1/8	24 - 1	0	1

**Selection criteria:** The reduced depth inlet cone is suitable for all unhooused wheel applications (Sizes 18-49) where a standard inlet cone can be used with the following exceptions: 1) Applications where the wheel must be removed through the inlet. 2) Applications where the minimum d/D ratio for wheels in a plenum is less than .2...see Plug Fan bulletin.

■ Performance losses occur with Size 18, 22, and 24 reduced depth inlet cones. To determine performance, apply the % derate to standard cataloged CFM or increase the cataloged speed by the RPM factor to achieve standard performance.

# AcoustaFoil/PLR HOUSINGS



## CLASS I, II, AND III DIMENSIONS [inches]

Class III not available in Sizes 10 through 15 and 36

Size	B	C	D*	E	F	G	Cut-out diameter	M* SWSI	Number and size holes	Stud circle diameter
10	8 1/2	10 1/8	11 1/4	6 3/8	10 5/8	8 1/2	11	8 1/8	8 - 5/16 X 1	11 7/8
12	10	12 5/16	13 5/8	7 3/4	12 15/16	10 5/16	13 1/2	9 3/8	8 - 5/16 X 1	14 5/8
13	11	13 5/8	15 1/8	8 3/4	14 1/4	11 3/8	14 7/8	10 3/8	8 - 5/16 X 1	15 7/8
15	12	15 1/16	16 3/4	9 9/16	15 13/16	12 5/8	16 1/2	11 3/8	8 - 5/16 X 1	17 7/8
16	13	16 5/8	18 1/2	10 5/8	17 1/2	14	18 3/8	12 1/4	8 - 5/16 X 1	19 5/8
18	14	18 3/8	20 7/16	11 5/8	19 5/16	15 3/8	20 1/2	13 7/8	16 - 3/8 X 1	21 3/4
20	15 1/2	20 3/8	22 1/2	13	21 3/8	17	22 1/4	15	16 - 3/8 X 1	23 1/2
22	17	22 7/16	24 13/16	14 3/16	23 9/16	18 3/4	24 7/8	16 7/8	16 - 3/8 X 1	26 1/8
24	19	24 11/16	27 5/16	15 5/8	25 15/16	20 5/8	27 3/8	18 1/2	16 - 3/8 X 1	29 1/8
27	20 1/2	27 3/16	30 3/16	17 5/16	28 9/16	22 3/4	30	20 3/8	16 - 3/8 X 1	31 3/4
30	22 1/2	30 1/4	33 7/16	19 3/16	31 3/4	25 5/16	33 1/2	22 5/8	16 - 3/8 X 1	35 1/8
33	24 1/2	33 5/16	36 13/16	21 1/8	34 15/16	27 7/8	36 7/8	24 7/8	16 - 3/8 X 1	38 3/8
36	29	36 7/8	40 3/4	23 3/8	38 11/16	30 7/8	40 1/2	27 1/2	16 - 3/8 X 1	42 3/8

D and M are out Dimensions

Tolerance: ± 1/8"

NOTE: Housings furnished with large cut-outs and studs on both sides. Sizes 16 through 36 furnished with outlet support bars unless otherwise specified.

## GAUGES [U.S. gauge]

Size	Sides			Scroll		
	Class I	Class II	Class III	Class I	Class II	Class III
10	14	14	NA	16	16	NA
12	14	14	NA	16	16	NA
13	14	14	NA	16	16	NA
15	14	14	NA	16	16	NA
16	14	14	NA	14	14	NA
18	14	14	10	14	14	10
20	12	12	NA	14	14	NA
22	14	14	10	14	14	10
24	12	12	10	14	14	10
27	12	12	10	14	14	10
30	12	12	10	14	14	10
33	12	12	7	14	14	7
36	12	12	NA	12	12	NA

## WEIGHTS [lbs.]

Size	SWSI		
	Class I	Class II	Class III
10	25	25	NA
12	31	31	NA
13	34	34	NA
15	40	40	NA
16	53	53	NA
18	63	63	113
20	89	89	NA
22	92	92	162
24	120	120	202
27	166	166	245
30	205	205	300
33	248	248	481
36	406	406	NA

NA - Not Available



## FAN COMPONENT BALANCE AND WARRANTY POLICY

The New York Blower Company manufactures and sells component parts, including wheels, to qualified purchasers. The purchaser is responsible for the overall design and quality of the structures in which the components are installed. Components carry **nyb's** standard limited product warranty. In addition, wheels are warranted to be balanced to within the following tolerances:

### Balancing Tolerances

All AcF/PLR wheels are shipped from the **nyb** plant with an unbalance not to exceed the following formula:

$$\text{oz.-in. (max.)} = \frac{30 \times \text{wheel weight}}{\text{max. operating RPM}}$$

Ounce-inches is the direct measure of the wheel's out-of-balance condition expressed as a single weight at a reference radius. The relationship between ounce-inches unbalance and rotational force can be found by the formula:

$$\text{force (lbs.)} = \frac{\text{oz.-in.} \times (\text{RPM})^2}{563,000}$$

EXAMPLE: A 27 AcF, Class III wheel has a weight of 115 lbs. and a maximum operating speed of 2530 RPM. Inserting these values into the first formula yields a maximum unbalance of 1.36 oz.-in. This number can then be used to determine the maximum rotational force at a specific fan operating speed (for this example, use 2200 RPM):

$$\text{force (lbs.)} = \frac{1.36 \times (2200)^2}{563,000} = 11.7 \text{ lbs.}$$

There is a limitless variety of reasons for vibration of fan components in excess of the indicated balancing tolerances, once the components are placed in operation. The most prevalent are insufficient structural supports, shipping damage, unbalanced drive sheaves, unmatched V-belts, poorly fitted assembly of rotating elements, such as shaft-to-fore fit, shaft-to-bearing fit, and shaft straightness. All of these are beyond the control of **nyb** and only the original factory balance can be warranted.

**nyb** will rebalance or replace any fan components returned to its factory, prepaid, that do not meet the listed balancing tolerance, provided the purchaser complies with the following conditions:

1. It is the purchaser's responsibility to ensure that the fan components balanced by **nyb** will operate smoothly in the complete structure or product. **nyb** relies on the purchaser to have appropriate vibration-testing equipment and technical expertise to analyze the structure or product and make whatever field-balance modifications necessary.
2. In the event that the purchaser has recurring balancing problems with components, **nyb** will furnish, at nominal cost, service consultants to assist in solving any continuing field difficulties.
3. If a purchaser suspects an **nyb** fan component to be out of balance beyond these tolerances, the purchaser should request authorization to return the components to **nyb**. Parts must be returned via prepaid freight. **nyb** does not accept any responsibility for charges incurred in removing and reinstalling the part in the purchaser's structure.

## LIMITED PRODUCT WARRANTY

All products are warranted by **nyb** to be free from defects in materials and workmanship for a period of one (1) year after shipment from its plant, provided buyer demonstrates to satisfaction of **nyb** that the product was properly installed and maintained in accordance with **nyb's** instructions and recommendations and that it was used under normal operating conditions.

This warranty is limited to the replacing and/or repairing by **nyb** of any part or parts which have been returned to **nyb** with **nyb's** written authorization and which in **nyb's** opinion are defective. Parts not manufactured by **nyb** but installed by **nyb** in equipment sold to the buyer shall carry the original manufacturer's warranty only. All transportation charges and any and all sales and use taxes, duties, imports or excises for such part or parts shall be paid for by the buyer. **nyb** shall have the sole right to determine whether defective parts shall be repaired or replaced.

This warranty does not cover any customer labor charges for replacement of parts, adjustments or repairs, or any other work unless such charges shall be assumed or authorized in advance, in writing, by **nyb**.

This warranty does not cover any product which, in the judgment of **nyb**, has been subject to misuse or neglect, or which has been repaired or altered outside **nyb's** plant in any way which may have impaired its safety, operation or efficiency, or any product which has been subject to accident.

This warranty shall be null and void if any part not manufactured or supplied by **nyb** for use in any of its products shall have been substituted and used in place of a part manufactured or supplied by **nyb** for such use.

There are no warranties, other than those appearing on the acknowledgement form **INCLUDING NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**, given in connection with the sale of the goods sold hereunder. The buyer agrees that his sole and exclusive remedy, and the limit of **nyb's** liability for loss from any cause whatsoever, shall be the purchase price of the goods sold hereunder for which a claim is made.