



---

## ***UPBLAST AXIAL ROOF VENTILATORS***

- *Macheta<sup>®</sup> Airfoil Design*
- *Model BD40C*



# Upblast Axial Model BD40C Roof Ventilators

The Model BD40C is the most versatile of Aerovent's upblast roof ventilators. It is a three-part assembly consisting of:

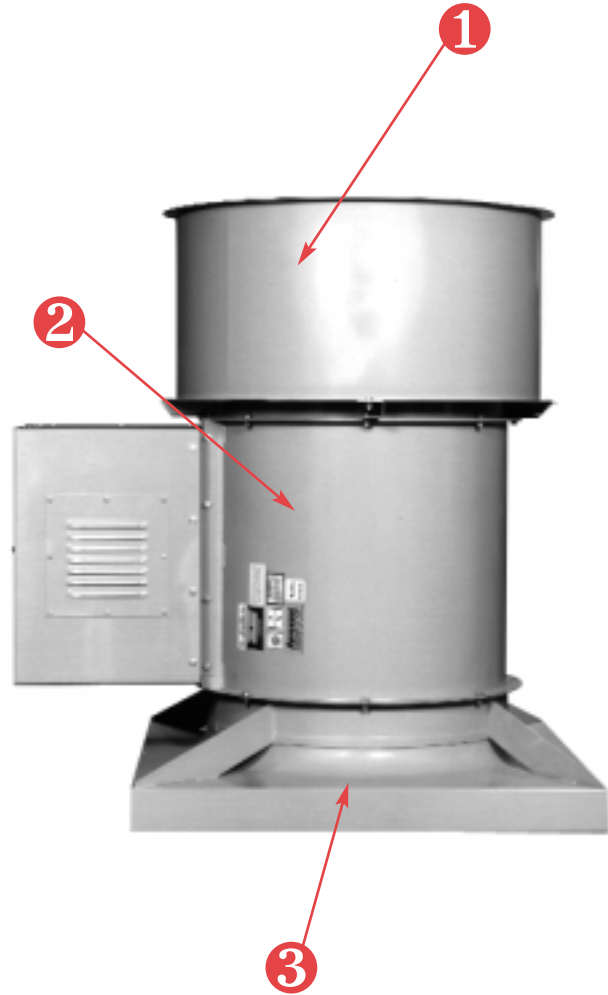
- ① Stack cap with automatic dampers.
- ② Standard belt driven tubeaxial fan with cast aluminum Macheta® airfoil bladed propeller.
- ③ Curb base for mounting the assembled ventilator to a roof curb.

This ventilator is of a taller design than typical centrifugal or propeller roof ventilator units and is, therefore, especially useful in the discharge of smoke and/or fumes high above the roof line and away from surrounding ventilation systems.

The three parts of the Model BD40C are shipped separately and are assembled on the job by bolting together matching flanges. Standard construction is of heavy-gauge steel finished with air-dried gray enamel. Hot dipped galvanized, stainless steel or all-aluminum construction is optional.

Although this catalog shows a standard rating table employing a belt driven tubeaxial fan, similar roof ventilators can be assembled to use any of the tubular fan designs, which include the standard tubeaxial, vaneaxial and centaxial fans.

When belt driven models are specified, a weather cover is furnished to protect the motor and the drives. The drives are sized with V-belts that have a 1.40 service factor. Belt driven units with motor ratings up to and including 5 horsepower are furnished with adjustable motor sheaves as standard. A disconnect switch and other standard accessories are available with this ventilator design. Aerovent can also furnish a mounting base adapter for the Model BD40C ventilator to fit existing and other than standard size roof openings.



## Contents

Design Features . . . . .	2
Optional Construction . . . . .	3
Accessories	
Motorized Stack Cap . . . . .	3
Disconnect Switch . . . . .	4
Bird Screen/Discharge Guard . . . . .	4
Shaft Seal . . . . .	4
Prefabricated Roof Curbs . . . . .	5
Performance Data . . . . .	6
Dimensional Data . . . . .	9
Typical Specifications . . . . .	10



Aerovent certifies that the Belt Driven Model BD40C Roof Ventilators shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

"Macheta" is a registered trade name of Aerovent, Minneapolis, Minnesota.

©1999 Aerovent, Twin City Fan Companies, Ltd.

Bulletin illustrations cover the general appearance of Aerovent products at the time of publication and we reserve the right to make changes in design and construction at any time without notice.

All models of the BD40C Roof Ventilators shown in this catalog have sufficient velocity to fully open steel dampers in the ventilator head section. The table below lists the minimum

CFM requirement for fully open damper operation and the maximum CFM allowable through the stack cap.

DAMPER MATERIAL		CFM PER DAMPER SIZE														
		12"	14"	16"	18"	21"	24"	30"	36"	42"	48"	54"	60"	72"	84"	96"
STEEL	MIN.	1390	1885	2450	3130	4190	5455	8520	12525	16850	21950	27670	34880	49050	66565	86750
	MAX.	2450	3320	4315	5525	7390	9625	15035	22100	29730	38690	48825	60140	86555	117460	153080
ALUM.	MIN.	1065	1440	1875	2395	3205	4170	6515	9580	12885	16765	21160	26050	37510	50905	66340
	MAX.	2450	3320	4315	5525	7390	9625	15035	22100	29730	38690	48825	60140	86555	117460	153080

## Optional Construction

### Spark Resistant Construction

Belt driven fans can be furnished for AMCA Type B and C spark resistant construction with the addition of an aluminum rub ring around the fan shaft or for AMCA Type A spark resistant construction with all-aluminum housing construction, an AMPCO 45 fan shaft and Monel hardware in the airstream. Direct drive fans are inherently AMCA Type B or C spark resistant, but should be specified with an appropriate explosion-proof motor.

### High Temperature Construction

Belt driven fans can be furnished to operate in temperatures from 275°F to 600°F. For this construction, the

fan is supplied with a cast solid A240 aluminum propeller, high temperature bearing lubrication and a special painted finish for high temperatures. Note that the fan must be energized to keep the bearings cool during high temperature operation.

### Corrosion Resistant Construction

For handling corrosive fumes or gases. Fan casings can be constructed of hot dipped galvanized steel, stainless steel, aluminum, or protected with a wide variety of suitable protective coatings such as Plasite, Heresite, epoxy, etc.

## Accessories

### Motorized Stack Cap

Available in sizes 24" through 48", the motorized stack cap option can be ordered for new or existing units.

A Honeywell M4182B1002 120/1/60 electric motor operates the damper lifting rods on the motorized stack cap, slowly raising and lowering the dampers, and keeping them closed tight when in the off position. This insures a secure closure without damper flutter due to wind gusts or internal positive pressure. The motor operated stack cap can also be used to open the dampers for the fan when there is not enough air velocity to raise the automatic backdraft dampers.

Supplied on all stack cap motors is an end switch that signals the fan "on" after the dampers are in the open position. This safeguard prevents any chance of pres-



sure build-up that would occur if the dampers were being held closed and the fan turned on.

This option is not appropriate for AMCA 99-0401-86 spark-resistant construction.

# Accessories

---

## Disconnect Switch

A necessary service safety component designed to insure isolation of the fan motor from remote starting equipment.



*NEMA 4 Enclosure  
(Dusttight/Watertight)*



*NEMA 3R Enclosure  
(Rainproof/Sleet Resistant)*

---

## Bird Screen/Discharge Guard

A discharge guard of spiral wire bolted to the wind-band flange to prevent foreign material from entering the stack cap damper assembly.



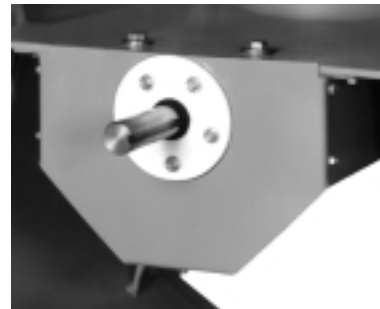
*Bird Screen/Discharge  
Guard*

---

## Shaft Seal

An elastomeric viton rotary seal rides against a heavy Teflon, bolted-in-place, wear plate which surrounds the shaft of the belt driven fans to provide protection of the shaft and bearings when handling dirty, wet or corrosive air.

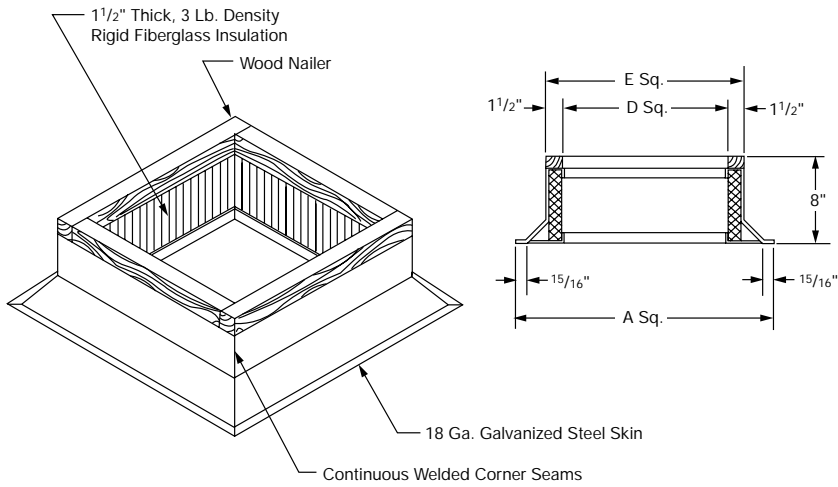
**Note:** the seal does not make the installation gas tight and is not appropriate in ambient temperatures above 250°F.



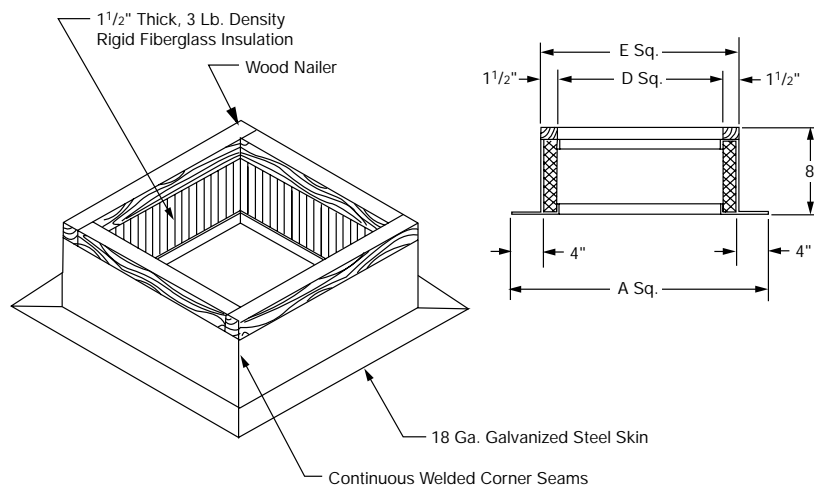
*Shaft Seal*

# Prefabricated Roof Curbs

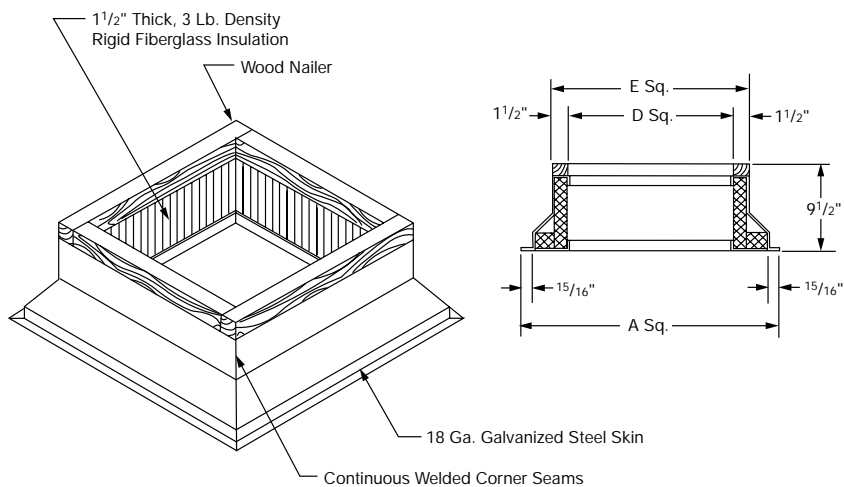
## Type 1



## Type 2



## Type 5



Dimensions in inches.

CURB SIZE	A	D	E
12	30	19	22
14	31	20	23
16	34	23	26
18	36	25	28
21	39	28	31
24	42	31	34
30	50	39	42
36	56	45	48
42	62	51	54
48	68	57	60
54	74	63	66
60	81	70	73
72	95	84	87
84	107	96	99
96	119	108	111

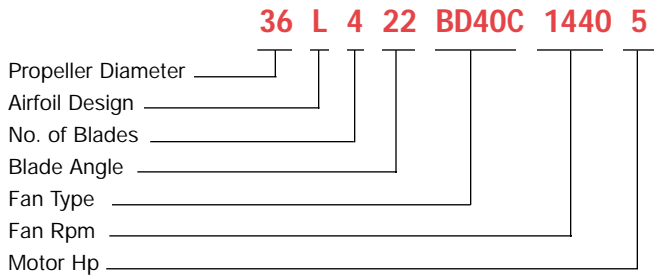
DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

# Performance Data

## Model BD40C Roof Ventilator

To identify a specific fan for ordering or engineering specification, it is necessary to show the complete information in the tables below under catalog number. All performance data is available in curve form upon request.

### Catalog Numbering System



### SIZE 12" (305 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
12M624	BD40C	2625	1/2	1430	.32	1360	.33								
12M624	BD40C	3100	3/4	1690	.52	1630	.54	1570	.55	1500	.55	1440	.55		
12M624	BD40C	3550	1	1930	.79	1880	.80	1830	.82	1780	.82	1720	.82	1600	.82

### SIZE 14" (356 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
14L428	BD40C	2410	1/3	1820	.36										
14L428	BD40C	2765	1/2	2090	.54	1960	.54	1830	.55						
14L428	BD40C	3180	3/4	2400	.82	2290	.82	2170	.83	2050	.82	1930	.82		
14L428	BD40C	3500	1	2640	1.10	2540	1.10	2440	1.10	2330	1.10	2220	1.11	1960	1.10

### SIZE 16" (406 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
16L428	BD40C	2227	1/2	2510	.55	2320	.55								
16L428	BD40C	2549	3/4	2870	.82	2710	.82	2550	.82						
16L428	BD40C	2806	1	3160	1.10	3010	1.10	2860	1.11	2720	1.11	2550	1.11		

### SIZE 18" (457 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
18L428	BD40C	1985	1/2	3420	.55	3100	.55								
18L428	BD40C	2260	3/4	3890	.81	3600	.81	3340	.82	3060	.82				
18L428	BD40C	2490	1	4290	1.09	4030	1.10	3790	1.10	3540	1.10	3260	1.10		
18L428	BD40C	2840	1½	4890	1.61	4650	1.61	4450	1.62	4230	1.63	4010	1.63	3490	1.63

**Notes:**

1. Performance shown is for Installation Type A: Free inlet, free outlet.
2. Power rating (BHP) includes drive losses.
3. Performance ratings include the effects of a stack cap damper in the airstream.

## SIZE 21" (533 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
21L428	BD40C	1754	3/4	4800	.81	4370	.82								
21L428	BD40C	1931	1	5280	1.09	4890	1.10	4530	1.10	4140	1.10				
21L428	BD40C	2210	1½	6040	1.62	5700	1.64	5380	1.65	5060	1.65	4710	1.65		

## SIZE 24" (610 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
24L422	BD40C	1470	3/4	5980	.80	5500	.81								
24L422	BD40C	1618	1	6550	1.10	6150	1.10	5700	1.10						
24L422	BD40C	1852	1½	7500	1.61	7150	1.62	6780	1.62	6400	1.62	6000	1.62		
24L422	BD40C	2039	2	8270	2.18	7950	2.20	7610	2.20	7260	2.20	6910	2.20	6170	2.20

## SIZE 30" (762 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
30L422	BD40C	1116	3/4	8820	1.08										
30L422	BD40C	1277	1½	10150	1.60	9500	1.62	8800	1.62						
30L422	BD40C	1405	2	11100	2.00	10550	2.10	9900	2.10	9300	2.10	8620	2.15		
30L422	BD40C	1609	3	12720	3.10	12230	3.20	11720	3.25	11150	3.25	10600	3.20	9410	3.20
30L422	BD40C	1907	5	15100	5.30	14690	5.35	14230	5.35	13800	5.40	13300	5.40	12380	5.50

## SIZE 36" (914 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
36L422	BD40C	842	1	12250	1.00										
36L422	BD40C	964	1½	14050	1.51	12900	1.59								
36L422	BD40C	1061	2	15500	2.01	14450	2.07	13130	2.15	12000	2.20				
36L422	BD40C	1214	3	17700	3.10	16800	3.10	15800	3.15	14700	3.20	13650	3.25		
36L422	BD40C	1440	5	21000	5.00	20250	5.10	19500	5.20	18650	5.30	17700	5.35	15750	5.40
36L422	BD40C	1648	7½	24000	7.30	23400	7.60	22700	7.80	22000	7.85	21200	7.90	19600	8.10

## SIZE 42" (1067 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
42L422	BD40C	745	1½	17250	1.50										
42L422	BD40C	820	2	19000	2.00	17400	2.10								
42L422	BD40C	939	3	21700	3.00	20400	3.10	18800	3.20	17200	3.30				
42L422	BD40C	1114	5	25750	5.00	24700	5.30	23400	5.40	22100	5.50	20650	5.50	17550	5.50
42L422	BD40C	1275	7½	29500	7.60	28500	7.90	27500	8.00	26350	8.00	2200	8.00	22700	8.10
42L422	BD40C	1403	10	32500	10.0	31600	10.2	30600	10.3	29700	10.3	28600	10.6	26400	10.9

### Notes:

1. Performance shown is for Installation Type A: Free inlet, free outlet.
2. Power rating (BHP) includes drive losses.
3. Performance ratings include the effects of a stack cap damper in the airstream.

## SIZE 48" (1219 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
48L422	BD40C	657	2	22600	2.00										
48L422	BD40C	752	3	25900	3.00	24000	3.15	21700	3.20						
48L422	BD40C	891	5	30800	5.10	29100	5.20	27350	5.40	25350	5.50	23200	5.50		
48L422	BD40C	1020	7½	35250	7.50	33800	7.90	32350	8.00	30650	8.00	28900	8.05	25200	8.10
48L422	BD40C	1123	10	38700	10.0	37500	10.2	36100	10.4	24700	10.7	33200	10.8	29950	11.0

## SIZE 54" (1372 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
54L422	BD40C	618	3	30350	3.10	27600	3.20								
54L422	BD40C	732	5	36100	5.00	33700	5.20	32100	5.50	28500	5.50				
54L422	BD40C	838	7½	41200	7.90	39200	7.90	37100	8.00	34800	8.00	32400	8.15	26900	8.10
54L422	BD40C	923	10	45500	10.0	43600	10.2	41700	10.4	39750	10.7	37500	11.0	33000	11.0
54L422	BD40C	1056	15	52000	15.1	50400	15.5	48750	15.9	47100	16.0	45200	16.1	41500	16.2

## SIZE 60" (1524 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
60L422	BD40C	615	5	41500	5.00	38500	5.20	35100	5.30						
60L422	BD40C	703	7½	47500	7.60	44850	7.80	42000	7.90	39000	8.10	35550	8.20		
60L422	BD40C	774	10	52300	10.0	49900	10.2	47300	10.4	44650	10.8	41650	11.0		
60L422	BD40C	886	15	60000	15.1	57700	15.3	55550	15.7	53300	15.9	50800	16.1	45750	16.2
60L422	BD40C	975	20	65900	20.2	64000	20.4	62000	20.8	60000	21.0	57800	21.3	53300	21.9

## SIZE 72" (1829 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
72L422	BD40C	453	5	53000	5.00	48000	5.20								
72L422	BD40C	519	7½	60500	7.65	56200	7.90	51300	8.00						
72L422	BD40C	571	10	66500	10.1	62800	10.4	58500	10.7	54000	10.9	48850	11.0		
72L422	BD40C	654	15	76150	15.2	73000	15.4	69300	15.8	65500	16.1	61200	16.2	52500	16.2
72L422	BD40C	720	20	84100	20.2	81000	20.6	77800	21.0	74300	21.2	70800	21.7	63000	22.0

## SIZE 84" (2134 mm)

CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
84L422	BD40C	442	10	82000	10.0	76000	10.3	69200	10.8						
84L422	BD40C	506	15	93900	15.2	88650	15.7	83000	15.9	77000	16.2	70400	16.2		
84L422	BD40C	557	20	103200	20.2	98700	20.8	93500	21.1	88200	21.7	82500	22.0	70200	22.0

## SIZE 96" (2438 mm)

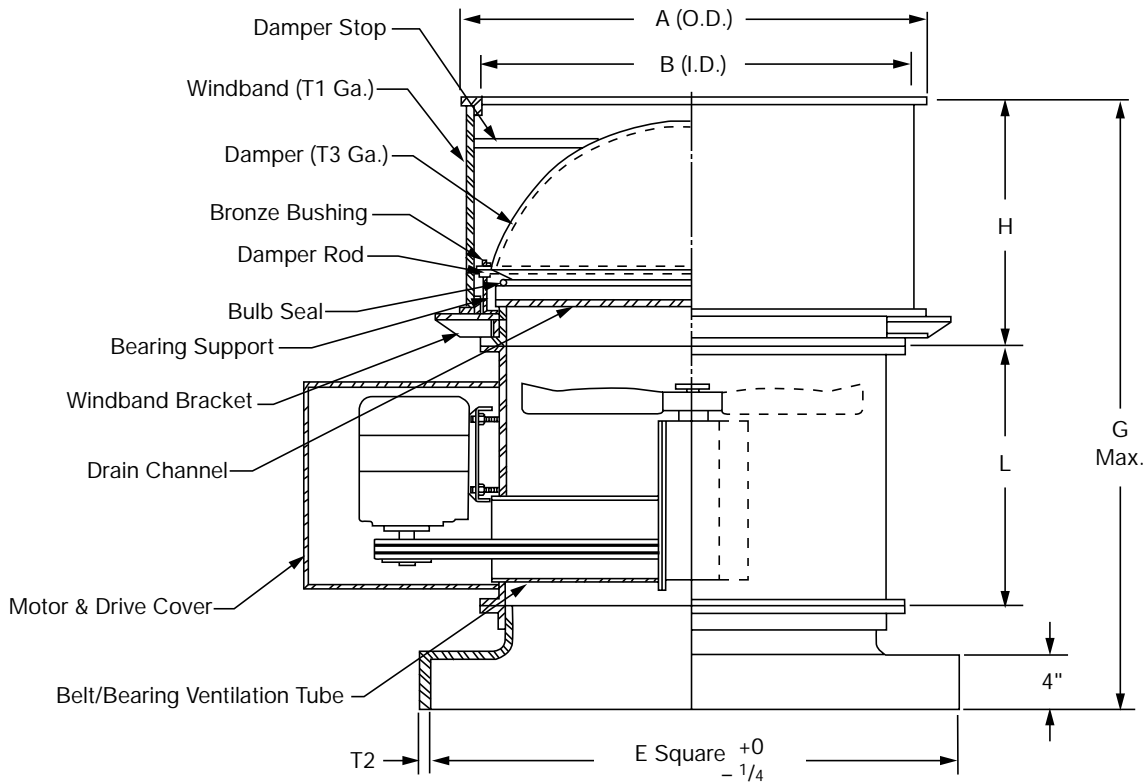
CATALOG NUMBER				CUBIC FT. PER MIN. & HORSEPOWER AT STATIC PRESSURE											
				0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		3/4" SP	
PROP	FAN TYPE	RPM	HP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
96L422	BD40C	354	10	98000	10.2	89700	10.4								
96L422	BD40C	405	15	112100	15.2	105000	15.7	96700	16.1	87900	16.2				
96L422	BD40C	446	20	123700	20.3	117000	20.8	110000	21.2	102000	21.9	93500	22.0		

### Notes:

1. Performance shown is for Installation Type A: Free inlet, free outlet.
2. Power rating (BHP) includes drive losses.
3. Performance ratings include the effects of a stack cap damper in the airstream.



# Dimensional Data



Dimensions in inches unless otherwise indicated.

SIZE	A	B	E	G	H	L	T1	T2	T3	MOTOR FRAME	
										MIN.	MAX
12	21 <sup>1</sup> / <sub>4</sub>	18 <sup>3</sup> / <sub>8</sub>	23 <sup>3</sup> / <sub>8</sub>	45 <sup>1</sup> / <sub>8</sub>	16 <sup>3</sup> / <sub>4</sub>	22	14 GA.	16 GA.	24 GA.	48	145T/U
14	23 <sup>1</sup> / <sub>4</sub>	20 <sup>3</sup> / <sub>8</sub>	24 <sup>7</sup> / <sub>8</sub>	47 <sup>7</sup> / <sub>8</sub>	17 <sup>3</sup> / <sub>4</sub>	22	14 GA.	16 GA.	24 GA.	48	145T/U
16	25 <sup>1</sup> / <sub>4</sub>	22 <sup>3</sup> / <sub>8</sub>	27 <sup>7</sup> / <sub>8</sub>	53 <sup>3</sup> / <sub>4</sub>	18 <sup>3</sup> / <sub>4</sub>	24	14 GA.	16 GA.	24 GA.	48	184T/U
18	28 <sup>7</sup> / <sub>4</sub>	25 <sup>3</sup> / <sub>8</sub>	29 <sup>7</sup> / <sub>8</sub>	56 <sup>3</sup> / <sub>4</sub>	21 <sup>3</sup> / <sub>4</sub>	24	14 GA.	16 GA.	24 GA.	48	184T/U
21	29 <sup>3</sup> / <sub>4</sub>	26 <sup>7</sup> / <sub>8</sub>	32 <sup>7</sup> / <sub>8</sub>	58 <sup>7</sup> / <sub>8</sub>	23 <sup>3</sup> / <sub>4</sub>	24	14 GA.	16 GA.	24 GA.	48	215T/U
24	31 <sup>3</sup> / <sub>4</sub>	28 <sup>7</sup> / <sub>8</sub>	35 <sup>7</sup> / <sub>8</sub>	60 <sup>1</sup> / <sub>4</sub>	24 <sup>3</sup> / <sub>4</sub>	24	14 GA.	14 GA.	24 GA.	48	215T/U
30	39 <sup>3</sup> / <sub>4</sub>	36 <sup>7</sup> / <sub>8</sub>	43 <sup>7</sup> / <sub>8</sub>	66 <sup>3</sup> / <sub>4</sub>	27 <sup>3</sup> / <sub>4</sub>	27	14 GA.	14 GA.	20 GA.	48	215T/U
36	45 <sup>3</sup> / <sub>4</sub>	42 <sup>7</sup> / <sub>8</sub>	49 <sup>7</sup> / <sub>8</sub>	76 <sup>3</sup> / <sub>4</sub>	30 <sup>3</sup> / <sub>4</sub>	34	14 GA.	14 GA.	20 GA.	56	256T/U
42	51 <sup>3</sup> / <sub>4</sub>	48 <sup>7</sup> / <sub>8</sub>	55 <sup>7</sup> / <sub>8</sub>	79 <sup>3</sup> / <sub>4</sub>	33 <sup>3</sup> / <sub>4</sub>	34	14 GA.	14 GA.	20 GA.	143T/U	286T/U
48	57 <sup>3</sup> / <sub>4</sub>	54 <sup>7</sup> / <sub>8</sub>	61 <sup>7</sup> / <sub>8</sub>	84 <sup>3</sup> / <sub>4</sub>	36 <sup>3</sup> / <sub>4</sub>	36	14 GA.	14 GA.	20 GA.	143T/U	286T/U
54	64	60 <sup>3</sup> / <sub>4</sub>	67 <sup>3</sup> / <sub>4</sub>	99 <sup>3</sup> / <sub>4</sub>	39 <sup>3</sup> / <sub>4</sub>	48	14 GA.	12 GA.	20 GA.	143T/U	286T/U
60	70	66 <sup>3</sup> / <sub>4</sub>	74 <sup>3</sup> / <sub>4</sub>	103 <sup>3</sup> / <sub>4</sub>	43 <sup>3</sup> / <sub>4</sub>	48	14 GA.	12 GA.	20 GA.	143T/U	286T/U
72	88	84 <sup>3</sup> / <sub>4</sub>	88 <sup>3</sup> / <sub>4</sub>	121 <sup>3</sup> / <sub>4</sub>	49 <sup>3</sup> / <sub>4</sub>	60	14 GA.	12 GA.	20 GA.	143T/U	326T/U
84	100	96 <sup>3</sup> / <sub>4</sub>	100 <sup>3</sup> / <sub>4</sub>	129 <sup>3</sup> / <sub>4</sub>	56 <sup>3</sup> / <sub>4</sub>	60	14 GA.	10 GA.	20 GA.	143T/U	326T/U
96	112	108 <sup>3</sup> / <sub>4</sub>	112 <sup>3</sup> / <sub>4</sub>	149 <sup>3</sup> / <sub>4</sub>	63 <sup>3</sup> / <sub>4</sub>	72	14 GA.	10 GA.	20 GA.	143T/U	326T/U

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

# Typical Specifications

---

Roof Ventilators, where indicated on drawings and schedules, shall be of the belt driven tubeaxial type, Arrangement 9, as manufactured by Aerovent, Minneapolis, Minnesota and shall be of the size and capacity as indicated in the fan schedule. Fans shall have the propeller mounted on a separate shaft, bearings in an enclosed tube, and 1.3 service factor V-belt drives. Units shall be complete with a stack cap damper assembly for vertical upblast discharge and a curb base adapter to facilitate mounting the roof ventilator assembly to a roof curb. Roof ventilators shall be tested and certified in accordance with ANSI/ASHRAE 51-1985 and ANSI/AMCA 210-85 test codes and guaranteed by the manufacturer to deliver at the rated published performance levels. Testing shall be conducted so that static pressure is external to the assembled ventilator with curb base and stack cap damper bolted in place. Brake horsepower shall include drive losses and the product shall be licensed to bear the AMCA certified ratings seal. Each unit shall be factory run-tested prior to shipment.

**CONSTRUCTION** — Fan casings shall be welded of 14-gauge hot rolled steel in sizes through 14" diameter, 12-gauge hot rolled steel from 16" diameter through 30" diameter, 10-gauge hot rolled steel in sizes from 36" diameter through 42" diameter and 7-gauge hot rolled steel on sizes of 48" diameter and larger. Inlet and outlet flanges shall be of welded angle ring construction on fan casings of 12" diameter through 14" diameter and all casings of 72" diameter and larger. Inlet and outlet flanges on 16" diameter through 60" diameter shall be integrally rolled mechanically from fan casing sheet steel to insure concentricity and alignment of flanges. Fan casing flanges shall be match-drilled to facilitate bolted connection to stack cap damper and curb base adapter. Concentricity of fan casing shall be insured through the use of welding jigs and fixtures. Units shall be constructed with a fabricated adjustable steel multi-frame jack-screw type motor support of minimum  $\frac{3}{16}$ " steel plate supported by threaded rod welded to the exterior of the fan casing.

**PROPELLERS** — Precision "Macheta" tipped airfoil fan blades and hub shall be of A319 aluminum alloy castings. The propeller shall be secured to the fan shaft with knurled cup point setscrews in all sizes up to 16" diameter and split taper lock bushings in all sizes of 18" and larger.

**BEARINGS** — All fans shall be supplied with sealed pillow block bearings with grease lines brought to the outside of the fan casing to facilitate servicing. Bearings shall have a minimum L-10 life as defined by AFBMA of at least 20,000 hours (100,000 hours average life).

**DRIVES** — Sheaves shall be cast iron with static conducting belts. Bearings and belts are enclosed in an air-insulated housing for protection.

**BALANCING** — The propeller assembly shall be statically and dynamically balanced in accordance with ISO 1940-1973, "Balance Quality of Rotating Rigid Bodies," Grade Level G6.3. In addition, belt driven fan propellers shall be balanced on the fan shaft after final assembly in the fan casing in accordance with ISO 2372, "Mechanical Vibration of Machines with Operating Speed from 10 to 200 Rev/Sec Basis for Specifying Evaluation Standards," to tolerances not to exceed those listed below in mils double amplitude:

<u>Fan RPM</u>	<u>Mils PK-PK</u>	<u>Vel In/Sec (PK)</u>
3450	0.66	0.124
1725	1.32	0.124
1160	1.97	0.124
870	2.63	0.124
695	3.38	0.124

**MOTORS** — Fan motors shall be foot-mounted NEMA Design B, standard industrial continuous duty, ball bearing (ODP, TEAO, TEFC, FCXP) variable torque type suitable for operation on voltage, phase, and hertz as listed in the fan schedule. An OSHA type louver-ventilated motor cover shall be bolted to the exterior of the fan to provide personnel and drip-proof protection of the motor and drive tube.

**CURB BASE** — The curb base shall be fabricated from a minimum of 16-gauge steel through 21" fan diameter, 14-gauge steel from 24" through 48" fan diameter, 12-gauge steel from 84" through 96" fan diameter. The curb base adapter shall have a smoothly radiused integral inlet bell to minimize inlet losses to the fan.

**DAMPERS** — The stack cap dampers shall be heavy-duty butterfly type. The windband shall be of 14-gauge steel. Damper blades shall be fabricated from 24-gauge steel from 12" through 24" fan diameter and 20-gauge steel from 30" through 96" fan diameter. All edges of the damper blades are to have a formed pie crust edge to provide maximum strength and rigidity. Heavy-duty steel damper rods shall rotate on rust-proof oil impregnated bronze bushings.

**FINISH** — The unit, after fabrication, shall be cleaned and chemically pretreated by a phosphatizing process and shall be painted inside and outside with an alkyd primer and finish painted with an air dry enamel. Fan shall be coated with following optional finish:

Optional Coatings

- Air Dry Epoxy
- High Temperature Aluminum
- Asphalt Based Coating
- Carbolene 3358/Sanitile 550 – Carbolene Primer Sanitile Finish

The following coatings require a sandblast metal preparation before applying.

- Plasite 4310 – Vinyl Ester
- Plasite 7122L – Air Dry Epoxy Phenolic
- Heresite VR506 – Air Dry Epoxy Phenolic
- Plasite 1246 – Baked Epoxy Phenolic
- Plasite 3066 – Baked Phenolic
- Farboil – Baked Aromatic Epoxy

**SOUND POWER LEVELS** — Sound power level of the fan(s) shall not exceed Octave Band-CPS (Sound Power  $10^{-12}$ ).

20-75	75-150	150-300	300-600	600-1200	1200-2400	2400-4800	4800-10000

**OPTIONAL ACCESSORIES** — The fan shall be furnished complete with:

- NEMA 3R outdoor rainproof, nonfused safety disconnect switch (mounted/mounted and wired)
- NEMA 4 outdoor watertight/dust-tight nonfused safety switch (mounted/mounted and wired)
- Prefab insulated roof curb (galvanized steel/aluminum/stainless steel) (slope base/flat base/peak base)
- Motorized stack cap damper
- Fusible link kit (165°F/212°F)
- Bird screen/outlet safety screen
- Viton shaft seal
- Inlet safety screen