AEROVENT

INDUSTRIAL VENTILATION SYSTEMS

LOW PROFILE UPBLAST ROOF VENTILATORS

MODELS: BSD53 / BSB53

CATALOG 631
APRIL 2024

Model BSD53

Model BSB53

Overview

BSD53 | BSB53

Aerovent's line of Low Profile Upblast Roof Ventilators provide general exhaust of commercial and light industrial buildings while offering a pleasing low profile design that minimizes extension above the roof line. The upblast design discharges air and contaminants up and away from the building. These ventilators exhaust large volumes of air at low to medium static pressures. Typical applications for upblast roof ventilators include warehouses, shopping centers and manufacturing facilities.

An array of adjustable pitch, cast aluminum impellers are available to meet specific performances and application requirements. The cost effective design is available in both belt and direct drive configurations. Application flexibility, cost competitiveness and robust design all combine to make Aerovent's BSD53 and BSB53 Low Profile Upblast Roof Ventilators an industry leader.

Typical Industries Include

Warehouse Ventilation, Office Ventilation, General HVAC, Gymnasium Ventilation, Factory Ventilation, Greenhouse Ventilation, Attic Exhaust, Hospital Exhaust, Agriculture, Manufacturing Exhaust, Paper Mills, Foundry, Textile, Commercial Plan & Spec, Office Ventilation

Configurations

Upblast

Impeller Types

"B" Die Cast Aluminum Impellers

Standard Construction

Heavy-Gauge Galvanized Steel

Optional Construction

Special Coatings, Aluminum Construction, UL 705

Certifications

UL 705 Listed for Electrical

Energy Regulations

Aerovent 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 Aerovent products to their specific applications to meet applicable DOE and state regulatory requirements. Aerovent has made significant investments in product testing and development to provide efficient products. Developments in Aerovent'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.

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Models BSD53 and BSB53 are UL/cUL 705 listed, for electrical, File No. E158680.

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

Overview

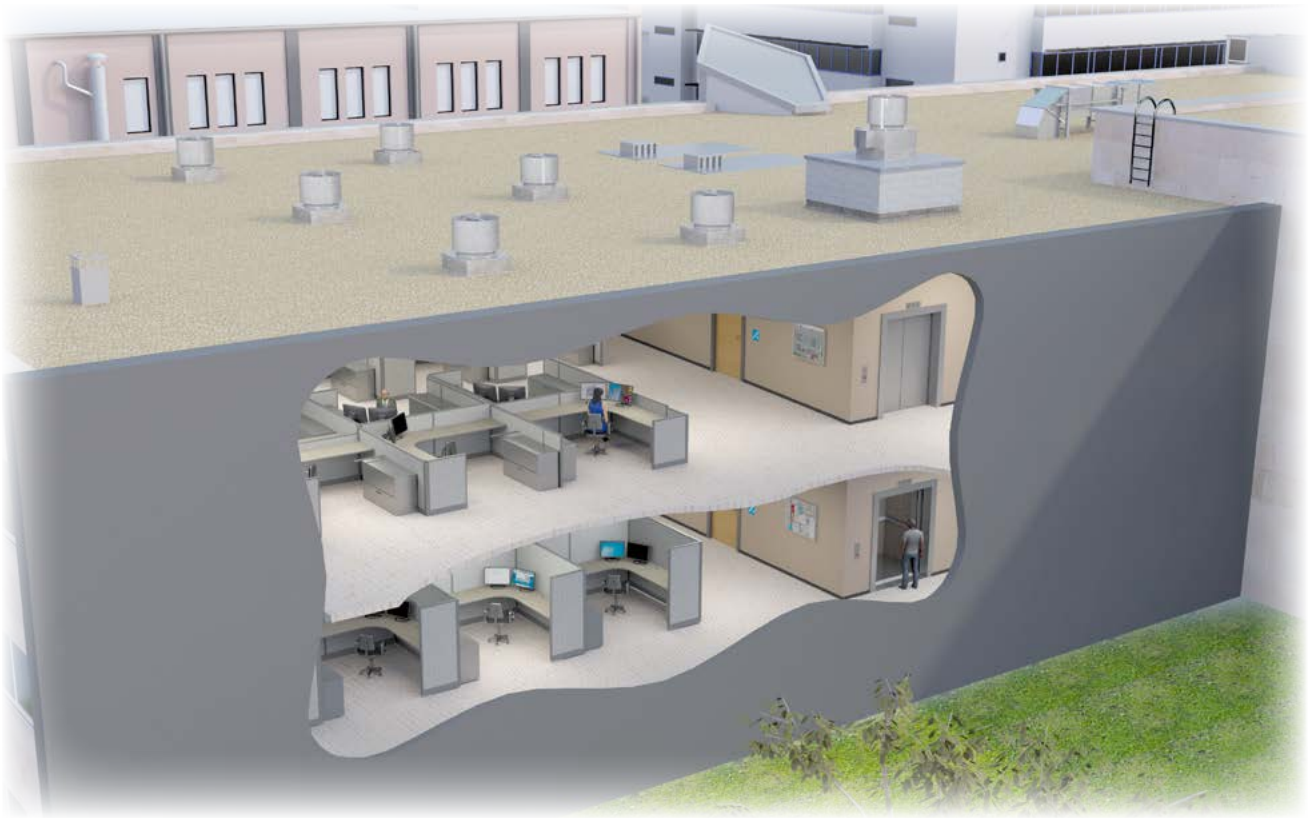
BSD53 | BSB53

BSD53 (Direct Drive)
Upblast direct drive model BSD53 is available for general-purpose exhaust. Direct drive fans are an ideal choice for installations where service and maintenance are made difficult due to limited access. The BSD53 can save on service costs incurred through sheave, belt and bearing maintenance.

Sizes and Performance
14" to 48" impeller diameters
Airflow to 36,300 CFM
Static pressure to 1" w.g.

BSB53 (Belt Driven)
Standard duty upblast belt driven model BSB53 is available for use in clean air applications requiring the adjustable performance of a belt drive fan. Motor and drives are located below the fan, inside the roof curb for access from inside the building.

Sizes and Performance
21" to 54" impeller diameters
Airflow to 52,000 CFM
Static pressure to 1" w.g.



General HVAC (Supply and Exhaust)
Emergency Smoke Contol (Elevator Shaft Exhaust)

Construction Features

Impellers
Cast aluminum blades and hubs. Impellers on belt driven units shall be secured to the fan shaft with a taper lock bushing. Impellers on direct drive units shall be mounted directly on the motor shaft with a taper lock bushing.

Butterfly Dampers
Blades constructed of steel as standard, unless the outlet velocity of the fan is below the minimum required to open steel damper blades, then aluminum blades shall be provided. Butterfly dampers provide weather protection when the fan is not in operation. A rain channel provides for run off of precipitation.

Windband
Constructed of heavy-gauge galvanized steel with bolted seams. Reinforcing flange provides rigidity, strength and safe handling. The windband is removable with four bolts, allowing access to the fan through the damper blades.

Bearings (BSB53 only)
Cast iron pillow block bearings selected for L-50 average life of 200,000 hours at maximum cataloged operating speeds.

Drives (BSB53 only)
Drive sheaves shall be of cast iron and supplied as variable pitch as standard. Drives and belts shall be rated for 150% of the required motor HP.

Curb Cap
Heavy-gauge galvanized or finish painted steel curb caps are provided with prepunched mounting holes. Curb cap includes venturi inlet for efficient airflow.

Motor and Drive Frame
Support assemblies are constructed of heavy-gauge galvanized or finish painted steel.

Shaft (BSB53 only)
Shaft diameters are sized to have a first critical speed of at least 125% of the fan's maximum operating speed.

Motors
ODP, TEFC and Explosion Proof, single- and three-phase motors are carefully matched to the fan load.

Mechanical Run Test & Final Vibration Check
All fans are assembled for a mechanical run test and final balance prior to shipment. Vibration readings are taken on both fan bearings in the axial, horizontal and vertical directions at the specified speed. Fans are balanced to 0.15 in./sec. peak or less.

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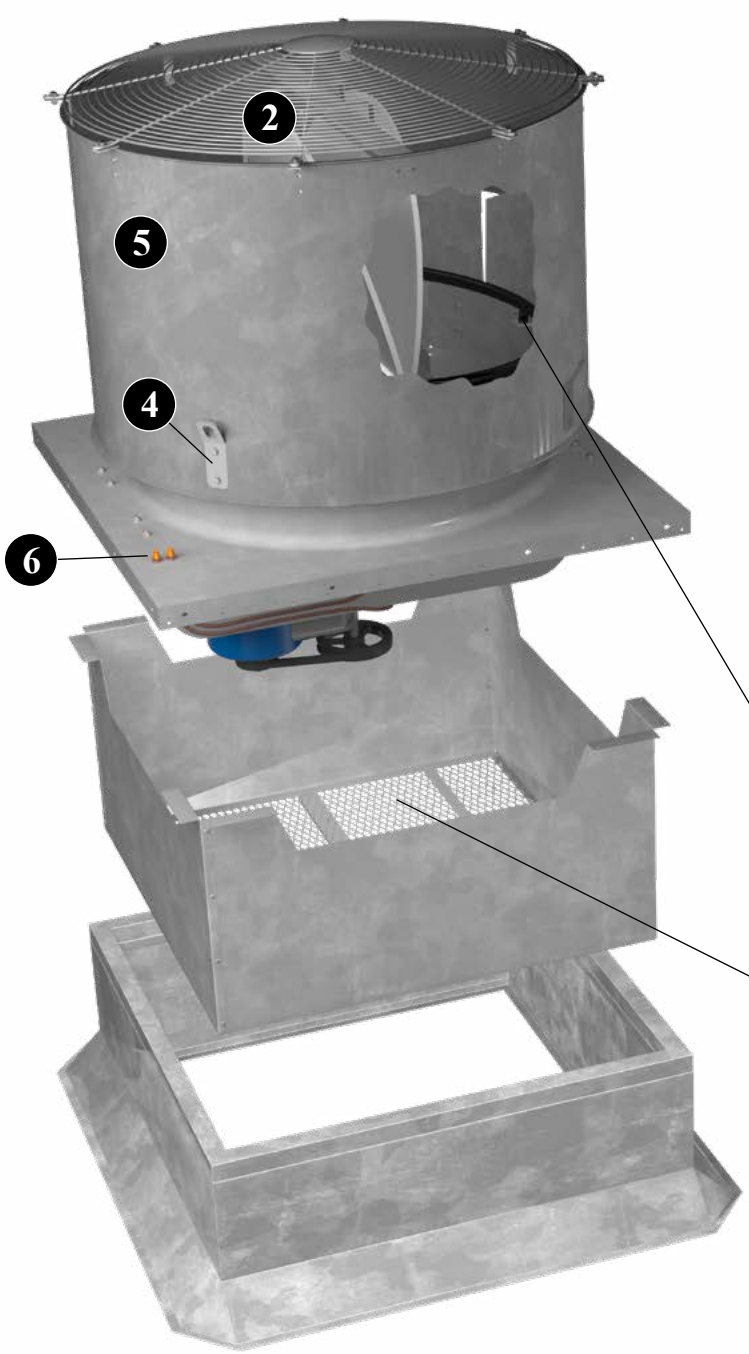
Lifting Lugs
The windband brackets also double as lifting points for the unit.

UL/cUL Listing
Models BSD53 and BSB53 are provided as standard with UL/cUL listing for electrical when supplied with specific motors.



1. **Basket Type Inlet Safety Screen** A basket style guard shall be offered to accommodate motors and drives extending down into the roof curb. Aerovent recommends the use of an inlet safety screen on all non-ducted installations.

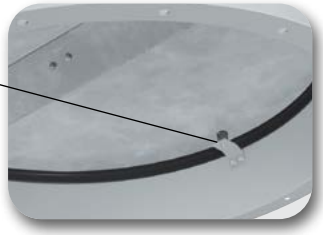
2. **Bird Screen (Outlet)** A zinc-plated steel bird screen protects the fan discharge from birds and other types of debris.

3. **Magnetic Damper Latches** Used to hold butterfly dampers closed when fan is not in operation. Damper blades must be steel with magnetic damper latches.

4. **Tie Down Brackets** Quantity of four brackets to allow for unit to be anchored to the roof. Cables by others.

5. **Aluminum Construction** Stack cap assembly is constructed out of aluminum in lieu of standard galvanized. Orifice panel is not constructed of aluminum.

6. **Extended Lube Lines** Allow for easy lubrication of bearings on belt driven units without disassembly by extending polyethylene lines from fan bearings to exterior of base.



Magnetic
Damper Latch

Other Accessories Include:

- Fusible Link Assembly
- Hinged Base
- Roof Curb Extensions
- Insect Screen
- Special Coatings

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Prefabricated Roof Curbs

Canted Roof Curbs

- Constructed of 18-gauge galvanized steel with continuously-welded seams
- Large 3" built-in 45° cant to accommodate roofing material to top of curb. Cant is beveled at corners for better support of roofing material
- Wood nailer ($1^1/_2$") secured to top ledge
- Lined with $1^1/_2$" fiberglass fire-resistant, sound-absorbing insulation
- Damper shelf standard
- Options: Aluminum (16-gauge) construction, burglar security bars, metal liner (galvanized or aluminum), special heights up to 24", single- or double-pitched curbs for sloping roofs

Self-Flashing & Straight-Sided Roof Curbs

- Constructed of 18-gauge galvanized steel with continuously-welded seams
- Wide base plate (flashing) to insure watertight seal to roof
- Top ledge covered with $^3/_{16}$" polystyrene gasket (self-flashing) for weather seal and to reduce metal-to-metal conducted noise
- Wood nailer secured to top ledge (straight-sided)
- Lined with $1^1/_2$" fiberglass fire-resistant, sound-absorbing insulation
- Damper shelf standard
- Straight-sided roof curbs are constructed with the same features as the self-flashing curbs, but are one dimensional to allow for field supplied cants and roofing material to be brought up to the top of the curb
- Options: Aluminum (16-gauge) construction, burglar security bars, metal liner (galvanized or aluminum), special heights up to 24", single- or double-pitched curbs for sloping roofs

Self-Flashing Vented Roof Curbs

For High Temperature Applications

- Completely assembled unit, easier to install and less expensive than a field constructed curb
- Constructed of 18-gauge galvanized steel with continuously-welded seams and wide base flashing for watertight seal to roof
- Meets NFPA-96 code requirements
- Top ledge covered with $^3/_{16}$" polystyrene gasket
- Furnished with ventilation slots

Curb Adapters

- Constructed of heavy-gauge galvanized steel with continuously-welded seams
- Top ledge covered with $^3/_{16}$" polystyrene gasket to reduce metal-to-metal conducted noise and act as a weather seal
- Available in enlarger or reducer (shown) models

Disconnect switches provide positive electrical shutoff during fan cleaning or maintenance.

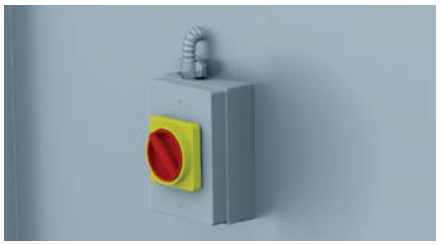
NEMA 3R Disconnect Switch

NEMA 3R Disconnect Switch

A NEMA 3R, rain proof, disconnect is available shipped loose for field mounting and wiring or factory mounted and wired externally.

NEMA 4 Disconnect Switch

A NEMA 4, water and dust tight, disconnect is available shipped loose for field mounting and wiring or factory mounted and wired externally.



NEMA 4 Disconnect Switch

NEMA 7/9 Disconnect Switch

A NEMA 7/9 disconnect switch is recommended on fans with explosion proof motors. The NEMA 7/9 switch is designed for use with fans operating in hazardous environments. Available shipped loose for field mounting and wiring. (Not shown.)

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Material Specifications - Direct Drive, BSD53

FAN SIZE	GAUGE OF MATERIAL			
	WIND BAND	FAN PANEL	DRIVE FRAME	IMPELLERS
14	20	16	14	DIE CAST ALUM.
16	20	16	14	
18	20	16	14	
21	20	16	14	
24	20	16	12	
30	20	16	12	
36	20	16	12	
42	20	14	10	
48	20	14	10	

* All gauges are minimums.

Shipping Weights

FAN SIZE	BSD53	BSB53
14	85	---
16	96	---
18	108	---
21	133	148
24	161	175
30	213	242
36	290	321
42	370	438
48	416	519
54	---	594

* Weights are only approximate and do not include accessories. Consult Fan Selector software for actual shipping weights.

Material Specifications - Belt Driven, BSB53

FAN SIZE	GAUGE OF MATERIAL				SHAFT SIZE (IN.)
	WIND BAND	FAN PANEL	DRIVE FRAME	IMPELLERS	
21	20	16	14	DIE CAST ALUM.	1
24	20	16	14		1
30	20	16	12		1
36	20	16	12		1
42	20	14	12		$1^{3}/_{16}$
48	20	14	12		$1^{7}/_{16}$
54	18	14	10		$1^{7}/_{16}$

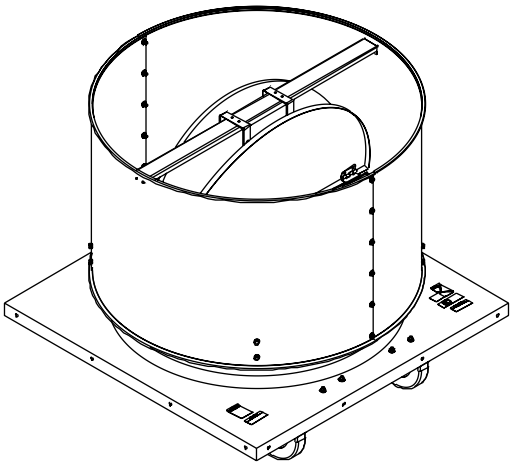
* All gauges are minimums.

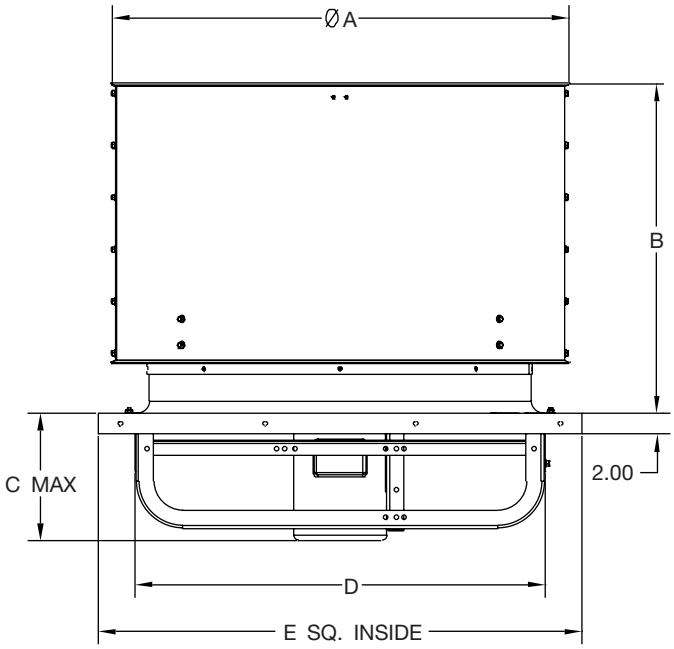
CFM Required to Open Damper Blades

DAMPER MATERIAL		14	16	18	21	24	30	36	42	48	54
STEEL	MIN.	1955	2516	3179	4284	5627	8704	12444	16949	22032	28305
	MAX.	2413	3519	4805	6363	8259	16223	24544	29853	41165	52321
ALUM	MIN.	1380	1776	2244	3024	3972	6144	8784	11964	15552	19980
	MAX.	2413	3519	4805	6363	8259	16223	24544	29853	41165	52321

The terminal velocity of rain is approximately 2000 feet per minute. Selections below this point are not recommended if rain entry into the building is a concern.

Model BSD53





SIZE	A	B	C MAX	D	E	CANTED CURB DIMENSIONS	SELF-FLASHING CURB DIMENSIONS
14	21.13	19.20	11.19	15.25	21.50	20 x 20	20.50 x 20.50
16	23.13	20.20	11.19	18.25	24.50	23 x 23	23.50 x 23.50
18	25.13	21.20	11.19	20.25	26.50	25 x 25	25.50 x 25.50
21	28.44	22.70	14.41	23.25	29.50	28 x 28	28.50 x 28.50
24	31.88	24.44	14.55	26.25	32.50	31 x 31	31.50 x 31.50
30	37.88	27.94	14.74	34.25	40.50	39 x 39	39.50 x 39.50
36	43.88	31.94	15.67	40.25	46.50	45 x 45	45.50 x 45.50
42	49.88	34.92	23.59	45.00	52.50	51 x 51	51.50 x 51.50
48	55.88	37.92	23.59	51.00	58.50	57 x 57	57.50 x 57.50

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NOTE:
1. Dimensions are not to be used for construction.

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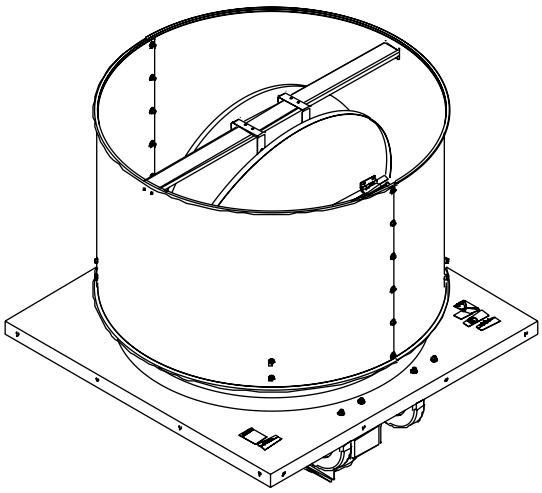
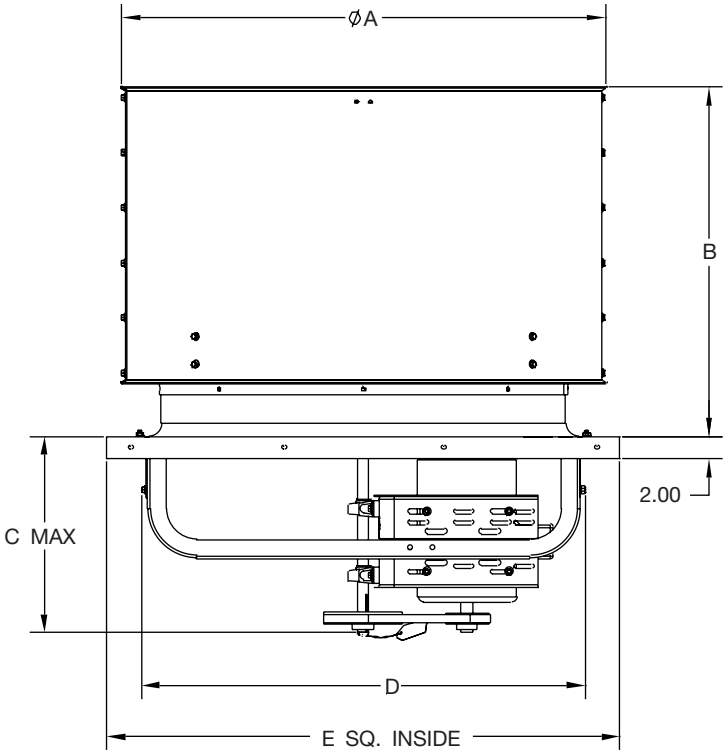
Model BSB53





SIZE	A	B	C MAX	D	E	CANTED CURB DIMENSIONS	SELF-FLASHING CURB DIMENSIONS
21	28.44	22.70	17.25	23.30	29.50	28 x 28	28.50 x 28.50
24	31.88	24.44	17.25	26.30	32.50	31 x 31	31.50 x 31.50
30	37.88	27.94	18.31	34.30	40.50	39 x 39	39.50 x 39.50
36	43.88	31.94	18.31	40.30	46.50	45 x 45	45.50 x 45.50
42	49.88	34.92	21.31	45.55	52.50	51 x 51	51.50 x 51.50
48	55.88	37.92	21.31	51.55	58.50	57 x 57	57.50 x 57.50
54	61.88	40.92	26.13	56.88	64.50	63 x 63	63.50 x 63.50

NOTE:
1. Dimensions are not to be used for construction.

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Model

BSD53

Low Profile Upblast Roof Ventilators, shall be Model BSD53 direct drive as manufactured by Aerovent, Minneapolis, Minnesota.

PERFORMANCE — Fans shall be tested in accordance with AMCA test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels.

CONSTRUCTION — Fan curb caps shall be constructed of heavy-gauge galvanized or painted steel for durability and appearance. Curb caps shall have a deep formed inlet venturi for efficient airflow and pre-punched holes for easy mounting to the roof curb. Stack cap with butterfly dampers shall contain a rain channel to protect against rain entry. Butterfly damper blades constructed of steel as standard, unless the outlet velocity of the fan is below the minimum required to open steel damper blades, then aluminum blades shall be provided. Stack caps and motor mount assemblies shall be constructed of heavy-gauge galvanized steel.

IMPELLERS — Impellers shall be constructed of cast aluminum blades and hubs. Impellers shall be secured to the motor shaft with a taper lock bushing.

MOTORS — All motors shall be single-phase or three-phase induction, permanently lubricated, heavy-duty, ball bearing type, closely matched to the fan load and provided at the voltage, phase, hertz and enclosure as provided on the fan schedule.

FINISH AND COATING — Fans shall have galvanized steel or finish painted curb caps, motor supports and windbands. The entire fan assembly, excluding the shaft, shall be properly washed and pretreated before application of a rust-preventative primer, if called out on the order. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly, if called out on the order. The fan shaft shall be coated with a petroleum-based rust protectant.

ACCESSORIES — When specified, accessories such as inlet safety guards, fusible link assemblies, magnetic damper latches, hinged bases, roof curbs and disconnect switches shall be provided by Aerovent to maintain one source responsibility.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at operating speed or maximum RPM allowed for the particular construction type. Each impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 "Balance Quality and Vibration Levels for Fans" to Fan Application Category BV-3, Balance Quality Grade G6.3. Records shall be maintained and a written copy shall be available upon request.

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Model
BSB53

Low Profile Upblast Roof Ventilators, shall be Model BSB53 belt driven as manufactured by Aerovent, Minneapolis, Minnesota.

PERFORMANCE — Fans shall be tested in accordance with AMCA test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels.

CONSTRUCTION — Fan curb caps shall be constructed of heavy-gauge galvanized steel or painted steel for durability and appearance. Curb caps shall have a deep formed inlet venturi for efficient airflow and pre-punched holes for easy mounting to the roof curb. Stack cap with butterfly dampers shall contain a rain channel to protect against rain entry. Butterfly damper blades constructed of steel as standard, unless the outlet velocity of the fan is below the minimum required to open steel damper blades, then aluminum blades shall be provided. Stack caps and motor mount assemblies shall be constructed of heavy-gauge galvanized steel.

IMPELLERS — Impellers shall be constructed of cast aluminum blades and hubs. Impellers on belt driven units shall be secured to the fan shaft with a taper lock bushing.

SHAFTS — Shafts shall be AISI 1045 cold rolled steel, accurately turned, ground, polished and ring-gauged for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed.

BEARINGS — Bearings are to be pillow block, heavy-duty, anti-friction, self-aligning, grease lubricated, ball type. Each fan's bearings are sized with a minimum average life, per AFBMA, in excess of 200,000 hours when operating at the maximum RPM of the fan size.

DRIVES — Motor sheaves shall be cast iron and supplied as variable pitch standard. Drives and belts shall be rated for a minimum of 150% of the required motor HP.

MOTORS — All motors shall be single-phase or three-phase induction, permanently lubricated, heavy-duty, ball bearing type, closely matched to the fan load and provided at the voltage, phase, hertz and enclosure as provided on the fan schedule.

FINISH AND COATING — Fans shall have galvanized steel or finish painted curb caps, motor supports and windbands. The entire fan assembly, excluding the shaft, shall be properly washed and pretreated before application of a rust-preventative primer, if called out on the order. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly, if called out on the order. The fan shaft shall be coated with a petroleum-based rust protectant.

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WALL MOUNTED FANS | TUBEAXIAL & VANEAXIAL FANS | CENTRIFUGAL FANS & BLOWERS
ROOF VENTILATORS | AIR HEATERS & COOLERS | AIR MAKE-UP | FIBERGLASS FANS | CUSTOM FANS

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