

## TUBEAXIAL FANS TYPE "S" BELT DRIVEN



**MODEL: TSBD**



## Overview

### TSBD



Model TSBD

For applications requiring extensive corrosion resistance or operation at higher temperatures than standard, the Arrangement 9 Model TSBD is the perfect choice. Standard construction is good for operation to 200°F; fans can be customized to handle up to 500°F. Steel construction is standard, all stainless steel construction is available. Driven by either a fixed or adjustable V-belt drive system, the exact point of rating can be achieved. A future change in rating can be accomplished through a simple sheave change.

### Typical Applications Include

Data Center Exhaust, General HVAC, Generator Room Ventilation, Swimming Pool Exhaust, Kitchen Exhaust, Dishwasher Exhaust, Elevator Shaft Exhaust/Pressurization, Emergency Smoke Exhaust, Stairwell Pressurization

### Configurations

Belt Driven, Vertical and Horizontal Mount

### Impeller Type

Steel

### Optional Construction

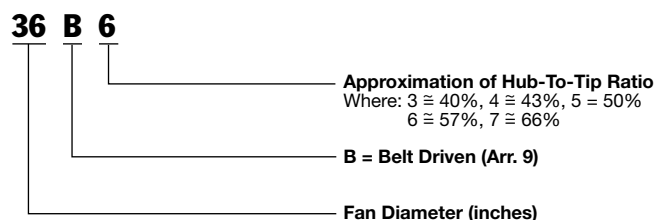
Clamshell Construction, Swingout Construction, AMCA Type C Spark Resistant Construction, Stainless Steel Construction

### Certifications

UL 705 Listed for Electrical, UL Listed for Smoke Control Systems

### Model Nomenclature

Model TSBD Arrangement 9 model numbers are represented as follows. Refer to the "Hub-To-Tip Ratio" section on page 4 for an explanation of hub-to-tip ratios.



Model TSBD is available with the UL/cUL 705 listing for electrical, File No. E158680.



For complete product performance, drawings and available accessories, download our Fan Selector software at [aerovent.com](http://aerovent.com).

## Overview

### TSBD

#### General HVAC Fans

##### Model TSBD

The Model TSBD Tubeaxial Fan is designed for applications requiring extensive corrosion resistance or operation at higher temperatures. Standard construction can accommodate operation to 200°F (93°C) and can be customized to handle up to 500°F (260°C). Steel construction is standard on this unit and the Model TSBD is also available in stainless steel.

##### Sizes and Performance

12" to 54" impeller diameters

Airflow to 80,000 CFM

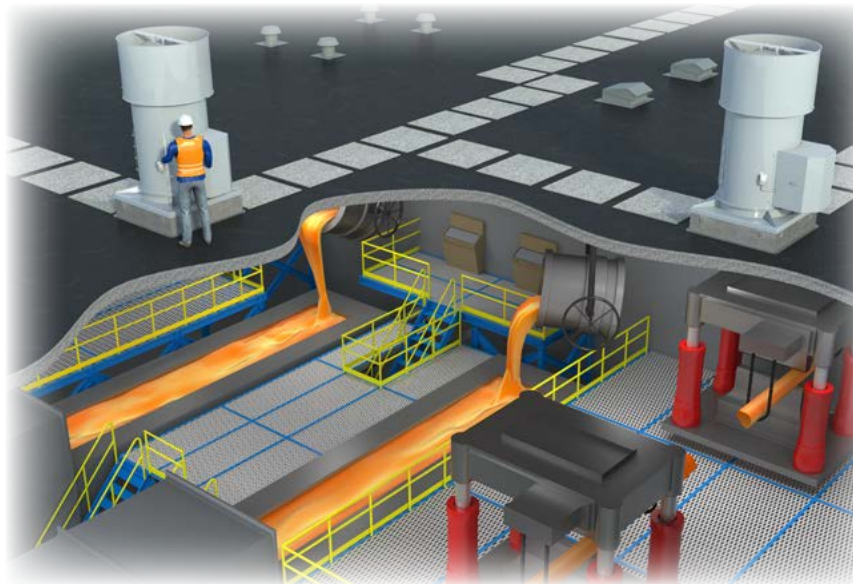
Static pressure to 4" w.g.



General HVAC of Hotel Elevator  
and Conference Room

## 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.



Foundry Application





## Steel Impellers

Steel impellers are manufactured with a spun steel hub. Steel blades are welded to the hub and can be attached at precise angles ranging from 30° to 50°. This ability to customize blade angles provides the highest efficiency for a given performance.

## Housing

Fan housings are constructed of continuously-welded, heavy-gauge steel for strength and rigidity. Flanges on both the inlet and outlet are integrally rolled and punched for attachment to ductwork or accessories.

## Shafts

Fan shafts are ground and polished 1045 steel sized to allow the rotating assembly to operate a minimum of 43% below the first critical speed.

## Bearings

Cast iron, re-greasable flange mounted ball or roller type bearings have a minimum L-10 life of 40,000 hours. This is equivalent to an average life of 200,000 hours. Extended lubrication lines terminate at the housing exterior.

## Drive Isolated from Airstream

The shaft and bearing assembly is mounted within the inner cylinder to isolate these components from the high velocity airstream. The V-belt drive assembly is extended through a two-piece belt fairing. The belt fairing is an aerodynamically designed tube, designed to maximize fan efficiency, minimize air blockage and reduce noise generation.

## Motors

A variety of single- and three-phase motors are available in open drip-proof (ODP), explosion-proof (EXP) and totally enclosed fan cooled (TEFC) enclosures. An adjustable mounting platform pivots to provide infinite belt tension adjustment.

## Hub-to-Tip Ratio

Impellers come in four hub sizes that are cut and machined to the specified diameter. Blades, made of formed steel, are custom-cut to size.

Customizing blades and hubs allows for impellers with various hub-to-tip ratios, offering flexibility in pressure and efficiency characteristics. With various hub-to-tip ratios, efficiency can be optimized for your specific application.



## Swingout Construction

Swingout construction provides easy access to the fan for cleaning and general maintenance without removing it from the ductwork. When quick-open clamp latches are released, the door swings out on heavy-duty hinges to provide out of the airstream access to the impeller for cleaning. For additional access to the shaft and bearings, a split inner cylinder is provided. Available in sizes 21-60.



Swingout  
Construction



## Clamshell Construction

Clamshell construction is ideal for applications needing regular cleaning. Depending on the size, one door (sizes 18-36) or two doors (sizes 42-60) are secured with quick access latches. These doors open outward and allow access to the internal components of the fan. As standard, there is an access door on the inner cylinder, allowing easy access to clean around the bearings. It is essential to follow proper safety precautions during cleaning. If bearing, shaft or impeller replacement is required, the fan should be removed from the ductwork or roof to facilitate safe replacement of parts. If replacement of these parts while ducted or on the roof is required, it is recommended to use swingout construction.



Clamshell Construction

## Roof Ventilator Package

The Model TSBD roof ventilator package provides excellent, cost-effective, general purpose ventilation for both industrial and commercial applications. The roof ventilator package is available in multiple configurations providing a versatile solution for any application. Fitting the Model TSBD with a stack cap makes this a powerful roof exhaust fan. When fitted with a heavy-duty hood and optional filter, the Model TSBD will make an ideal supply roof ventilator.

## High Moisture Modification

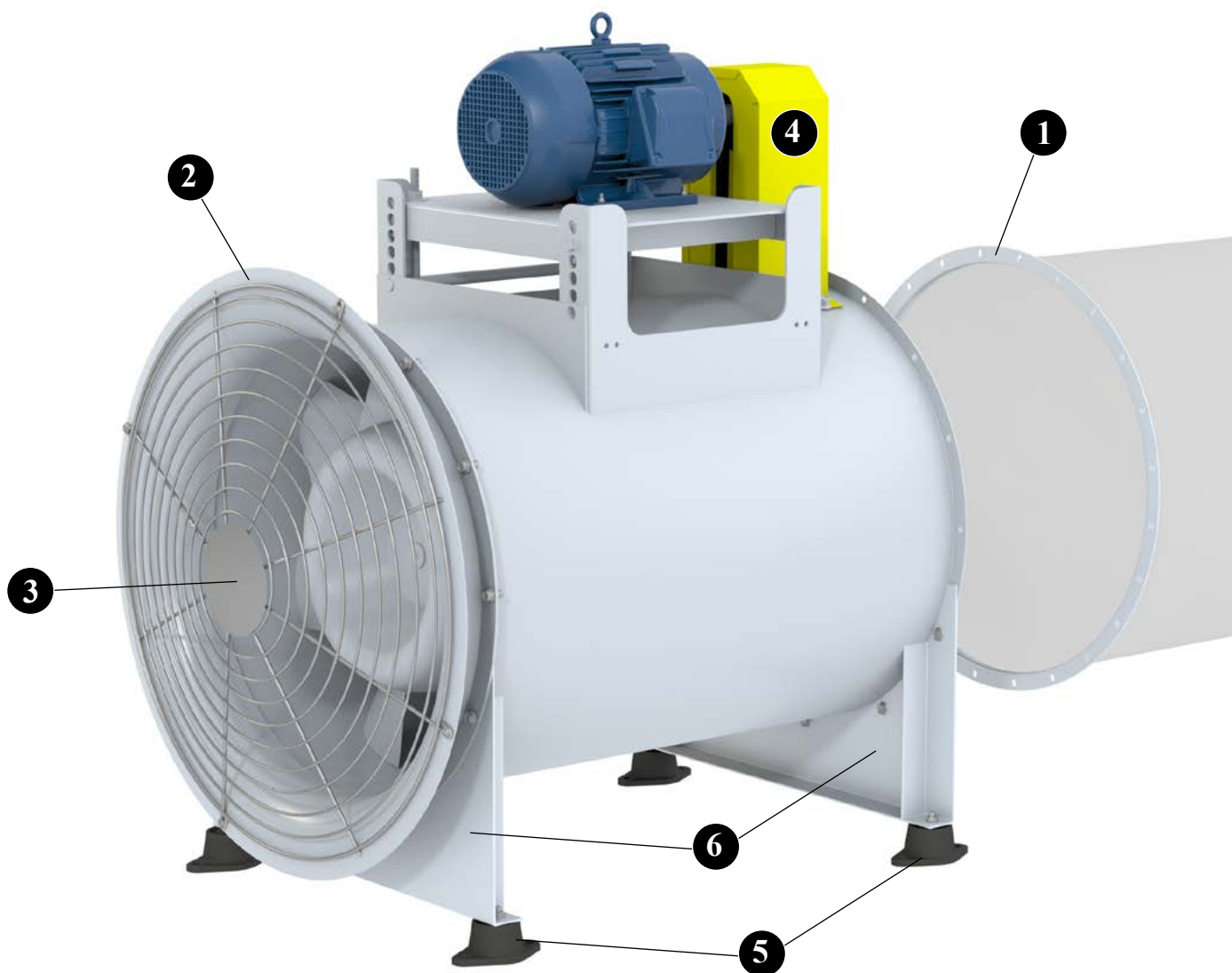
A shaft seal and added gaskets to the bearing housing protect the rotor assembly from damage due to moisture ingress. Ideal for steam and high humidity applications, 201°-300°F.



Roof Ventilator Package

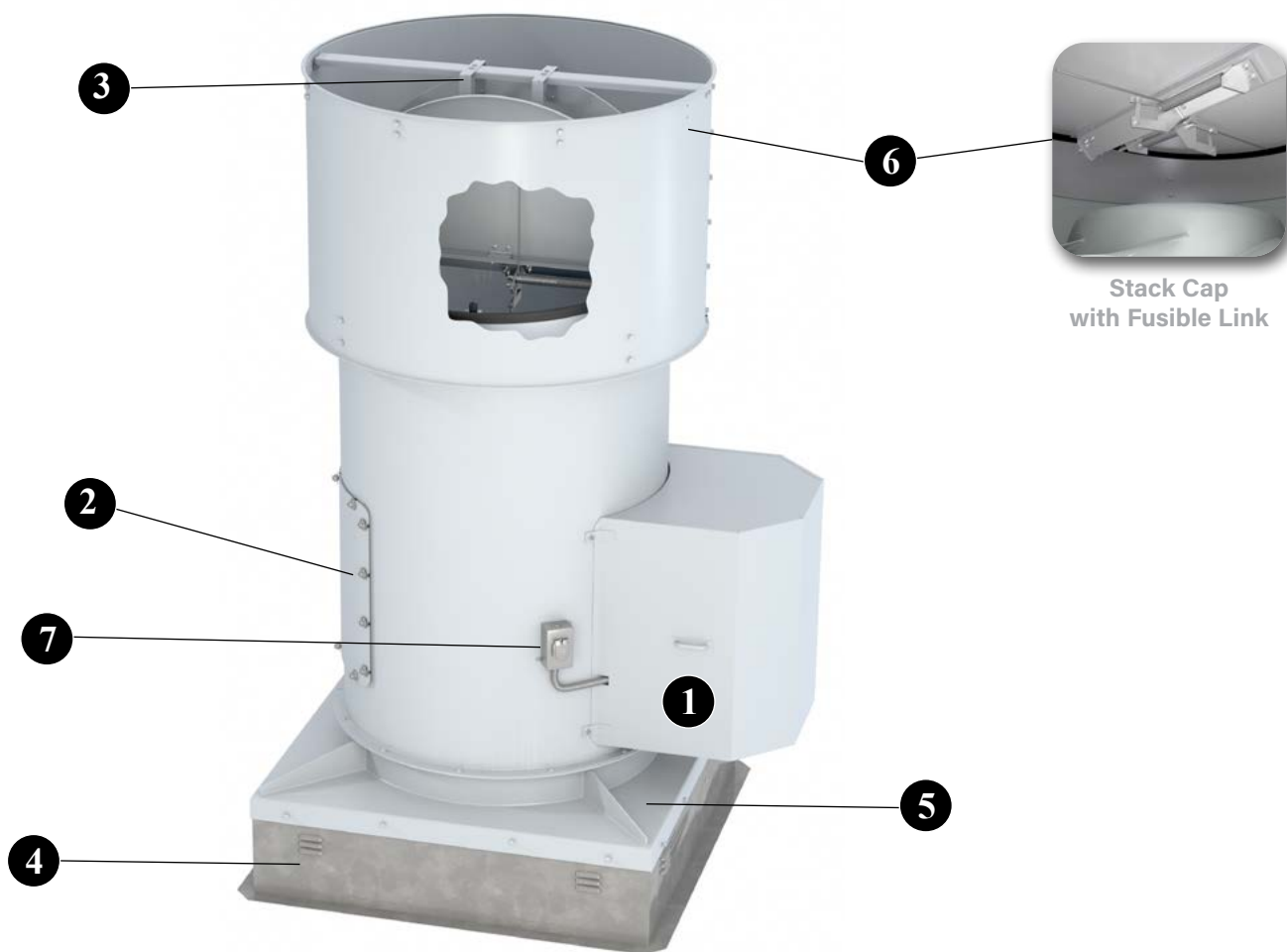
## Other Optional Construction

- High Temperature Construction
- Class I & II
- Shaft Cooler
- Heat Shield



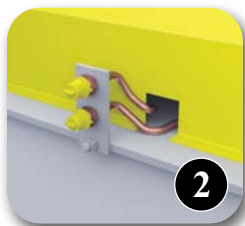
- 1 Companion Flanges** For ease of installation of adjacent ductwork, companion flanges can be provided. Flanges are rolled angle rings, drilled to match the fan's inlet or outlet flange.
- 2 Inlet Bell** An inlet bell is recommended to minimize entrance losses for installations where the inlet of the fan is nonducted. Inlet bell is flanged and punched to mate up with the standard flanged inlet.
- 3 Inlet/Outlet Screens** Safety screening can be provided for installation in the fan inlet or outlet.
- 4 Belt Guard** For Arrangement 9 belt driven fans, the belt guard encloses the motor sheave and V-belts. The guard is easily removable for inspection and maintenance.
- 5 Vibration Isolators Floor Mount** Rubber-in-shear type vibration isolation mounts are available to damper vibration and noise transmission in floor mounted installations. Also available in spring type construction.
- 6 Support Legs** For horizontal flow with floor mounting, support legs are welded to the fan flange with bolt holes aligned for connection of ductwork.

**AEROVENT**   
INDUSTRIAL VENTILATION SYSTEMS

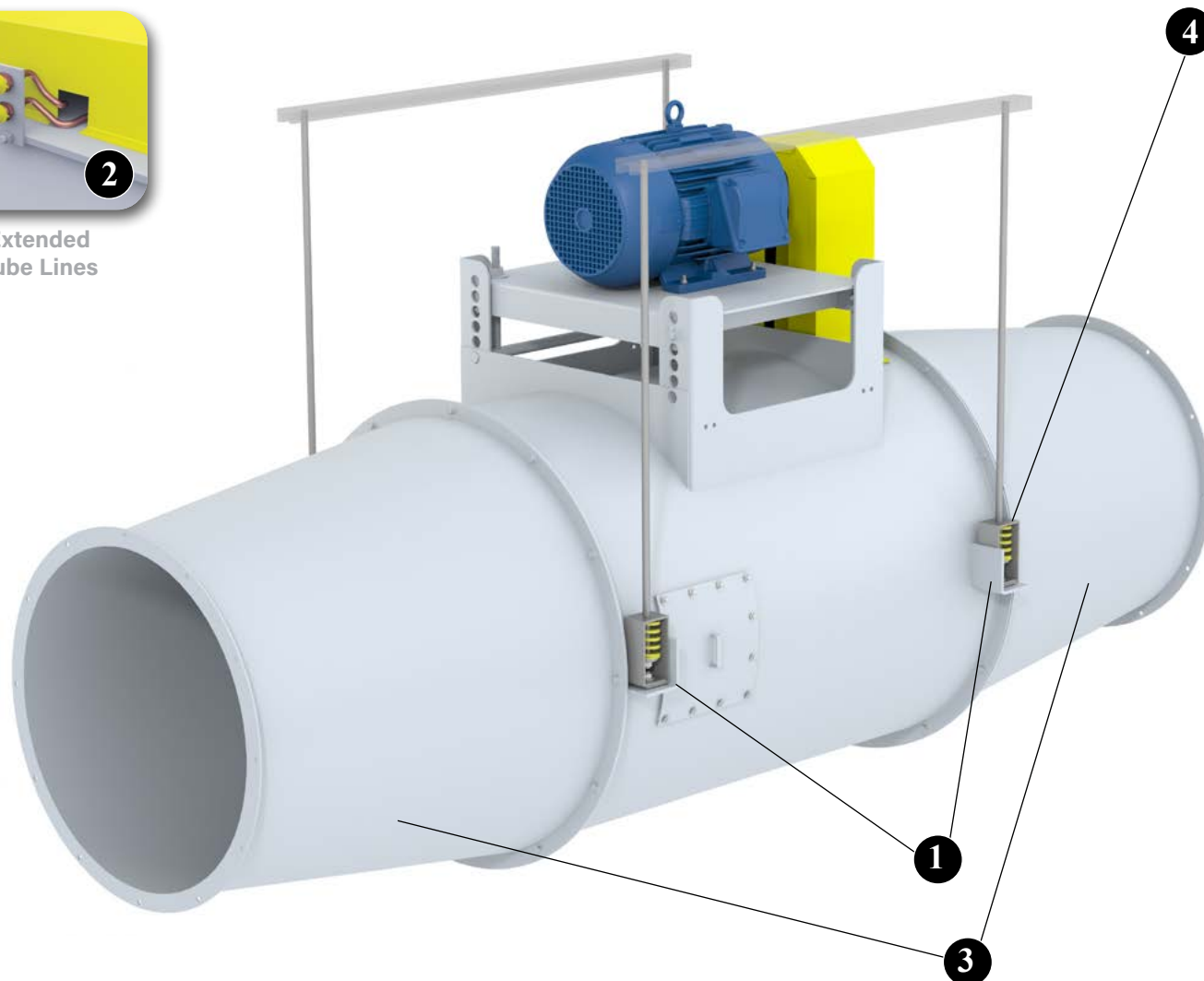


- 1 Weather Cover** For outdoor installations, the weather cover completely encloses the motor and V-belt drive from the elements and is provided with slots for ventilation. Weather covers are available for either horizontal or vertical flow fans. Standard accessory on vertical roof mounted configuration.
- 2 Bolted Access Door** Bolted access door allows for inspection and maintenance of internal fan components. Provided as standard.
- 3 Magnetic Damper Latches** Magnetic latches are available to hold stack cap butterfly dampers closed when not in operation.
- 4 Vented Roof Curb** Self-flashing style curbs with ventilation louvers allow ambient air in to cool and dilute grease- or smoke-laden airstreams.
- 5 Curb Cap** Attached to the fan's inlet flange for curb mounting. Standard accessory on vertical roof mounted configuration.
- 6 Stack Cap w/ Fusible Link** Units can be provided with a stack cap for rooftop mounting. Stack caps are designed for vertical discharge with butterfly type dampers to seal out the weather when the fan is shut off and minimal flow obstruction when the fan is operating. Butterfly dampers open with airflow (see Stack Cap Limits table on page 12). Stack caps meet snow load tests set forth by UL, IRI and SBCCI. Stack caps meet UL 793 requirements, providing a fusible link and spring assembly that forces the discharge butterfly dampers open when the fuse melts at 165°F. This provides gravity ventilation in case electricity to the ventilator is interrupted in a fire.
- 7 NEMA 3R Disconnect Switch** Disconnect switches offer superior environmental protection. From water proofing to hazardous environments, know that you and your equipment are safe. Positive electrical shutoff during fan cleaning or maintenance provides additional safety and peace of mind. For more information about disconnect switches, see page 11.





Extended  
Lube Lines



**1 Suspension Clips** For horizontal flow with ceiling mounting, four clips of formed angle are welded to the fan housing for suspension via tie rods to the ceiling support structure.

**2 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 the guard.

**3 Inlet/Outlet Transition Cone** A round-to-round transition bolted to the inlet or discharge flange of the fan housing provides a smooth connection of the fan to larger or smaller ductwork. Cones are flanged on both ends and drilled to mate with the fan's flange. Cones are available with an access door if required. Outlet cones can be utilized to affect performance and transform velocity pressure into static pressure.

**4 Vibration Isolators** Spring type vibration isolation mounts are available to damper vibration and noise transmission in floor mounted installations. Also available in rubber-in-shear type construction.

## Other Accessories Include:

- Inspection Ports
- Minimum 2-Groove Drive
- Support Legs (Vertical)
- Shaft Seal

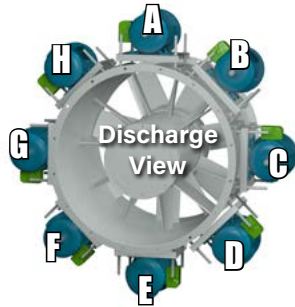


## Horizontal Construction

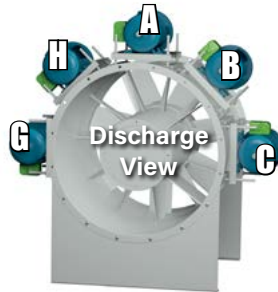
**Horizontal Base Mounted (HBM)** — Support legs are provided at each end of the fan for floor mounting.

**Horizontal Ceiling Hung (HCH)** — For duct mounted fans, four suspension clips are welded to the fan casing to allow ceiling suspension using rod hangers.

**Horizontal (HOR)** — For mounting configurations where support legs and suspension clips are not required.



**HCH**  
Horizontal  
Ceiling Hung



**HBM**  
Horizontal Base  
Mounted



**HOR**  
Horizontal  
No Mounting  
Brackets

## Vertical Construction

**Floor or Ceiling Mounted (VUI/VUO/VDI/VDO)** — Four vertical brackets are welded to either end of the fan housing. Bracket location is determined by airflow direction and support details (see below).

**Roof Mounted (VRM)** — A curb cap provides weathertight seal for roof curb mounted fans. A stack cap and weather cover are also available for the upblast style roof ventilator.

**Vertical (VUN/VDN)** — For mounting configurations where support brackets are not required.



**VUS**  
Vertical Upblast  
with Stack Cap



**VUH**  
Vertical Upblast  
with Hood and  
Curb Cap



**VDH**  
Vertical Downblast  
with Hood and Curb  
Cap



**VUI**  
Vertical Discharge Up,  
Floor Mount Support  
Brackets On Inlet



**VUO**  
Vertical Discharge Up,  
Ceiling Hung Support  
Brackets On Outlet



**VUN**  
Vertical Up  
No Brackets



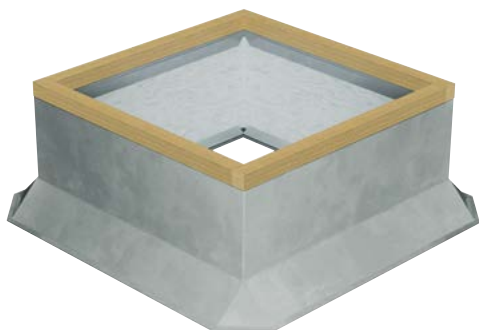
**VDI**  
Vertical Discharge Down,  
Ceiling Hung Support  
Brackets On Inlet



**VDO**  
Vertical Discharge Down, Floor  
Mount Support  
Brackets On Outlet



**VDN**  
Vertical Down  
No Brackets



## Canted Roof Curbs

- Constructed of 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 (1½") secured to top ledge
- Lined with 1½" fiberglass fire-resistant, sound-absorbing insulation
- Damper shelf standard
- Options: Aluminum construction, burglar security bars, metal liner (galvanized or aluminum), special heights up to 24"



## Self-Flashing & Straight-Sided Roof Curbs

- Constructed of galvanized steel with continuously-welded seams
- Wide base plate (flashing) to ensure 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 1½" 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 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 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 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 1 Disconnect Switch

A NEMA 1 disconnect switch is available shipped loose for field mounting and wiring or factory mounted and wired with ODP or TEFC motors.



NEMA 1  
Disconnect Switch



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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## Installation Photos



Refinery Vapor Dispersion



Exhaust for Digester  
Gas Compressor Facility



Air Compressor Heat Exhaust Fans

## Bare Fan Weights (lb)

| FAN MODEL | 12B7 | 15B6 | 18B5 | 21B6 | 24B5 | 28B6 | 30B4 | 32B5 | 36B6 | 42B3 | 48B4 | 54B3 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|
| TSBD      | 74   | 92   | 106  | 165  | 208  | 243  | 308  | 397  | 671  | 630  | 974  | 1054 |

## Accessory Weights (lb)

| FAN SIZE | BELT GUARD | WEATHER COVER | INLET/ OUTLET SCREEN | INLET BELL | INLET/ OUTLET CONE | COMPANION FLANGE | SUPPORT LEGS |            | DISCHARGE CAP | CURB CAP |
|----------|------------|---------------|----------------------|------------|--------------------|------------------|--------------|------------|---------------|----------|
|          |            |               |                      |            |                    |                  | HORIZ. FLOW  | VERT. FLOW |               |          |
| 12       | 4          | 7             | 3                    | 8          | 9                  | 5                | 10           | 10         | 30            | 15       |
| 15       | 6          | 11            | 3                    | 10         | 11                 | 8                | 12           | 10         | 40            | 16       |
| 18       | 8          | 18            | 4                    | 12         | 16                 | 10               | 12           | 10         | 55            | 17       |
| 21       | 10         | 21            | 5                    | 13         | 21                 | 11               | 20           | 10         | 65            | 23       |
| 24       | 11         | 23            | 7                    | 20         | 30                 | 13               | 24           | 17         | 78            | 26       |
| 28       | 12         | 26            | 8                    | 22         | 40                 | 15               | 32           | 17         | 98            | 34       |
| 30       | 13         | 29            | 9                    | 24         | 48                 | 16               | 40           | 17         | 110           | 40       |
| 32       | 14         | 32            | 10                   | 25         | 54                 | 17               | 47           | 17         | 120           | 45       |
| 36       | 16         | 34            | 11                   | 52         | 82                 | 19               | 58           | 17         | 165           | 51       |
| 42       | 18         | 40            | 13                   | 62         | 100                | 25               | 83           | 19         | 230           | 64       |
| 48       | 21         | 45            | 18                   | 70         | 114                | 33               | 97           | 19         | 288           | 72       |
| 54       | 25         | 56            | 24                   | 76         | 128                | 37               | 126          | 26         | 384           | 82       |

## Motor Weights (lb)

| FRAME | 48 | 56 | 143T | 145T | 182T | 184T | 213T | 215T | 254T |
|-------|----|----|------|------|------|------|------|------|------|
| ODP   | 7  | 11 | 33   | 44   | 71   | 82   | 124  | 144  | 185  |
| TE    | 9  | 14 | 40   | 53   | 85   | 98   | 149  | 173  | 222  |

| FRAME | 256T | 284T | 286T | 324T | 326T | 364T | 365T |
|-------|------|------|------|------|------|------|------|
| ODP   | 214  | 266  | 310  | 404  | 452  | 620  | 680  |
| TE    | 257  | 319  | 372  | 485  | 542  | 744  | 816  |

## Housing Gauges

| FAN SIZE | HOUSING GAUGE |
|----------|---------------|
| 12       | 14            |
| 15       | 12            |
| 18       | 12            |
| 21       | 12            |
| 24       | 10            |
| 28       | 10            |
| 30       | 10            |
| 32       | 10            |
| 36       | 10            |
| 42       | 7             |
| 48       | 7             |
| 54       | 7             |

## Stack Cap Limits

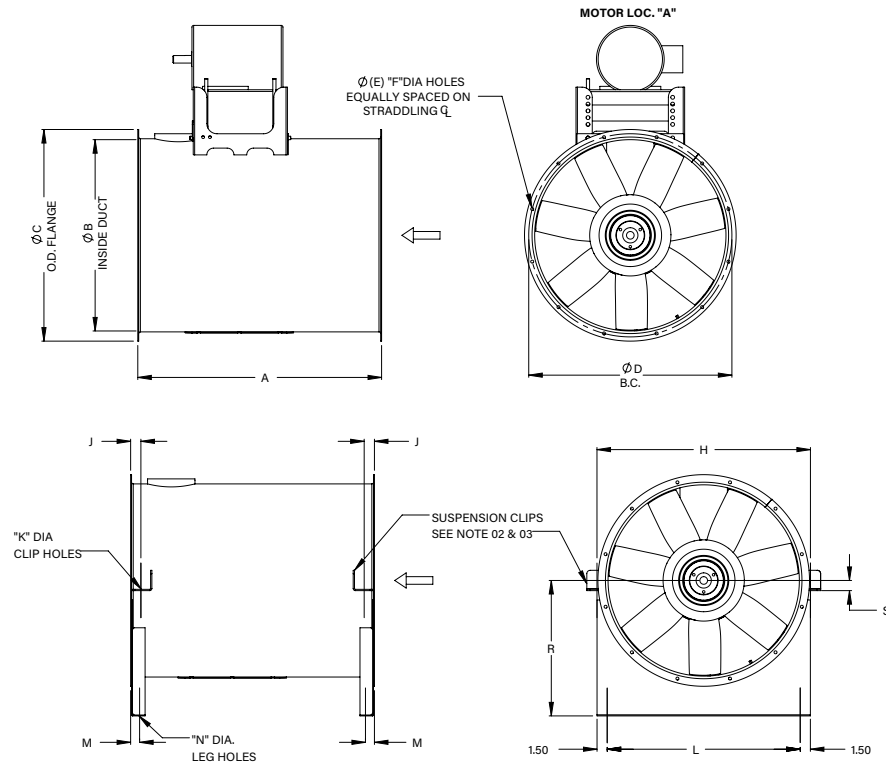
| FAN SIZE | MINIMUM CFM TO OPEN |          | MAXIMUM CFM* |
|----------|---------------------|----------|--------------|
|          | STAINLESS           | ALUMINUM |              |
| 12       | 1372                | 1049     | 2502         |
| 15       | 2132                | 1630     | 3887         |
| 18       | 3058                | 2339     | 5577         |
| 21       | 4163                | 3184     | 7592         |
| 24       | 5426                | 4150     | 9895         |
| 28       | 7400                | 5659     | 13494        |
| 30       | 8449                | 6461     | 15407        |
| 32       | 9644                | 7375     | 17586        |
| 36       | 12184               | 9317     | 22218        |
| 42       | 16650               | 12732    | 30361        |
| 48       | 21709               | 16601    | 39587        |
| 54       | 27404               | 20956    | 49972        |

**NOTE:** The terminal velocity of rain is approximately 2,000 feet per minute. Selections below this point are not recommended if rain entry into the building is a concern.

\* Ask about our extra heavy-duty stack cap if your CFM exceeds the maximum CFM.



## Model TSBD, Horizontal Flow



### NOTES:

1. Motor and access door locations are as viewed from fan outlet end.
2. Support legs and suspension clips are provided as accessory equipment.
3. Motor positions other than 'A' and 'E' will affect suspension clips 'H' and 'J' dimension.  
Motor location 'D', 'E' and 'F' not recommended on base mounted units.

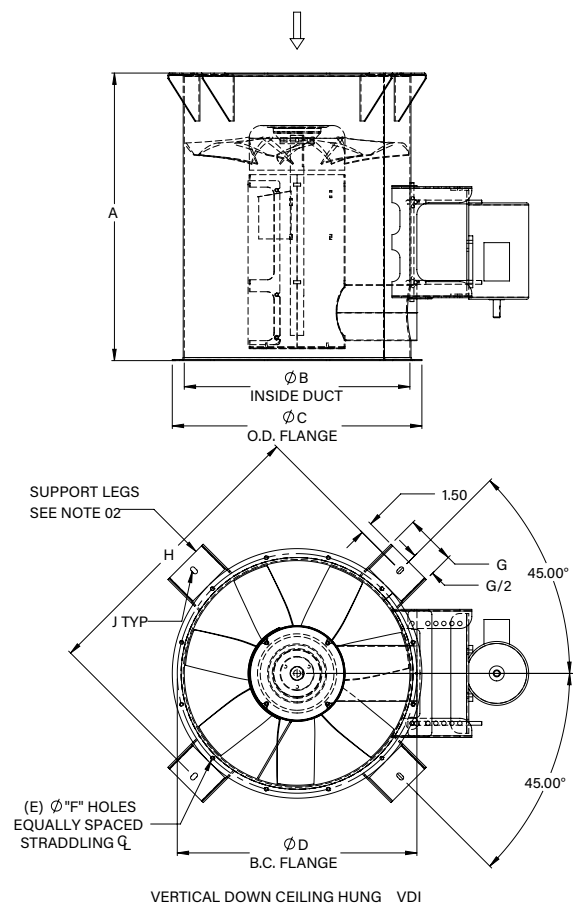
| FAN SIZE | A<br>HUB RATIO |    |    |    |    | B     | C     | D     | E  | F    | H     |
|----------|----------------|----|----|----|----|-------|-------|-------|----|------|-------|
|          | 3              | 4  | 5  | 6  | 7  |       |       |       |    |      |       |
| 12       | NA             | NA | NA | NA | 27 | 12.13 | 15.13 | 13.88 | 8  | 0.44 | 15.25 |
| 15       | NA             | NA | NA | 27 | NA | 15.13 | 18.13 | 16.88 | 8  | 0.44 | 18.38 |
| 18       | NA             | NA | 27 | NA | 36 | 18.19 | 21.19 | 19.88 | 8  | 0.44 | 21.38 |
| 21       | NA             | 27 | NA | 36 | NA | 21.19 | 24.19 | 22.88 | 8  | 0.44 | 24.38 |
| 24       | 36             | NA | 36 | NA | 48 | 24.19 | 27.19 | 25.88 | 12 | 0.44 | 27.50 |
| 28       | NA             | 36 | NA | 48 | NA | 28.25 | 31.25 | 30.00 | 12 | 0.44 | 31.50 |
| 30       | NA             | 36 | 48 | NA | NA | 30.25 | 33.25 | 32.00 | 12 | 0.44 | 33.50 |
| 32       | 36             | NA | 48 | NA | 48 | 32.25 | 35.25 | 34.00 | 12 | 0.44 | 35.50 |
| 36       | NA             | 48 | NA | 48 | NA | 36.31 | 39.31 | 38.00 | 16 | 0.44 | 39.63 |
| 42       | 48             | NA | 48 | NA | NA | 42.31 | 46.31 | 44.63 | 16 | 0.56 | 45.63 |
| 48       | NA             | 48 | NA | NA | NA | 48.38 | 52.38 | 50.63 | 16 | 0.56 | 51.75 |
| 54       | 48             | NA | NA | NA | NA | 54.44 | 58.44 | 56.63 | 16 | 0.56 | 57.75 |

| FAN SIZE | J    | K    | L     | M    | N    | R     | S    | HSG GA | MAXIMUM MOTOR |
|----------|------|------|-------|------|------|-------|------|--------|---------------|
| 12       | 0.94 | 0.56 | 12.25 | 1.00 | 0.56 | 9.25  | 0.75 | 14     | 184T          |
| 15       | 1.00 | 0.56 | 15.25 | 1.06 | 0.56 | 11.50 | 0.75 | 12     | 215T          |
| 18       | 1.50 | 0.56 | 18.25 | 1.06 | 0.56 | 12.50 | 1.50 | 12     | 215T          |
| 21       | 1.50 | 0.56 | 21.25 | 1.06 | 0.56 | 15.00 | 1.50 | 12     | 256T          |
| 24       | 1.50 | 0.56 | 24.50 | 1.34 | 0.56 | 17.00 | 1.50 | 10     | 256T          |
| 28       | 1.50 | 0.56 | 28.50 | 1.34 | 0.56 | 20.00 | 1.50 | 10     | 286T          |
| 32       | 1.50 | 0.56 | 30.50 | 1.34 | 0.56 | 21.00 | 1.50 | 10     | 286T          |
| 36       | 1.50 | 0.56 | 33.00 | 1.34 | 0.56 | 23.00 | 1.50 | 10     | 286T          |
| 42       | 2.00 | 0.81 | 37.00 | 1.64 | 0.81 | 25.00 | 1.50 | 10     | 326T          |
| 48       | 2.06 | 0.81 | 43.75 | 1.69 | 0.81 | 30.00 | 1.50 | 7      | 326T          |
| 54       | 2.06 | 0.81 | 49.75 | 1.69 | 0.81 | 34.00 | 1.50 | 7      | 365T          |
| 60       | 2.06 | 0.81 | 55.50 | 1.69 | 0.81 | 38.00 | 1.50 | 7      | 365T          |

AC1002679C

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

Model TSBD, Vertical Flow



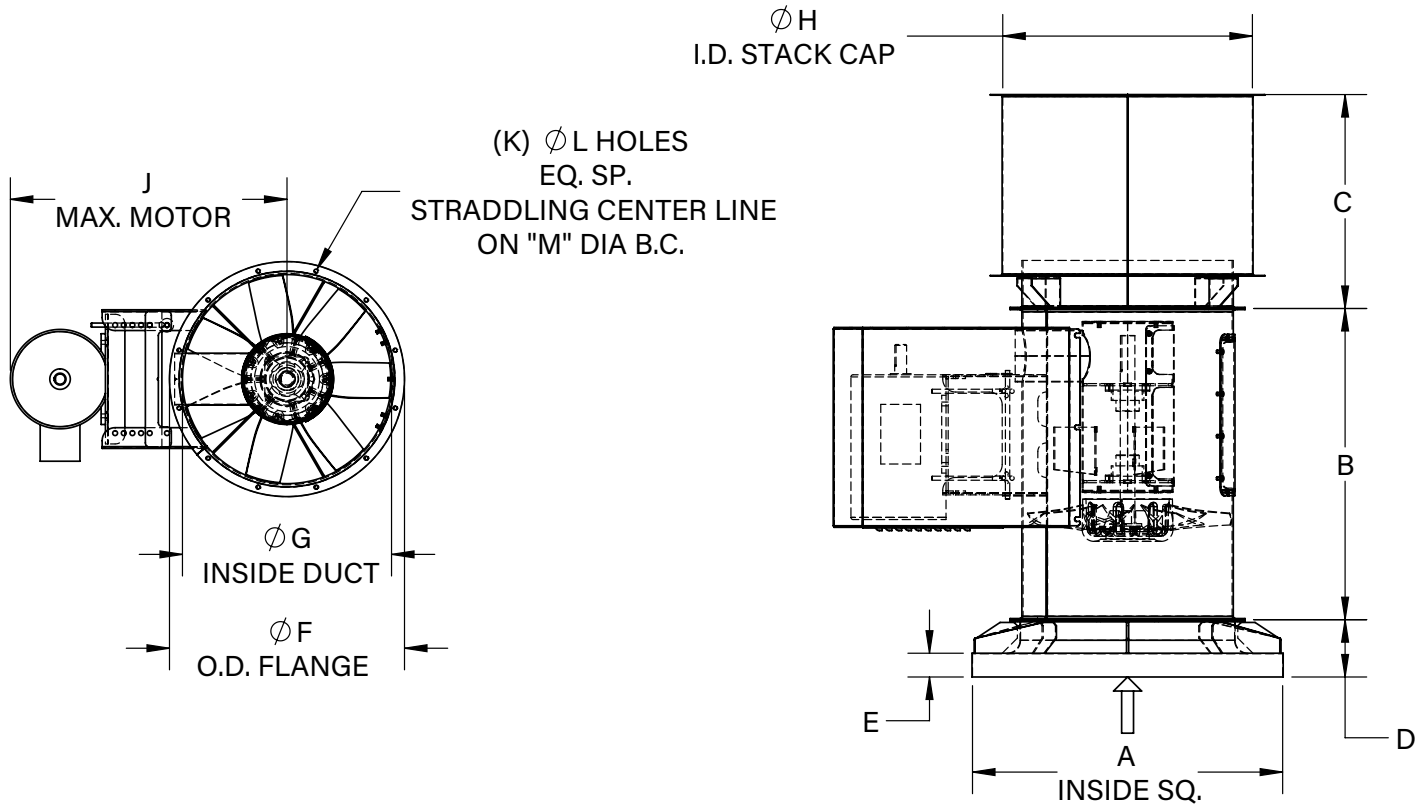
- NOTES:**
- Access door locations are as viewed from fan outlet end with motor positioned at 12:00 o'clock.
  - Support legs are provided as accessory equipment.

| FAN SIZE | A<br>HUB RATIO |    |    |    |    | B     | C     | D     | E  | F    | G    | H     | J                   | HSG. GA. | MAXIMUM MOTOR |
|----------|----------------|----|----|----|----|-------|-------|-------|----|------|------|-------|---------------------|----------|---------------|
|          | 3              | 4  | 5  | 6  | 7  |       |       |       |    |      |      |       |                     |          |               |
| 12       | NA             | NA | NA | NA | 27 | 12.13 | 15.13 | 13.88 | 8  | 0.44 | 4.25 | 20.13 | 0.56 HOLE           | 14       | 184T          |
| 15       | NA             | NA | NA | 27 | NA | 15.13 | 18.13 | 16.88 | 8  | 0.44 | 4.25 | 23.13 |                     | 12       | 215T          |
| 18       | NA             | NA | 27 | NA | 36 | 18.19 | 21.19 | 19.88 | 8  | 0.44 | 4.25 | 26.45 |                     | 12       | 215T          |
| 21       | NA             | 27 | NA | 36 | NA | 21.19 | 24.19 | 22.88 | 8  | 0.44 | 4.25 | 29.45 | 0.56 x 1.00<br>SLOT | 12       | 256T          |
| 24       | 36             | NA | 36 | NA | 48 | 24.19 | 27.19 | 25.88 | 12 | 0.44 | 4.25 | 32.45 |                     | 10       | 256T          |
| 28       | NA             | 36 | NA | 48 | NA | 28.25 | 31.25 | 30.00 | 12 | 0.44 | 6.25 | 36.50 |                     | 10       | 286T          |
| 30       | NA             | 36 | 48 | NA | NA | 30.25 | 33.25 | 32.00 | 12 | 0.44 | 6.25 | 38.50 |                     | 10       | 286T          |
| 32       | 36             | NA | 48 | NA | 48 | 32.25 | 35.25 | 34.00 | 12 | 0.44 | 6.25 | 40.50 | 0.81 HOLE           | 10       | 286T          |
| 36       | NA             | 48 | NA | 48 | NA | 36.31 | 39.31 | 38.00 | 16 | 0.44 | 6.25 | 44.57 |                     | 10       | 326T          |
| 42       | 48             | NA | 48 | NA | NA | 42.31 | 46.31 | 44.63 | 16 | 0.56 | 6.25 | 51.81 |                     | 7        | 326T          |
| 48       | NA             | 48 | NA | NA | NA | 48.38 | 52.38 | 50.63 | 16 | 0.56 | 6.25 | 57.88 |                     | 7        | 365T          |
| 54       | 48             | NA | NA | NA | NA | 54.44 | 58.44 | 56.63 | 16 | 0.56 | 6.25 | 0.70  |                     | 7        | 365T          |

AC14688B

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.

## Model TSBD, Roof Ventilator



| FAN<br>SIZE | A     | B         |    |    |    |    | C     | D    | E    | F     | G     | H     | J     | K  | L    | M     |
|-------------|-------|-----------|----|----|----|----|-------|------|------|-------|-------|-------|-------|----|------|-------|
|             |       | HUB RATIO |    |    |    |    |       |      |      |       |       |       |       |    |      |       |
|             |       | 3         | 4  | 5  | 6  | 7  |       |      |      |       |       |       |       |    |      |       |
| 12          | 23.88 | NA        | NA | NA | NA | 27 | 16.75 | 4.50 | 2.75 | 15.13 | 12.13 | 18.38 | 19.75 | 8  | 0.44 | 13.88 |
| 15          | 24.88 | NA        | NA | NA | 27 | NA | 17.75 | 5.50 | 2.75 | 18.13 | 15.13 | 20.38 | 20.50 | 8  | 0.44 | 16.88 |
| 18          | 29.88 | NA        | NA | 27 | NA | 36 | 21.75 | 5.50 | 2.75 | 21.19 | 18.19 | 25.38 | 27.63 | 8  | 0.44 | 19.88 |
| 21          | 32.88 | NA        | 27 | NA | 36 | NA | 23.75 | 6.63 | 2.75 | 24.19 | 21.19 | 26.88 | 31.63 | 8  | 0.44 | 22.88 |
| 24          | 35.88 | 36        | NA | 36 | NA | 48 | 24.75 | 6.63 | 2.75 | 27.19 | 24.19 | 28.88 | 34.25 | 12 | 0.44 | 25.88 |
| 28          | 37.88 | NA        | 36 | NA | 48 | NA | 26.75 | 6.75 | 2.75 | 31.25 | 28.25 | 32.88 | 38.13 | 12 | 0.44 | 30.00 |
| 30          | 42.5  | NA        | 36 | 48 | NA | NA | 27.75 | 6.75 | 2.75 | 33.25 | 30.25 | 36.88 | 39.75 | 12 | 0.44 | 32.00 |
| 32          | 45.88 | 36        | NA | 48 | NA | 48 | 28.75 | 6.75 | 2.75 | 35.25 | 32.25 | 38.88 | 41.00 | 12 | 0.44 | 34.00 |
| 36          | 49.88 | NA        | 48 | NA | 48 | NA | 30.75 | 7.25 | 2.75 | 39.31 | 36.31 | 42.88 | 43.13 | 16 | 0.44 | 38.00 |
| 42          | 54.5  | 48        | NA | 48 | NA | NA | 33.75 | 7.75 | 2.75 | 46.31 | 42.31 | 48.88 | 47.50 | 16 | 0.56 | 44.63 |
| 48          | 61.88 | NA        | 48 | NA | NA | NA | 36.75 | 7.75 | 2.75 | 52.38 | 48.38 | 54.88 | 53.25 | 16 | 0.56 | 50.63 |
| 54          | 67.88 | 48        | NA | NA | NA | NA | 39.75 | 8.00 | 2.75 | 58.44 | 54.44 | 60.75 | 56.88 | 16 | 0.56 | 56.63 |

AC1008442

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.



## Model TSBD

Fans shall be Model TSBD Tubeaxial, fixed pitch, steel impeller, as manufactured by Aerovent, Minneapolis, Minnesota. Fans shall be Arrangement 9, V-belt driven with the impeller mounted on a separate shaft and bearings supported completely within an enclosed tube isolated from the high velocity airstream.

**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. Model TSBD shall be available UL/CUL 705 listed.

**HOUSING** — Housings shall be welded of hot rolled steel. Inlet and outlet flanges are standard.

Housings shall be fitted with mounting legs, hanging clips or flange mounted as shown on the drawings. Fan mounting legs and clips shall be fabricated from steel plate suitably braced to ensure stability and rigidity.

**IMPELLER** — The impeller shall be a fabrication consisting of formed steel blades of single-surface airfoil shape welded to a spun steel central hub. Precise blade attachment shall be ensured through the use of welding jigs and fixtures. The ability to provide various factory-set blade angles ranging from 30° to 50° allows the highest possible latitude in selection and provides fan operation at the highest possible efficiency.

All impellers are statically and dynamically balanced prior to assembly. Fans with motors and drives mounted by Aerovent are test run as a complete assembly and rechecked for balance at the specified operating speed.

**SHAFT** — Shafts shall be AISI 1045 hot 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 shall be heavy-duty, grease lubricated, anti-friction flange ball or roller, self-aligning, pillow block type and selected for a minimum average bearing life (AFBMA L-50) in excess of 200,000 hours at the maximum fan RPM. All bearings shall be provided with pre-filled factory extended lubrication lines terminating at the housing exterior to facilitate bearing relubrication without gaining access inside the ductwork.

**DRIVE** — The fan shall be equipped with a (fixed/adjustable) pitch V-belt drive selected to operate the fan at the correct operational RPM. The V-belt drive shall consist of cast iron sheaves and anti-static conducting belts and shall be selected with a (1.2/1.5) service factor based upon the required brake horsepower of the fan.

The complete fan shaft and bearing assembly shall be mounted within a steel fabricated inner cylinder. The V-belt drive assembly shall be extended through a two-piece belt fairing. The belt fairing shall be an aerodynamically shaped tube designed to maximize fan efficiency, minimize air blockage and reduce noise generation. The belt fairing shall be welded continuously to both the inner cylinder that houses the fan shaft and bearings and the fan housing, thus protecting and completely isolating the V-belt components from the direct blast of the airstream.

**MOTOR** — Fan motors shall be manufactured in accordance with current applicable standards of IEEE and NEMA and, where applicable, shall meet current EPACT standards. They shall be foot-mounted, NEMA standard, (ODP, TEFC, Explosion-Proof), continuous-duty, ball bearing type with class ("B"/"F") insulation and of cast iron construction when commercially available.

**FINISH AND COATING** — 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. Aluminum components shall be unpainted.

**ACCESSORIES** — When specified, accessories shall be provided by Aerovent to maintain one source responsibility.

**FACTORY RUN TEST** — All fans with motors and drives mounted by Aerovent shall be completely assembled and test run as a unit at the specified operating speed prior to shipment. 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. 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.





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