



INDUSTRIAL PROCESS AND  
COMMERCIAL VENTILATION SYSTEMS

# TUBEAXIAL PAINT SPRAY BOOTH EXHAUST FANS

Model TCBS



## Overview

### TCBS



Model TCBS

The Twin City Fan & Blower Model TCBS is a belt driven tubeaxial fan that is designed specifically for reliable and cost-effective air movement in paint spray booth applications. Model TCBS exhaust fans are designed for applications requiring either a horizontal or a vertical airflow direction.

### Typical Applications Include

Paint Spray Booth Exhaust

### Configurations

Belt Driven – vertical & horizontal mounting configurations

### Impeller Type

"BSA" Backswept Die Cast Aluminum Impellers

### Sizes and Performance

- Arrangement 9 – belt driven
- Available in sizes from 12" to 42" diameter
- Airflow to 36,131 CFM
- Static pressures to 1.25" w.g.

## Energy Regulations

Twin City Fan & Blower supports energy efficiency regulations enacted by the Department of Energy (DOE) and energy commissions of specific states. The selection and application of fan products is a significant part of these regulations. Engineers and specifiers must understand how to apply Twin City Fan & Blower products to their specific applications to meet efficiency requirements. Twin City Fan & Blower has made significant investments in product testing to assure users will receive the most efficient products available. Developments in the Fan Selector software are in place to help aide in product selection to meet the efficiency requirements as stipulated in the regulations. Visit [tcf.com](http://tcf.com) for the latest on fan energy efficiency regulations.



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

## Construction Features

### TCBS

- Aluminum non-sparking impeller dynamically balanced for quiet, vibration-free operation
- Continuously-welded, heavy-gauge, corrosion resistant, coated steel housing with pre-punched inlet and outlet flanges
- OSHA belt guards are standard
- Non-relubricable "sealed for life" ball bearings in mono-block housing to extend bearing life with perfect shaft/bearing alignment
- Designed for continuous-duty

### Housing

Housings are heavy-gauge, hot-rolled steel construction, continuously-welded and ground smooth to assure efficient airflow through the housing. Inlet and outlet flanges are integrally rolled and punched to allow attachment to ductwork or accessories as necessary.

### Drive Isolated from Airstream

The v-belt drive assembly is enclosed in an aerodynamically designed belt tube, which maximizes fan efficiency, minimizes air blockage and reduces noise generation.

### Impeller

- Die cast aluminum construction
- Unique Backswept profile with airfoil cross section
- Adjustable pitch blades with factory set blade angles
- Uses split taper lock bushing for superior holding power on shaft
- Generates low wake turbulence for low noise emission

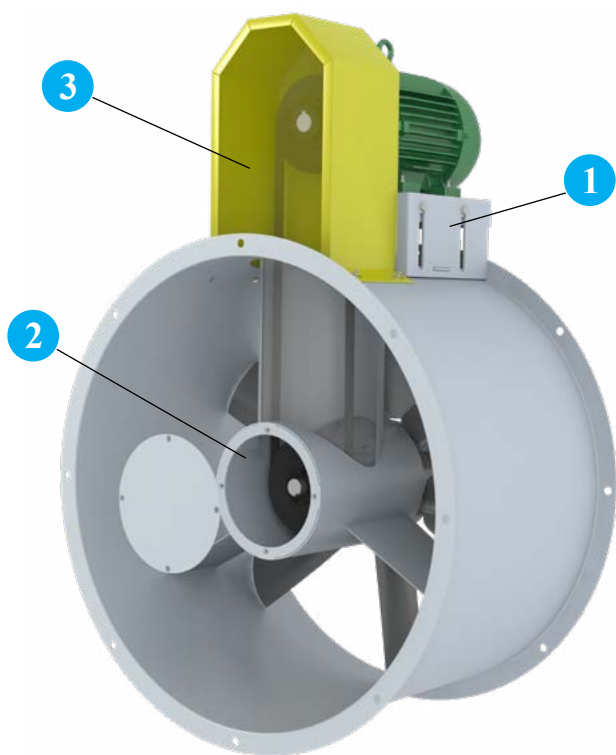


6-Bladed BSA Impeller



Paint Booth Application





- 1 **Motor Base** is easily and accurately adjusted to tension belts with two jack-bolts. Four hold-bolts on the side of the base secure the motor and provide rigidity to drive out vibration.
- 2 **Inner Cylinder** is aerodynamic for high airflow efficiency and low particulate build-up. Access to the fan sheave is gained through the cover plate, enabling fan speed to be adjusted to suit the paint booth performance.
- 3 **Belt Guards** protect personnel from the moving drive parts.



## MOUNTING CONFIGURATIONS

### Horizontal Construction

Horizontal construction is available in sizes 12 through 42.

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

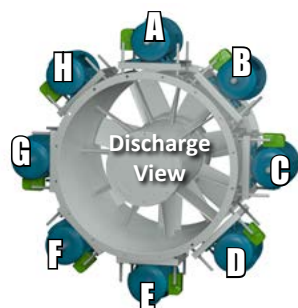
**Horizontal Ceiling Hung (HCH)** — For duct mounted fans, four suspension clips are welded to the fan casing to allow ceiling suspension using rod hangers.

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

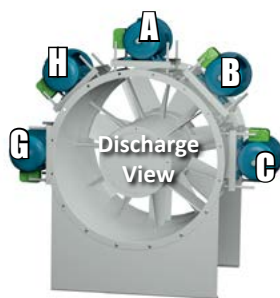
### Vertical Construction

Vertical construction is available in sizes 12 through 42. Consult factory for larger sizes.

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



**HCH**  
Horizontal  
Ceiling Hung



**HBM**  
Horizontal Base  
Mounted



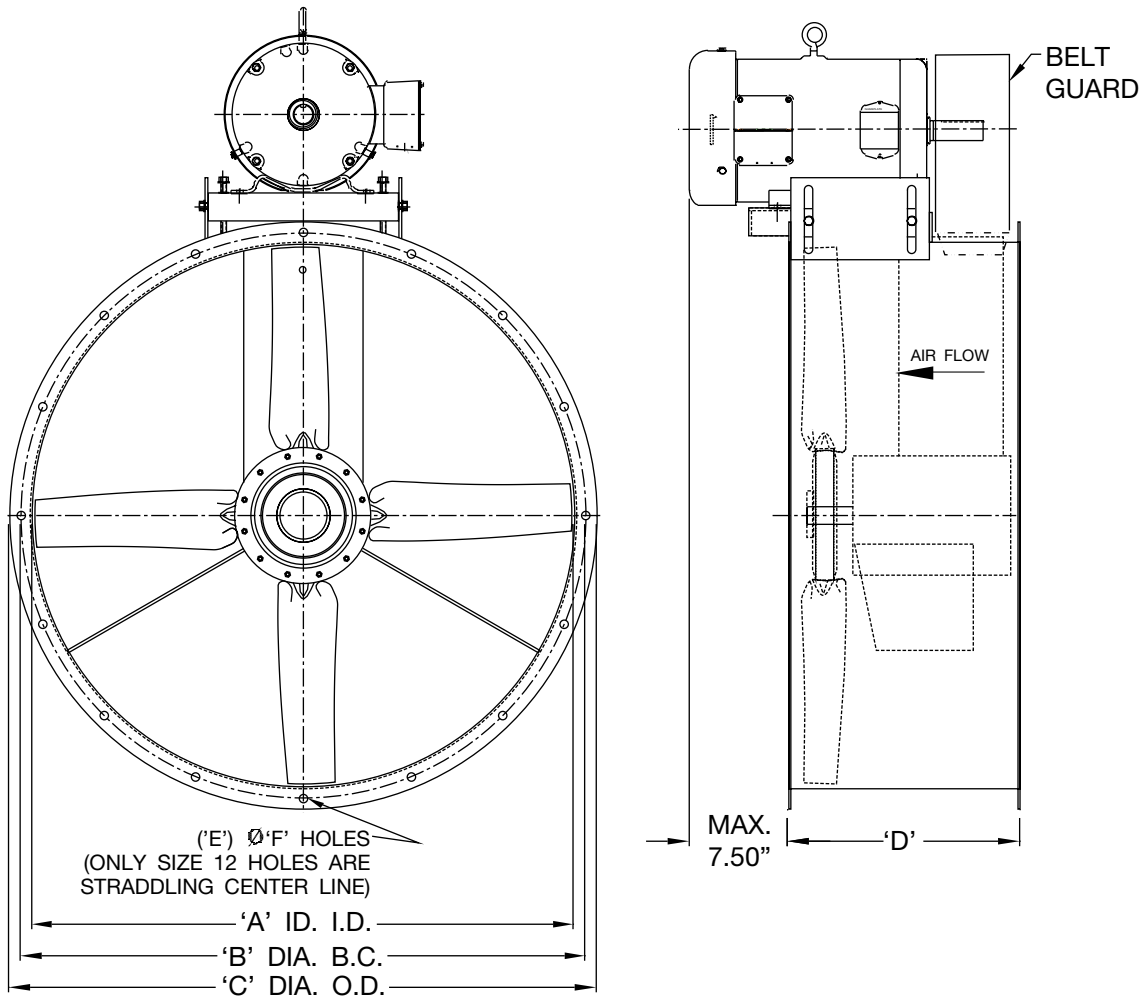
**HOR**  
Horizontal  
Flange Mounted



**VUN**  
Vertical Up  
No Brackets



**VDN**  
Vertical Down  
No Brackets



SIZE	A	B	C	D	E	F	MAX. MTR FRAME
12	12.25	13.88	14.88	12.00	8	.44	145T
14	14.25	15.88	16.88	12.00	8	.44	145T
16	16.25	17.88	19.00	12.00	8	.44	184T
18	18.25	19.88	21.00	12.00	8	.44	184T
24	24.25	25.88	27.13	15.50	8	.56	184T
30	30.38	31.88	33.25	15.50	8	.56	184T
34	34.38	35.75	37.38	15.50	8	.56	184T
36	36.38	37.88	39.38	15.50	16	.56	184T
42	42.50	44.13	45.50	15.50	16	.56	215T

Dimensions shown are in inches unless otherwise indicated.  
Dimensions are not to be used for construction.

AC1002686





## Model TCBS

Fans shall be Model TCBS Tubeaxial, Paint Spray Booth Exhaust Fans as manufactured by Twin City Fan & Blower, 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 AMCA 210 and AMCA 300 test codes in an AMCA registered laboratory and shall be guaranteed by the manufacturer to deliver rated published performance levels.

**HOUSING** — Fan casings shall be welded of low carbon, commercial quality 12-gauge hot rolled steel in sizes through 20" diameter, 10-gauge hot rolled steel from 24" diameter through 28" diameter, and 7-gauge hot rolled steel on sizes greater than 30" diameter. Inlet and outlet flanges shall be integrally rolled mechanically from fan casing sheet steel to ensure concentricity and alignment. Accuracy and uniformity of the fan casing shall be ensured through the use of welding jigs and fixtures. The motor base plate shall be fabricated of minimum 3/16" steel plate and welded to the exterior of the fan casing.

**IMPELLERS** — Impellers shall be constructed of non-sparking, die cast aluminum hubs and blades. Fan blade pitch angle shall be preset at the factory. Impellers shall be secured to the fan shaft with a taper lock bushing.

**SHAFT & BEARINGS** — All fans shall be supplied with a shaft of AISI C-1045 steel material that has been properly turned, ground and polished for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed. The shaft shall be supported by a matched set of nonrelubricable bearings that are housed in a cast aluminum monoblock. All fan bearings are to have an L-10 minimum life as defined by AFBMA of at least 60,000 hours.

**DRIVES** — 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) safety factor based upon the required brake horsepower of the fan. A belt guard is to be provided to afford personnel safety and general traffic protection.

**MOTORS** — Motors for Arrangement 9 fans shall be manufactured in accordance with current applicable standards of IEEE and NEMA and, where applicable, shall meet current EPACT standards. Motors shall be footmounted, NEMA standard (ODP, TEFC, Explosion-Proof), continuous-duty, ball bearing type with class (B, F) insulation.

**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.

**FACTORY RUN TEST** — All fans with motors and drives mounted by Twin City Fan & Blower 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.

**GUARANTEE** — The manufacturer shall guarantee the workmanship and materials for its TCBS Tubeaxial, Paint Spray Booth Exhaust Fans for at least one (1) year from startup or eighteen (18) months from shipment, whichever occurs first.



# INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS

MIXED FLOW FANS | TUBEAXIAL & VANEAXIAL FANS | WALL MOUNTED FANS | ROOF VENTILATORS

CENTRIFUGAL ROOF & WALL EXHAUSTERS | CEILING VENTILATORS | GRAVITY VENTILATORS | DUCT BLOWERS

RADIAL BLADED FANS | RADIAL TIP FANS | HIGH EFFICIENCY INDUSTRIAL FANS | PRESSURE BLOWERS

LABORATORY EXHAUST FANS | FILTERED SUPPLY FANS | MANCOOLERS | FIBERGLASS FANS | CUSTOM FANS



**TWIN CITY FAN & BLOWER**  
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