TCF
TWIN CITY FAN

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.

6-Bladed BSA Impeller

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For complete product performance, drawings and available accessories, download our Fan Selector program at 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

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

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.

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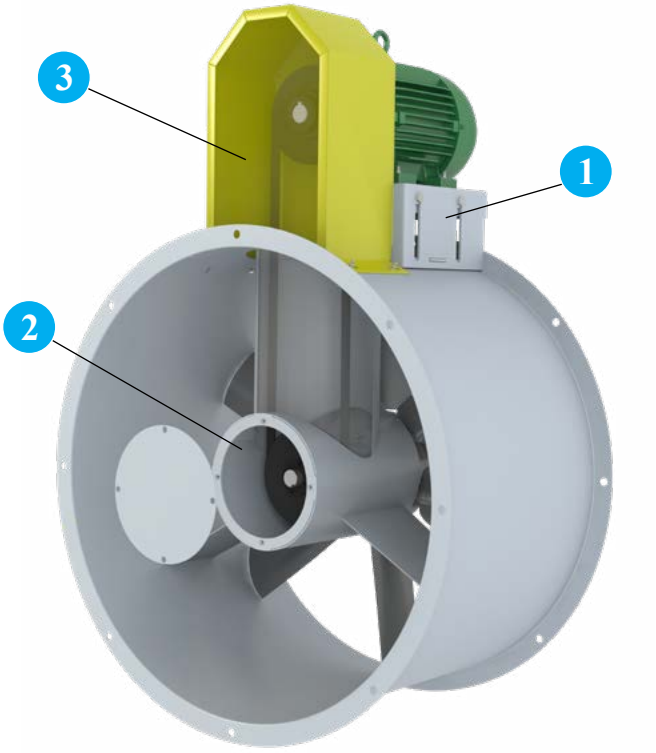
Paint Booth Application

OPTIONS/ACCESSORIES



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.

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MOUNTING CONFIGURATIONS

Horizontal Construction

Horizontal construction is available in sizes 12 through 42.

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

HOR
Horizontal
No Mounting
Brackets

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.

VUN
Vertical Up
No Brackets

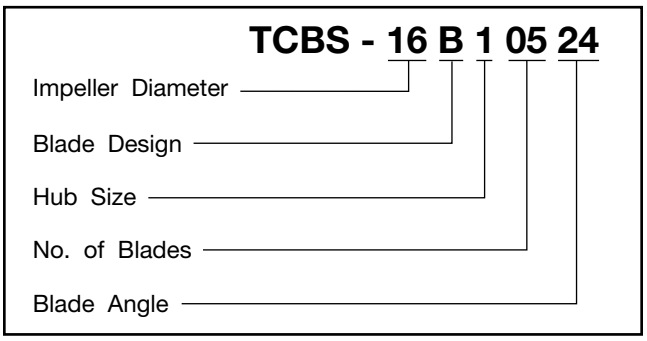
VDN
Vertical Down
No Brackets

To identify a specific fan for ordering or engineering specification, it is necessary to show the complete catalog number as shown at the right. All performance data is available in curve form upon request.

All capacities shown in the performance tables that follow are for standard air conditions: 70°F at sea level (0.075 lbs./cu.ft. air density).

The tables show a representative sample of the wide range of impellers available.

Model Nomenclature



TCBS | Size 12

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																			
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
12B10521	2375	1/4	1295	.20	1240	.21	1171	.22	1102	.22	1010	.23	900	.24	730	.24								
12B10521	2745	1/2	1500	.31	1452	.32	1394	.33	1336	.34	1273	.35	1200	.36	1107	.37								
12B10521	3576	1	1953	.67	1923	.69	1879	.71	1835	.72	1788	.74	.75	1745	1700	.76	1647	.77						

TCBS | Size 14

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																			
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
14B10532	2036	1/2	2478	.45	2375	.47	2255	.48	2130	.49	1930	.50	1691	.49										
14B10532	2258	3/4	2751	.62	2659	.64	2555	.65	2447	.67	2320	.68	2122	.69	1906	.68								
14B10532	2463	1	2991	.80	2916	.82	2819	.85	2723	.86	2619	.87	2489	.88	2300	.88	2104	.88						

TCBS | Size 16

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																			
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
16B10524	1890	1/2	2887	.47	2769	.42	2631	.44	2485	.46	2300	.48	2071	.48	1815	.48								
16B10524	2145	3/4	3272	.60	3173	.62	3059	.64	2934	.69	2800	.50	2637	.69	2440	.75	2237	.71						
16B10524	2429	1	3709	.86	3620	.88	3516	.91	3412	.94	3303	.95	3183	.97	3050	1.00	2887	1.01	2705	1.02	2523	1.02		

TCBS | Size 18

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																			
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
18B10525	1496	1/2	3309	.33	3142	.35	2918	.37	2656	.38	2320	.39												
18B10525	1877	3/4	4125	.66	4031	.68	3867	.71	3694	.73	3500	.75	3263	.77	2980	.77	2698	.77						
18B10525	2064	1	4572	.88	4463	.90	4307	.93	4166	.95	4000	.98	3815	.99	3597	1.01	3355	1.03	3090	1.03	2754	1.01		
18B10525	2237	1 1/2	4939	1.12	4861	1.14	4728	1.17	4588	1.20	4440	1.22	4283	1.25	4104	1.28	3909	1.30	3683	1.31	3456	1.31	3200	1.25
18B10525	2566	2	5684	1.69	5618	1.71	5501	1.75	5385	1.78	5260	1.82	5135	1.85	5000	1.87	4852	1.90	4686	1.93	4519	1.95	4319	1.97

TCBS | Size 24

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																			
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
24B30618	1427	3/4	6393	.61	6163	.69	5878	.77	5574	.85														
24B30618	1565	1	7012	.80	6804	.89	6551	.99	6505	1.07	6000	1.15	5701	1.20										
24B30618	1719	1 1/2	7701	1.06	7514	1.16	7291	1.27	7046	1.37	6800	1.46	6542	1.53	6261	1.59	5969	1.63	5653	1.66				
24B30618	1856	2	8321	1.34	8146	1.44	7935	1.56	7724	1.67	7500	1.77	7256	1.86	7010	1.94	6753	2.00	6472	2.05	6203	2.08	5910	2.10
24B30618	2119	3	9488	2.00	9363	2.10	9176	2.24	8988	2.38	8785	2.51	8598	2.62	8400	2.72	8193	2.81	7958	2.90	7740	2.97	7521	3.03

Performance shown is for installation type D: Ducted inlet, ducted outlet.
Power ratings (BHP) do not include drive losses.
Performance ratings do not include the effects of appurtenances in the airstream.

TCBS | Size 30

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																	
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
30B30618	1060	1	9224	.68	8737	.79	8220	.89	7639	.97	7000	1.01	6290	1.03	5537	1.02								
30B30618	1218	1 1/2	10588	1.03	10180	1.16	9741	1.29	9271	1.39	8750	1.47	8204	1.53	7608	1.56	6965	1.56	6337	1.55				
30B30618	1337	2	11610	1.37	11256	1.51	10861	1.65	10445	1.78	10000	1.88	9508	1.97	9009	2.02	8468	2.05	7886	2.06	7324	2.05	6741	2.04
30B30618	1538	3	13316	2.11	13066	2.24	12713	2.42	12359	2.57	12000	2.71	11600	2.83	11194	2.94	10778	3.02	10341	3.08	9862	3.12	9384	3.14
30B30618	1852	5	16104	3.63	15870	3.82	15589	4.03	15308	4.23	15000	4.42	14700	4.60	14372	4.77	14068	4.91	13740	5.04	13389	5.16	13038	5.26

TCBS | Size 34

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																	
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
34B30420	1190	2	15106	1.63	14447	1.75	13671	1.85	12824	1.92	12000	1.96	11035	1.97	10094	1.96	9176	1.94						
34B30420	1382	3	17540	2.55	17009	2.68	16322	2.83	15698	2.92	15000	3.00	14231	3.06	13420	3.08	12640	3.08	11797	3.06	10986	3.04		
34B30420	1621	5	20567	4.12	20130	4.27	19599	4.44	19069	4.58	18500	4.70	17883	4.81	17259	4.89	16635	4.94	15948	4.97	15230	4.98	14512	4.97

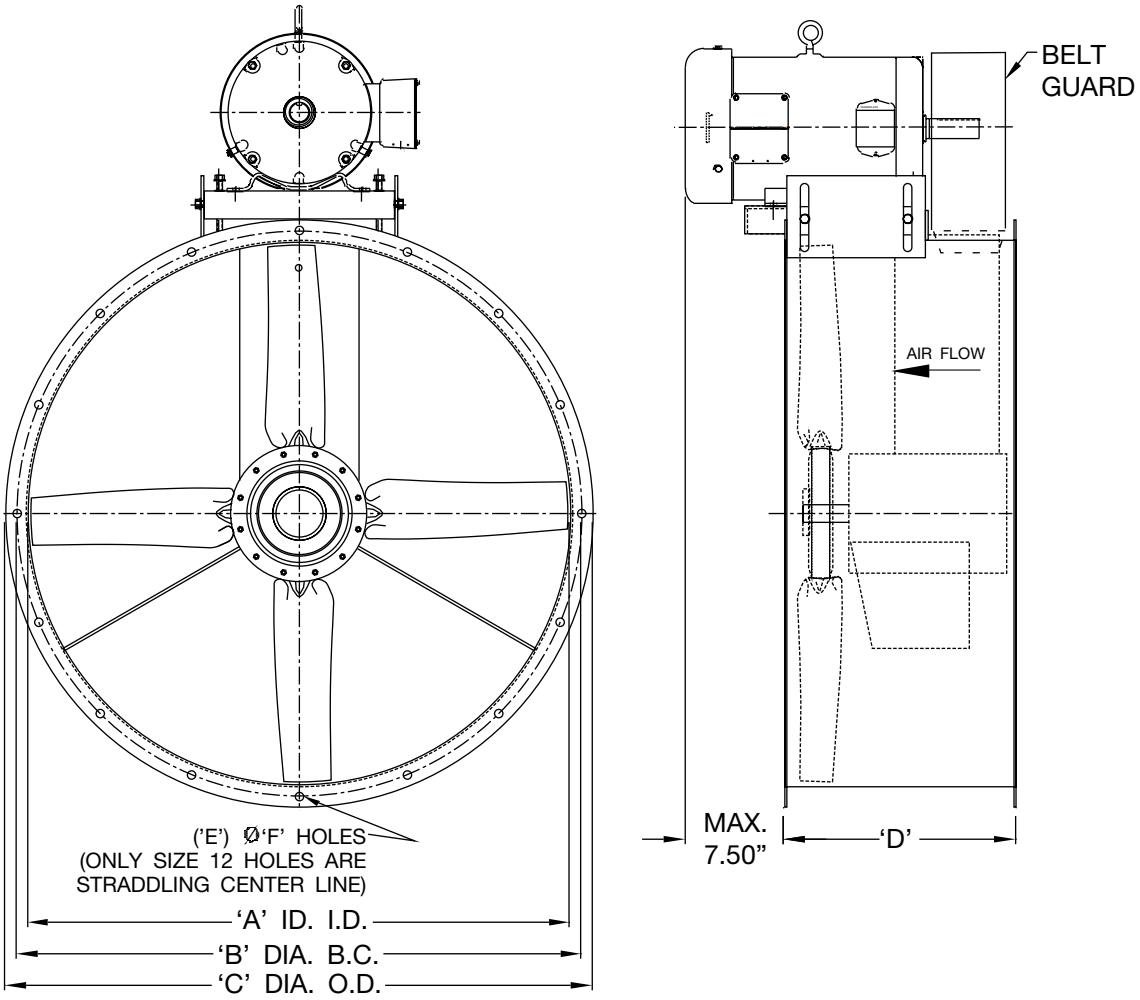
TCBS | Size 36

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																	
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
36B30420	1118	2	16736	1.72	15964	1.84	15051	1.94	14068	2.01	13000	2.04	11891	2.03	10767	2.02								
36B30420	1277	3	19137	2.56	18478	2.70	17694	2.83	16878	2.93	16000	3.00	15059	3.03	14086	3.04	13114	3.02	12110	3.00				
36B30420	1511	5	22684	4.23	22101	4.41	21446	4.58	20791	4.72	20100	4.93	19371	4.93	18606	4.99	17841	5.03	17004	5.04	16166	5.02	15293	5.00

TCBS | Size 42

CATALOG NUMBER			CUBIC FEET PER MINUTE & HORSEPOWER AT STATIC PRESSURE																	
FAN SIZE	RPM	HP	0 " SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		7/8" SP		1" SP		1⅛" SP		1¼" SP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
42B30420	1032	3	23376	2.43	22190	2.59	20817	2.71	19506	2.77	18000	2.79	16447	2.78	14918	2.75								
42B30420	1246	5	28213	4.29	27256	4.48	26216	4.65	25134	4.77	24000	4.86	22804	4.91	21514	4.92	20224	4.90	18934	4.87	17727	4.84		
42B30420	1359	7½	30793	5.56	29909	5.77	28973	5.96	27984	6.12	27000	6.24	25904	6.33	24811	6.37	23667	6.39	22419	6.37	21274	6.34	20078	6.30
42B30420	1636	10	36131	9.01	35399	9.26	34614	9.49	33830	9.70	33000	9.88	32105	10.04	31216	10.16	30327	10.25	29386	10.30	28392	10.33	27399	10.34

Performance shown is for installation type D: Ducted inlet, ducted outlet.
Power ratings (BHP) do not include drive losses.
Performance ratings do not include the effects of appurtenances in the airstream.



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

TCF
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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 ASTM A-1011 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" in 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 thoroughly degreased and deburred before application of a rust-preventative primer. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly. 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.


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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

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5959 TRENTON LANE N | MINNEAPOLIS, MN 55442 | PHONE: 763-551-7600 | FAX: 763-551-7601