

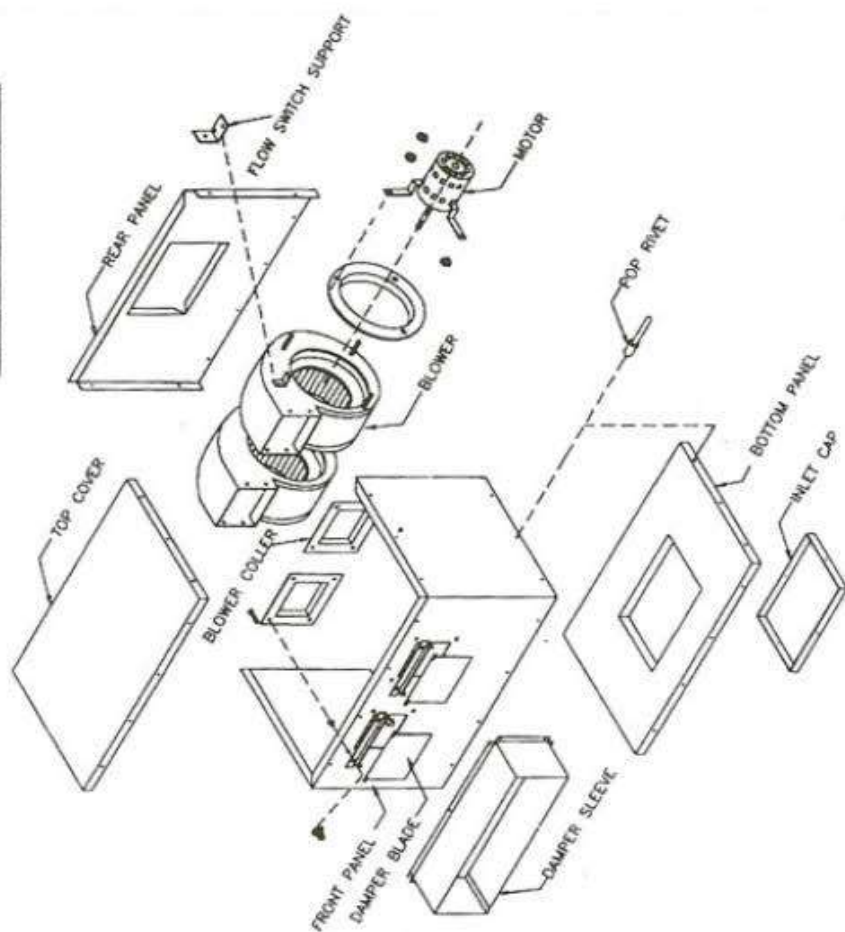
# Technical Manual

TCF Series  
Twin Fan

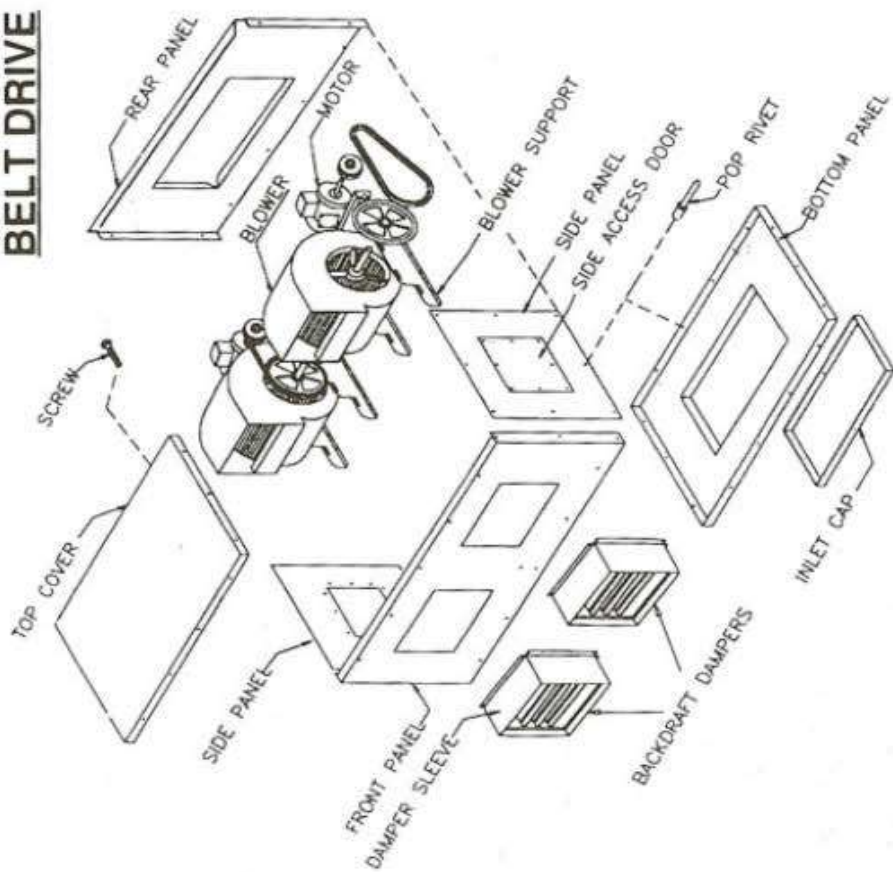


**ENERGY  
INDUSTRIAL COMPANY**  
We Care for your ventilation needs

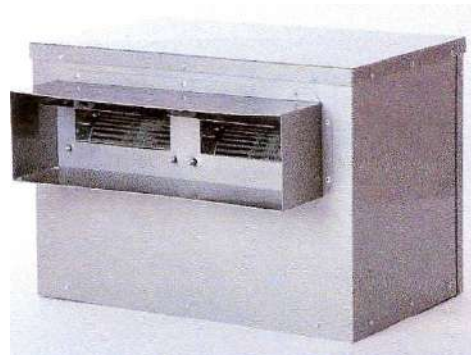
## DIRECT DRIVE



## BELT DRIVE



Energy Industrial twin cabinet Direct & Belt Drive fans are dual unit general purpose ventilation fans. These versatile, quiet air movers provide economical, convenient and effective ventilation. The Twin assembly assures continuous operation. Two similar motors and blowers are used which enable the flexibility of independent or simultaneous operation to achieve double airflow capacity. Various combinations of wheel sizes and speeds enable the TCF to cover wide range of CFM and static pressures. High efficiency performance and weather resistant construction make the TCF twin fans both tough and reliable. These fans can be used for inline, ceiling suspended or roof mounted application.



## Design Features

### Wheels

Wheels are forward curved statically and dynamically balanced. Wheels are housed in a double inlet scroll.

### Housing

Housings are weatherproof, made of heavy gauge Aluminum sheet. Completely removable bottom, top and rear panels are provided for easy access and service.

Each fan is fitted with Aluminum back draft damper as standard at discharge side of the fan for duty and standby operations.

### Motor

Motors are TE (totally enclosed), class 'F' insulation with permanently lubricated bearings. Motors feature a built in overload protection and plug in disconnects. Motors available for IISV/60 Hz, 220V/60 Hz & 240V/50 Hz.

### Electrical Connection

Wiring the TCF is quick and easy. Access to the motor leads is through a panel at the top of the unit. There is no need to remove the power pack. However, power pack can be easily removed by loosening the screws and disconnecting the quick connect plug.

## Accessories

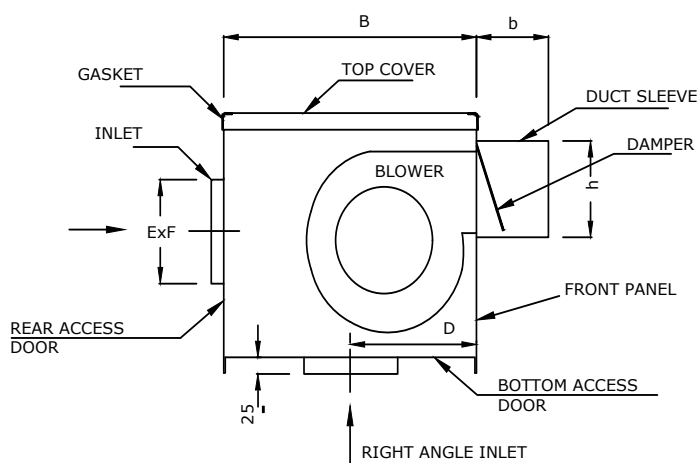
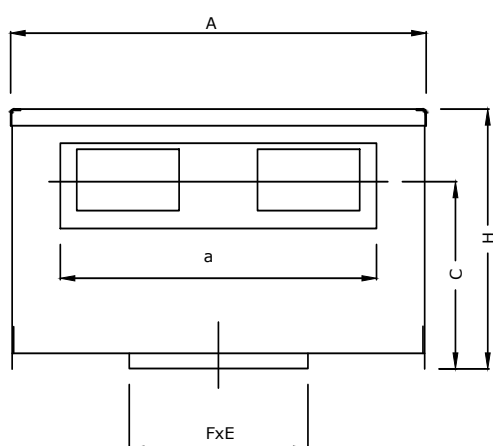
- Auto change over panel
- Speed controllers
- Vibration isolators
- Outlet bird screen
- 3/4" Acoustical insulation lining
- Epoxy coating



"Energy Industrial Company LLC certifies that the model TCF 08, TCF 12, TCF 10B & TCF 15B shown herein are licensed to bear the AMCA Seal. The rating shown are based on tests and procedures performed in accordance with AMCA publication 211 and AMCA publication 311 and comply with the requirements of the AMCA Certified Ratings Program"

### Overall Size

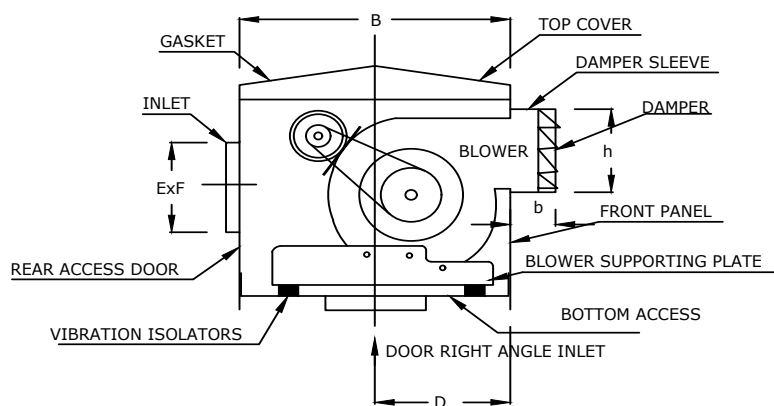
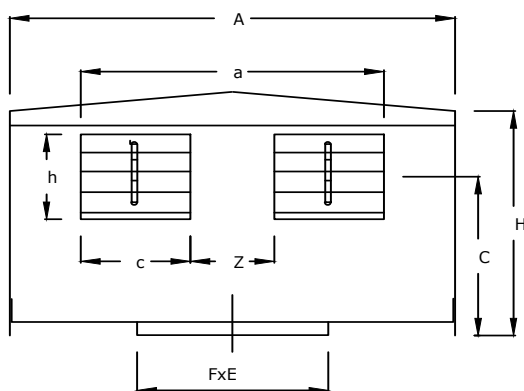
#### TCF Direct Drives



TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF08	27.5	16.6	11.4	16.6	8.2	11.8	15.7	19.9	5.2	19.9	5.3
TCF12	36.1	19.6	10.7	9.6	12.4	17.5	19.4	26.6	5.2	9.2	8.6

*All dimensions are in inch.*

#### TCF Belt Drives



TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF10B	45.2	25.0	12.6	12.2	15.3	23.2	20.4	38.5	5.9	15.6	13.3
TCF15B	67.5	32.1	17.0	16.0	19.5	43.0	29.0	55.5	6.1	22.3	19.2

*All dimensions are in inch.*

### Technical Data

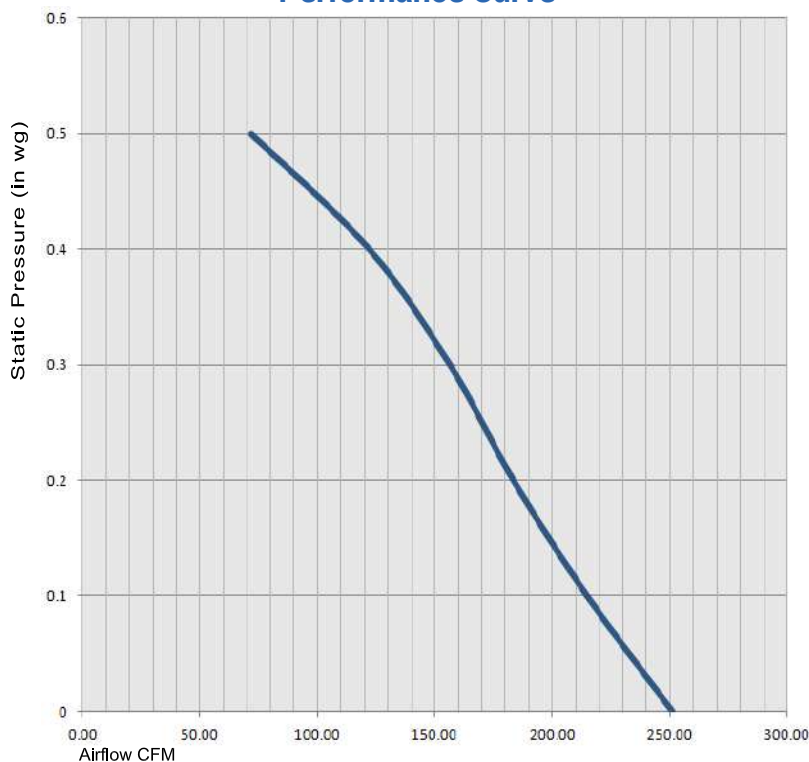
#### Model: TCF 08

Voltage, V/Hz	230/50
Maximum Motor input Watt	60
Insulation Class	F
Protection	IP 44
Speed, RPM	1112
Air Flow [CFM]	251
Ambient Temp. $t_R$	-20°C - +50°C
Appr. Weight, kg	10

The above data based on 50Hz motor with one fan operating. For both fans in operation, Please double the capacity

Performance certified is for installation type D: Ducted inlet, Ducted outlet per AMCA Standard 210. Performance ratings include the effects of back draft damper. "Value shown are for inlet Lwi sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction. The sound power level ratings shown are in decibels, referred to  $10^{-12}$  watts calculated per AMCA international Standard 301."

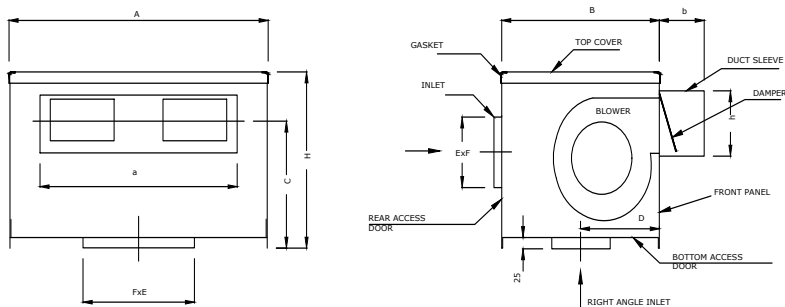
### Performance Curve



Nominal RPM	Air Flow [CFM]	Static Pressure [in. wg]	Sound power level (dB re $10^{-12}$ watts)							
			Octave Band Center Frequency (Hz)							
			63	125	250	500	1K	2K	4K	8K
797*	251	0.00	77	75	62	56	53	50	42	36
1112*	95	0.47	77	75	64	58	55	52	46	38

\*speed (rpm) shown is nominal. Performance is based on actual speed of test.

### Dimensional Drawings



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TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF 08	27.5	16.6	11.4	16.6	8.2	11.8	15.7	19.9	5.2	19.9	5.3



### Technical Data

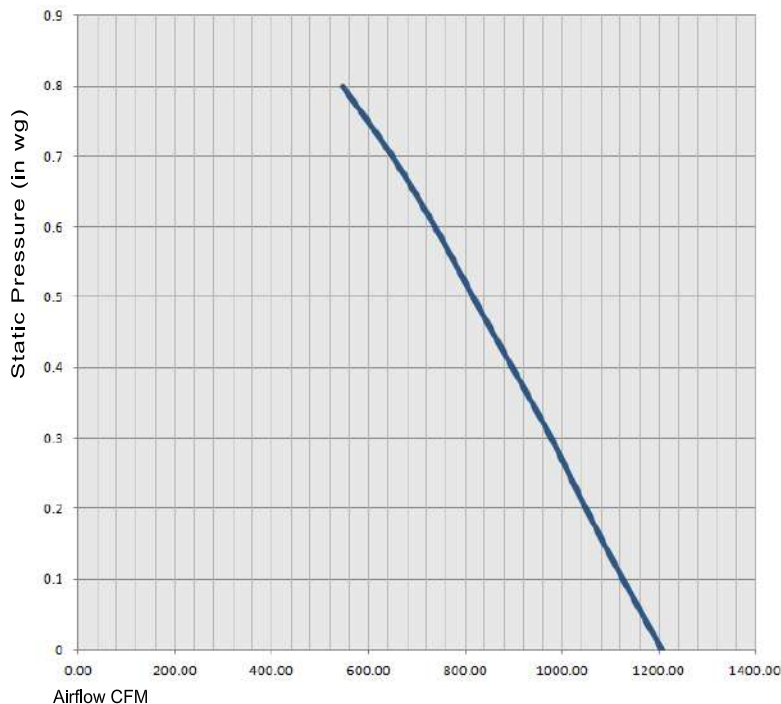
#### Model: TCF 12

Voltage, V/Hz	230/50
Maximum Motor input Watt	449
Insulation Class	F
Protection	IP 44
Speed, RPM	1399
Air Flow [CFM]	1205
Ambient Temp. $t_R$ :	-20°C - +50°C
Appr. Weight, kg	14

The above data based on 50Hz motor with one fan operating. For both fans in operation, Please double the capacity

Performance certified is for installation type D: Ducted inlet, Ducted outlet per AMCA Standard 210. Performance ratings include the effects of back draft damper. "Value shown are for inlet Lwi sound power levels for installation type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction. The sound power level ratings shown are in decibels, referred to  $10^{-12}$  watts calculated per AMCA international Standard 301."

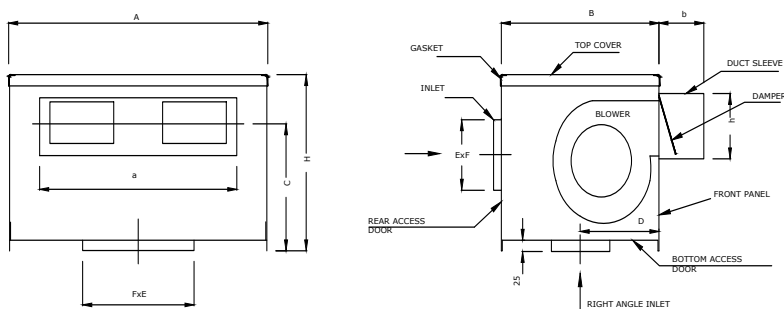
### Performance Curve



Nominal RPM	Air Flow [CFM]	Static Pressure [in.wg]	Sound power level (dB re $10^{-12}$ watts) Octave Band Center Frequency (Hz)							
			63	125	250	500	1K	2K	4K	8K
1305*	1205	0.00	87	88	78	74	72	71	70	67
1399*	478	0.90	88	93	76	75	70	67	64	60

\*speed (rpm) shown is nominal. Performance is based on actual speed of test.

### Dimensional Drawings



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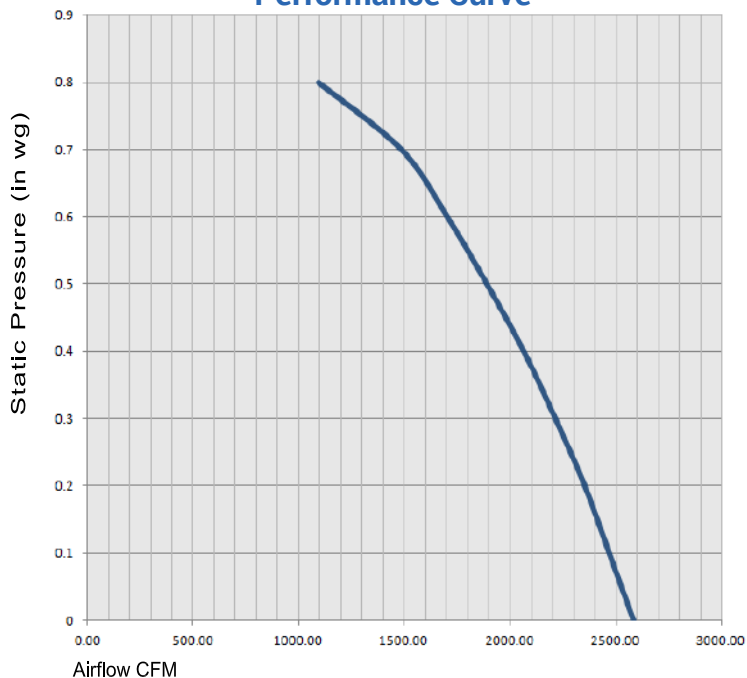
TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF 12	36.1	19.6	10.7	9.6	12.4	17.5	19.4	26.6	5.2	9.2	8.6

### Technical Data

Model: TCF 10B	
Voltage, V/Hz	230/50
Maximum Motor KW	0.6
Insulation Class	F
Protection	IP 55
Speed, RPM	950
Air Flow [CFM]	2583
Ambient Temp. $t_R$ :	-20°C - +50°C
Appr.Weight, kg	15

The above data based on 50Hz motor with one fan operating. For both fans in operation, Please double the capacity

### Performance Curve

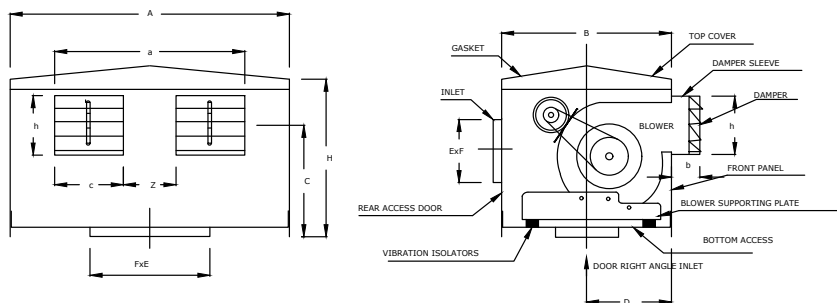


"Performance ratings do not include the effects of appurtenances(accessories). Performance certified is for installation type C: Ducted inlet, Unducted outlet per AMCA Standard 210. . The Sound ratings shown are loudness values in fan sones at 1.5 m ( 5 ft ) in a hemispherical free field calculated per AMCA International Standard 301 . Values shown are for : Installation Type C : Ducted inlet , Unducted Outlet.

Model	Max Watts	RPM	Fan Capacity – Cubic Feet Per Minute (CFM)										
			ESP	0"	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"
TCF10B	685	950*	CFM	2582	2466	2351	2212	2063	1889	1701	1485	1092	-
			SONES	21	21	19.7	19.7	17.2	17.2	17.2	17.2	14	-

\*speed (rpm) shown is nominal. Performance is based on actual speed of test.

### Dimensional Drawings



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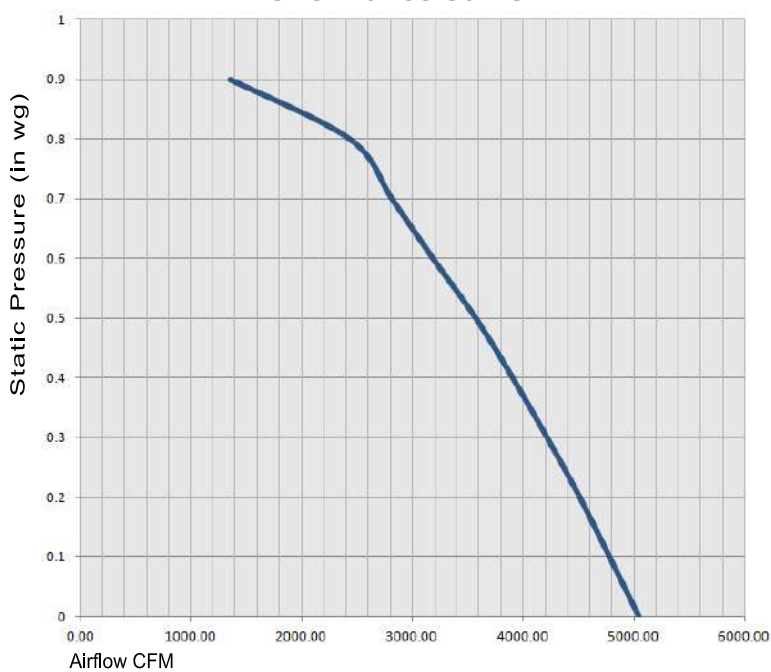
TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF 10B	45.2	25.0	12.6	12.2	15.3	23.2	20.4	38.5	5.9	15.6	13.3

### Technical Data

<b>Model: TCF 15B</b>	
Voltage, V/Hz	230/50
Maximum Motor KW	1.2
Insulation Class	F
Protection	IP 55
Speed, RPM	720
Air Flow [CFM]	5043
Ambient Temp. $t_R$ :	-20°C - +50°C
Appr.Weight, kg	32

The above data based on 50Hz motor with one fan operating. For both fans in operation, Please double the capacity

### Performance Curve

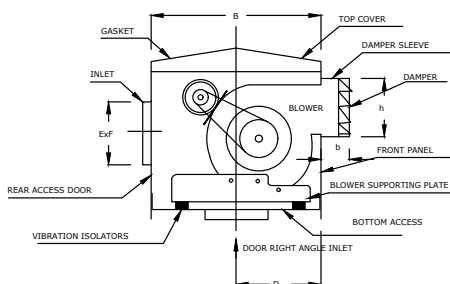
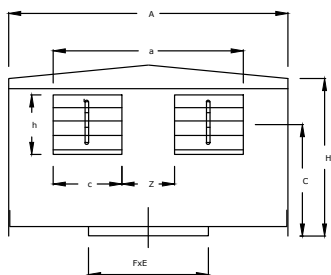


"Performance ratings do not include the effects of appurtenances(accessories). Performance certified is for installation type C: Ducted inlet, Unducted outlet per AMCA Standard 210. . The Sound ratings shown are loudness values in fan sones at 1.5 m ( 5 ft ) in a hemispherical free field calculated per AMCA International Standard 301 . Values shown are for : Installation Type C : Ducted inlet , Unducted Outlet.

Model	Max Watts	RPM	Fan Capacity – Cubic Feet Per Minute (CFM)										
			ESP	0"	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"
TCF 15B	1295	720*	CFM	5043	4776	4509	4213	3904	3572	3185	2817	2437	1354
			SONES	22	22	22	18.3	18.3	14.4	14.4	14.4	11.7	11.7

\*speed (rpm) shown is nominal. Performance is based on actual speed of test.

### Dimensional Drawings



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TWIN MODEL	A	B	C	D	E	F	H	a	b	c	h
TCF 15B	67.5	32.1	17.0	16.0	19.5	43.0	29.0	55.5	6.1	22.3	19.2



### Auto Change Over Panel (ACOP)



- ❖ "ACOP" is an electronic system designed and developed for automatic operation of twin-fans.
- ❖ Factory wired single unit that can fit on the Fan housing.
- ❖ ACOP has a silent feature which enables the user to override the auto system (cyclic changeover) to manual mode by pressing the mode button. This feature helps the end user to run any of the selected fans continuously or to do the maintenance in case of failure.
- ❖ The customer has an option to switch on both fans simultaneously, if required, in order to increase the capacity.

ACOP works on latest digital electronic technology that ensures the accurate results and seamless operation to the installer with a choice of options for a maintenance free operation.

The control Module is connected to the fan with plug-in socket system which is factory wired in order to avoid any wrong wiring and supports an easy installation. The airflow sensor, which is an inherent part of the unit, ensures the proper status of the system by monitoring the airflow. This feature also supports the belt driven fans in case the belt is damaged or broken, the system will shift to the standby fans and display a failure alarm.

The rail is mounted in a durable plastic enclosure as per DIN standard. The dimension of the ACOP is 110 x 100 mm with the following available options:

1. Auto mode: This mode is for automatic duty sharing between the fans for every 12 hours which is factory set and the cycle time is not field adjustable.
2. Manual mode: It provides the option of running each fan individually or both fans at the same time in order to double the flow rate of the unit.
3. Green light indicates the normal operation status. Red light indicates fault signal.

User can switch to any mode by pressing on the "mode button" on the ACOP and the status of the fans is shown by distinct LEDs.

#### **Optional B.M.S Interface available on request.**

Optional Interface with Potential free Contracts can be provided. The user can start / stop the fan and can read the status of the fan on the remote B.M.S. computer.

### Operation:

Auto Mode: Once the system is energized, ACOP checks for the complete system integrity and give command to the first fan (FAN-A) to start. A built in delay timer is also activate with the fan and it allows the system to run for a preset time to develop the airflow. Once the airflow is developed the system will allow the FAN- A to run for its pre set cycle time (12 Hrs). When the cycle is complete, the system will shift the duty to the second fan (FAN-B).

### Technical Infomation:

#### **Single Phase Motors:**

Operating Voltage	: 110V - 240V A.C. 50 Hz/60Hz
Capacity to Drive Motors	: 1.5 Hp
Ambient Temperature	: 55° C (not directly exposed to the sunlight)

#### **Three Phase Motors:**

**Applicable with the conventional starter panels (consult factory)**

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This fan features described in the sample, such as size, performance parameters, the Company reserves the right to change without notice  
Referenc: **EIND-TCF-20 (Ed:01 Rev:00)** July-2020)