

# ENERVEX SFTA SUPPLY FAN

3916046 06.16

Installation & Operating Manual



**READ AND SAVE THESE INSTRUCTIONS!**

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This symbol shows that the ENERVEX SFTA Supply Fans are listed in the US and certified for Canada under Underwriters Laboratories Inc. file no. E158680.

## Symbol Legend

The following terms are used throughout this manual to bring attention to the presence of potential hazards, or to important information concerning the product.



**DANGER:** Indicates an imminent hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.



**WARNING:** Indicates an imminent hazardous situation which, if not avoided, may result in personal injury or property damage.

## How to use this manual

This installation manual does not contain any system design documentation. System design documentation is available from any authorized ENERVEX representative. Accessories, fans, and variable frequency drives are not covered by this manual. Please refer to these component's individual manuals.

## TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Use this unit in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed on the front of the manual.
2. Before servicing or cleaning the unit, switch off at service panel and lock service panel to prevent power from being switched on accidentally.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.
4. Follow the appliance manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. This unit must be grounded.

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## 1. PRODUCT INFORMATION

### 1.1 FUNCTION

The ENERVEX SFTA fan is a tube axial supply fan used to move large volumes of air. The SFTA may be used for combustion air supply systems that require reliability, efficiency, and little noise during operation. This fan is a component in the Modulating Combustion Air System (MCAS™).

The SFTA consists of an eight blade propeller mounted directly to a motor shaft. The propeller is dynamically balanced to provide vibration free operation while moving a large quantity of air. The fan is equipped with an energy efficient, dual voltage motor.

The motor and propeller are completely enclosed in a heavy-gauge steel housing. The housing is painted with corrosion resistant enamel. Flanges on the inlet and outlet of the fan housing allow it to be easily mounted to a wall or horizontal stack run. There are mounting brackets and hangers located at either end of the fan for ceiling, wall or base mounting.

The motor in the fan is a commercial grade, TEFC (Totally Enclosed, Fan Cooled), dual voltage, 3-phase motor. It is Class F insulated, IP54 Protection Class. Thermal overload protection is provided. The motor is foot-mounted and meets NEMA standards.

#### LISTINGS

UL/ ULc Listed to UL 705, Standard for Power Ventilators , File No. E158680. Manufactured at ISO9001 certified plant AMCA rated and certified to publications 211 and 311.

### 1.2 COMPONENTS

- A. Housing
- B. External Conduit Box
- C. Motor
- D. Propeller
- E. Mounting Brackets

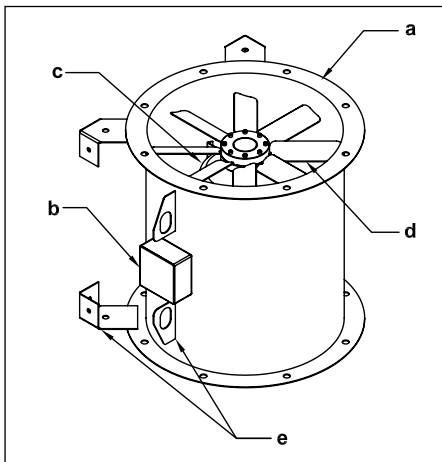


Fig 1

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### **1.3 SHIPPING**

The fan is shipped bolted to a wooden pallet. Do not remove from pallet until the fan has been moved to the location it will be mounted.

Loosen the bolts and carefully remove the fan from the pallet before installation. This will require the use of a lift or other form of mechanical assistance. Never lift the fan by the housing flanges, propeller, motor, motor shaft or external conduit box. Use cables or nylon straps to lift the fan without causing damage to the fan housing, fan coating or fan components.

### **1.4 WARRANTY**

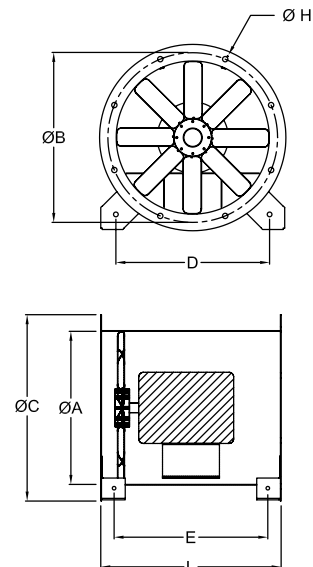
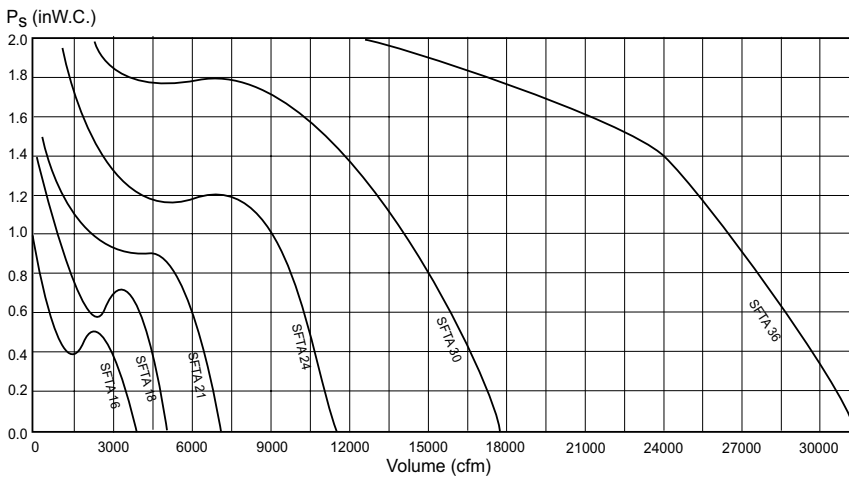
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX, Inc.

## 2. SPECIFICATIONS AND DIMENSIONS

### 2.1 DIMENSIONS AND CAPACITIES

#### Specifications

Model		SFTA 16	SFTA 18	SFTA 21	SFTA 24	SFTA 30	SFTA 36	
Fan Type		Tube-axial						
Motor Type		TEFC						
Number of Blades		8	8	8	8	8	8	
Voltage	V AC	200-240/3/60 OR 440-480/3/60						
Amperage	Amps	2.8/1.4	2.8/1.4	4.0/2.0	8.2/4.1	14.2/7.1	23.0/11.5	
Motor Output	HP	1.0	1.0	1.5	3.0	5.0	10.0	
	kW	.75	.75	1.30	2.25	3.75	7.50	
RPM		1750						
Average Weight	lbs	53	60	85	97	149	234	
	kg	24	27	39	54	77	117	
Nominal Duct Connection	in	16	18	21	24	30	36	
	mm	400	450	530	600	750	910	
Dimensions	Ø A	in	16.13	18.25	21.25	24.25	30.38	36.50
		mm	410	464	540	616	772	927
	Ø B	in	17.88	19.88	22.88	25.88	32.00	38.38
		mm	454	505	581	657	813	975
	Ø C	in	18.88	20.88	24.00	27.00	33.50	40.00
		mm	480	530	610	686	851	1,016
	D	in	15.88	17.25	19.25	21.5	25.75	30.38
		mm	403	438	489	546	654	772
	E	in	15.25	15.25	17.25	17.25	22.25	23.25
		mm	641	641	438	438	565	591
	Ø H	in	0.34	0.34	0.44	0.44	0.44	0.44
		mm	9	9	11	11	11	11
L	in	19	19	21	21	26	27	
	mm	483	483	533	533	660	686	
Mounting Holes	Qty	8	8	8	8	8	16	
Max. Frame		143T	145T	184T	184T	184T	245T	



### 3. MECHANICAL INSTALLATION

#### 3.1 GENERAL

The SFTA fan may be mounted indoors or outdoors. If mounted outdoors, an additional epoxy coating should be applied to the fan housing to prevent corrosion.

Air should flow from the back of the motor through the end.

The customer is required to provide proper external support for the fan. See Chapter 2 of this manual for the weight of each fan model. Mounted fans should be placed as close as possible to a wall or column.

The fan may either be wall mounted or stack mounted.

Position the fan so the external conduit box and grease ports are easily accessed for routine maintenance and cleaning (See Chapter 6).

A louver should always be placed on the outside of the wall opening to keep objects away from fan blades. An inlet/outlet screen is available from ENERVEX if either end of the fan is exposed.

#### 3.2 WALL MOUNTING THE SFTA FAN

The SFTA fan may be wall mounted in the room where the appliance(s) needing an intake air supply is located. The fan should be attached to the wall via the mounting holes in the fan housing. Brackets or other means of support should be attached at both ends of the fan. The bracket may be attached above the fan or below as shown in Fig. 2. Once mounted, horizontal stack or duct may be connected (must be independently supported).

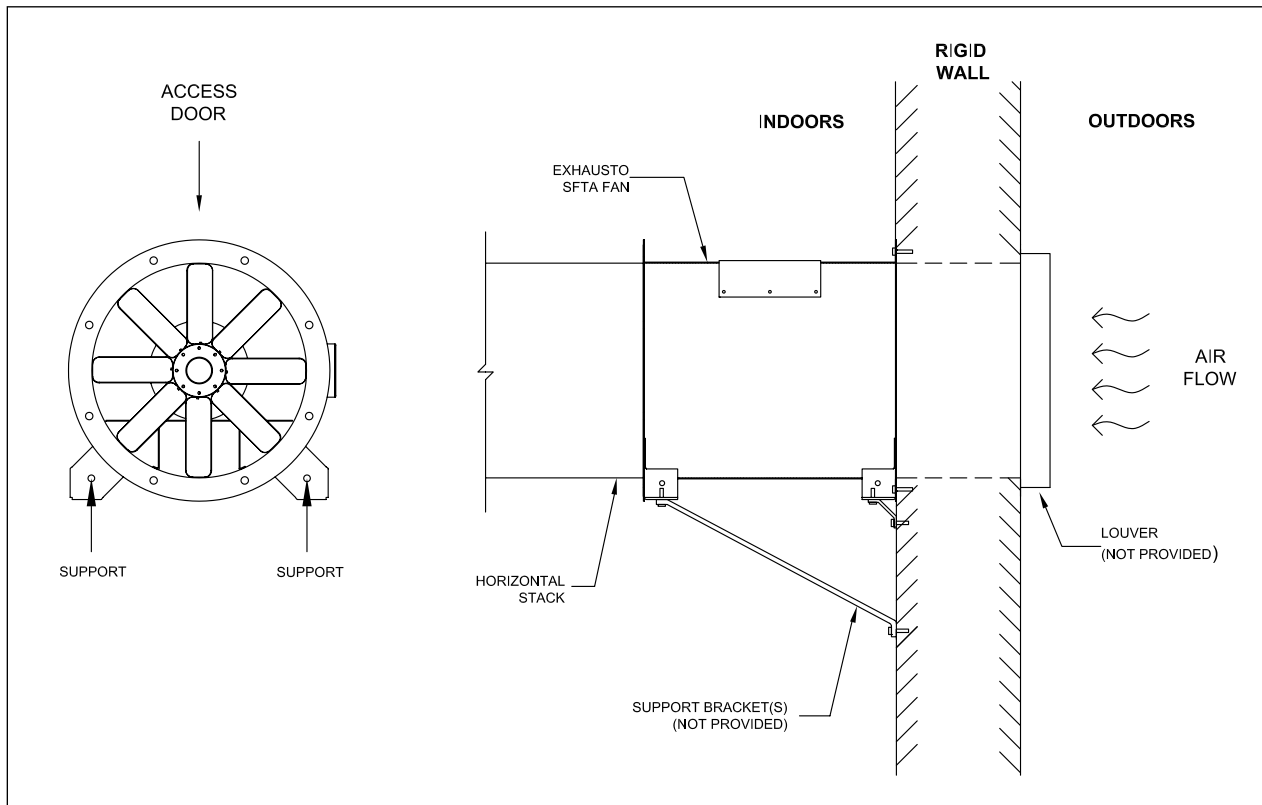


Fig 2

### 3.3 STACK MOUNTING THE SFTA FAN

The SFTA fan may be mounted directly into the horizontal stack that runs from the louver to the appliances. When using this mounting option, the SFTA fan must be supported from the ceiling or floor. To mount from the ceiling use the hangers on the side of the fan housing.

The fan must be externally supported before connecting it to the stack. A suspended fan must be cross-braced to prevent side sway of the fan. Any stack or duct work surrounding the fan should be independently supported. Do not use the fan to support the stack or duct.

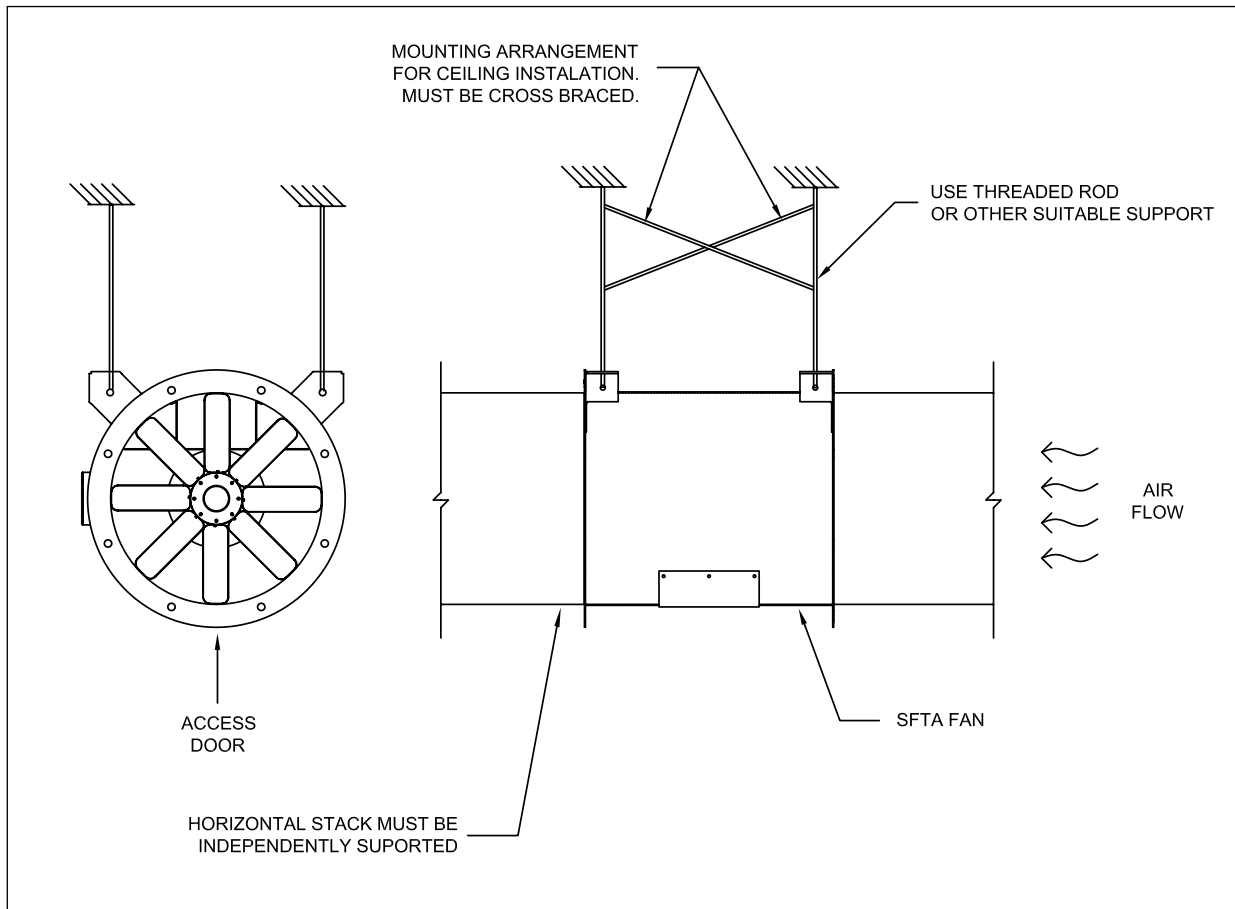


Fig 3





### 4.2 MOTOR WIRING DETAIL - SFTA

The wiring configuration inside the motor junction box is shown in Fig. 5. All models will operate on 3-phase voltage at 60 Hz. The operating voltage, chosen at the user's discretion, will be either 200-240 VAC or 440-480 VAC. The current draw for each voltage is shown in the table in Section 2.1.

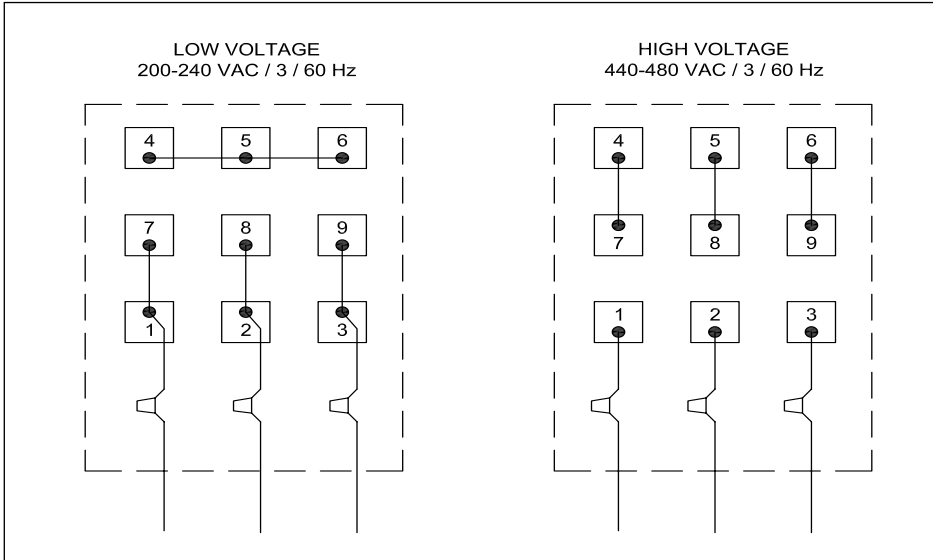


Fig 5

### 4.3 WIRING DIAGRAM - VFD

The wiring diagram for a typical ventilation system using a SFTA fan is shown in Fig. 6 and Fig. 7. Wire according to Fig. 6 if using an ABB ACS320 series VFD.

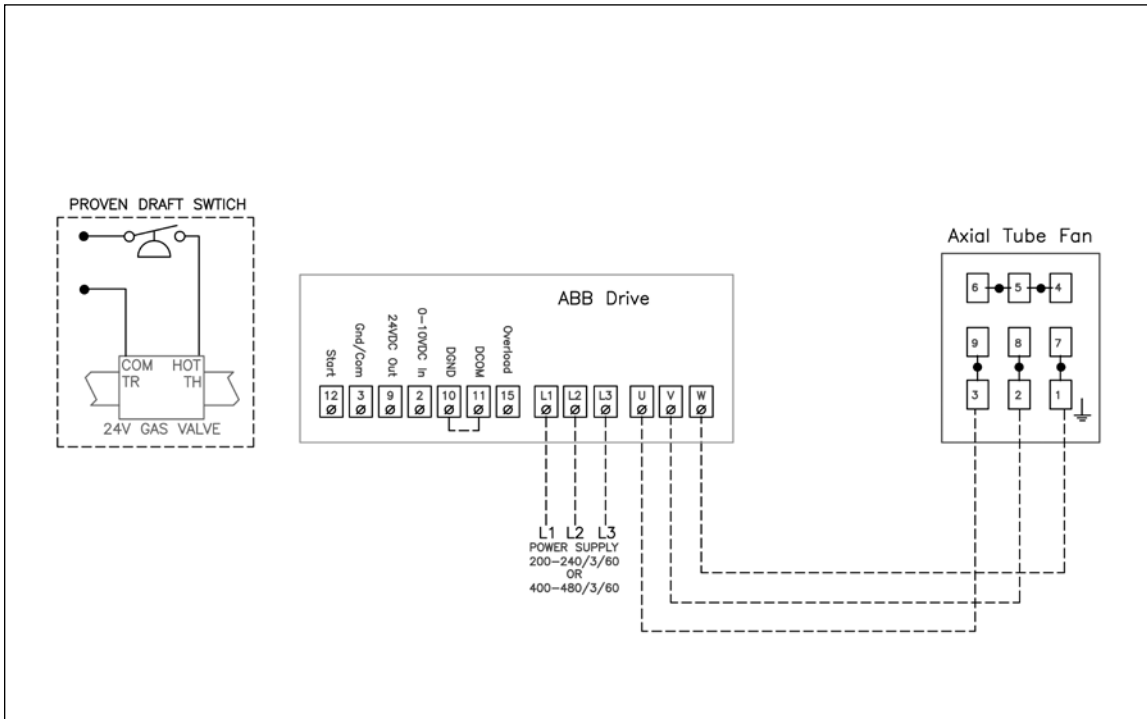


Fig 6

Wire according to Fig. 7 if using a VLT Micro Drive series VFD.

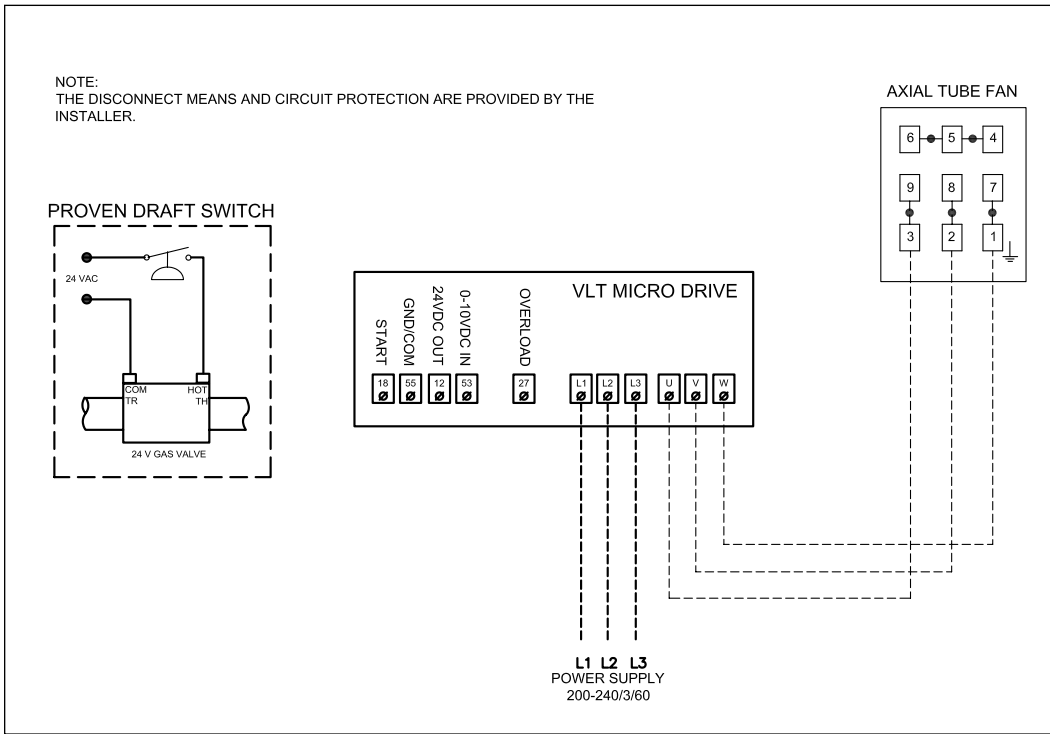


Fig 7

#### 4.4 WIRING DIAGRAM - MOTOR STARTER

If a VFD is not installed, a motor starter should be installed in its place (as required by local codes).

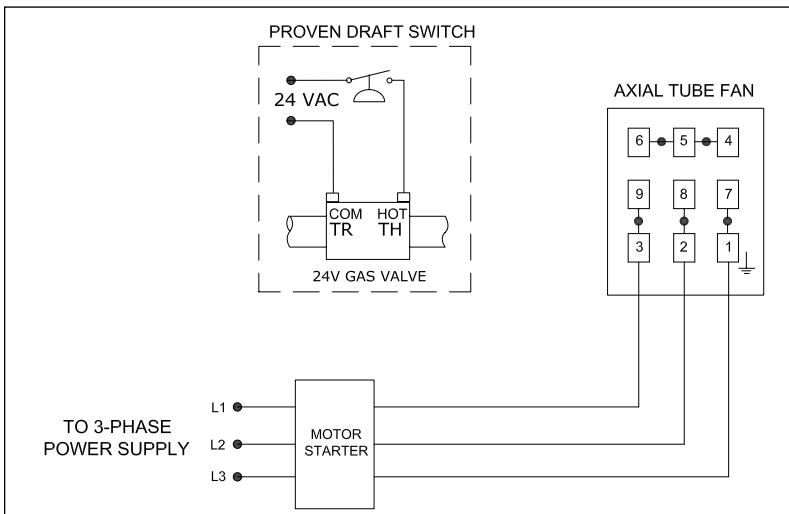


Fig 8


#### 4.5 INSTALLING A SAFETY SYSTEM

A safety system is required to be interlocked with the appliance(s) in use. The safety system could utilize a Proven Draft Switch (PDS), a thermal switch, a flow switch or a sail switch. The device must be interlocked with the appliance(s) so it shuts down in the case of insufficient draft, fan failure, or power failure. Please refer to the PDS-1 Installation Manual for wiring instruction.

If using an EBC 14 or EBC 30 Fan Control, a PDS-1 is already integrated into the control. For more information about safety systems, please contact ENERVEX, Inc.

#### 4.6 CHECKING/CHANGING FAN ROTATION

Once wiring of the fan motor has been completed, the user must check the rotation direction of the propeller. To do this, face the end of the fan closest to the propeller. When power is applied, the blades should rotate clockwise. If the fan is rotating in the wrong direction, the output wires running into terminals U and V of the Variable Frequency Drive must be switched. See the diagram in Fig. 8.



**CAUTION**

Do not touch the fan blades or attempt to impede their motion while they are moving.

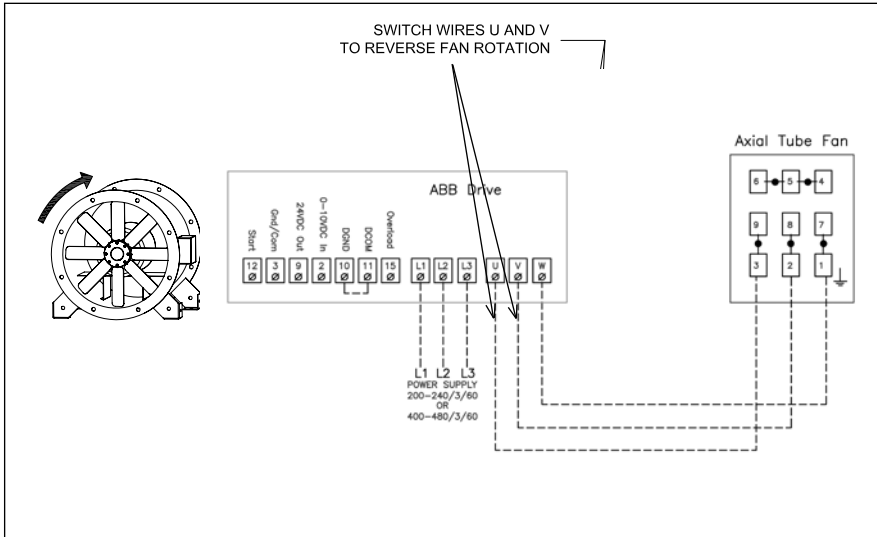


Fig 8

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## 5. STARTUP AND CONFIGURATION

### 5.1 SYSTEM TESTING



Make sure the fan blades are rotating in the correct direction; the fact that the fan blows is no guarantee it is doing so. Running the fan in the wrong direction over a longer period of time will damage the motor.



It is important that the installation, start-up and system testing procedures are followed. Failure to do so may have a major negative impact on motor life expectancy.

1. Verify the line voltage is the same thing as the motor rating.
2. Verify the bracket holding the motor shaft and impeller in place during transport has been removed.
3. Test the fan blade to make sure it is clear of any obstructions and has not been subject to misalignments during shipping or installation.
4. Apply power to the fan to verify the fan is running in the CLOCKWISE direction when facing end of the fan closest to the propeller.
5. Switching any two phases in the junction box will reverse the direction of the fan (see Section 4.4).

### 5.2 ADJUSTING THE FAN SPEED

Once the fan is installed, start all appliances. If the fan is operating with a variable speed, a modulating control (EBC 14, EBC 30, &/or VFD) is required. Follow the directions in the control installation manual.

### 5.3 TESTING THE SAFETY SYSTEM

Adjust the setting of the Proven Draft Switch or other safety device. Start the appliance(s) and the fan to verify the safety device is functioning. Manually turn the fan off. If the appliance shuts down within 2 minutes, the safety system is functioning properly.

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## 6. MAINTENANCE AND TROUBLESHOOTING

### 6.1 CLEANING THE FAN



#### **WARNING**

Do not remove the cover on the external conduit box unless power to the fan has been disconnected.

This fan may need cleaning periodically to free it of debris that may have accumulated from the outside air flow. If buildup accumulates in the fan housing or on the fan blades, it could cause the propeller to operate out of balance and hinder the fan's performance.

### 6.2 STRUCTURAL MAINTENANCE

All components used to mount and support the fan must be checked regularly for signs of stress, fatigue, cracks or corrosion.

### 6.3 MOTOR MAINTENANCE

The motor on the SFTA fan must be kept clean, properly lubricated and free of excessive moisture. A lubrication schedule and recommended grease can be found on the motor plate.

Inspect the motor every 500 hours of operation or every 3 months to check that the motor is free of dirt, oil, grease, water or other blockages. Make sure the motor received proper ventilation to prevent overheating and premature motor failure. Unless otherwise stated on the motor plate, lubricate as follows:

Motors running for 8 hours a day in a clean environment should be lubricated once every year. If the fan runs continuously, lubricate twice as often. If the fan is located in a dirty or high temperature environment it should be lubricated 4 times as often.

NOTE: The manufacturer and/or model of the motor in SFTA models may vary. Before installation, please check the motor plate to verify the type of motor, recommended grease and lubrication schedule.

The following applies to TECO motors with type ZZ bearings ONLY. Please verify type of motor before lubricating.

The recommended grease for TECO motors with type ZZ bearings is Shell Alvania R3 (lithium base) grease. Use a grease gun to pump grease through the grease ports into the bearings. Pump enough grease to fill the grease port. After re-greasing, operate the motor for 10-30 minutes to purge any excess grease.



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