

# Installation and Operation Manual

## 1SDE Series

Standard Duty Exhaust Wall Fans








Fantech Inc. certifies that the SDE Series shown herein is licensed to bear the AMCA Seal. The ratings 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.

### United States

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Note	Warning / Important note	Information	Technical information	Practical tip



**Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.**

1. Follow all local electrical and safety codes in the United States and Canada, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States, and the Canadian Electric Code (CEC) in Canada.
2. Motor must be properly grounded by wiring with a grounded, metal-clad raceway system, using a separate ground wire connected to the bare metal of the motor frame, or other suitable means.
3. Lock and tag power disconnect to prevent unexpected application of power.
4. Guard all moving parts.
5. Be careful when touching the exterior of an operating motor - it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage - modern motors are built to operate at higher temperatures.
6. Protect the power cable from coming in contact with sharp objects.
7. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.
8. Make certain that the power source conforms to the requirements of your equipment.
9. Wiping or cleaning rags and other flammable waste materials must be placed in a tightly closed metal container and disposed of later in the proper fashion.
10. When cleaning electrical or electronic equipment, always use an approved cleaning agent such as dry cleaning solvent.
11. **Units are UL Listed when using those motors and drives provided by the manufacturer.**

**Do not depend on any switch as sole means of disconnecting power when installing or servicing the fan. If the power disconnect is out-of-sight, lock it in the open position and tag to prevent application of power. Failure to do so may result in fatal electrical shock.**

## Description

Exhaust and supply belt-drive fans are used for industrial ventilating systems in factories, warehouses, foundries, laundries, etc. Utilized in duct installations up to .375" SP (Static Pressure).

Each unit is equipped with self-aligning, press-fit ball bearing pillow blocks, five-wing propeller, (six-wing on Models 1SDE48J), deep-drawn venturi, and adjustable predrilled motor base.

## Unpacking

1. When receiving unit, inspect carefully for any damage that may have occurred during transit.
2. Due to availability of carriers and truck space, it is not possible to guarantee that all items will be shipped together. Verification of shipments must be limited to only those items on the bill of lading.
3. Unpack each carton or crate and verify that all required parts and proper quantities of each item have been received. Refer to drawings for part descriptions. Report shortages or missing items to your local representative to arrange for replacement parts.
4. Before installing, rotate the propeller to be sure there are no obstructions which would interfere with proper operation. Adjust as required.

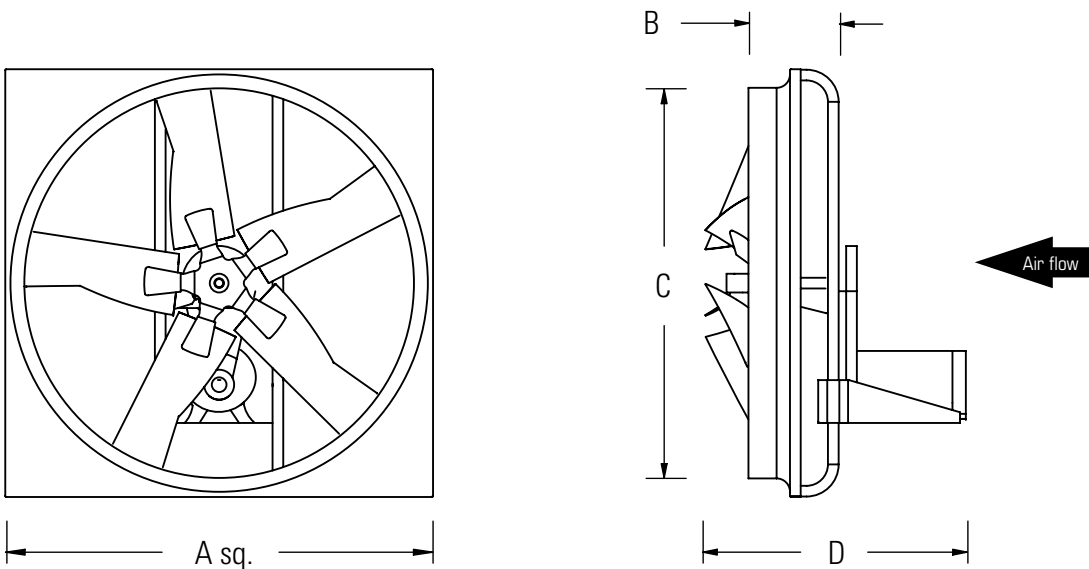


Figure 1 - Vertical Exhaust/Horizontal Supply Belt-Drive

## Dimensions and Specifications

Model	A	B	C	D	Venturi Gauge	Shaft Dia.
1SDE24	28	7 <sup>1</sup> / <sub>8</sub>	24 <sup>3</sup> / <sub>8</sub>	23 <sup>1</sup> / <sub>3</sub>	18	7/8
1SDE30	34	8 <sup>3</sup> / <sub>4</sub>	30 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>4</sub>	18	7/8
1SDE36	40	8 <sup>7</sup> / <sub>16</sub>	36 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>4</sub>	18	7/8
1SDE42	46	9 <sup>1</sup> / <sub>16</sub>	42 <sup>3</sup> / <sub>4</sub>	29 <sup>1</sup> / <sub>4</sub>	18	7/8
1SDE48	54	9 <sup>3</sup> / <sub>4</sub>	43 <sup>3</sup> / <sub>4</sub>	32 <sup>1</sup> / <sub>8</sub>	18	7/8

All dimensions in inches.

# Assembly

1. Place the motor base so that the flanges are facing UP.



On motors with side conduit boxes, interference may occur with the side plates. In such instances, turn the base over (flanges down). Once completed a shorter belt may be required. Install a belt that is at least 5 belt sizes shorter than the one furnished in the drive pack.

2. Secure the motor base to the frame tubes using the bolts provided.

### Do not tighten the nuts at this time.

3. Mount the pulleys (motor and fan) on their respective shafts. A key is included in the hardware package for the fan pulley. In all instances, the larger diameter pulley mounts on the fan shaft. For some horsepower/drive combinations, a bushed pulley is provided. The motor pulley should be as close to the motor face as possible.
4. Slip the belt(s) into the fan pulley grooves.
5. Place the motor on the motor base so that the belt(s), hanging freely from the fan pulley, slip into the motor pulley grooves.
6. Position the motor on the base with the end of the motor shaft approximately even with the outer edge of the frame tubing. Align the motor holes with the base holes and, using the bolts provided in the hardware package, securely mount the motor. As the motor is drawn down into position, tension will also be applied to the belt(s).

**When assembling the motor and drive, the pulleys must be aligned to keep the belt(s) straight. This is accomplished by ensuring that the motor and fan pulley grooves are directly in line with one another.**

7. Adjust the motor base height as required to assure proper belt tension.



Proper tension is approximately 1/2" movement of the belt when pressed at midspan under normal thumb pressure. Do not overtighten the belt(s). However, new belts should be tighter than used belts. On multiple belt installations, belts should be matched and replaced only in sets.

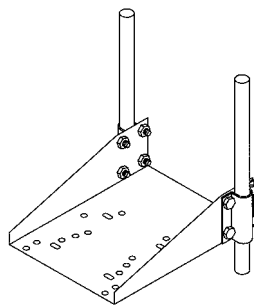


Figure 3 - Motor Base Assembly

# Installation

- **Do not tighten the nuts at this time.**
- **Do not use in explosive atmospheres.**

1. The fan must be securely mounted within a rigid framework to prevent flexing or movement of the fan frame during operation. The fan frame should be equally supported on all sides within the framework and caution should be taken to avoid twisting or cocking of the fan frame during installation.

**Allowing the fan frame to flex or move during operation will create harmful vibrations which may damage the unit.**

2. Fans should be mounted in an opening within 3/16" clearance around perimeter. Bolts should be used in holes drilled in the flanges with no greater than 10" center-line distance. Hole centers are to be centered on the flange. Bolts should be a minimum of 1/4" diameter steel..

**All electrical connections should be made by a qualified electrician.**

3. Install remaining auxiliary components (motor starter, shutter, intake guard, etc.).

- **In United States to reduce the risk of injury to persons, OSHA complying guards are required when fan is installed within 8 feet of floor, ground, or working level.**
- **In Canada to reduce the risk of injury to persons, CSA complying guards are required when fan is installed below 2.5 meters (8.2 feet) above floor or grade level.**

4. Connect power to the motor, using an approved wiring method. (Motor terminal connection data is provided on the motor nameplate or on the motor terminal box cover plate. Use adequate size wire for all branch and feeder runs).

- **For safety, a lockable disconnect switch should be located near the fan so power can be positively disconnected while servicing the unit.**
- **The fan frame and motor must be electrically grounded to a suitable electrical ground such as a grounded water pipe, or properly grounded metallic raceway to ground wire system.**

5. Unit is ready for operation.

**Before activating the fan, double check to ensure that there are no obstructions (framing, studs, shutters, etc.) which would interfere with propeller operation**

6. Upon completion of all installation inspect the unit for excessive vibration and correct rotation during operation. If excessive vibration is noticeable, disconnect power supply. Inspect mounting installation and refer to "Troubleshooting Chart" for probable cause.

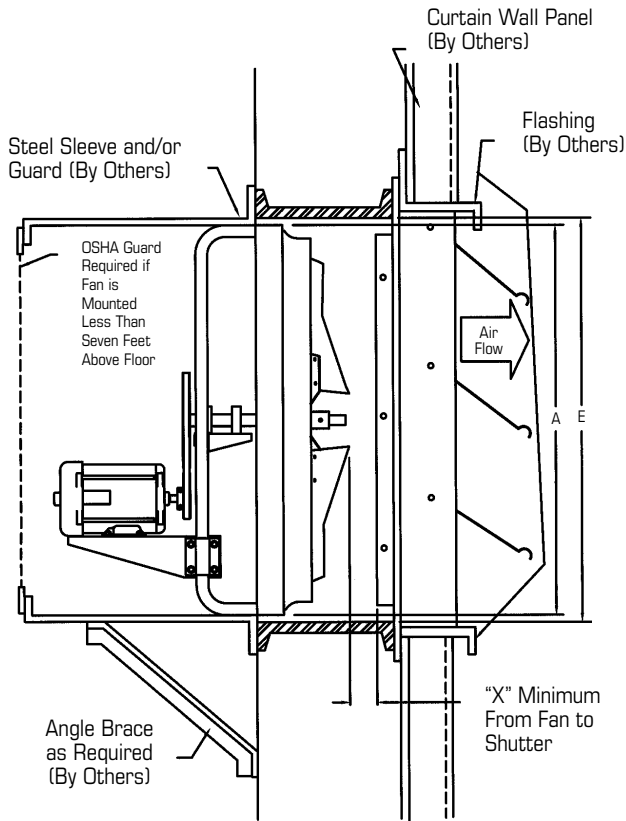


Figure 3 - Installation for Steel Building Construction

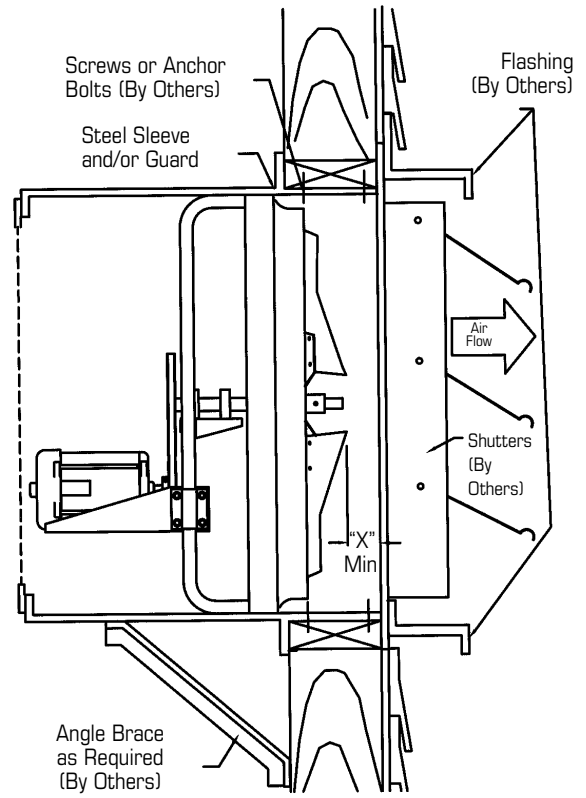


Figure 4 - Installation for Wood Wall Construction

## Mounting specifications

Model	Min. No. Fasteners per side flange	Min. Fasteners Total
1SDE24	3	12
1SDE30	4	16
1SDE36	5	20
1SDE42	5	20
1SDE48	6	24

All dimensions in inches.

## Distance of shutter to fans discharge

Model	A	"X" Min.	E
1SDE24	28	3	28 1/4
1SDE30	34	3	34 1/4
1SDE36	40	4	40 1/4
1SDE42	46	5	46 1/4
1SDE48	54	5	54 1/4

All dimensions in inches.

# Maintenance



**Do not depend on any switch as sole means of disconnecting power when installing or servicing the fan. If the power disconnect is out-of-sight, lock it in the open position and tag to prevent application of power. Failure to do so may result in fatal electrical shock.**

## Belt Tension

Periodically check belt tension and adjust as necessary (Refer to Step 7, under "Assembly").

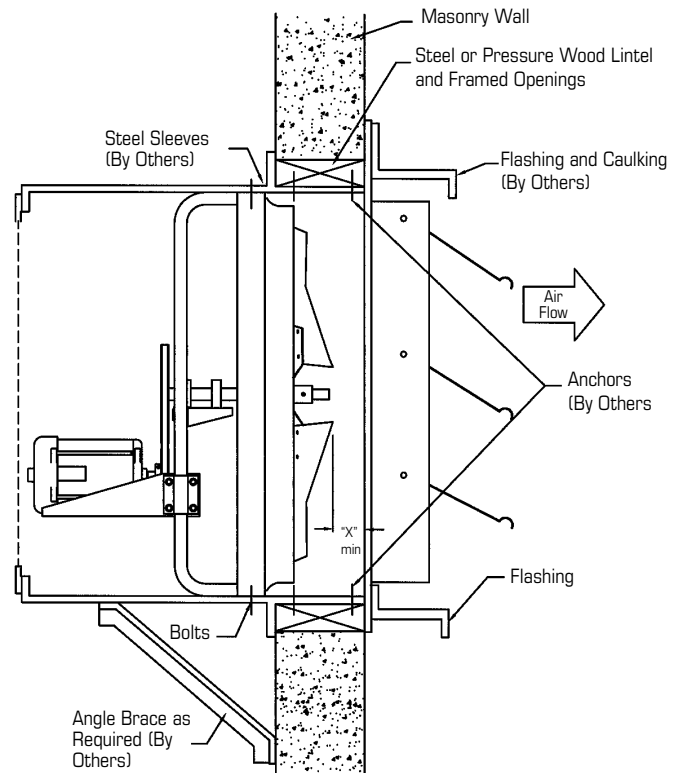
## Cleaning

When checking for proper belt tension, it is advisable to clean the propellers. This will remove any accumulated dirt which would cause imbalance and result in excessive vibration.

## Lubrication

Pillow blocks are prelubricated at the factory and require no further lubrication.

Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations and experienced with this type of equipment.



**Figure 5 - Installation for Masonry Construction**



- Sharp edges and screws are a potential injury hazard. Avoid them.
- Hazardous moving parts. Unit may contain protected fan motor which may start automatically and cause injury. Allow time for reset. Disconnect power before servicing.

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Start-up and routine maintenance should cover the following items:

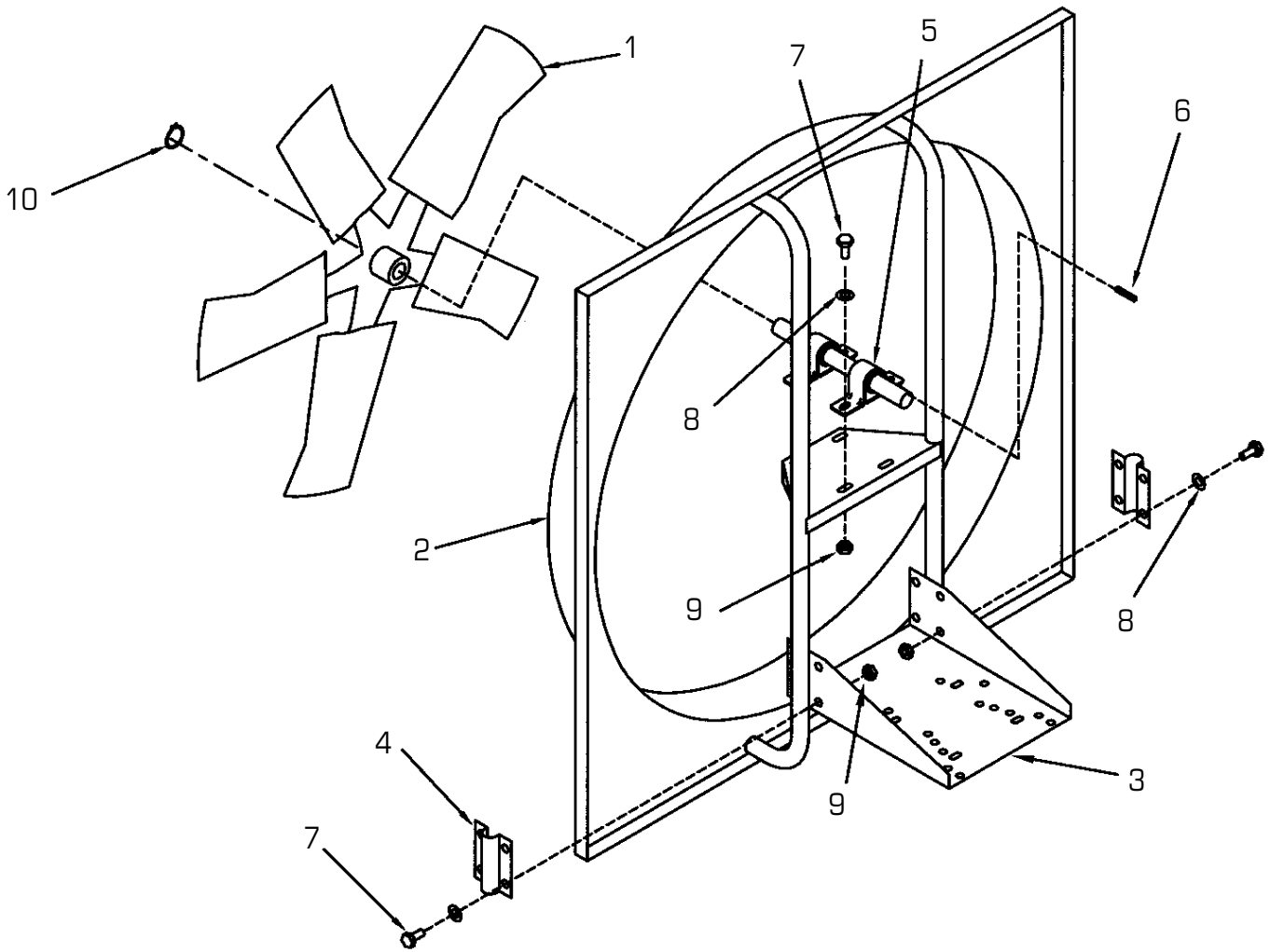
- Tighten all setscrews, bolts and wire connections.
- Check belt tension and sheaves for wear.
- Cleaning of unit, wheel and damper (if present).

# Maintenance (CONT'D)

All motors containing ball bearings are permanently lubricated from the factory. No additional maintenance is required.

1. Before performing any maintenance on the fan, be sure power is turned off and locked in the OFF position at the service entrance.
2. Ventilators should be carefully checked at least once a year. For critical or rugged applications, a routine check every two or three months is suggested.
3. All motors supplied with Fantech ventilators carry a one-year limited warranty from date of shipment. For repairs within the warranty period, the motor must be taken to the motor manufacturer's authorized service dealer. Contact your representative for additional warranty details.
4. A periodic motor check should consist of spinning the motor shaft with the power off to be sure the motor turns freely and the bearings run smoothly. The belt should be removed from the motor sheave when doing this.
5. When removing or installing a belt, do not force the belt over the sheave. Loosen the motor mount so that the belt can be easily slipped over the sheave.
6. The belt should be and carefully checked for glazing, cracks, ply separation or irregular wear. A small irregularity in the contact surface of the belt will result in noisy operation. If any of these defects are apparent, the belt should be replaced. Check the sheaves also for chipping, dents or rough surfaces which could damage the belt.
7. The correct belt tension is important. Too tight of a belt will result in excess bearing pressure on the motor bearings and shaft pillow blocks and may also overload the motor. Too loose of a belt will result in slippage which will quickly "burn" out belts. A belt should feel "live" when thumped, approximately W belt deflection (3 to 5 lb.) when subject to finger pressure at midpoint between sheaves.
8. The belt alignment should also be checked to be sure the belt is running perpendicularly to the rotating shafts. Fan and motor shafts must be parallel. Improper alignment will result in excessive belt wear.
9. Check sheave setscrews to ensure tightness. Proper keys must be in keyways.
10. If sheaves are replaced, use only sheaves of identical size and type.
11. If unit is to be left idle for an extended period, it is recommended that belts be removed and stored in a cool, dry place to avoid premature belt failure.
12. During the first few months of operation it is recommended that the sheave setscrews be checked periodically to ensure that they are tight.
13. The rotating wheel requires particular attention since materials in the air being handled can build up on the blades to cause destructive vibration or weaken the structure of the wheel by corroding and/or eroding the blade material. Regular inspection and corrective action at intervals determined by the severity of each application are essential to good service life and safety.

# Maintenance (CONT'D)



**Figure 6 - Repair Parts Illustration**

Reference Number	Description	Qty.
1	Propeller w/setscrew	1
2	Venturi frame	1
3	Motor base	1
4	U-clip	2
5	Shaft/bearing set	1
6	Shaft key	1
7	5/16-24 x 3/4" HCS (capscrew)*	12
8	5/16" Washer*	12
9	5/16-24 Spin locknut*	12
10	Snap ring	1

\* Standard hardware items, available locally.



# Components

Model	Shell	Motor & Label	Drive Pack
1SDE24BB	49591	49907	45501
1SDE24CB	49591	49909	45502
1SDE24DB	49591	49910	45566
1SDE24DX	49591	49911	45503
1SDE24EB	49591	49912	45504
1SDE24EX	49591	49913	45504
1SDE30BB	49592	49907	45505
1SDE30CB	49592	49909	45506
1SDE30DB	49592	49910	45567
1SDE30DX	49592	49911	45507
1SDE30EB	49592	49912	45508
1SDE30EX	49592	49913	45508
1SDE30FB	49592	49914	45509
1SDE30FX	49592	49915	45509
1SDE36CB	49593	49909	45510
1SDE36DB	49593	49910	45568
1SDE36DX	49593	49911	45511
1SDE36EB	49593	49912	45512
1SDE36EX	49593	49913	45512
1SDE36FB	49593	49914	45513
1SDE36FX	49593	49915	45513
1SDE36GB	49593	49916	45514
1SDE36GX	49593	49917	45514
1SDE42DB	49594	49910	45569
1SDE42DX	49594	49911	45515
1SDE42EB	49594	49912	45516
1SDE42EX	49594	49913	45516
1SDE42FB	49594	49914	45517
1SDE42FX	49594	49915	45517
1SDE42GB	49594	49916	45518
1SDE42GX	49594	49917	45518
1SDE48DB	49595	49910	45570
1SDE48DX	49595	49911	45519
1SDE48EB	49595	49912	45520
1SDE48EX	49595	49913	45520
1SDE48FB	49595	49914	45521
1SDE48FX	49595	49915	45521
1SDE48GB	49595	49916	45522
1SDE48GX	49595	49917	45522
1SDE48HX	49595	49918	45523
1SDE48JX	49595	49919	45524

# Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Excessive noise and/or vibration	<ol style="list-style-type: none"> <li>1. Defective bearing</li> <li>2. Foreign material inside bearing</li> <li>3. Pulley not tightened on shaft; (motor and/or fan)</li> <li>4. Loose propeller</li> <li>5. Loose belt(s)</li> <li>6. Belts are worn, oily or dirty</li> <li>7. Improper drive selection</li> <li>8. Misaligned pulleys</li> <li>9. Crooked or damaged propeller</li> <li>10. Motor or motor base not securely anchored</li> <li>11. Bent fan shaft</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace shaft/bearing assembly</li> <li>2. Replace</li> <li>3. Check alignment and tighten setscrew</li> <li>4. Tighten setscrew</li> <li>5. Adjust tension</li> <li>6. Clean or replace</li> <li>7. See Individual Model Characteristics Page 3 for correct drive selection</li> <li>8. Realign</li> <li>9. Straighten or replace</li> <li>10. Secure properly</li> <li>11. Replace shaft/bearing assembly</li> </ol>
Fan inoperative	<ol style="list-style-type: none"> <li>1. Blown fuse or open circuit breaker</li> <li>2. Broken belt(s)</li> <li>3. Loose pulley(s)</li> <li>4. Defective motor</li> <li>5. Electricity turned off</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse or reset circuit breaker</li> <li>2. Replace</li> <li>3. Check alignment and tighten</li> <li>4. Repair or replace</li> <li>5. Contact local power company</li> </ol>
Too much air flow	Insufficient static pressure (SP)	Check you static pressure (SP) calculations and correct system accordingly
Insufficient air flow	<ol style="list-style-type: none"> <li>1. Damper (shutter) stuck shut</li> <li>2. Fan speed too slow</li> <li>3. Belt slippage</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair</li> <li>2. Check for proper drive combination</li> <li>3. Replace and/or adjust tension</li> </ol>
Reversed air flow	Propeller rotation reversed	Reverse motor rotation

# Warranty

## **DURING ENTIRE WARRANTY PERIOD:**

Fantech will repair or replace any part which has a factory defect in workmanship or material. Product may need to be returned to the Fantech factory, together with a copy of the bill of sale and identified with RMA number.

## **FOR FACTORY RETURN YOU MUST:**

- Have a Return Materials Authorization (RMA) number. This may be obtained by calling Fantech either in the USA at 1.800.747.1762 or in CANADA at 1.800.565.3548. Please have bill of sale available.
- The RMA number must be clearly written on the outside of the carton, or the carton will be refused.
- All parts and/or product will be repaired/replaced and shipped back to buyer; no credit will be issued.

## **OR**

The Distributor may place an order for the warranty part and/or product and is invoiced. The Distributor will receive a credit equal to the invoice only after product is returned prepaid and verified to be defective.

FANTECH WARRANTY TERMS DO NOT PROVIDE FOR REPLACEMENT WITHOUT CHARGE PRIOR TO INSPECTION FOR A DEFECT. REPLACEMENTS ISSUED IN ADVANCE OF DEFECT INSPECTION ARE INVOICED, AND CREDIT IS PENDING INSPECTION OF RETURNED MATERIAL. DEFECTIVE MATERIAL RETURNED BY END USERS SHOULD NOT BE REPLACED BY THE DISTRIBUTOR WITHOUT CHARGE TO THE

END USER, AS CREDIT TO DISTRIBUTOR'S ACCOUNT WILL BE PENDING INSPECTION AND VERIFICATION OF ACTUAL DEFECT BY FANTECH.

## **THE FOLLOWING WARRANTIES DO NOT APPLY:**

- Damages from shipping, either concealed or visible. Claim must be filed with freight company.
- Damages resulting from improper wiring or installation.
- Damages or failure caused by acts of God, or resulting from improper consumer procedures, such as:
  1. Improper maintenance
  2. Misuse, abuse, abnormal use, or accident, and
  3. Incorrect electrical voltage or current.
- Removal or any alteration made on the Fantech label control number or date of manufacture.
- Any other warranty, expressed, implied or written, and to any consequential or incidental damages, loss or property, revenues, or profit, or costs of removal, installation or reinstallation, for any breach of warranty.

## **WARRANTY VALIDATION**

- The user must keep a copy of the bill of sale to verify purchase date.
- These warranties give you specific legal rights, and are subject to an applicable consumer protection legislation. You may have additional rights which vary from state to state.

## **Limitation of Warranty and Liability**

This warranty does not apply to any Fantech product or part which has failed as a result of faulty installation or abuse, incorrect electrical connections or alterations made by others, or use under abnormal operating conditions or misapplication of the product or parts. We will not approve for payment any repair not made by us or our authorized agent without prior written consent. The foregoing shall constitute our sole and exclusive warranty and our sole exclusive liability, and is in lieu of any other warranties, whether written, oral, implied or statutory. There are no warranties which extend beyond the description on the page hereof. In no event, whether as a result of breach of contract, or

warranty or alleged negligence, defect incorrect advice or other causes, shall Fantech be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of equipment or any other associated equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs, or claims of customers of purchase for such damages. Fantech neither assumes or authorizes any person to assume for it any other liability in connection with the sale of product(s) or part(s). Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.

## **Warning**

Fantech products are designed and manufactured to provide reliable performance, but they are not guaranteed to be 100% free from defects. Even reliable products will experience occasional failures and this possibility should be recognized by the user. If these products are

used in a life support ventilation system where failure could result in loss or injury, the user should provide adequate backup ventilation, supplementary natural ventilation, failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

Fantech reserves the right to make technical changes.  
For updated documentation please refer to [www.fantech.net](http://www.fantech.net)

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