Square Inline Fans

INSTALLATION, OPERATION & MAINTENANCE MANUAL

IM-4205

March 2026

Throughout this manual, there are a number of HAZARD WARNINGS that must be read and adhered to in order to prevent possible personal injury and/or damage to equipment. Two signal words "WARNING" and "CAUTION" are used to indicate the severity of a hazard and are preceded by the safety alert symbol.

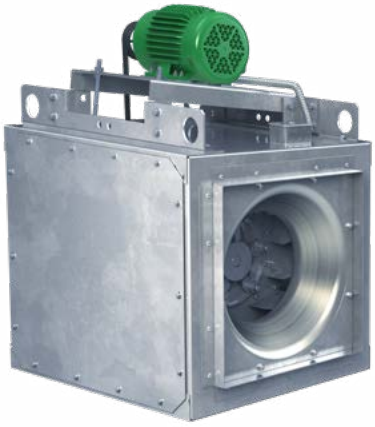
WARNING
Used when serious injury or death MAY result from misuse or failure to follow specific instructions.

CAUTION
Used when minor or moderate injury or product / equipment damage MAY result from misuse or failure to follow specific instructions.

NOTICE
Indicates information considered important, but not hazard-related.

It is the responsibility of all personnel involved in installation, operation and maintenance to fully understand the ⚠ Warning and ⚠ Caution procedures by which hazards are to be avoided.

Twin City Fan & Blower Catalog 4205 and Catalog 4210 provide additional information on this equipment. These catalogs can be found at *www.tcf.com*.



Model BSI
– 080A through 402A

Model DSI
– 080A through 165A

Model DSI
– 165X through 245X

Nomenclature

DSI - 120 A N E

- DSI / BSI: BSI = Belt Driven Centrifugal Inline; DSI = Direct Drive Centrifugal Inline
- 120: Size
- A: *Impeller Type* — A = Backward Inclined Centrifugal; X = Airfoil Mixed Flow
- N: *High Pressure* — BSI = HP; DSI = N
- E: E = Electronically Speed Controlled (Direct Drive Centrifugal Only)

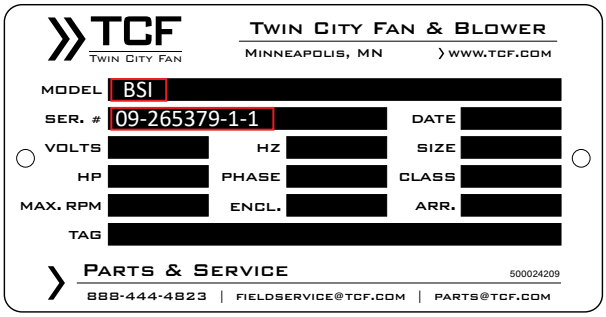
Receiving, Inspection & Unpacking

When the equipment is received all items should be carefully checked against the bill of lading to be sure all crates and cartons have been received. Before accepting delivery, carefully inspect each carton or crate for visible shipping damage. If any damage is noticed, the carrier should make the proper notation on the delivery receipt acknowledging the damage. Make notations of all damage on all copies of the bill of lading and have all copies countersigned by the delivering carrier. The carrier should also fill out a Carrier Inspection Report. The factory Traffic Department should then be contacted. File claim for damage with the carrier. Physical damage to the unit after acceptance is not the responsibility of Twin City Fan Companies, Ltd.

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.

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.

The unit nameplate must be checked to make sure the voltage agrees with the power supply available.



General Installation

CAUTION

Sheet metal parts, screws, clips and similar items inherently have sharp edges and it is necessary that the installer and service personnel exercise caution.

The installation of this equipment shall be in accordance with the regulations of authorities having jurisdiction and with all applicable codes.

This equipment is to be installed by an experienced installation company and fully trained personnel.

The mechanical installation of the inline centrifugal fan consists of making final connections between the unit, building services and duct connections.

Electrical Connection

1. Check the wiring diagrams on the motor for connections.
2. The motor is factory set at the voltage marked on the fan nameplate. Check the line voltage with the nameplate voltage and wiring diagrams.
3. The main power wiring should be sized for the ampacity shown on the dataplate. Size wires in accordance with the ampacity tables in Article 310 of the National Electrical Code. If long wires are required, it may be necessary to increase wire size to prevent excessive voltage drop. Wires should be sized for a maximum of 3% voltage drop.

CAUTION

1. **Use copper conductors only.**
2. **Protect wiring from sharp edges. Leave some slack in the line to prevent damage.**

4. Disconnect switches are not fused. The power leads must be protected at the point of distribution in accordance with the fan dataplate.
5. On fans without a thermal protector integral to the motor (refer to unit or motor dataplate to determine if protector is present) a separate overload device is required. Refer to Sections 430-32 of the N.E.C. for sizing.
6. All units must be electrically grounded in accordance with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code (ANSI/NFPA 70). A ground lug is provided as standard in the unit terminal box. Size grounding conductor in accordance with Table 250-95 of the National Electrical Code. **DO NOT** use the ground lug for connecting a neutral conductor.
7. Supply voltage to the inline fan should not vary by more than 10% of the value indicated on the unit dataplate. Phase unbalance must not exceed 2%.

WARNING

Failure of motor due to operation on improper line voltage or with excessive phase unbalance constitutes product abuse and may cause severe damage to the unit's electrical components.

TCF Twin City Fan

Check, Test & Start Procedure

WARNING

1. **Electric shock hazard. Could cause severe injury or death. Failure to bond the frame of this equipment to the building electrical ground by use of the grounding terminal provided or other acceptable means may result in electrical shock. Disconnect electric power before servicing equipment. Service to be performed only by qualified personnel. Before start-up, make sure power is turned off and locked in the OFF position.**
2. **Impeller rotation is critical. If spun in the opposing direction, fan performance is heavily degraded and the motor will overload and burn out prematurely.**
3. **Three-phase units are especially susceptible to incorrect rotation due to the ease of incorrectly connecting the wires. If the unit is checked on temporary wiring, impeller rotation should be rechecked when permanently installed. Motor burn out or tripped overload protection devices are key indications of a fan left to run in the wrong rotation.**

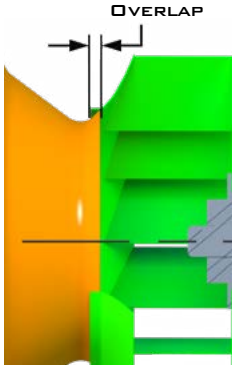
NOTICE

The impeller was balanced at the factory to be within stringent vibration levels before shipment. However, there are several things that may cause vibration, such as rough handling in shipment and installation, weak foundations and alignments.

1. General unit check:
   a. Check for any defects or damage. Contact your local representative if any damage is present.
   b. Verify that all accessories are installed and operational.
   c. Validate all fasteners are secure and there are no loose parts.
2. Impeller check:
   a. Validate that the impeller is free and able to rotate.
   b. Validate that the impeller to inlet venturi overlap is maintained. See *Impeller to Inlet Venturi* table for the specified overlap.
   c. Apply power to the unit and check the rotation of the impeller. The label within the motor housing indicates the direction. See image below for visual aid.
   d. Verify fan RPM using a tachometer. If a speed controller is used, check that the maximum and minimum RPM are as desired. If the minimum RPM is not as desired, see *Speed Control Installation* section for instructions on how to adjust.
3. Drive and belt check (BSI fans ONLY):
   a. Verify that sheaves are aligned parallel.
   b. Verify that the belt is taut with minimal deflection. Adjustment can be made by sliding the idler pulley along the groove to either tighten or loosen the belt.
   c. Verify the RPM of the impeller. Adjustment can be made via the variable speed sheave attached to the motor to reach the desired RPM.
   d. Bearings should be properly greased from the manufacturer.
   e. See the V-Belts section for further information.
4. Electrical Input Check: Perform check of fan ampere draw and verify that motor or drive nameplate amps are not exceeded. Take into account the service factor range if motor is nameplated above a 1.0 service factor.

Impeller to Inlet Venturi

MODEL	SIZE	OVERLAP (+/- 0.05")
BSI/DSI	080	0.31
BSI/DSI	090	0.31
BSI/DSI	100	0.31
BSI/DSI	120	0.34
BSI/DSI	135	0.38
BSI/DSI	150	0.41
BSI/DSI	165	0.47
BSI	180	0.52
BSI	210	0.55
BSI	225	0.59
BSI	245	0.67
BSI	270	0.75
BSI	300	0.82
BSI	330	0.72
BSI	365	0.90
BSI	402	1.00
DSI	165X	0.38
DSI	182X	0.42
DSI	200X	0.47
DSI	222X	0.64
DSI	245X	0.71



Impeller Overlap

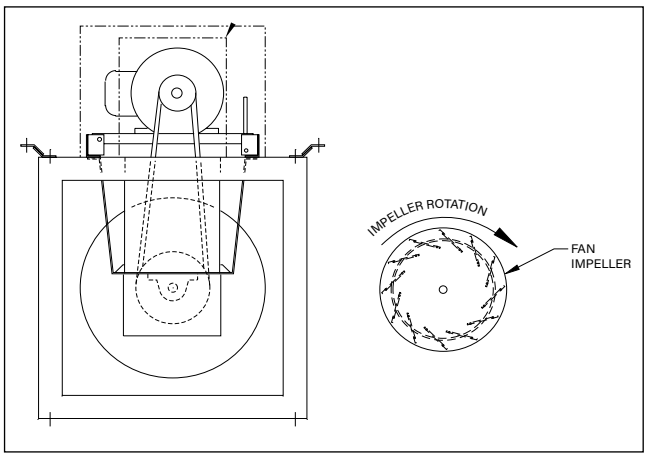
*Impeller Rotation**

MODEL	CW	CCW
BSI	all	---
DSI	---	all

* Impeller rotation is determined when viewed from discharge.

Note: To reverse the rotation of a three-phase induction motor, swap any two power leads. With a GridSmart® drive installed, the lead swap must be performed on the drive output side or at the motor conduit box.

Fan Impeller Rotation - View from Discharge



Note: CW rotation shown, CCW rotation is similar but opposite.

Speed Control Installation

(Model DSI - optional)

Speed control is available for DSI models. For 115/60/1 open type PSC or shaded pole motors, please see the instructions on this page. For speed control on GridSmart® EC motors or drives, please see page 11.

Installation

Connect control in series with motor and line voltage **(115V only)**. Never connect across line. See Figure 1.

Minimum Speed Setpoint

All controls are factory set to 65V±3V output as standard with an input voltage of 120V. If different minimum speed is desired, the control may be adjusted by turning minimum speed pot clockwise to decrease minimum speed and counterclockwise to increase minimum speed. Refer to Figure 2.

WARNING

1. **If minimum speed is readjusted, verify unit ampere draw does not exceed motor nameplate amps. Do not operate unit in range where amp draw exceeds motor nameplate.**
2. **Certain failure modes of solid-state controls, such as half-waving, can cause high levels of DC, motor overheating and motor burn-out. Therefore, a thermal overload protection (integral with motor) is required to limit the maximum motor temperature under such a failure.**

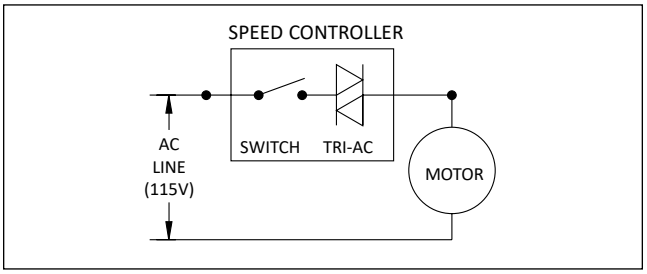
CAUTION

These motors operate more efficiently in the ranges set from the factory. Operating motor outside these ranges (see *Speed Controller RPM Range* table) may cause motor to run hotter and substantially shorten motor life.

NOTICE

Lowering the minimum speed setpoint may adversely affect motor start-up characteristics.

Figure 1. Connection Diagram, Speed Control



Speed Controller RPM Range

HP	RPM	MAX. RPM	MIN. RPM
1/30 1/8	1650/1500/1350[2,3]	1650[4] 1500[5]	1300[4] 950[5]
1/15 1/8 1/6 1/4 1/2	860	860	500
1/8 1/6 1/4 1/2 1	1140	1140	900
1/3 1/2 3/4	1725	1725	1200

NOTES:

1. Speed control available only with 115/60/1 open motors (thermally protected).
2. Three-speed motor (multiple tap winding).
3. Speed control should not be connected to low speed tap on motor because of starting characteristics.
4. Speed control connected to high speed tap on motor.
5. Speed control connected to medium speed tap on motor.

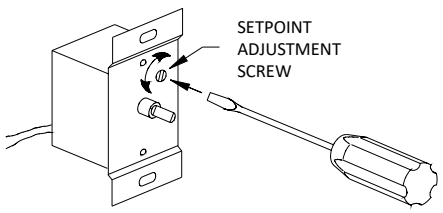
NOTICE

Do not allow any sleeve bearing motor to operate below 500 RPM. Operation below 500 RPM will substantially shorten bearing life.

Speed Controller Size

MOTOR					SPEED CONTROLLER DESIGNATION / FLA"		
PART NUMBER	ENCLOSURE	VOLTAGE	HP	RPM	KBWC-15K 5 AMP	KBWC-110 10 AMP	KBWC-115 15 AMP
66801400	Open	115V	1/30	1650/1500/1350	X		
66543600	Open	115V	1/8	1650/1500/1350	X		
66804500	Open	115V	1/15	860	X		
66543700	Open	115V	1/8	860	X		
67123100	Open	115V	1/6	860	X		
66543800	Open	115V	1/4	860	X		
66543900	Open	115V	1/2	860		X	
66804600	Open	115V	1/8	1140	X		
67125100	Open	115V	1/6	1140	X		
66544000	Open	115V	1/4	1140	X		
66544100	Open	115V	1/2	1140		X	
66544200	Open	115V	1	1140			X
66544300	Open	115V	1/3	1725		X	
66544400	Open	115V	1/2	1725		X	
67122500	Open	115V	3/4	1725			X

Figure 2. Low End Setpoint Adjustment



NOTE: 5 amp model shown. On 10 and 15 amp models, adjustment is made through clearance hole in heat sink.

V-Belts

(Model BSI)

V-belts on these belt driven fans are oil, heat and static resistant type and oversized for continuous duty. With proper installation and maintenance, years of operating efficiency can be added to the lifespan of the V-belt drive.

The condition of V-belts and the amount of belt tension should be checked prior to start-up (see Figure 3). When it becomes necessary to adjust belt tension, do not over-tension as bearing damage will occur. Recommended belt tension should permit 1/64" deflection per inch of span of the belt at the center of the belt span. To find this point, measure halfway between the pulley centerlines as shown in Figure 4. Extreme care must be exercised when adjusting V-belts as not to misalign the pulleys. Any misalignment will cause a sharp reduction in belt life and will also produce squeaky, annoying noises (see Figure 5). On units equipped with 2 groove pulleys, adjustments must be made so that there is equal tension on all belts (see Figure 6).

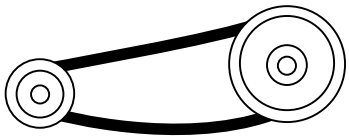
1. Where tensioning rods are not provided, adjustment is more easily obtained by loosening and adjusting one side of the motor bracket at a time.
2. Always loosen tension adjustment enough to place belts on sheaves without running belts over the edge of either sheave. A new belt may be seriously damaged internally by careless handling (see Figure 7).

WARNING

When removing or installing belts, never force belts over pulleys without loosening motor first to relieve belt tension.

3. Fan speed can be increased by closing the adjustable motor pulley or decreased by opening it. Always check the load on the motor when increasing the fan speed.

Figure 3. Eliminate Slack



Slack belts wear excessively, cause slippage and deliver less power. For longest belt life, always provide proper tension

Figure 4. Belt Deflection

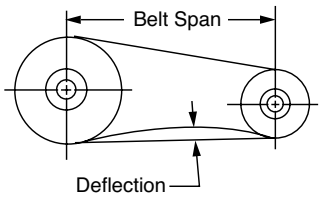
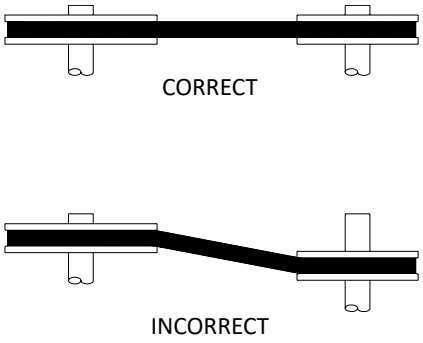
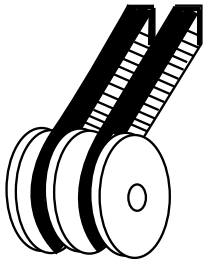


Figure 5. Mounting Belts



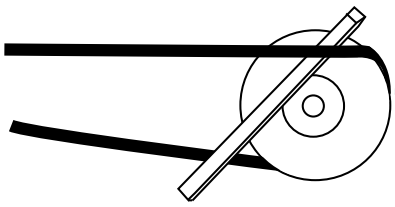
Mount belts straight. Shafts must be parallel and sheaves in alignment to prevent unnecessary belt wear.

Figure 6. Sheaves



Two-groove variable pitch sheaves must be opened the same number of turns on both sides; otherwise, slippage occurs, wearing belts rapidly.

Figure 7. Belts



Do not force belt. Forcing the belt will break the cords and cause belt failure.

Maintenance

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.

WARNING

Hazardous moving parts. Unit may contain protected fan motor, which may start automatically and cause injury. Allow time for reset. Disconnect power before servicing.

CAUTION

Sharp edges and screws are a potential injury hazard. Avoid them.

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Routine maintenance should cover the following items:

a. Tighten all set screws, bolts and wire connections.

b. Check belt tension and sheaves for wear.

c. Lubricate fan bearings (see *Greasing Intervals* and *Grease Manufacturers* tables).

d. Cleaning of unit, impeller and damper (if present).

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. Fans 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. For repairs within the warranty period, the motor must be taken to the motor manufacturer's authorized service dealer.
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 on belt driven units should be removed from the motor sheave.
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 on belt driven units should be removed 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 ¼" 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 set screws to ensure tightness. Proper keys must be in keyways.
10. Do not readjust fan RPM. 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. The standard pillow block bearings on belt driven fans are factory lubricated and are provided with external grease fittings. Lubrication annually is recommended or more frequently if needed (see *Greasing Intervals* table).

    It is recommended to add fresh grease at start-up. Use only 2 or 3 shots of a recommended lubricant with a hand gun in most cases (see *Grease Manufacturers* table). Maximum hand gun rating 40 P.S.I. Rotate bearings during lubrication where good safety practice permits.

CAUTION

Greases of different soap bases (lithium, sodium, etc.) may not be compatible when mixed. Prevent such intermixing by completely purging the bearing of old greases.

The most frequent causes of bearing failure are not greasing often enough, using an excessive quantity of grease or using incompatible greases. Excessive vibration, especially if the bearing is not rotating, will also cause bearings to fail. Bearings must also be protected from water and moisture to avoid internal corrosion.

13. During the first few months of operation it is recommended that the bearing set screws be checked periodically to ensure that they are tight.
14. The rotating impeller 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 impeller by corroding and/or eroding the blade metal. Regular inspection and corrective action at intervals determined by the severity of each application are essential to good service life and safety.
15. If filter box is acquired, check filters monthly and replace or clean as necessary.

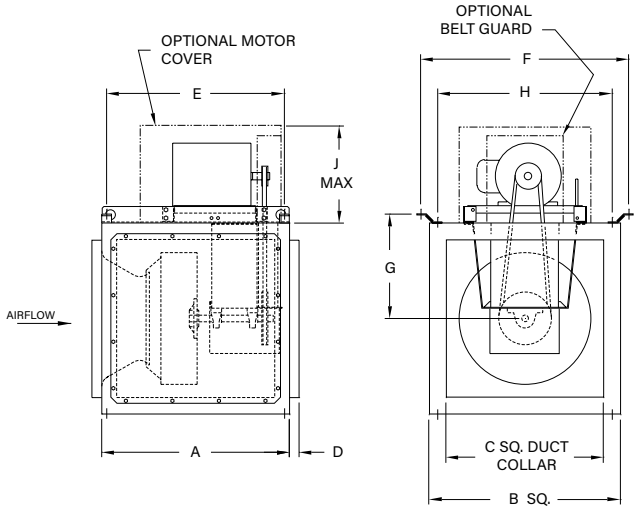
Suggested Fan Bearing Greasing Intervals

INTERVAL (MONTHS)	TYPE OF SERVICE
12 to 18	Infrequent operation or light duty in clean atmosphere.
6 to 12	8 to 16 hrs./day in clean, relatively dry atmosphere.
3 to 6	12 to 24 hrs./day, heavy duty, or if moisture is present.
1 to 3	Heavy duty in dirty, dusty locations; high ambient temperatures; moisture laden atmosphere; vibration.

Grease Manufacturers

MANUFACTURER	GREASE (NLGI #2)
Shell	Shell Gadus S2 V100 2
Exxon/Mobil	Ronex MP

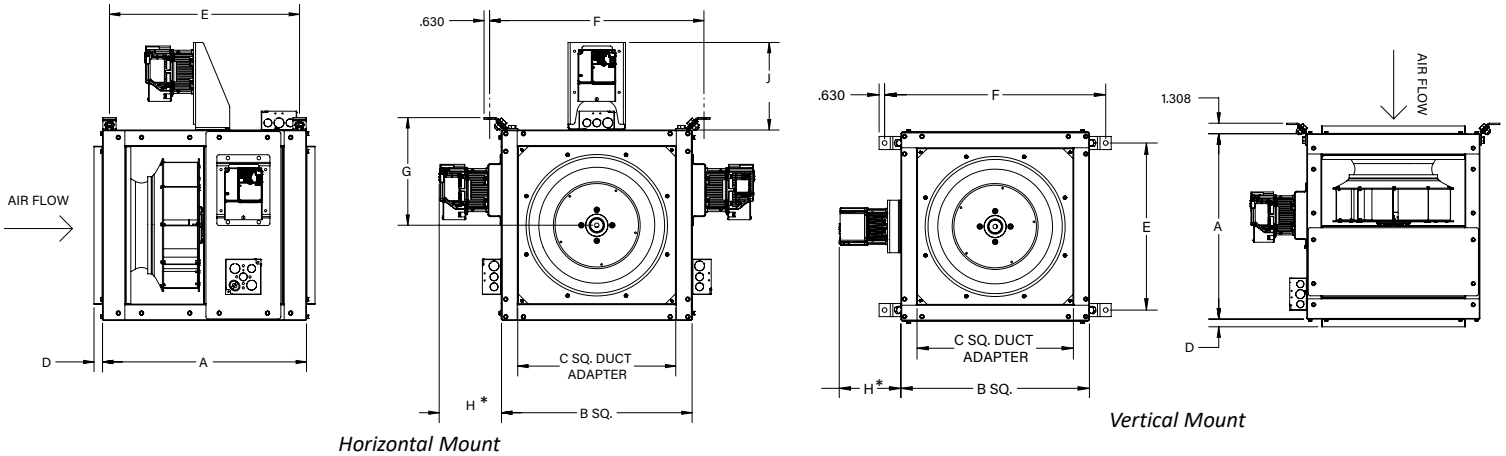
BSI: Belt Driven Centrifugal Inline Fans



MODEL BSI	A	B	C	D	E	F	G	H	J	DAMPER SIZE	AVG. SHIP WT. (LBS.)	SIDE DISCHARGE SIZE
080A	19.00	15.33	11.88	1.00	16.50	19.50	8.63	13.56	12.00	12.00 x 12.00	93	11.88 x 11.88
090A	19.00	15.33	11.88	1.00	16.50	19.50	8.63	13.56	12.00	12.00 x 12.00	96	11.88 x 11.88
100A	20.50	17.81	13.88	1.00	19.00	21.06	10.38	16.00	12.00	14.00 x 14.00	106	13.88 x 13.88
120A/120AHP	21.50	19.38	15.88	1.00	20.00	22.06	11.13	17.00	12.00	16.00 x 16.00	127	15.88 x 15.88
135A/135AHP	23.00	21.56	17.88	1.00	21.50	24.25	12.19	19.16	12.75	18.00 x 18.00	132	17.88 x 17.88
150A/150AHP	24.00	23.82	19.88	1.00	22.50	26.38	13.29	21.31	12.75	20.00 x 20.00	157	19.88 x 19.88
165A/165AHP	26.00	26.50	22.88	1.00	24.50	29.06	14.64	24.00	14.56	23.00 x 23.00	167	22.88 x 22.88
180A/180AHP	28.50	29.00	23.88	1.50	27.00	31.56	15.89	26.50	16.25	24.00 x 24.00	193	23.88 x 23.88
210A/210AHP	32.00	32.34	27.88	1.50	30.50	35.06	17.54	30.00	16.25	28.00 x 28.00	223	27.88 x 27.88
225A/225AHP	34.00	34.00	29.88	1.50	32.50	36.89	18.45	31.81	18.50	30.00 x 30.00	287	25.88 x 28.88
245A/245AHP	36.50	37.50	32.88	1.50	35.00	40.38	20.20	35.31	18.50	33.00 x 33.00	352	27.88 x 31.88
270A/270AHP	39.00	40.13	35.88	1.50	37.50	43.00	21.45	37.88	20.00	36.00 x 36.00	394	29.88 x 33.88
300A/300AHP	41.50	44.13	39.88	1.50	39.50	47.62	23.83	41.88	20.00	40.00 x 40.00	442	29.88 x 37.88
330A/330AHP	45.50	48.81	43.88	1.50	43.50	52.31	26.19	46.56	20.00	44.00 x 44.00	554	31.88 x 39.88
365A/365AHP	48.50	50.13	45.88	1.50	46.50	53.63	26.84	47.88	20.00	46.00 x 46.00	665	32.88 x 41.88
402A/402AHP	52.00	55.25	51.88	1.50	50.00	58.88	29.47	53.13	20.00	52.00 x 52.00	743	34.88 x 46.88

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

DSI: Direct Drive Centrifugal Inline Fans



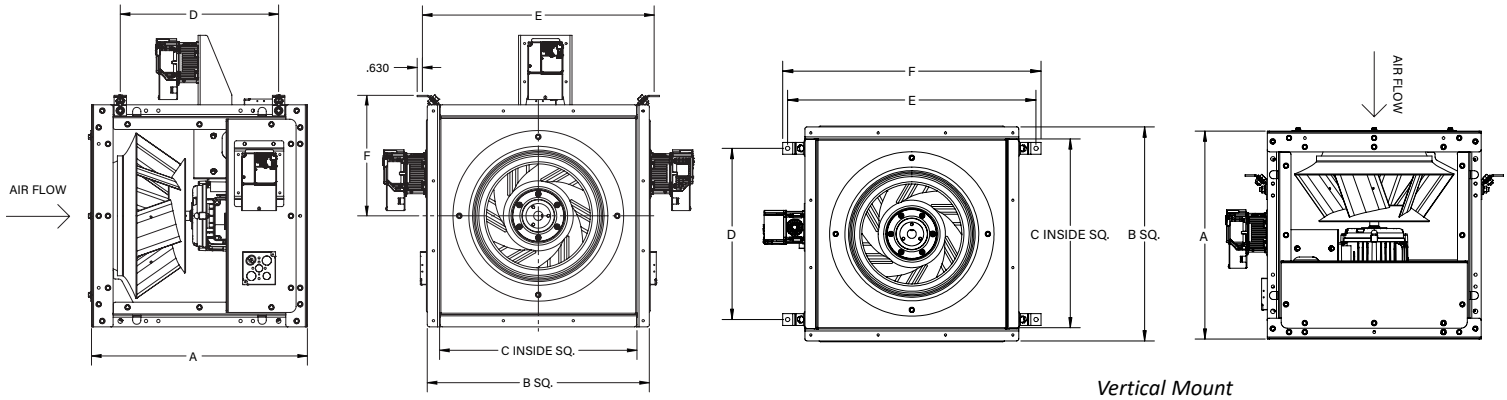
Horizontal Mount *Vertical Mount*

* Microdrive location may be on the left, right or top as viewed from inlet on horizontal mount. Location is fixed for vertical mount fan as shown. Microdrive only available on sizes 135-165.

MODEL DSI	A	B	C	D	E		F		G	H	J	DAMPER SIZE	AVG. SHIP WT. (LBS.)	SIDE DISCHARGE SIZE
					HOR.	VER.	HOR.	VER.						
080A	19.00	15.33	11.88	1.00	16.50	13.30	19.50	19.05	8.63	–	–	12.00 x 12.00	93	11.88 x 11.88
090A	19.00	15.33	11.88	1.00	16.50	13.30	19.50	19.05	8.63	–	–	12.00 x 12.00	96	11.88 x 11.88
100A	20.50	17.81	13.88	1.00	19.00	15.47	21.06	21.53	10.38	–	–	14.00 x 14.00	106	13.88 x 13.88
120A	21.50	19.38	15.88	1.00	20.00	16.94	22.06	23.09	11.13	–	–	16.00 x 16.00	127	15.88 x 15.88
135A/135AN	23.00	21.56	17.88	1.00	21.50	19.10	24.25	25.27	12.19	7.05	9.91	18.00 x 18.00	132	17.88 x 17.88
150A/150AN	24.00	23.82	19.88	1.00	22.50	21.31	26.38	27.53	13.29	7.05	9.91	20.00 x 20.00	157	19.88 x 19.88
165A/165AN	26.00	26.50	22.88	1.00	24.50	24.00	29.06	30.22	14.64	7.69	9.91	23.00 x 23.00	167	22.88 x 22.88

DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

DSI: Direct Drive Mixed Flow Inline Fans



Horizontal Mount

Vertical Mount

MODEL DSI	A	B	C	D	E		F		DAMPER SIZE	AVG. SHIP WT. (LBS.)		SIDE DISCHARGE SIZE
					HOR.	VER.	HOR.	VER.		GALV.	ALUM.	
165X	26.25	27.00	24.00	21.61	28.18	31.35	14.65	32.61	24.00 X 24.00	212	165	21.00 X 21.00
182X	29.00	29.75	26.75	24.36	30.93	34.10	16.02	35.36	26.75 X 26.75	244	189	23.50 X 23.50
200X	32.00	32.38	29.38	26.98	33.55	36.73	17.34	37.99	29.25 X 29.25	269	203	26.00 X 26.00
222X	36.25	35.00	32.00	29.61	36.40	39.35	18.65	40.61	32.00 X 32.00	386	304	28.00 X 28.00
245X	40.25	38.50	35.50	33.11	39.90	42.85	20.40	44.11	35.50 X 35.50	429	328	31.00 X 31.00

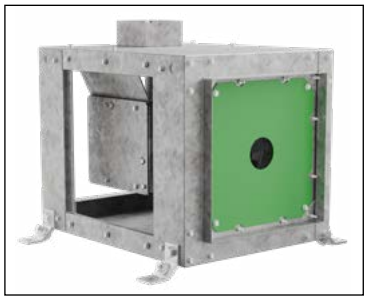
DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION.

Baffle Plate Installation

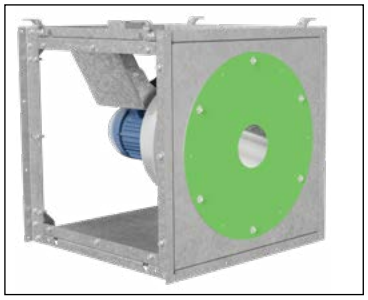
Step 1: Place the baffle plate on the fan inlet.

Step 2: Using the supplied hardware, bolt into place.

For removal, locate the fan inlet and remove the bolts securing the baffle plate.



Baffle plate installed on Model DSI with backward inclined impeller

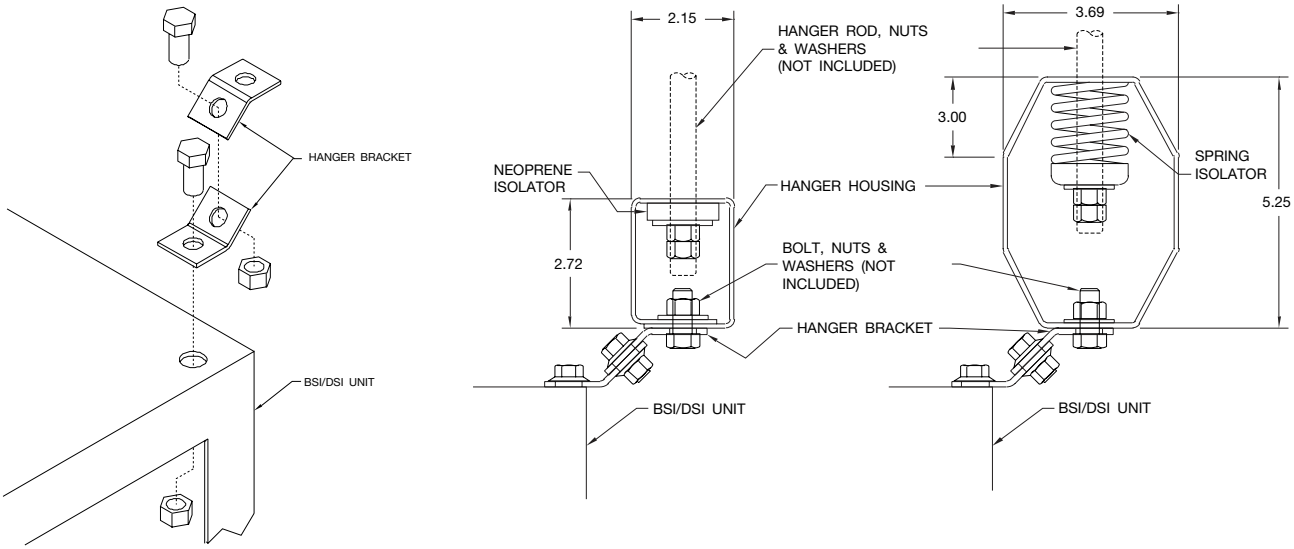


Baffle plate installed on Model DSI with mixed flow impeller

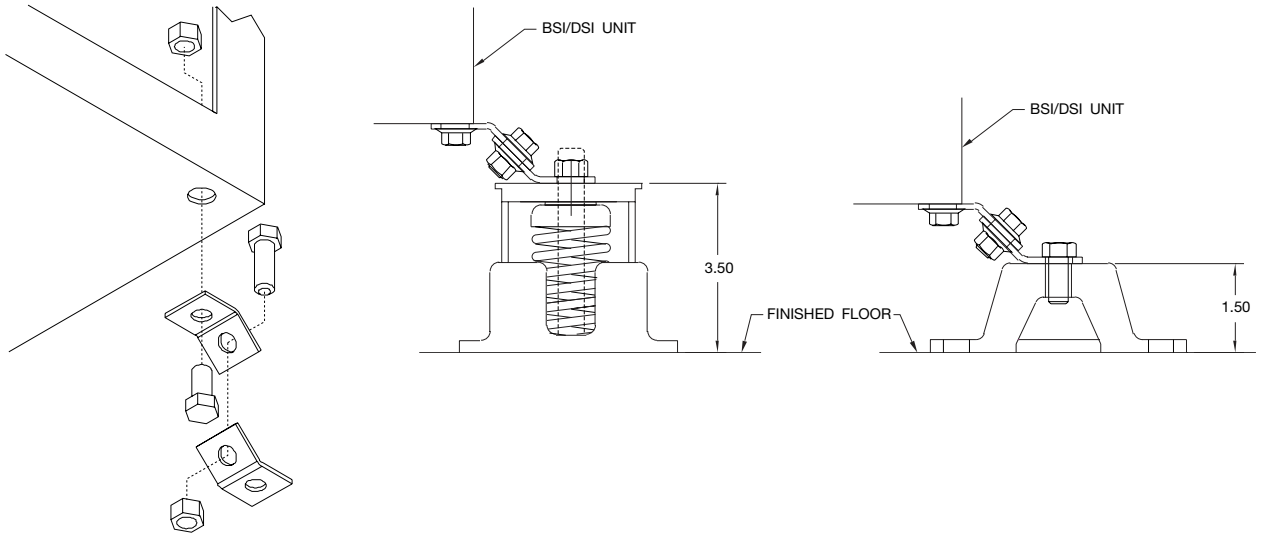
Mounting Brackets

BSI and DSI square inline fans can be mounted in any position: horizontal, vertical or angular. They can be hung from above or mounted on the floor. Typical dimensions (E and F) for the mounting brackets that are supplied with these units are shown on pages 8 and 9. The $^{9}/_{16}$" holes in these brackets can readily be used for installing the units. To obtain optimum isolation, the BSI unit should be installed with the motor above or below the fan body.

Overhead Mounting



Floor Mounting



Side Discharge Option

Side discharge kits (including panels, mounting collars and necessary hardware) are available to provide one-way, two-way or three-way discharges.

Note: Panel opposite motor (on belted Model BSI) cannot be used for discharge.

Configurations

Option	Figure	Configuration
Standard	A	Rear
One-Way	B	Left
	C	Right
Two-Way	D	Left and Right
	E	Left and Rear
	F	Right and Rear
Three-Way	G	Left, Right and Rear

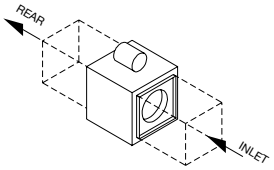


Fig. A

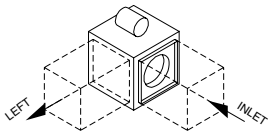


FIG. B

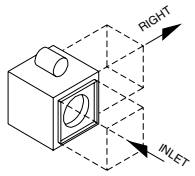


FIG. C

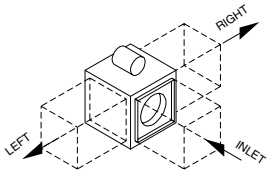


FIG. D

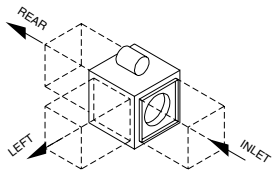


FIG. E

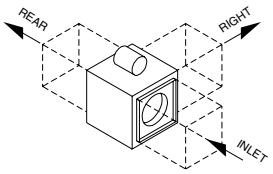


FIG. F

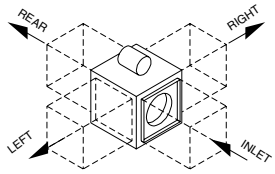


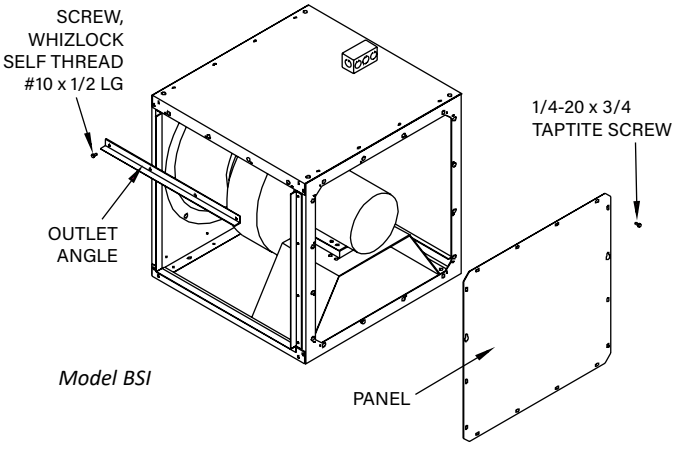
FIG. G

Duct Openings

Model BSI	Model DSI (Centifugal)	Left and Right Discharge			Rear Discharge/Inlet		
		Duct Collar		Duct Size Required	Duct Collar		Duct Size Required
		Width	Height		Width	Height	
080	080	11.88	11.88	12.00 x 12.00	11.88	11.88	12.00 x 12.00
090	090	11.88	11.88	12.00 x 12.00	11.88	11.88	12.00 x 12.00
100	100	13.88	13.88	14.00 x 1400	13.88	13.88	14.00 x 1400
120	120	15.88	15.88	16.00 x 16.00	15.88	15.88	16.00 x 16.00
135	135	17.88	17.88	18.00 x 18.00	17.88	17.88	18.00 x 18.00
150	150	19.88	19.88	20.00 x 20.00	19.88	19.88	20.00 x 20.00
165	165	22.88	22.88	23.00 x 23.00	22.88	22.88	23.00 x 23.00
180	—	23.88	23.88	24.00 x 24.00	23.88	23.88	24.00 x 24.00
210	—	27.88	27.88	28.00 x 28.00	27.88	27.88	28.00 x 28.00
225	—	25.88	28.88	26.00 x 29.00	29.88	29.88	30.00 x 30.00
245	—	27.88	31.88	28.00 x 32.00	32.88	32.88	33.00 x 33.00
270	—	29.88	33.88	30.00 x 34.00	35.88	35.88	36.00 x 36.00
300	—	29.88	37.88	30.00 x 38.00	39.88	39.88	40.00 x 40.00
330	—	31.88	39.88	32.00 x 40.00	43.88	43.88	44.00 x 44.00
365	—	32.88	41.88	33.00 x 42.00	45.88	45.88	46.00 x 46.00
402	—	34.88	46.88	35.00 x 47.00	51.88	51.88	52.00 x 52.00

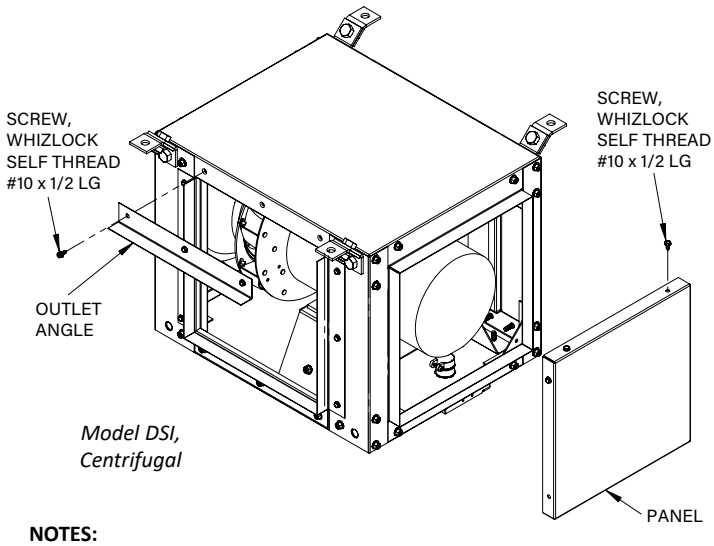
Model DSI (Mixed Flow)	Left and Right Discharge			Rear Discharge/Inlet		
	Duct Collar		Duct Size Required	Optl. Duct Collar		Duct Size Required
	Width	Height		Width	Height	
165X	20.88	20.88	21.00 x 21.00	23.88	23.88	24.00 x 24.00
182X	23.38	23.38	23.50 x 23.50	26.63	26.63	26.75 x 26.75
200X	25.88	25.88	26.00 x 26.00	29.38	29.38	29.50 x 29.50
222X	27.88	27.88	28.00 x 28.00	31.88	31.88	32.00 x 32.00
245X	30.88	30.88	31.00 x 31.00	35.38	35.38	35.50 x 35.50

Side Discharge Instructions



Model BSI

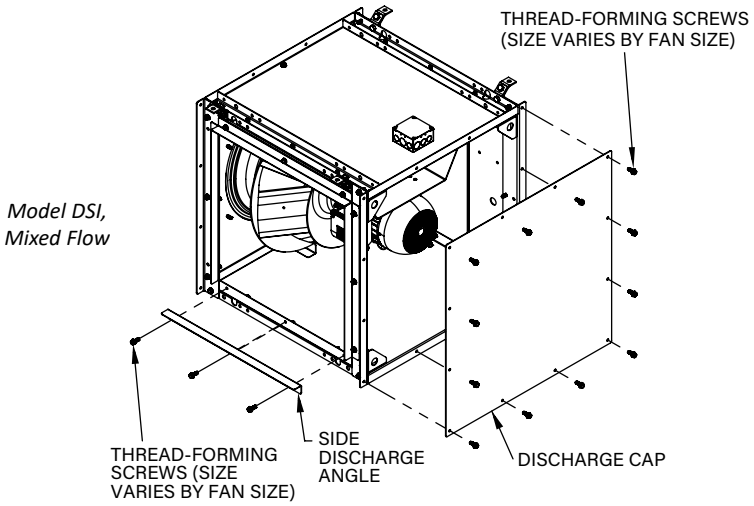
NOTES:
1. Remove outlet angles from fan discharge.
2. Remove panel from side required to be discharge.
3. Mount outlet angles on new discharge.
4. Mount panel on back of fan (previous outlet).



Model DSI, Centrifugal

NOTES:
1. Remove panel from side required to be discharge.
2. Mount outlet angles on new discharge.
3. Mount panel on back of fan (previous outlet).

Side Discharge Option (cont.)

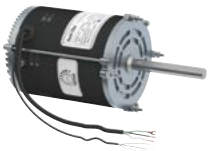


NOTES:

1. Remove panel from side required to be discharge.
2. Mount outlet angles on new discharge.
3. Mount panel on back of fan (previous outlet).

EC Motor Information

See Single-Phase EC Motors Manual, IM-4055 for EC motor details.



EC Motor

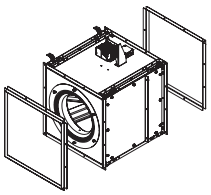
Microdrive Information

See Microdrive Quick Start Guide for details.

Microdrive

Slip Fit Companion Flange Information

See Slip Fit Companion Flange Quick Start Guide for details.



DSI with Slip Fit Companion Flange

Limitation of Warranties and Claims

Please refer to our Terms & Conditions of Sales and Service on our website: www.tcf.com/terms-and-conditions

Fan Troubleshooting Chart

PROBLEM	POSSIBLE CAUSES
FAN DOES NOT OPERATE	1. Wrong voltage. 2. Electricity turned off or not wired properly. 3. Tripped overload protector. 4. Blown fuses. 5. Loose pulleys. 6. Broken belts.
TOO LITTLE AIR	1. Impeller rotating in wrong direction. 2. Fan speed lower than design. 3. System is more restrictive (more static pressure) than expected. 4. Restricted fan inlet or outlet. 5. Inlet or outlet screens clogged. 6. Filters (if applicable) are dirty or clogged.
TOO MUCH AIR	1. Fan speed higher than design. 2. System is less restrictive (less static pressure) than expected. 3. Filters, if applicable, not in place.
EXCESSIVE HORSEPOWER	1. Impeller rotating in wrong direction. 2. Impeller rubbing on inlet venturi. 3. Fan speed higher than design. 4. Worn fan bearings.
EXCESSIVE NOISE	1. Impeller or sheaves loose. 2. Bearing or drive misalignment. 3. Accumulation of material on impeller. 4. Worn or corroded impeller. 5. Impeller out of balance. 6. Impeller hitting housing. 7. Bent shaft. 8. Bearings need lubrication. 9. Loose bearing bolts. 10. Loose or worn bearings. 11. Mismatched belts. 12. Belts too loose or too tight. 13. Belts oily or dirty. 14. Belts worn. 15. Loose fan mounting bolts. 16. Rattle of components in high velocity airstream. 17. Electrical noise. 18. Noise from high velocity air system. 19. Vibrating parts not isolated from building. 20. Vibrating ductwork.
EXCESSIVE VIBRATION	1. Impeller or sheaves loose on shaft. 2. Impeller out of balance. 3. Excessive buildup of dirt/dust on impeller. 4. Belts too loose or too tight. 5. Mismatched belts. 6. Bent shaft. 7. Bearing or drive misalignment. 8. Loose or worn bearings. 9. Fan mounting bolts loose. 10. Weak mounting base for fan. 11. Structures not cross-braced (wall fans). 12. Curb not flat and level.

It is recommended that the users and installers of this shipment familiarize themselves with AMCA Publication #201, “Fans and Systems” and publication #202, “Troubleshooting” which are published by the Air Movement and Control Association (AMCA), 30 West University Drive, Arlington Heights, Illinois 60004. www.amca.org