



Model BDF Belt Drive Duct Fan

Installation, Operation and Maintenance Manual

Upon receiving unit, check for any damage and report it immediately to the shipper. Also check to see that all accessory items are accounted for.

Move fan to desired location and determine position of access panels and motor. Attach the fan to a suitable framework as specified (hanging or base vibration isolators are recommended). See chart below for dimensions of vibration isolator centerlines (Fig. 1). See Fig. 2 and 3 for physical dimensions.

The motor's amperage and voltage ratings must be checked for compatibility to supply voltage prior to final electrical connection. Supply wiring may be routed through knockouts which are provided on the top and bottom of each fan housing. Provide adequate wiring to permit the access doors to open for servicing. Wiring should be secured inside the fan to prevent interference with the drive components. All wiring must conform to local and national codes.

Inlet and discharge collars are provided for duct connection. The inlet panel is removable for attaching optional filter box accessory.

VIBRATION ISOLATOR DIMENSIONAL DATA

Unit Size	A	C	M*
80	20 $\frac{1}{4}$ "	22 $\frac{1}{16}$ "	26 $\frac{5}{16}$ "
90	21 $\frac{1}{4}$ "	25 $\frac{5}{16}$ "	30 $\frac{1}{2}$ "
100	23 $\frac{3}{4}$ "	27 $\frac{7}{16}$ "	25 $\frac{1}{2}$ "
120	30 $\frac{1}{2}$ "	31 $\frac{1}{16}$ "	30 $\frac{1}{16}$ "
150	32"	35"	27 $\frac{1}{8}$ "
180	37 $\frac{1}{8}$ "	44"	34 $\frac{15}{16}$ "
200	47 $\frac{1}{8}$ "	51 $\frac{1}{2}$ "	36"

M* applies to optional filter box only.

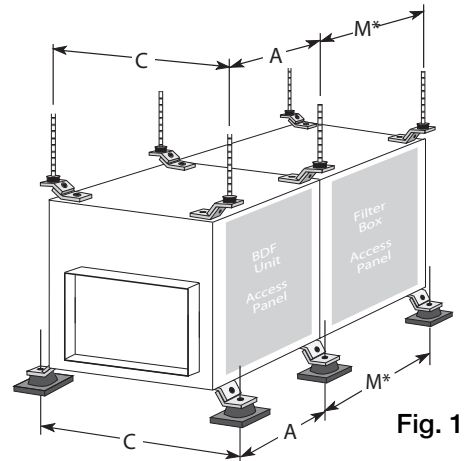


Fig. 1

BDF DIMENSIONAL DATA

Fig. 2
BDF Unit

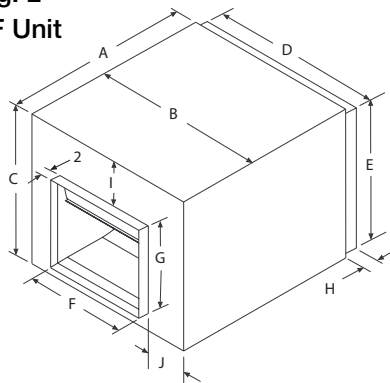
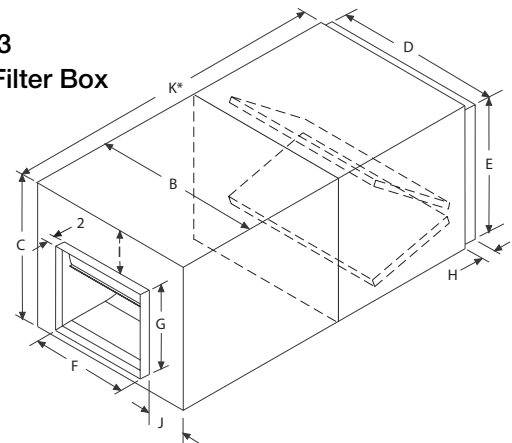


Fig. 3
BDF w/ Filter Box



Unit Size	A	B	C	D	E	F	G	H	I	J	K*	Filter Size	Number of Filters	Material Thickness (ga.)	Approx. Weight (lbs)	
															Fan	Filter Box
80	23 $\frac{3}{4}$ "	18 $\frac{1}{2}$ "	15 $\frac{1}{8}$ "	15 $\frac{5}{16}$ "	12 $\frac{11}{16}$ "	9 $\frac{1}{8}$ "	8 $\frac{1}{8}$ "	1"	5 $\frac{1}{8}$ "	4 $\frac{1}{4}$ "	49 $\frac{1}{8}$ "	16 x 20	2	20	71	32
90	24 $\frac{1}{4}$ "	21 $\frac{1}{4}$ "	18 $\frac{1}{8}$ "	18 $\frac{1}{4}$ "	15 $\frac{1}{8}$ "	12 $\frac{1}{4}$ "	10 $\frac{1}{2}$ "	1"	6 $\frac{1}{8}$ "	4 $\frac{1}{2}$ "	54 $\frac{1}{8}$ "	20 x 25	2	20	92	42
100	26 $\frac{1}{4}$ "	22 $\frac{1}{2}$ "	20 $\frac{1}{8}$ "	19 $\frac{1}{4}$ "	17 $\frac{1}{8}$ "	13 $\frac{1}{4}$ "	11 $\frac{1}{8}$ "	1"	7 $\frac{1}{8}$ "	4 $\frac{1}{2}$ "	51 $\frac{1}{8}$ "	20 x 20	2	20	107	52
120	33"	27 $\frac{1}{4}$ "	22 $\frac{1}{4}$ "	24 $\frac{1}{4}$ "	19 $\frac{1}{8}$ "	16"	13 $\frac{1}{8}$ "	1"	7 $\frac{1}{8}$ "	5 $\frac{1}{8}$ "	63 $\frac{1}{16}$ "	12 x 25	4	20	144	70
150	34 $\frac{1}{4}$ "	32 $\frac{1}{2}$ "	27 $\frac{1}{4}$ "	28 $\frac{1}{4}$ "	23 $\frac{1}{8}$ "	19 $\frac{1}{8}$ "	16 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	9 $\frac{1}{8}$ "	6 $\frac{1}{8}$ "	62 $\frac{1}{16}$ "	16 x 20	8	20	223	97
180	40 $\frac{1}{4}$ "	41 $\frac{1}{4}$ "	31 $\frac{1}{4}$ "	37 $\frac{1}{2}$ "	27 $\frac{1}{8}$ "	22 $\frac{1}{2}$ "	18 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	9 $\frac{1}{8}$ "	75 $\frac{1}{8}$ "	20 x 25	6	20	307	134
200	50 $\frac{1}{4}$ "	49 $\frac{1}{4}$ "	39 $\frac{1}{4}$ "	45 $\frac{1}{8}$ "	36"	23 $\frac{1}{8}$ "	25 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	13"	85 $\frac{1}{8}$ "	16 x 25	12	20	565	174

K* is length of fan and filter box combined.

PRE-STARTING CHECKS

Check all fasteners for tightness. The wheel should rotate freely and not rub on the inlet venturi's. Turn the fan on momentarily to check for unusual vibration or noise. Do not run the fan more than a few seconds without being connected to the system for which it was designed. Motor overloading and burnout may result from lack of system static pressure. Also check direction of wheel rotation. Improper rotation will result in reduced airflow and pressure capabilities. Rotation is always in the same direction as airflow at the outlet. See housing and wheel examples in figure 4.

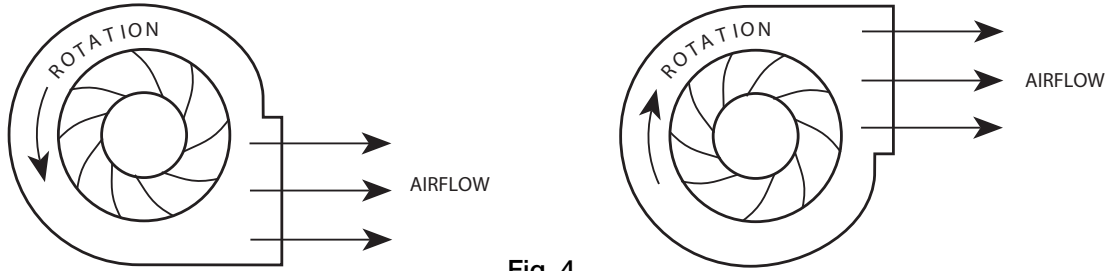


Fig. 4

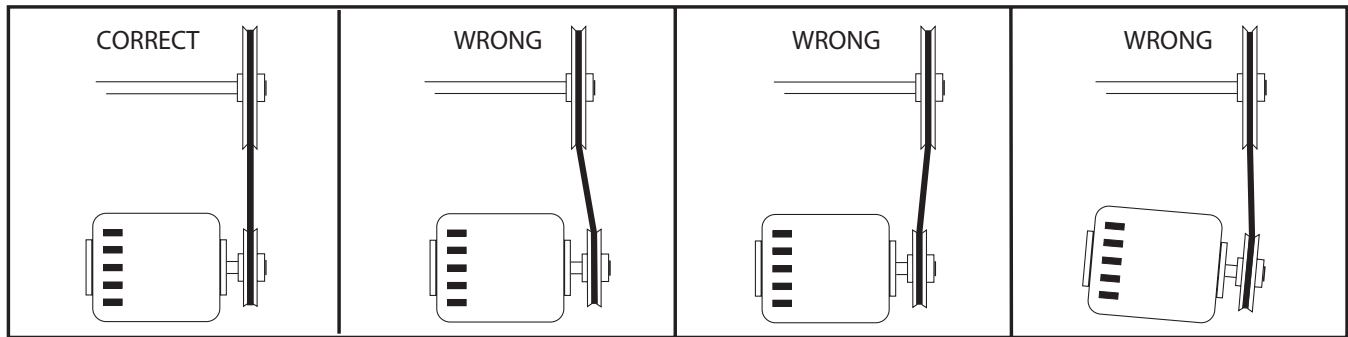


Fig. 5

If adjustments are made, it is very important to check the pulleys for proper alignment. Misaligned pulleys lead to excessive belt wear, vibration, noise and power loss. (See Fig. 5)

For all BDF units, belt tension can be adjusted by loosening four fasteners (marked "R") on the drive frame. The motor plate slides on the slotted adjusting arms (see Fig. 6). Belt tension should be adjusted to allow 1/64" of deflection per inch of belt span. For example, a 15" belt span should have 15/64" (or about 1/4") of deflection with moderate thumb pressure at mid-point between pulleys (See Fig. 7). Over tightening will cause excessive bearing wear and noise. Too little tension will cause slippage at startup and uneven wear.

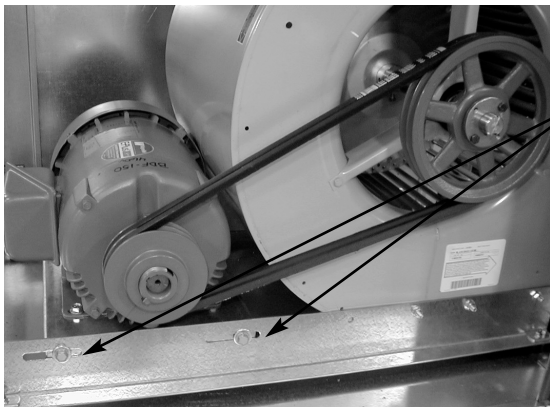


Fig. 6

(R)
NOTE:
Identical fasteners on
opposing side must
also be loosened.

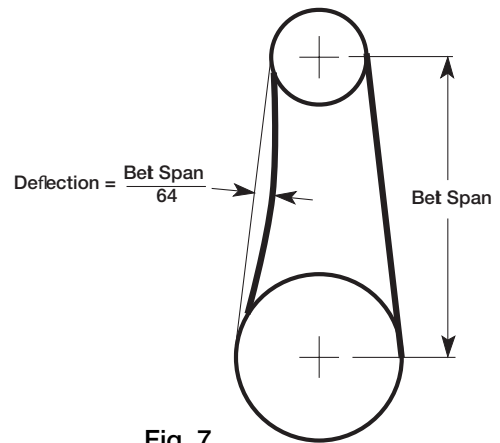


Fig. 7

The adjustable motor pulley is factory set for the RPM specified. Speed can be increased by closing or decreased by opening the adjustable motor sheave. Two groove variable pitch pulleys must be adjusted an equal number of turns open or closed. Any increase in speed represents a substantial increase in the horsepower required by a unit. Motor amperage should always be checked to avoid serious damage to the motor when speed is varied.

MAINTENANCE

Belts tend to stretch after a period of time. They should be checked periodically for wear and tightness. When replacing belts, use the same type as supplied with the unit. Matched belts should always be used on units with multigroove pulleys. For belt replacement, loosen the tensioning device far enough to allow removal of the belt by hand. Do not force belts on or off. This may cause cords to break, leading to premature belt failure. Once installed, adjust belts as shown in “Pre-Starting Checks.”

Shaft bearings can be classified in two groups: relubricating and non-relubricating. Bearings on sizes 80 through 180 are factory lubricated and require no further lubrication under normal use (between -20°F and 180°F in a relatively clean environment). Bearings on size 200 are relubricatable. These bearings will require frequent lubrication. Caution should be employed to prevent overpacking or contamination. Grease fittings should be wiped clean. The unit should be in operation while lubricating. Extreme care should be used around moving parts. Grease should be pumped in very slowly until a slight bead forms around the seal. A high grade lithium base grease is recommended.

Motor maintenance is generally limited to cleaning and lubrication (where applicable). Cleaning should be limited to exterior surfaces only. Removing dust buildup on motor housing ensures proper motor cooling. Greasing of motors is only intended when fittings are provided. Many fractional motors are permanently lubricated and should not be lubricated further. Motors supplied with grease fittings should be greased in accordance with the manufacturer’s recommendations. Where motor temperatures do not exceed 104°F (40°C), the grease should be replaced after 2000 hours of running time as a general rule.

Wheels require very little attention when moving clean air. Occasionally, oil and dust may accumulate causing imbalance. When this occurs, the wheel and housing should be cleaned to ensure smooth and safe operation.

The unit should be made non-functional when cleaning the wheel or housing (fuses removed, disconnect locked off, etc.).

All fasteners should be checked for tightness each time maintenance checks are performed prior to restarting unit.

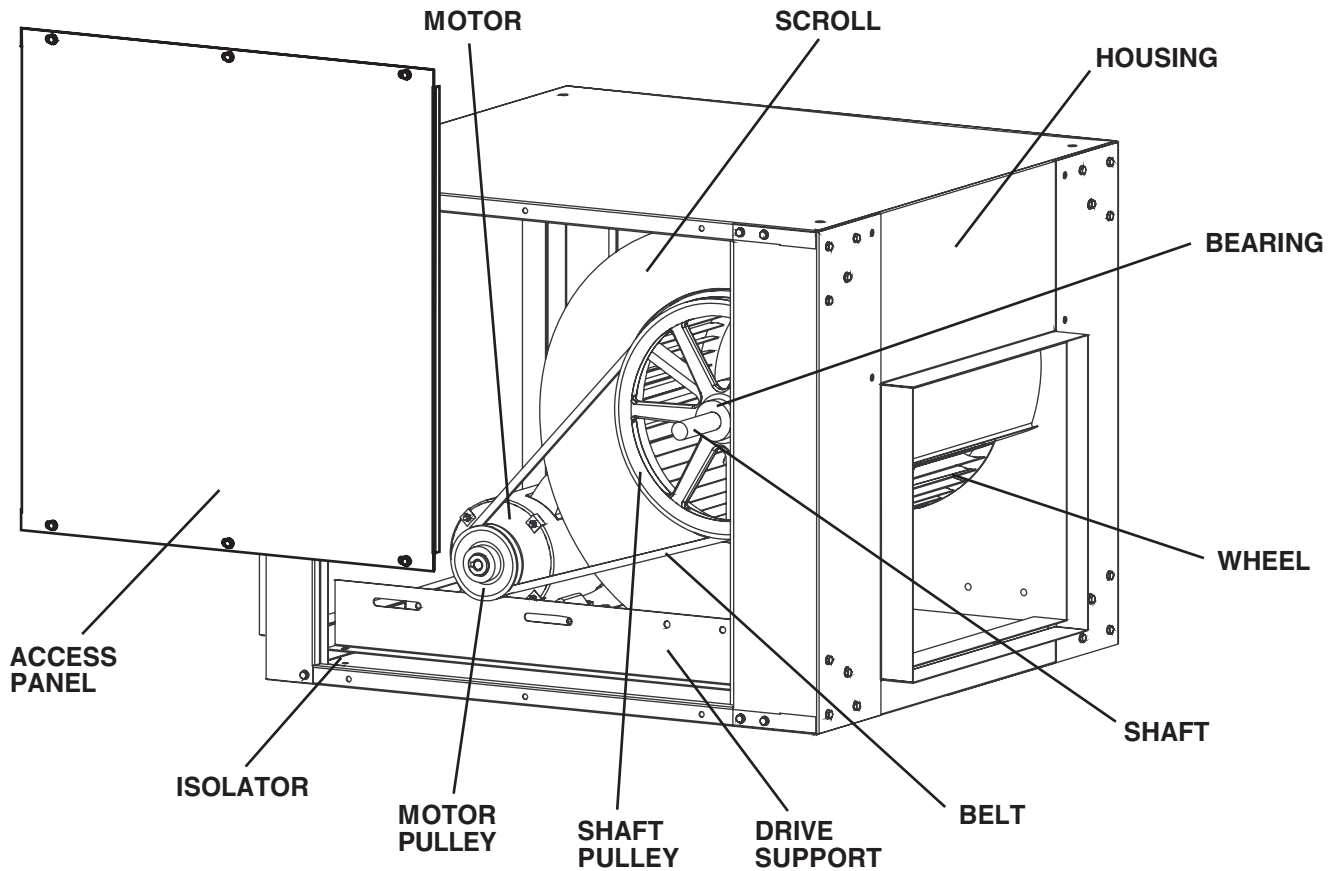
A proper maintenance program will help these units deliver years of dependable service.

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTIVE ACTION
REDUCED AIRFLOW	System resistance too high	Check system: Proper operation of backdraft or control dampers, obstruction in ductwork, etc.
	Unit running backwards	Correct as shown in Fig. 4
	Excessive dirt buildup on wheels	Clean wheel
	Improper wheel alignment	Center wheel on inlets
EXCESSIVE NOISE OR VIBRATION	Bad bearings	Replace
	Belts too tight or too loose	Refer to Fig. 6 and adjust tension
	Loose drive or motor pulleys	Align and tighten. See “Pre-Starting Checks.”
	Foreign objects in wheel or housing	Remove objects, check for damage or unbalance
	Unbalance of wheel caused by excessive dirt and grease buildup	Remove buildup

NOTE: Before taking any corrective action, make certain unit is not capable of operation during repairs.

PARTS LIST



NOTE: Each fan bears a manufacturer's nameplate with model number and serial number embossed. This information will assist the local Greenheck representative and the factory in providing service and replacement parts.

Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove to be defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid.

The motor is warranted by the motor manufacturer for a period of one year. Should the motor prove defective during this period, it should be returned to the nearest authorized motor service station.

Greenheck will not be responsible for any installation or removal costs.

As a result of our commitment to continuous research, Greenheck reserves the right to change specifications without notice.

