



**IM-140**  
June 1997

## General Installation, Operation and Maintenance Instructions For Aerovent Products

# Centrifugal Fans

## Bearings

Before the unit is put into operation, tighten bearing collar setscrews and bearing anchor bolts. Rotate shaft to check alignment.

All grease lubricated bearings are completely filled with grease prior to shipment from the factory. This prevents the condensation of moisture in the pillow block during shipment and before the unit is installed.

The bearings will discharge excess grease through the seals for a short period of time after start-up. Do not replace this initial discharge, because leakage will cease after the excess grease has been purged from the bearings. Also, the purging of the excess grease will cause the bearing to heat up, but the heat will dissipate after the purging.

Observation of the amount of grease expelled from the bearing at the time of relubrication is the best guide as to whether the regreasing intervals and amount added should be altered. When regreasing, use lubrication instructions for fan ball bearings as outlined in IM-100 which is included with shipment. Avoid mixing different types of grease. Bearings should be flushed and refilled with fresh grease at approximately one-year intervals. **DO NOT OVER LUBRICATE.**

## Couplings

Arrangement 7 and 8 direct drive fans, which are shipped completely assembled with motor and coupling mounted, should be checked for correct coupling alignment before putting the unit into operation. Also check lubricant, following manufacturer's recommendations for type and amount of lubricant used.

## Foundations

A rigid, level foundation is essential for smooth and quiet operation, good performance, and low maintenance expenses. Inadequate foundations may lead to excessive vibration in well-balanced fans, resulting in possible premature failure.

Particular attention must be given to ensure a solid support for the rotating assembly, particularly in the area of the bearing and motor supports.

## V-Belt Drive

On belt-driven units, position and anchor the motor slide base firmly to the foundation or bearing base. Mount the motor on the slide base and move the motor to the position closest to the fan. The V-belt drive should be mounted as follows:

1. Remove dirt and corrosion from fan and motor shafts.
2. Coat bores of sheaves with grease or oil and mount sheaves on the shafts. Do not force the sheaves on the shafts by hammering as this will damage the fan and motor bearings.
3. Install the belts. Belts should be worked carefully over the grooves of each sheave until they are properly in place. Belts should never be forced on with a screwdriver or similar tool as this will break the cords in the belts. After the belts have been installed, adjust the sheaves so that both shafts are at right angles to the belts. See IM-101 for alignment procedure. Once proper alignment is assured, tighten sheaves in place.
4. Take up slack by adjusting the motor slide base. Proper belt tension is important. If belts are too tight, undue wear on fan and motor bearings will result. Insufficient tension shortens belt life and may cause vibration. Use drive manufacturer's recommendations for correct belt tension.
5. **IMPORTANT! BEFORE PUTTING THE UNIT INTO CONTINUOUS OPERATION, INSTALL BELT GUARD.**
6. After several days of operation, check belt tension and sheave alignment.

## Safety Practices

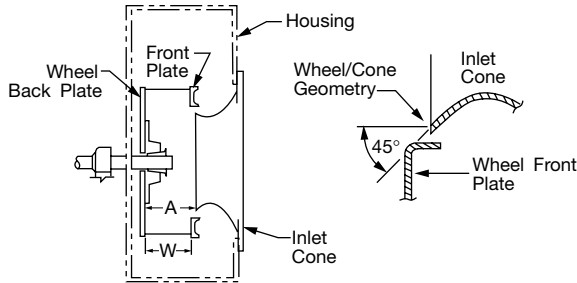
1. Do not operate fan at speeds in excess of factory specified limits for each construction class.
2. Where applicable, provide inlet or outlet screens to prevent objects from entering the fan.
3. Provide adequate guards over rotating parts, belt guard, shaft guards, and coupling guards.
4. Locate a disconnect switch with padlock at fan for maintenance personnel. Also provide means for locking out primary power where possible.
5. Provide vibration limiting switches to detect sudden change in fan operation, particularly on critical applications such as high speed, high temperature, or in erosive or corrosive atmospheres.

See AMCA Publication 410, Revision 2, for additional safety practices.

## Wheel Clearance

Adjust clearance by moving the wheel axially on the shaft. The following table indicates the correct measurements for positioning the BI and BIA wheels. Proper positioning is important in attaining correct fan performance, particularly on the BI and BIA wheels.

### Type BI & BIA (SWSI Units)



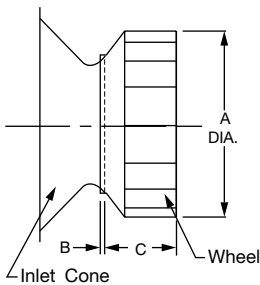
SIZE	A	W*
12	4 <sup>11/16</sup>	4 <sup>7/16</sup>
14	5 <sup>9/32</sup>	5 <sup>1/32</sup>
16	5 <sup>29/32</sup>	5 <sup>21/32</sup>
18	6 <sup>23/32</sup>	6 <sup>9/8</sup>
20	7 <sup>7/16</sup>	7 <sup>1/16</sup>
22	8 <sup>5/16</sup>	7 <sup>15/16</sup>
25	9 <sup>5/16</sup>	8 <sup>15/16</sup>
28	10 <sup>17/32</sup>	10 <sup>1/16</sup>
32	11 <sup>27/32</sup>	11 <sup>11/32</sup>

SIZE	A	W*
35	13 <sup>15/16</sup>	12 <sup>3/4</sup>
39	14 <sup>27/32</sup>	14 <sup>3/16</sup>
44	16 <sup>9/16</sup>	15 <sup>7/8</sup>
49	18 <sup>9/16</sup>	17 <sup>23/32</sup>
55	20 <sup>7/8</sup>	19 <sup>27/32</sup>
63	23 <sup>3/4</sup>	22 <sup>11/16</sup>
71	26 <sup>19/32</sup>	25 <sup>1/2</sup>
79	29 <sup>5/8</sup>	28 <sup>11/32</sup>

\*100% Wheel Width

"A" dimension (inside edge of inlet cone to inside face of wheel backplate) must be held. This dimension is critical to fan performance. "A" dimension shown is based on 100% wheel width "W" and must be adjusted if wheel furnished is other than 100% full width.

### Type BIUB



SIZE	A	B	C
12	12.25	0.32	4.28
13	13.50	0.34	4.84
15	15.00	0.38	5.38
16	16.50	0.44	5.81
18	18.25	0.56	6.44
20	20.00	0.63	7.00
22	22.25	0.69	7.84
24	24.50	0.75	8.63
27	27.00	0.88	9.47
30	30.00	0.97	10.56
33	33.00	1.06	11.63
36	36.50	1.10	13.03

## Type BW, OW, PB & HPB

These radial blade wheels do not require precise positioning to attain the correct performance. The important thing is to centrally locate these wheels axially within the housing to ensure adequate running clearance and to maintain concentricity with the fan inlet.

### Type AW

These wheels require a special inlet on the housing which must extend into the wheel inlet flange to perform properly. Other than maintaining a minimum 1/4" overlap, adequate running clearance and concentricity are all that is required.

### Type FC

The forward curve blower employs a shallow venturi in the housing to guide the air into the wheel. The depth of this venturi is approximately one-tenth the wheel diameter. Clearance between the wheel and venturi should be the smallest allowable and still maintain normal running clearance. This axial separation is approximately 1/4" and should be measured at four points approximately 90° apart.

## Maintenance

Regular and systematic inspection of all fan parts is the key to good fan maintenance. Frequency of inspection is determined by the severity of the application and local conditions. Once a maintenance schedule is established, it should be strictly followed. Regular fan maintenance should include the following:

1. Check fan wheel for any build-up of foreign material or excessive wear from abrasion. Both can cause vibration which creates a serious safety hazard. Any build-up of foreign material should be removed. If the wheel shows excessive wear, replace it immediately.
2. On belt driven units, check V-belt drive for proper alignment and tension. If belts show wear, they should be replaced with a matched set of belts. If unit is direct driven, check coupling alignment.
3. Lubricate the bearings (see bearing section for lubrication specifications). On direct drive units, lubricate the coupling (see coupling section).
4. Lubricate shaft seal with the same grease as used on the fan bearings. **IMPORTANT:** The operating life of the shaft seal is dependent upon the amount and frequency of lubrication. Insufficient grease in the shaft seal may result in damage to the seal and reduced sealing efficiency.
5. A final check on the tightness of all setscrews and bolts completes the maintenance routine.



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