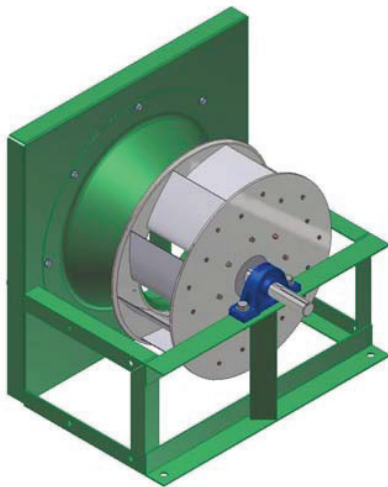


**OPERATION INSTRUCTIONS AND PARTS MANUAL
MODELS: DPL/DPL-AF-12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36**

GENERAL SAFETY

Rotating parts on fans should not be exposed. Where these components are not protected by ductwork, cabinets or covers, appropriate guards should be employed to restrict exposure to rotating parts. Access doors should not be opened with the fan operating to avoid foreign objects being drawn into the system. On initial start-up a careful inspection should be carried out to ensure no foreign material is present which could become airborne in the system.

Read installation and operation instructions carefully before attempting to install, operate or service Delhi DPL/DPL-AF Series Blowers. Failure to comply with instructions could result in personal injury and/or property damage. Retain instructions for future reference.



MODEL	MAX. H.P	SHAFT DIA.	WEIGHT
DPL-12	7-1/2	1"	51
DPL-13	7-1/2	1"	57
DPL-15	7-1/2	1"	68
DPL-16	10	1-3/16"	80
DPL/DPL-AF-18	7-1/2 / 10	1-3/16"	91 / 81
DPL/DPL-AF-20	10 / 15	1-3/16"	104 / 96
DPL/DPL-AF-22	10 / 15	1-7/16"	148 / 139
DPL/DPL-AF-24	15 / 20	1-7/16"	185 / 162
DPL/DPL-AF-27	15 / 25	1-7/16"	205 / 185
DPL/DPL-AF-30	20 / 30	1-11/16"	236 / 248
DPL/DPL-AF-33	25 / 40	1-15/16"	288 / 306
DPL/DPL-AF-36	30 / 40	1-15/16"	344 / 357

ALL SHAFTS ARE KEYWAYED

Fig. 1

GENERAL

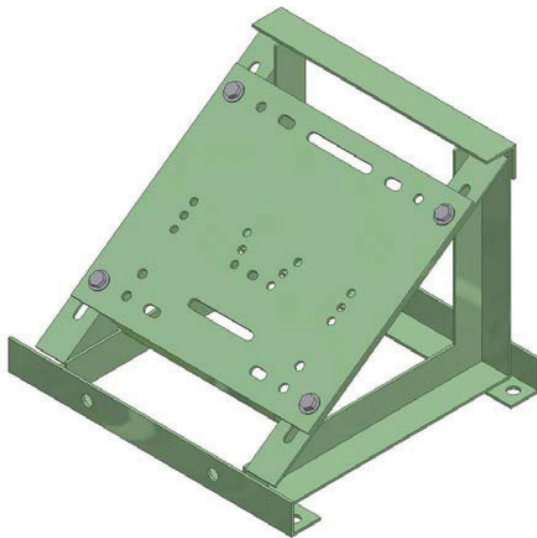
Inspect unit for damage, report any shipping damage to carrier. Check all fasteners and re-tighten as required. Rotate the blower wheel by hand to ensure free rotation. . If rubbing occurs, loosen the set screw(s), re-position the wheel to the shaft centre, re-tighten set screw(s).

UNIT DESCRIPTION

- Rigid welded angle iron frame construction.
- Full Class II capability.
- Min L10 bearing life of 35,000 hrs (average L50 bearing life of 175,000 hrs).
- Standard backwardly inclined flat blade steel wheel for DPL-12 through DPL-36 (aluminum wheel available as an option).
- Standard Aluminum airfoil wheel for DPL-AF-18 through DPL-AF-36.

INSTALLATION

1. Secure the unit through the mounting holes located on the angle iron frame.
2. Rotate the blower wheel by hand. It should not rub against the inlet venturi. If rubbing occurs, loosen the hub bolts and adjust the motor wheel position.
3. Install the motor mounting platform using the hardware supplied with the optional 10-30 HP motor platform. Mount the motor to the motor platform (motor platform shown in Figure 2) from Delhi Industries, or base mount the motor. (supplied by others)



WHEEL DIAMETERS	MOTOR PLATFORM	
	MAX HP	MAX FRAME SIZE
12" TO 20"	10	215T
22" TO 27"	15	284T
30" TO 36"	30	286T

FIGURE 3: 10-30 HP OPTIONAL MOTOR PLATFORM

4. Mount the blower sheave on the blower shaft and tighten its set-screw securely on the key of the shaft. (See Table 1 for drive data).
5. Mount the motor sheave on the motor shaft. Leave some clearance between the pulley and the motor end bell. Tighten the set-screws on the key of the motor shaft.
6. When using the 10-30 HP motor platform, with the slide base in its minimum position install the V belt within the sheave grooves. Adjust the sheave on the blower shaft to ensure proper pulley alignment (see Figure 3) and secure in place. A straight edge across the face of the driven pulley should be parallel to the belt once proper alignment has been achieved.

WARNING: Excessive belt tension is the most frequent cause of bearing wear and resulting noise. Proper belt tension is critical for quiet efficient operation.



FIGURE 3: PULLEY ALIGNMENT

7. Adjust the slide base motor platform to tighten the belt. Ideal belt tension is the lowest tension at which the belt will not slip during start up. As rule of thumb suggests that $\frac{3}{4}$ " of deflection mid span under medium finger pressure (2-3 lbs.) for every foot of span is approximately proper belt tension. Tighten all hardware once belt has been adjusted properly.

PERFORMANCE CONSIDERATIONS

Correction Factors:

The actual performance of the plenum is based upon the overall design of the plenum system. Two correction factors must be applied to all plenum fans.

1. Outlet duct loss
2. Influence of adjacent plenum walls

ESTIMATED LOSSES DUE TO PLENUM OUTLETS

Outlet losses based on the outlet configuration and duct velocity must be included in the systems external static pressure requirements. Outlet losses are dependent on the direction of the outlet, shape of the outlet and size of the Plenum. On Plenum's with more than one discharge, select the configuration that has the greatest loss.

See examples

Example 'A'

Axial, With Enlarged Plenum,
Duct Velocity 2200 FPM
From Curve 4 -

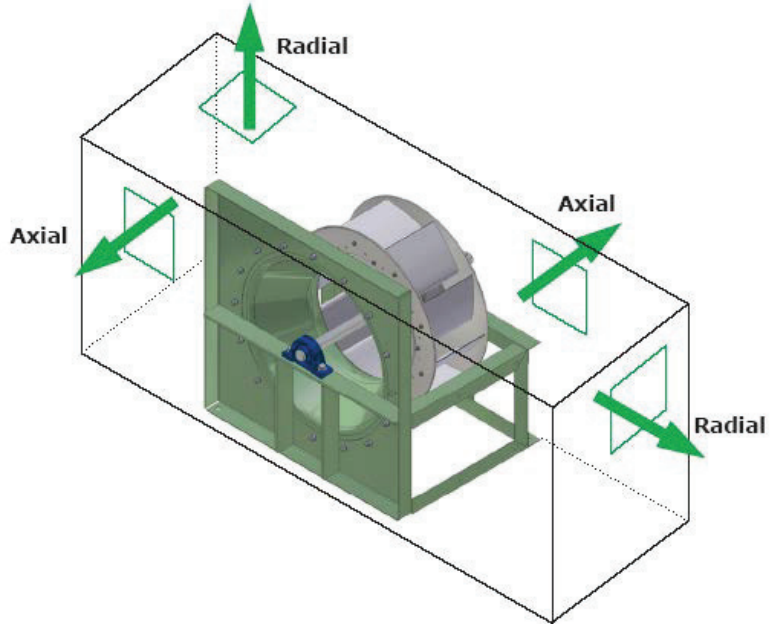
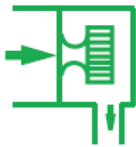
Plenum/Outlet Duct loss = **0.80" WG**



Example 'B'

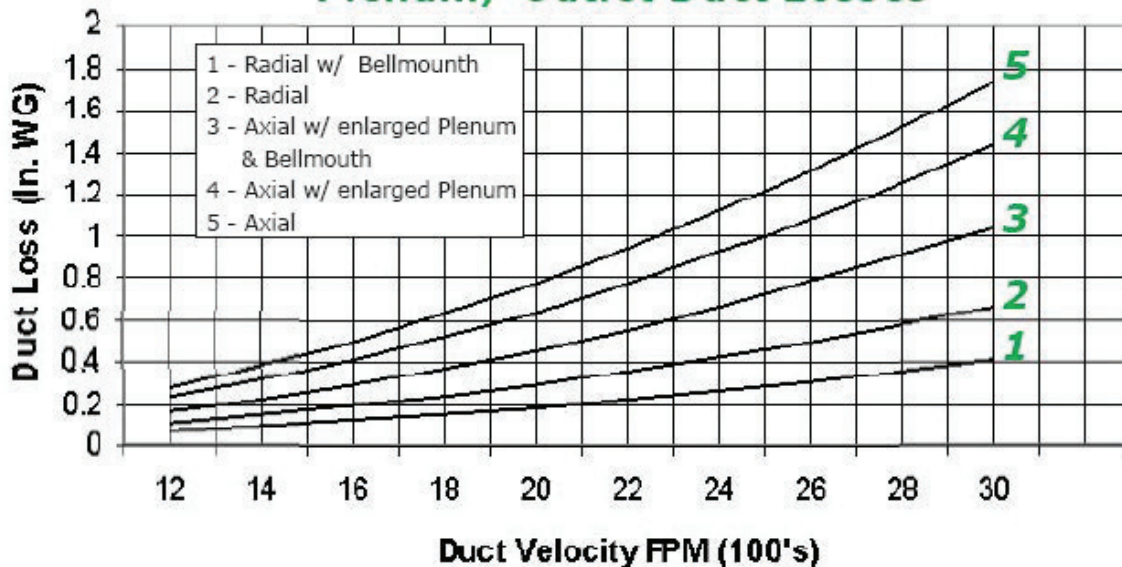
Radial, Duct Velocity 2600 FPM
From Curve 2 -

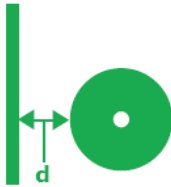
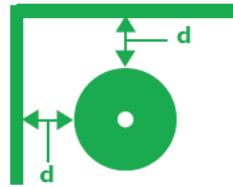
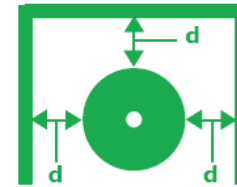
Plenum/Outlet Duct loss = **0.5" WG**



**CORRECTION FACTOR CALCULATIONS INCLUDED
IN DELAIR SOFTWARE PACKAGE AVAILABLE
FOR DOWNLOAD OR ON CD AT:
WWW.DELHI-INDUSTRIES.COM**

Plenum/ Outlet Duct Losses



CORRECTION FACTORS DUE TO INFLUENCE OF ADJACENT PLENUM WALLS
ONE WALL

TWO WALLS

THREE WALLS


% WOV*		ONE WALL d/Wheel Diameter			TWO WALLS d/Wheel Diameter			THREE WALLS d/Wheel Diameter		
		1/4	1/2	3/4	1/4	1/2	3/4	1/4	1/2	3/4
90	RPM	.975	.965	.974	.970	.984	.988	.993	.981	1.005
	BHP	1.019	.931	.984	.909	.945	.990	1.012	.934	.993
80	RPM	.991	.982	.993	.985	1.000	.998	1.014	1.002	1.015
	BHP	1.074	1.032	1.065	.991	1.038	1.066	1.089	1.019	1.094
70	RPM	1.020	1.012	1.016	1.008	1.016	1.022	1.035	1.020	1.037
	BHP	1.181	1.136	1.140	1.070	1.104	1.157	1.140	1.086	1.167
60	RPM	1.057	1.055	1.057	1.047	1.043	1.055	1.063	1.046	1.063
	BHP	1.299	1.229	1.242	1.187	1.196	1.265	1.214	1.158	1.223
50	RPM	1.098	1.095	1.100	1.086	1.078	1.093	1.094	1.080	1.100
	BHP	1.417	1.366	1.369	1.277	1.344	1.403	1.323	1.272	1.330

* % WOV = Wide Open Volume = CFM @ 0" WG SP for given RPM

Example A

Required

4000 CFM @ 3.5" SP

Installation

Plenum Fan with 3 adjacent walls

d/wheel diameter = 3/4 for 2 walls, 1/2 for the third wall

Use higher factor - 3/4 d/wheel diameter

Solution

Model DPL-18 selected

From Blower curves (by interpolation)

Blower RPM = 1960, HP = 4.5

WOV = CFM @ 1960 RPM & 0" WG = 6800,

% WOV = 4000/6800 = 59%, use 60%

From Tables

Revised RPM = 1.063 x 1960 = 2083

Revised HP = 1.223 x 4.5 = 5.50

Combined Example

External System Requirement

8000 CFM @ 3.0" SP

Installation

Plenum, radial duct with bellmouth opening

Plenum Fan located adjacent to 2 walls

d/wheel diameter = 1/4

Rectangular 24" x 24" Outlet duct (4 sq. ft.)

Solution

Step 1 - Calculated overall static requirement

Velocity = 8000 CFM / 4 sq. ft. = 2000 FPM

From Curve 1 - Radial Flow to Outlet duct with bellmouth opening

Outlet Duct Loss = 0.18" W.G.

Overall static requirement = 3.18" SP

Step 2 - Select fan for 8000 CFM @ 3.18" SP

Model DPL-24 selected

Blower RPM = 1430, HP = 7.5

Step 3 - Adjust RPM & HP requirements due influence of adjacent plenum wall

Calculate WOV

WOV = CFM @ 1440 RPM @ 0" WG = 12800

% WOV = 8000/12800 = 62.5%, use 60 %

From Tables

Revised RPM = 1.047 x 1430 = 1497

Revised HP = 1.187 x 7.55 = 8.9

Solution

Overall system will require

DPL-24 @ 1497 RPM, 8.9 BHP

ELECTRICAL

WARNING: Ensure power supply is disconnected and locked out prior to making electrical connections.

Before connecting the motor to the electrical supply, check the electrical characteristics and wiring instructions as indicated on the motor nameplate or as shown below. Complete electrical connections as indicated.

WARNING: A ground wire must be connected from the motor housing to a suitable electrical ground.

OPERATION

1. After electrical connections are completed, remove belts, energize the motor momentarily to ensure proper motor rotation. Re-install the belts.
2. With the air systems in full operation and all ducts and access panels attached, measure current input to the motor and ensure that it is less than the rated full load motor amperage.
3. Proper adjustment to the belt tension is critical for quiet efficient operation.

MAINTENANCE

Ensure power supply is disconnected and locked out prior to performing maintenance

1. Inspect and tighten the wheel hub bolts after the first 50 to 100 hours of operation and periodically thereafter.
2. Follow the motor manufacturer's instructions for motor lubrication. Remove any excess lubrication.
3. Drives:
A – Check belt tension and alignment, replace cracked or worn belts. If it is necessary to replace one belt on a multiple belt drive, replace all the belts with a matched set.
B – Under normal conditions, no re-lubrication is the rule. The bearing lubricant cavity is 1/3-1/2 filled as shipped from the factory. Never lubricate new bearings.
C – Tighten set-screws on sheaves, wheel and bearing locking collars.
4. Clean the blower wheel periodically. Material build up on the blades can cause wheel imbalance which, may result in wheel or motor bearing failure.
5. Generally, bearings should be lubricated at six to twelve month intervals. Recommended lubricants are: a) Imperial Oil – ESSO Beacon 325, or b) Shell Oil – Alvania Grease #3. A small amount of grease should be added slowly when the shaft is rotating. **Note: Over greasing may cause damage to the bearing. Avoid rupturing the bearing seal.**
6. To reinstall replacement ball bearings press the locking collar against the inner ring of the bearing and turn in the direction of the shaft rotation until engaged. Insert a drift pin into the pin hole and tap lightly to set. Tighten set-screw on locking collar firmly.
7. Should further service to the blower be necessary, refer to the exploded view illustration (see Figure 4).

PARTS LIST	
1.	PLENUM INLET WALL
2.	DETACHABLE INLET VENTURI
3.	C-SHAPED FRAME
4.	T-BAR
5.	PILLOW BLOCK BEARING
6.	SHAFT
7.	BACKWARDLY INCLINED FLAT BLADE STEEL WHEEL OR BACKWARDLY INCLINED AIRFOIL WHEEL

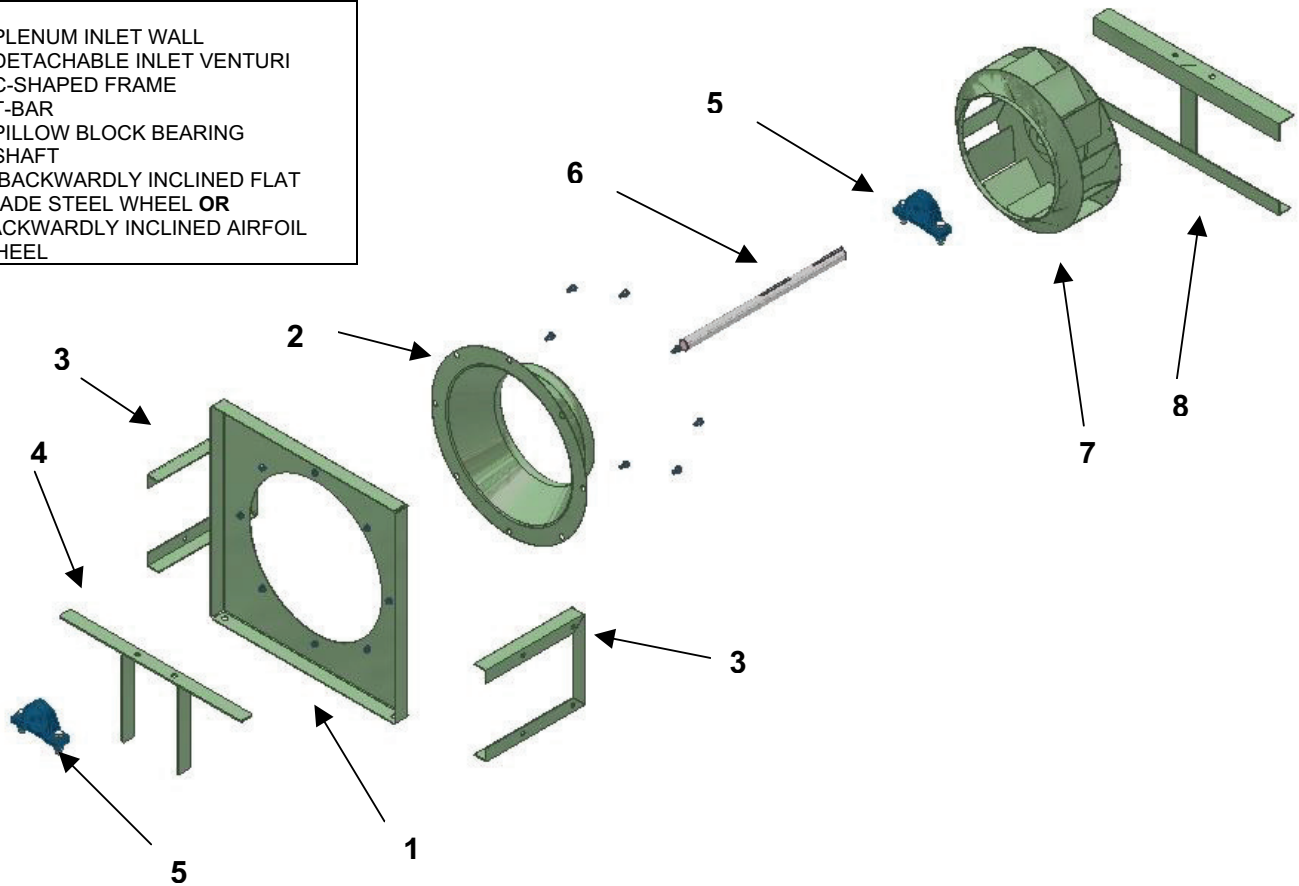


FIGURE 4:EXPLODED VIEW

WARRANTY

Delhi Industries Inc. Air Moving Products are guaranteed for a period of one year against manufacturing defects in material and workmanship when operating under normal conditions. Liability is limited to the replacement of defective parts. Labour and transportation costs are not included.