Blowers; Back to Basics

-Maintenance
-Application
Lubrication

- Oil changes
- Proper grade and type
- Non detergent
- Anti foam
- Rust inhibitors
- Anti wear
- Hydrolytic stability
## 10.3 Recommended oils

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<th>Make</th>
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<th>Pour point</th>
<th>ISO VG - 220</th>
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Oil Drains
Oil Level sight glasses
Mineral Oil
Change Filter
Filter with weather hood
Open filter for indoor use, up to 3025 cfm
Open filter for indoor use, up to 480 cfm
Filter Restriction Indicator

Easy to read
Simple
Re-useable
Dirty Filter
Re-set button
Good Filter
Food Grade gaskets
Cost of a dirty filter

BHP = RPM x CFR x P x 0.00474

With clean filter;

BHP = 2040 x 10 x 0.28 x 0.00474

= 27.074

With dirty filter;

BHP = 2040 x 10.9 x 0.28 x 0.00474

= 29.51  (BHP differential = 2.43)

P = 25” WC (equals 0.9psig differential)

Extra Cost;

= 2.43 x 16hrs x 300days x $0.1 = $1166.40/year
V-Belt Drive Design

Minimum sheave diameters
- Blower
- Motor

Correct number of belts to handle the hp
$X$ belts – more hp/belt

Keep sheaves close to blower & motor

Align sheaves

Proper Tension
### Table IV: Minimum sheave diameter [inches / mm]

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Check pressure rating for all blowers.
## Motor Sheave Diameter

**Table 3-3 Recommended Minimum Sheave Diameters, Belt Type, Number of Belts and Deflected Force**

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<th>Motor Hp</th>
<th>1200 rpm</th>
<th>1800 rpm</th>
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**Notes:**
1. Horsepower is the nameplate motor horsepower, and RPM is the motor (driver) speed.
Over Pressure

Blower will over heat in about 5 minutes
Rotors expand causing tip to housing contact
- increased clearance
- loss of efficiency
- wasted hp
- higher operating temperatures
Blower will seize up
Check Valve
Application

- Sized correctly;
- too big or too small
- Speed;
- too slow or too fast
- High pressure
- High temperature
TL70 600icfm 12psig 2600rpm, 68% 150F delta t 68F Ambient = 218F outlet temp!
Blower Speed

- Too fast;
  - shortened bearing life

- Too slow;
  - higher temperature
  - oil degradation
  - shortened bearing life
Quick Calculation

For every 1 psig pressure rise, the discharge temperature will increase by approximately 13°F plus ambient.

Ex. 10psig x 13°F + 75°F = 205°F

Hotter Ambient

Ex. 10psig x 16°F + 100°F = 260°F
Pneumatic Conveying

- Match the blower to the job
- elevation
- product
- line size & lengths
- elbows
- airlock
- diverter
# Pneumatic Conveying Data Sheet

**Company Name**

**Contact**

**Phone** (___) ___-___

**Fax** (___) ___-___

**Elevation**

**Average Ambient Temperature** °F

**Type of System**

- Pressure
- Vacuum

**Product to be Conveyed**

**Weight, lb/ft²**

**Particle size**

**Flow Rate** or lbs/min or kgs/min

**Conveying line size O/D** I/D

**Total Conveying line in feet**

**Horizontal**

**Vertical**

**Total number of long sweep elbows** 90° 45°

**Specify other i.e. Hammertek, short radius etc.**

**Total number of diverters**

- Flap
- Tunnel

**Number of air locks**

**Size and manufacture of air locks**

**Terminal of conveying line**

- Bin
- Cyclone
- Tanker
- Other

**Please specify any other info i.e. flex hose, switching station, multi product line, etc.**

**Size of air line from blower to air lock**

**Total Length in feet**

**Horizontal**

**Vertical**

**Number of elbows**

- 90°
- 45°

**Outside installation**

- Inside installation
- Blower room
- Mill floor
- Other

**Plenum air intake (outside air)**

- Blower room / mill intake (inside air)

**Motor frame TEFC**

- Explosion proof
Compact/Silencer package
Oil Drain Hoses
Oil Drain Hoses
Filter Restriction Indicator
Double adjusting slide base
Summarize

Change oil
Change filter
Pressure Relief Valve
Check Valve
V-Belt drive-aligned & tensioned
Thank you

Blower Engineering

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Cell: 289-221-2414