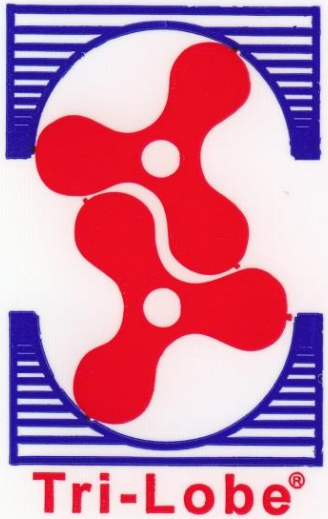


Blower Engineering

Blowers; Back to Basics

-Maintenance

-Application

Lubrication

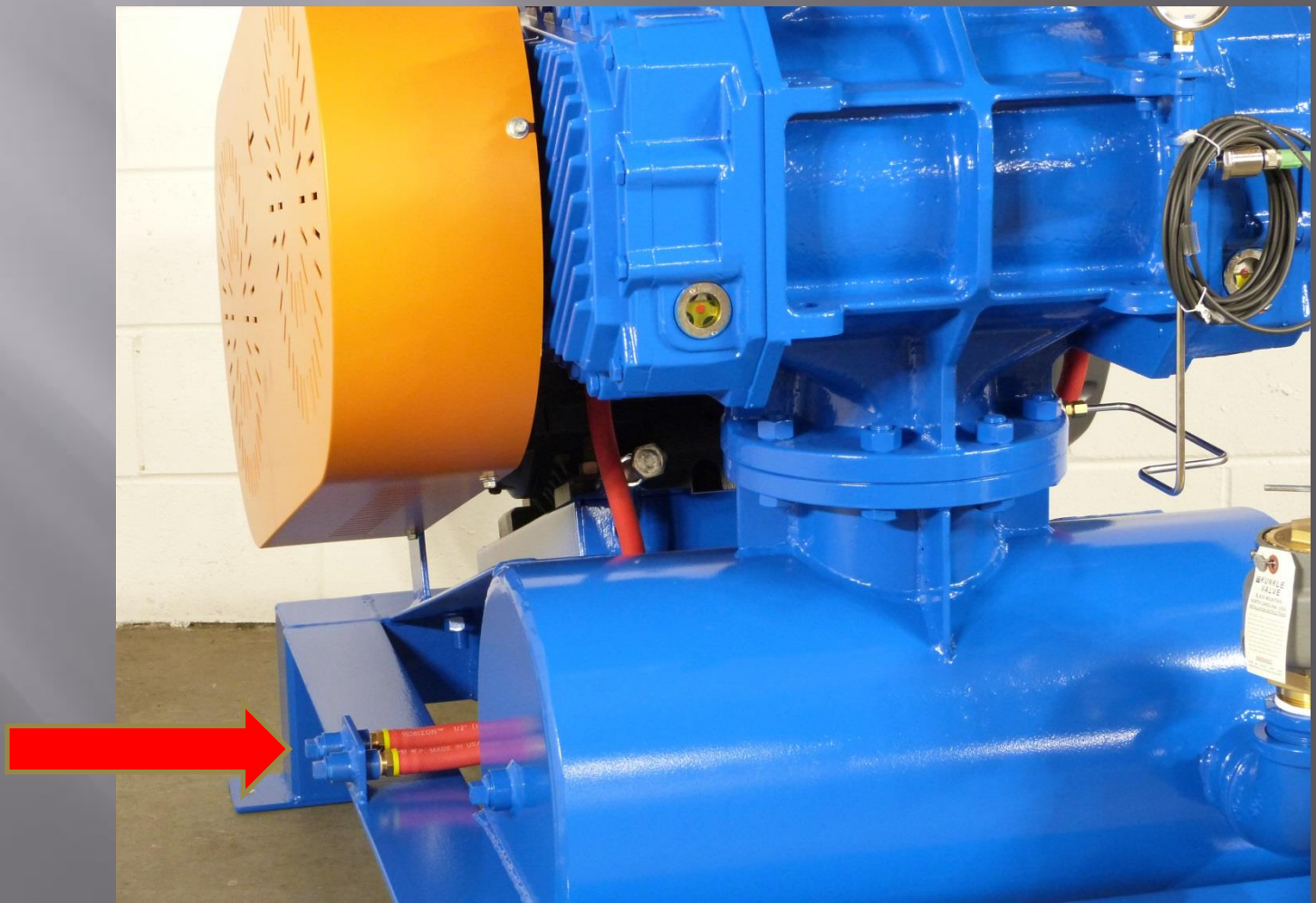
-Oil changes
-Proper grade and type
-Non detergent
-Anti foam
-Rust inhibitors
-Anti wear
-Hydrolytic stability

Recommended oils

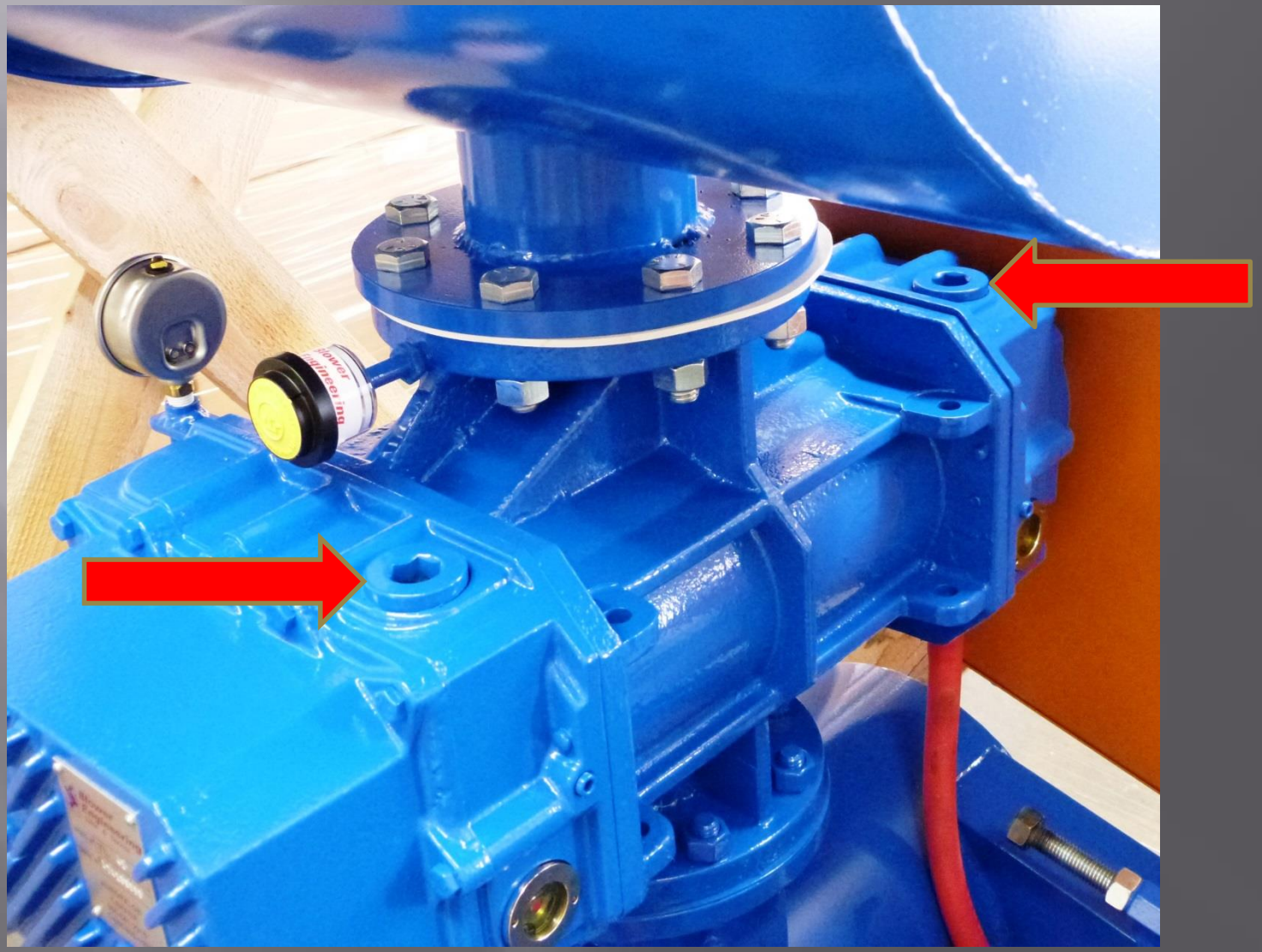
10.3 Recommended oils

Make	Type	ISO VG - 150	Pour point		ISO VG - 220	Pour point	
			°F	°C		°F	°C
Mobil	Nuto	150	0	-18	n/a	n/a	n/a
Petro-Canada	Compro XL-S	150	-11	-24	n/a	n/a	n/a
Mobil	Synthetic	SHC630	-49	-45	SHC630	-49	-45

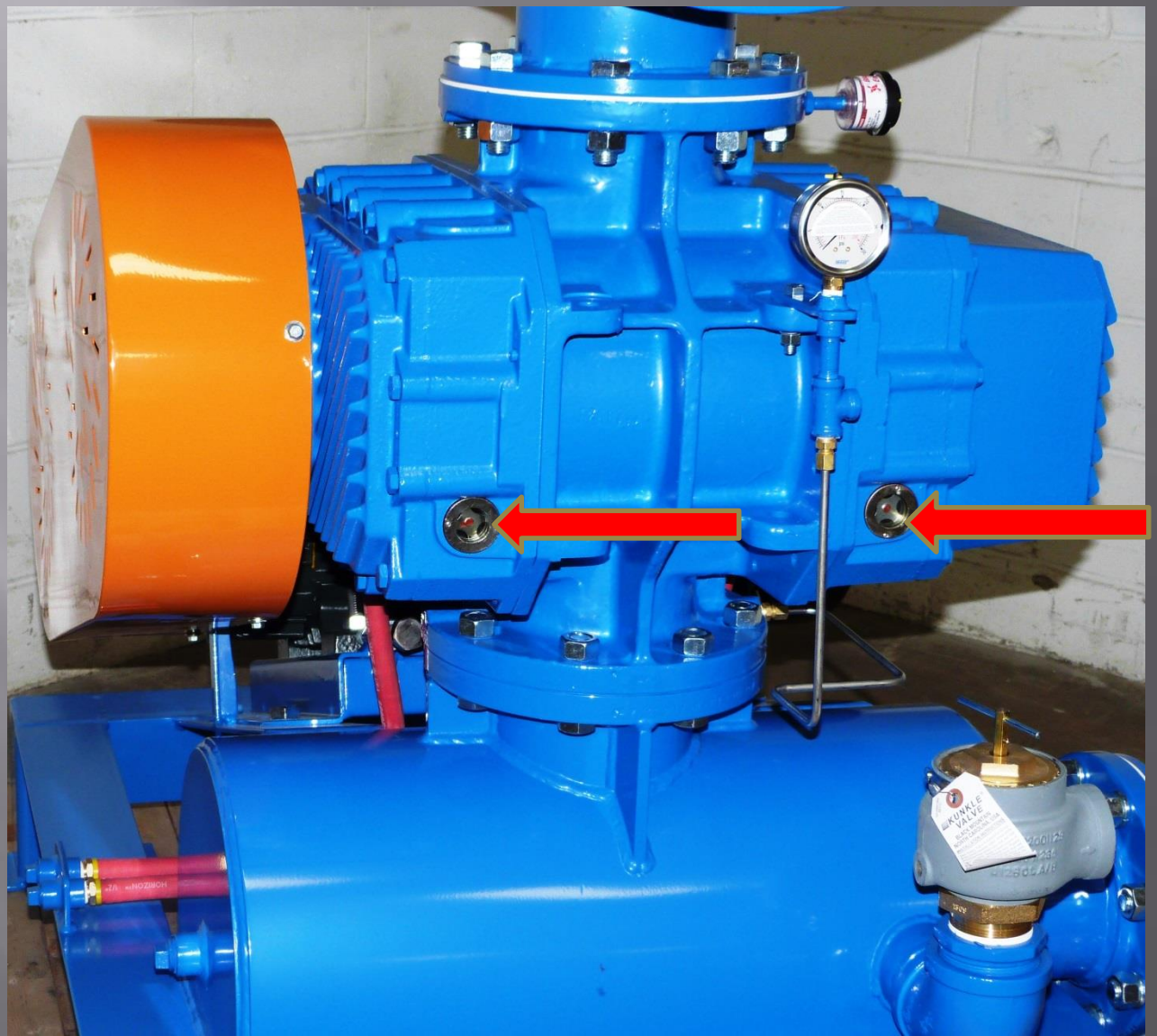
Oil Drains



Oil Fill Ports



Oil Level sight glasses



Synthetic Oil

Mineral Oil


Mobil
NUTO™ H 150
HYDRAULIC OIL
HUILE HYDRAULIQUE
WARNING!
SPILL CONTROL
ExxonMobil Oil Corporation
3225 Gallows Road
Fairfax, VA 22037-0001
5 GAL/18.9 L

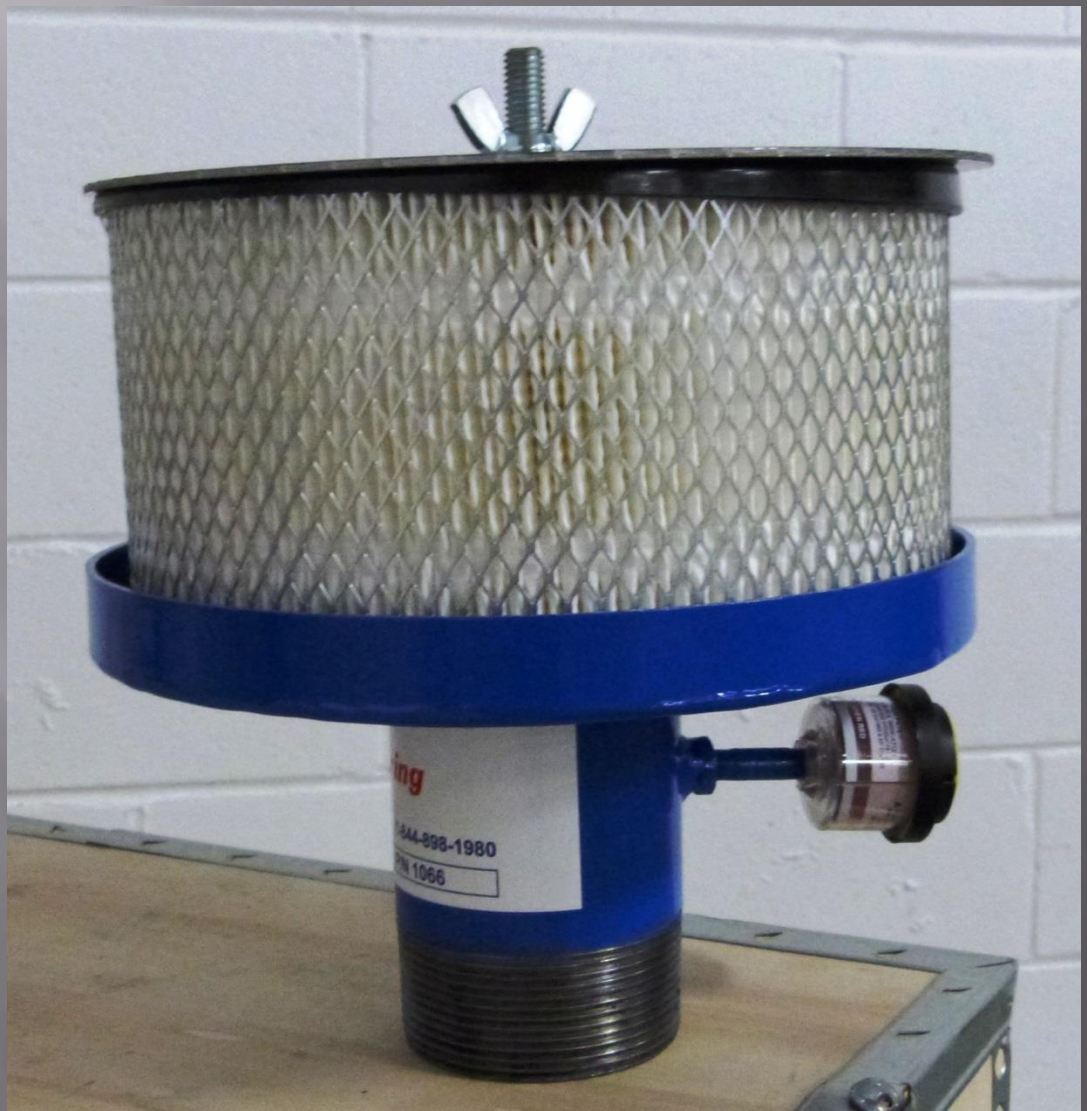
Air Filter

Change Filter

Filter with weather hood

Open filter for indoor use, up to 3025cfm

Open filter for indoor use, up to 480cfm



Filter Restriction Indicator

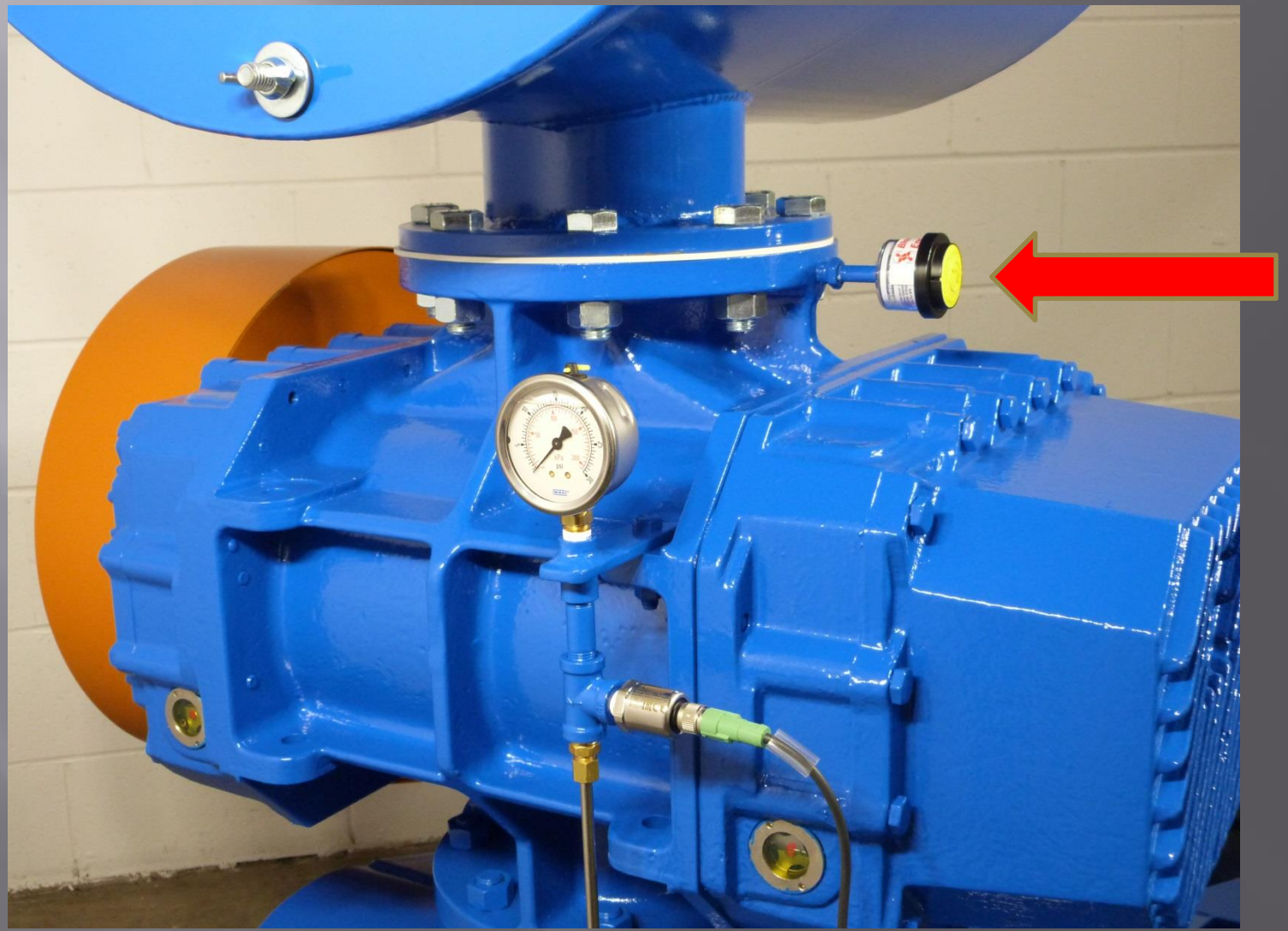
Easy to read

Simple

Re-useable

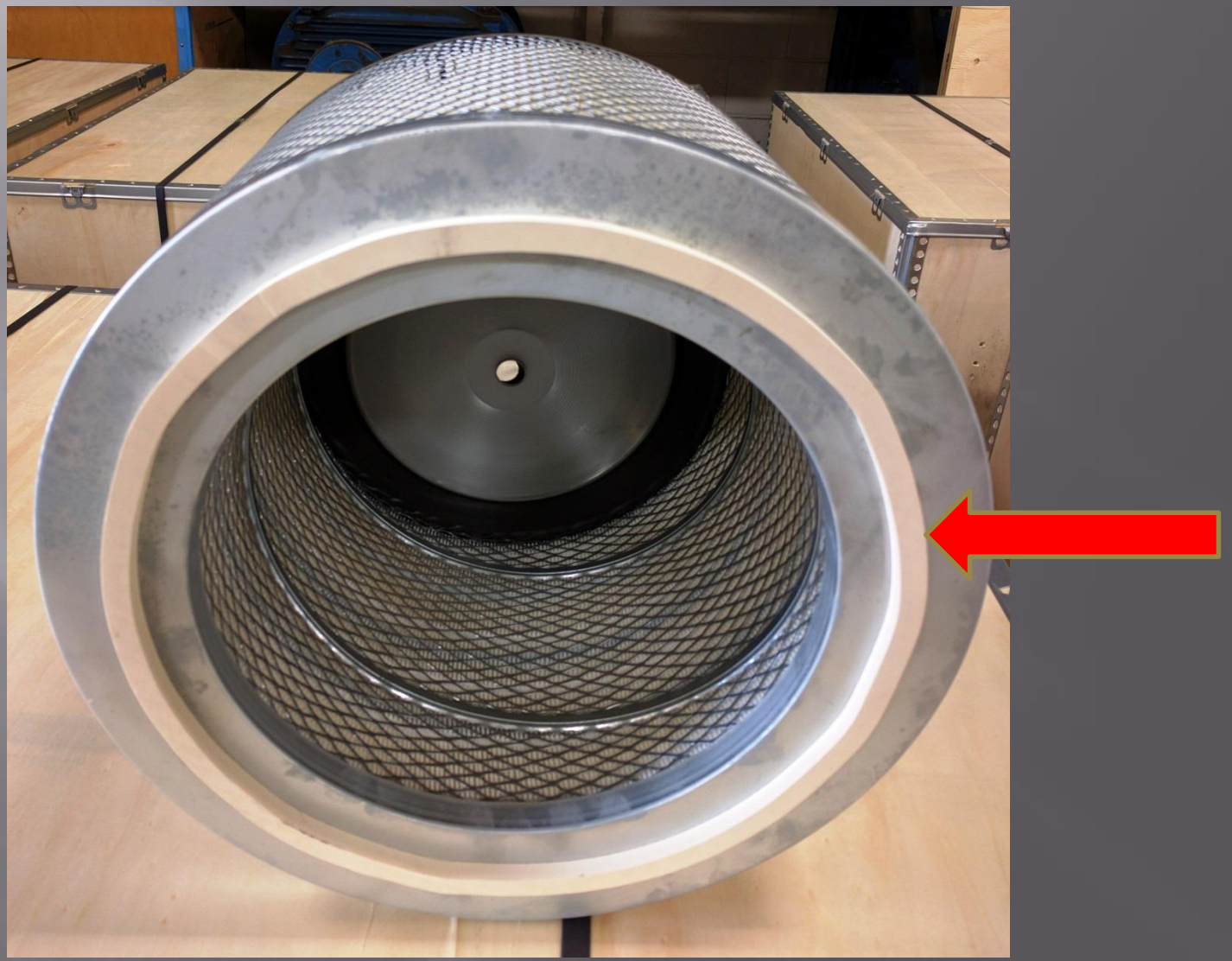
Dirty Filter

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 .00474

= 27.074

With dirty filter;

BHP=2040 x 10.9 x 0.28 x .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

Minimum Sheave Diameter

Table IV: Minimum sheave diameter [inches / mm]

TL	Differential Pressure [psig / kPa]																	
	3	20.7	5	34.5	6	41.4	7	48.3	8	55.2	10	68.9	12	82.7	13	89.6	15	103.4
TL10	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	X	X
TL20	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	80	X	X
TL30	4.00	100	4.00	100	4.00	100	4.00	100	4.00	100	4.40	112	4.40	112	4.40	112	4.40	112
TL40	4.00	100	4.00	100	4.00	100	4.00	100	4.40	112	4.40	112	4.40	112	4.40	112	4.40	112
TL41	4.00	100	4.00	100	4.00	100	4.40	112	4.40	112	4.40	112	4.40	112	X	X	X	X
TL50	4.70	118	4.70	118	4.70	118	5.20	132	5.20	132	5.50	140	5.50	140	5.50	140	5.50	140
TL60	5.20	132	5.20	132	5.20	132	5.20	132	5.50	140	5.50	140	5.50	140	5.50	140	5.50	140
TL61	5.20	132	5.20	132	5.50	140	5.50	140	5.90	150	5.90	150	5.90	150	X	X	X	X
TL70	5.50	140	5.50	140	5.90	150	5.90	150	6.30	160	6.30	160	6.30	160	6.30	160	6.30	160
TL80	5.50	140	5.50	140	5.90	150	6.30	160	6.30	160	6.30	160	6.30	160	6.30	160	6.30	160
TL81	6.00	160	6.00	160	6.70	170	6.70	170	7.10	180	7.10	180	7.10	180	X	X	X	X
TL90	7.90	200	7.90	200	7.90	200	7.90	200	7.90	200	9.00	225	9.00	225	9.90	250	9.90	250
TL100	7.90	200	7.90	200	7.90	200	7.90	200	9.00	225	9.00	225	9.90	250	9.90	250	10.90	275
TL101	7.90	200	7.90	200	7.90	200	7.90	200	9.00	225	9.00	225	X	X	X	X	X	X
TL110	7.90	200	7.90	200	7.90	200	9.00	225	9.30	236	9.90	250	9.90	250	9.90	250	11.80	300
TL120	7.90	200	7.90	200	9.00	225	9.30	236	9.90	250	9.90	250	11.80	300	X	X	X	X
TL600	9.30	236	9.30	236	9.30	236	9.90	250	11.80	300	13.80	350	13.80	350	13.80	350	13.80	350
TL900	9.30	236	9.30	236	9.30	236	9.90	250	11.80	300	13.80	350	13.80	350	X	X	X	X

Check pressure rating for all blowers

Motor Sheave Diameter

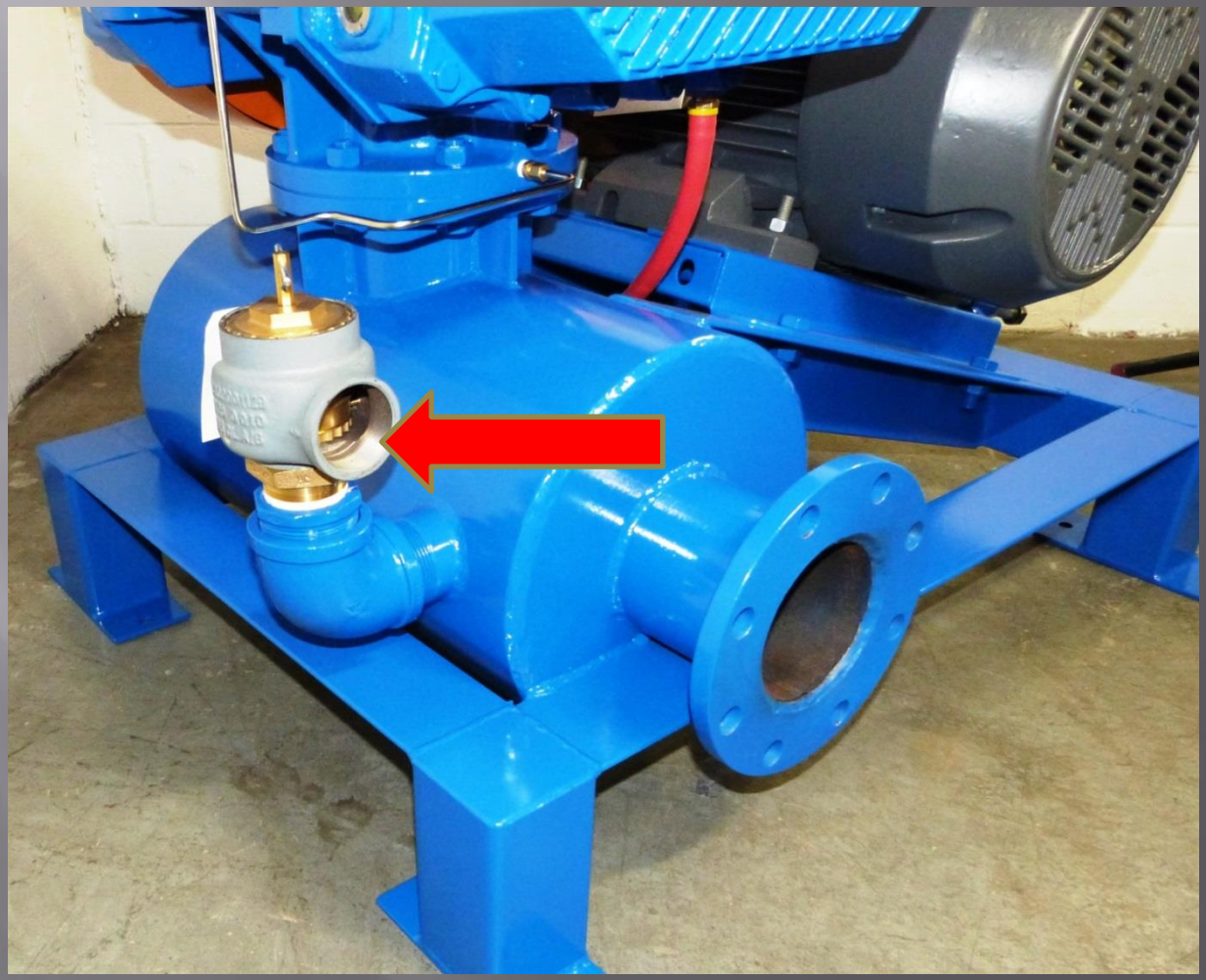
Table 3-3 Recommended Minimum Sheave Diameters, Belt Type, Number of Belts and Deflected Force

Motor Hp	1200 rpm				1800 rpm				3600 rpm			
	Min Sheave Dia (in)	Belt Type	Max # of Belts	Avg. Deflected Force (lbs)	Min Sheave Dia (in)	Belt Type	Max # of Belts	Avg. Deflected Force (lbs)	Min Sheave Dia (in)	Belt Type	Max # of Belts	Avg. Deflected Force (lbs)
0.75	2.2	3VX	1	3.4	2.2	3VX	1		2.2	3VX	1	
1	2.4	3VX	1	4.0	2.2	3VX	1	3.1	2.2	3VX	1	
1.5	2.4	3VX	2	3.1	2.4	3VX			2.2	3VX	1	2.5
2	2.4	3VX	3	2.8	2.4	3VX	2	2.9	2.4	3VX		
3	3.0	3VX	2	3.3	2.4	3VX	3	2.9	2.4	3VX	2	2.3
5	3.0	3VX	3	4.0	3.0	3VX	3	3.7	2.4	3VX	3	2.5
7.5	3.8	3VX	4	4.7	3.0	3VX	4	4.1	3.0	3VX	2	4.2
10	4.4	3VX	4	5.4	3.8	3VX	4	4.3	3.0	3VX	3	3.8
15	4.4	3VX	5	5.4	4.4	3VX	4	5.4	3.8	3VX	3	4.4
20	5.2	3VX	6	6.0	4.4	3VX	6	4.8	4.4	3VX	3	5.0
25	6.0	3VX	7	5.6	4.4	3VX	7	5.2	4.4	3VX	4	4.7
30	6.8	3VX	7	5.9	5.2	3VX	7	5.3				
40	6.8	5VX	4	11.6	6.0	3VX	7	6.0				
50	8.2	5VX	4	14.6	6.8	3VX	8	5.9				
60	8.2	5VX	5	14.1	7.4	5VX	4	13.3				
75	10.0	5VX	5	14.5	8.6	5VX	4	14.3				
100	10.0	5VX	6	16.0	8.6	5VX	6	13				
125	12.0	5V	7	14.1	10.5	5V	6	13.1				
150	13.2	5V	7	15.4	10.5	5V	7	13.4				
200	15.0	5V	8	16.0	13.2	5V	8	13.1				
250	15.0	8V	6	27.6	14.0	5V	9	13.8				
300	16.0	8V	7	27.1	14.0	5V/**8V**	11 / **7**	23.4				
350	16.5	8V	7	30.3	14.5	5V/**8V**	12 / **7**	26.0				
400	17.5	8V	8	29.1	15.0	5V/**8V**	13 / **8**	25.7				
450	18	8V	8	31.6	16.0	5V/**8V**	14 / **9**	25.2				
500	18.5	8V	9	30.7	16.5	5V/**8V**	15 / **9**	26.9				
600					17.5	8V	11	26.3				
700					19.0	8V	12	27.3				
800					20.0	8V	13	28.2				

Notes:

1. Horsepower is the nameplate motor horsepower, and RPM is the motor (driver) speed.

Pressure Relief Valve



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

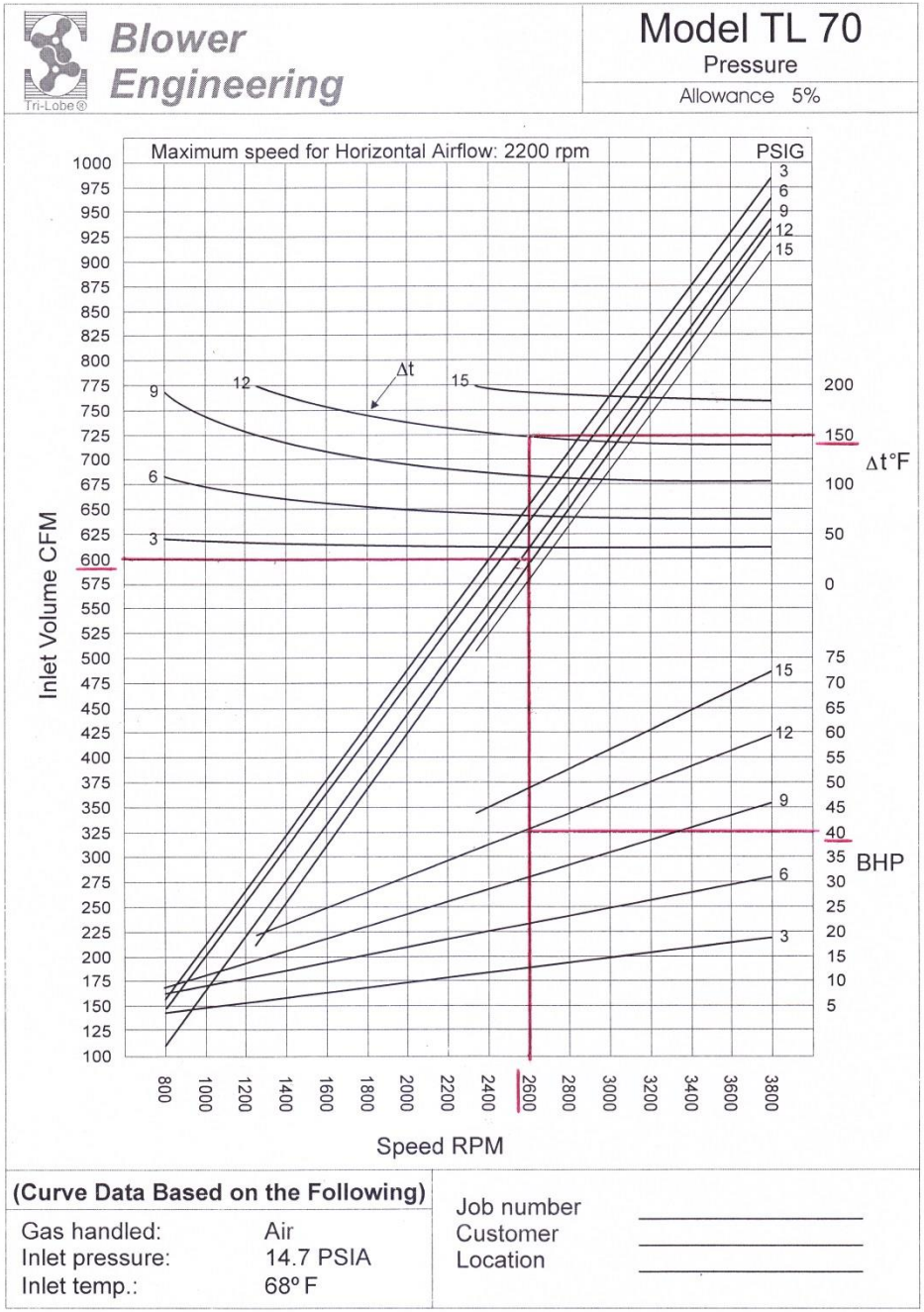
Blower will seize up

Check Valve

Product in Air Box

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

Blower Engineering Canada *Sales and Service*

40 Industrial Parkway North Aurora, ON L4G 4C2
Tel. 905-841-2215 Fax. 905-841-3360
Toll Free: 844-898-1980

Date: _____

Pneumatic Conveying Data Sheet

Company Name _____

Contact _____ email: _____

Phone (____) ____ - ____ Fax (____) ____ - ____

City _____ Province _____

Elevation _____ Average Ambient Temperature _____ °F

Type of System Pressure _____ Vacuum _____

Product to be Conveyed _____

Weight, lb/ft^3 _____ 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 _____

Pneumatic Conveying Data Sheet

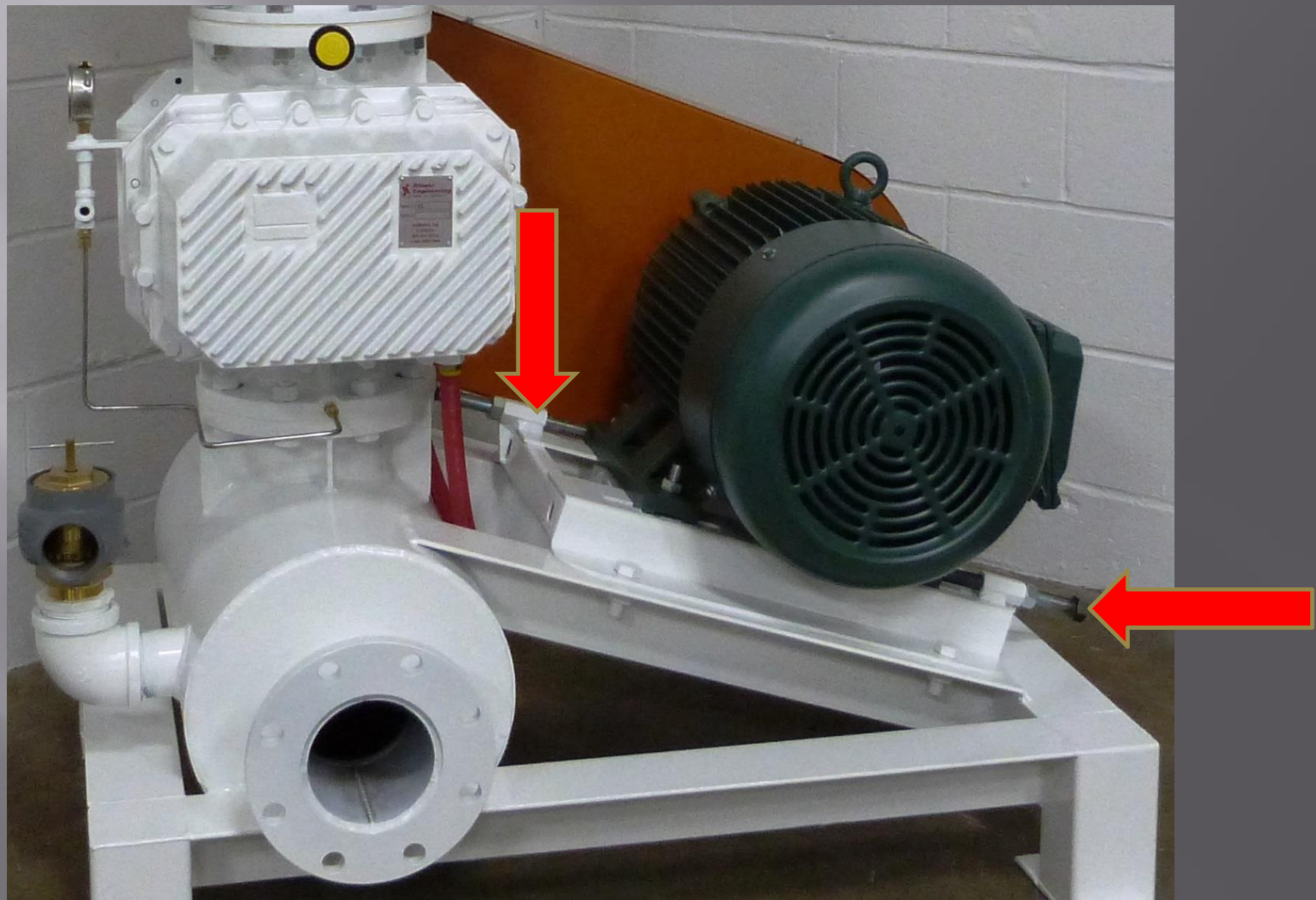
Compact/Silencer package

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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bill@blowerengineering.com
40 Industrial Parkway North
Aurora, ON Canada L4G 4C2
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Toll Free: 844-898-1980
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Cell: 289-221-2414