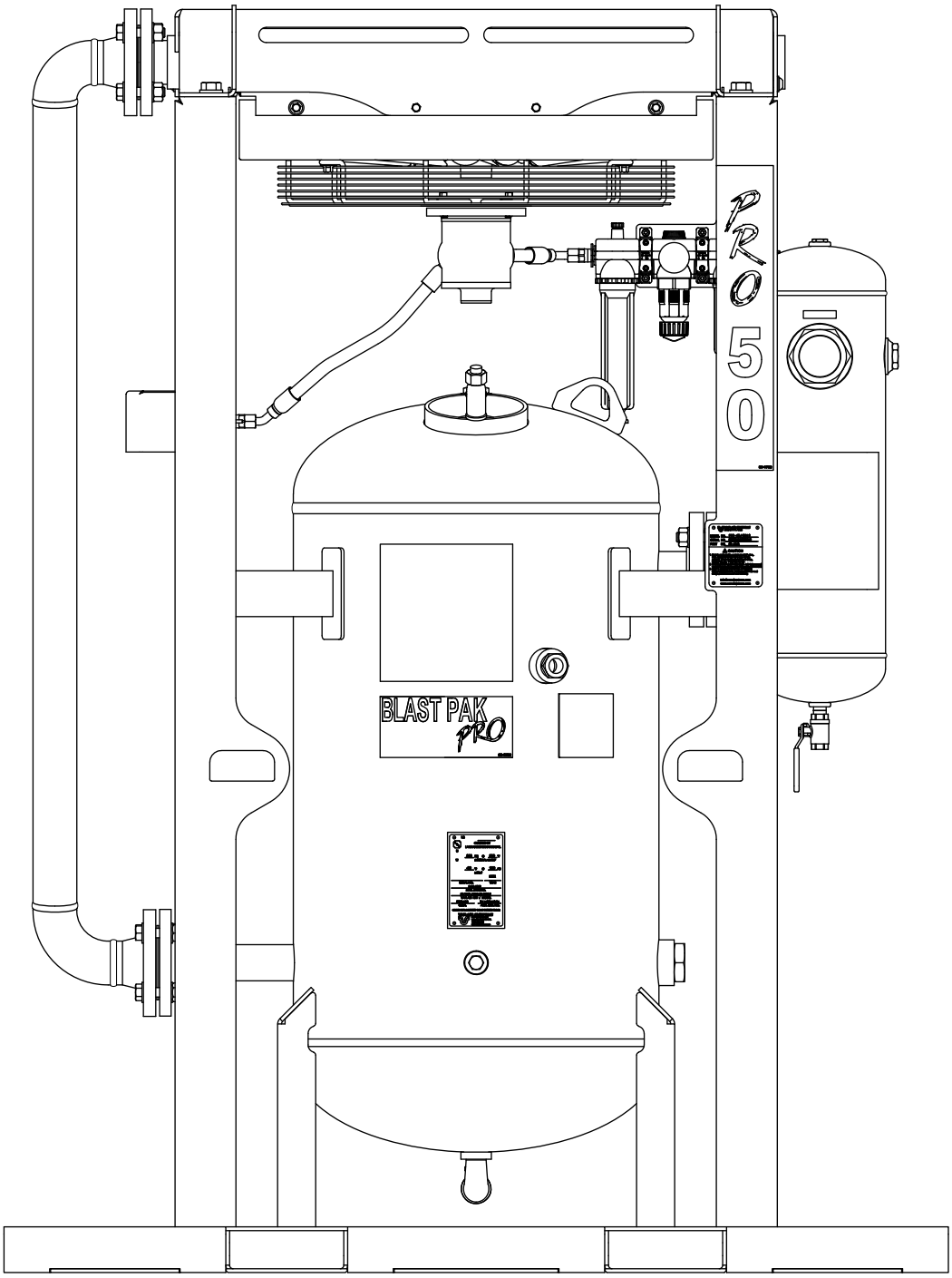
VAN AIR SYSTEMS

OPERATION AND MAINTENANCE INSTRUCTIONS
FOR

BLAST PAK - PRO SERIES

PACKAGED COMPRESSED AIR TREATMENT SYSTEM

MODELS: PRO-25 through PRO-100



WARNING

DO NOT OPERATE THIS SYSTEM ABOVE MAXIMUM WORKING PRESSURE (MWP) AND/OR MAXIMUM OPERATING TEMPERATURE (°F) SHOWN ON THE VESSEL ASME DATA PLATE.

THIS ASME CODE VESSEL MUST BE PROTECTED BY A PRESSURE RELIEF VALVE. Refer to OSHA 1910.169 Par. b, Sub. Par (3) and ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, UG-125 through UG-136. Also comply with all applicable state and local codes.

DO NOT ATTEMPT TO REMOVE OR REPAIR ANY PART OF THE SYSTEM UNTIL IT IS COMPLETELY DEPRESSURIZED. SERIOUS PERSONAL INJURY MAY RESULT IF THIS SAFETY RULE IS NOT FOLLOWED.

DO NOT WELD, GRIND, OR SAND VESSEL, THIS WILL MAKE IT UNSAFE TO OPERATE. (Note: Any alteration to the vessel will void the ASME Code Certification and the warranty.)

INSPECT VESSEL, INSIDE AND OUT, REGULARLY FOR BULGES, CORROSION, DENTS, GOUGES, LEAKS OR SIGNS OF FIRE. IF DAMAGED, REMOVE FROM SERVICE IMMEDIATELY AND NOTIFY YOUR CERTIFYING AUTHORITY.

DO NOT TRY TO TIGHTEN A LEAKING HATCH COVER. IMMEDIATELY SHUT OFF THE AIR SUPPLY AND DEPRESSURIZE THE SYSTEM.

DO NOT ATTEMPT TO REMOVE THE HATCH COVER UNTIL THE SYSTEM IS COMPLETELY DEPRESSURIZED. WHEN THE VESSEL PRESSURE IS REDUCED TO ZERO, THE HATCH COVER CAN BE REMOVED BY HAND.

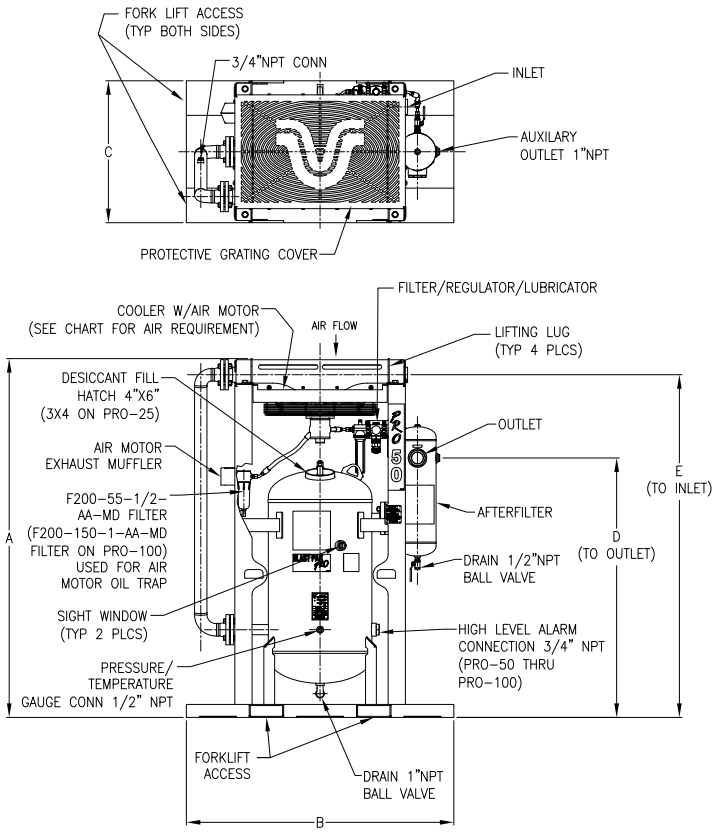
INSTALL A NEW GASKET EVERY TIME THE HATCH COVER IS REMOVED, OR AT LEAST ONCE PER YEAR. INSPECT THE COVER AND SEALING SURFACE FOR DAMAGE SUCH AS CORROSION, CRACKS, OR DISTORTION. IF THERE IS ANY DAMAGE, REPLACE COVER. REPLACE THE HATCH COVER EVERY FIVE YEARS REGARDLESS OF CONDITION. USE VAN AIR AUTHORIZED PARTS ONLY.

DO NOT USE POWER TOOLS OR CHEATER BARS TO TIGHTEN THE NUT ON THE HATCH COVER. TOO MUCH FORCE CAN DISTORT THE COVER AND/OR THE GASKET. IF DAMAGED BY OVERTIGHTENING, THE COVER CAN BLOW OUT AND CAUSE SERIOUS INJURY. (Note: Tighten the nut until it is snug. When the vessel is pressurized, the pressure on the cover will complete the seal.)

THE USE OF CHEMICALS OTHER THAN VAN AIR DESICCANT WILL VOID THE WARRANTY ON THE BLAST PAK PRO.

SECTION 1 DESCRIPTION OF OPERATION

A Blast Pak PRO is a skid mounted system consisting of an air-cooled trim cooler, a single tower dryer with a bed of desiccant tablets and a coarse afterfilter. Wet warm air enters the trim cooler where it is cooled to a temperature approaching ambient. Water is condensed out during this cooling process. The saturated air and the liquid water proceed to the inlet of the single tower dryer. The liquid water and any solid particles present are separated by gravity and fall to the dryer sump area. The process air moves upward through the bed of desiccant tablets which attract and absorb moisture from the air before it flows through the dryer outlet. The tablets dissolve gradually as they absorb the moisture. The solution, which consists of dissolved desiccant and water, falls into the sump area at the bottom of the vessel. The dryer must be drained periodically to remove the accumulated solution. A manual ball valve is supplied for this purpose. A pneumatic drain valve is available as optional equipment for automatic draining. Likewise, the desiccant in the dryer must be periodically replenished to maintain performance. The coarse afterfilter is supplied to catch any residuals that may work their way downstream.



MODEL	A	B	C	D	E
PRO-25	77"	53"	27"	58-7/8"	71-3/4"
PRO-40	77"	53"	27"	59-3/8"	72-1/8"
PRO-50	83-1/8"	62"	32-7/8"	60-1/8"	79-1/2"
PRO-75	83-1/8"	62"	32-7/8"	60"	79-1/2"
PRO-100	89-5/8"	71-1/2"	43"	59-1/8"	85-1/2"

MODEL	INLET	OUTLET	WEIGHT W/O D-O-L	DRY-O-LITE DESICCANT *
PRO-25	1-1/2" NPT	1-1/2" NPT	750 lbs	250 lbs
PRO-40	2"NPT	2"NPT	850 lbs	400lbs
PRO-50	2-1/2"NPT	2-1/2" NPT	1110 lbs	500 lbs
PRO-75	2-1/2" NPT	3" NPT	1390 lbs	750 lbs
PRO-100	3"NPT	3"NPT	2175 lbs	1000 lbs

MODEL	REGULATOR INITIAL SETTING FOR AIR MOTOR
PRO-25	20 PSIG FOR 3000 RPM (22 SCFM)
PRO-40	20 PSIG FOR 1725 RPM (14 SCFM)
PRO-50	22 PSIG FOR 1725 RPM (27 SCFM)
PRO-75	30 PSIG FOR 1725 RPM (33 SCFM)
PRO-100	20 PSIG FOR 1725 RPM (70 SCFM)

*** - ORIGINAL FILL OF DESICCANT SUPPLIED (CUSTOMER TO INSTALL)**

3.1 INLET CONDITIONS

The Blast Pak Pro Series units are rated as follows: 250 SCFM (PRO-25), 400 SCFM (PRO-40), 800 SCFM (PRO-50), 1200 SCFM (PRO-75) and 1600 SCFM (PRO-100) respectively at 100 PSIG, 180° F into the trim cooler sized for 90° F ambient and 10° approach (15° approach on PRO-25). Approach temperatures will vary with changes to the inlet conditions (flow, pressure, temperature) and the ambient temperature. The dew point out of the dryer tower is directly related to the inlet temperature entering the dryer vessel. The lower the inlet temperature, the lower the dew point of the outlet air.

The aftercooler maximum inlet temperature is 250° F. When using DRY-O-LITE desiccant, the inlet temperature to the dryer tower should not exceed 100° F.

3.2 MAXIMUM CAPACITIES FOR DELIQUESCENT DRYER - SCFM (Nm^3/hr)

MODEL	60 PSIG 4.1 Bar	80 PSIG 5.5 Bar	100 PSIG 6.9 Bar	125 PSIG 8.6 Bar	150 PSIG 10.3 Bar	175 PSIG 12.1 Bar	MWP 200 PSIG 13.8 Bar
PRO-25	**163** 262	**206** 331	**250** 402	**304** 489	**359** 577	**413** 664	**468** 752
PRO-40	**261** 419	**330** 531	**400** 643	**487** 783	**574** 923	**662** 1064	**749** 1204
PRO-50	**521** 838	**661** 1062	**800** 1286	**974** 1567	**1149** 1847	**1323** 2127	**1497** 2408
PRO-75	**782** 1256	**991** 1593	**1200** 1929	**1462** 2350	**1723** 2770	**1985** 3191	**2246** 3611
PRO-100	**1042** 1675	**1321** 2124	**1600** 2572	**1949** 3133	**2297** 3694	**2646** 4254	**2995** 4818

NOTE: Cooler is sized for 180°F inlet, 90°F ambient and 10°F approach (15°F approach on PRO-25) for flows shown at 100 PSIG.

SECTION 4 ACCESSORIES

4.1 PRESSURE RELIEF VALVE

A 2" NPT coupling (1" NPT on the PRO-25) is provided on the back of the dryer vessel for installing the relief valve. A pressure relief valve should be installed to conform to OSHA safety standards. Refer to OSHA Standard Section 1910.169, paragraph "b", subparagraph "3" and all other federal, state and local codes concerning pressure vessels.

See section 8 for recommended relief valve.

4.2 PNEUMATIC DRAIN VALVE (P/N 39-0284)

The 1"NPT drain connection can be fitted with a PDV-500T pneumatic drain valve for automatic draining of the vessel.

4.3 COMBINATION PRESSURE/TEMPERATURE GAUGE (29-0200)

A 1/2" NPT connection is provided on the lower front of the dryer for installing this gauge.

4.4 DRAIN HOSE ASSEMBLY (26-7823)

By removing the existing drain nipple from the Dryer Drain 1"NPT Ball Valve, a Drain Hose assembly can be attached to the Ball Valve to run the accumulated liquid away from the dryer base.

SECTION 5 OPERATION

5.1 DESICCANT INSTALLATION

IMPORTANT

The Blast Pak PRO is shipped WITHOUT the desiccant installed. The desiccant MUST BE INSTALLED before using the system.

THE USE OF CHEMICALS OTHER THAN VAN AIR DESICCANT WILL VOID THE WARRANTY ON THE DRYER.

The procedure for filling the dryer with desiccant is outlined in Section 6.8 of this manual.

5.2-A LUBRICATOR OIL

Check oil level in lubricator regularly and add oil as required. Verify that the lubricator is set as indicated in the chart below.

MODEL	LUBRICATOR SETTING
PRO-25 THRU PRO-75	1 DROP / MIN
PRO-100	2-3 DROPS / MIN

5.2-B OIL TRAP (EXHAUST FILTER)

The lubricating oil accumulates in the air motor exhaust filter (F200 AA grade) located downstream of the air motor. This filter must be drained periodically into a collection container. (Normally at the time that oil is added to the lubricator). Comply with all regulations concerning oil disposal.

5.3 START UP PROCEDURES

SLOWLY pressurize the air system. Allow some air to bleed through the dryer manual drain valve. Once the system starts to pressurize, the manual drain valve can be closed. The Blast Pak PRO is now in operation.

CAUTION

Make sure that the Blast Pak PRO is not subjected to sudden flow surges. Always open the valves slowly to permit gradual equalization of pressure between the Blast Pak PRO and the air supply lines.

Verify that regulator pressure is set as shown on page 3 of this manual to maintain 1725 rpm fan speed (3000 RPM on the PRO-25) to ensure proper aftercooler performance.

5.4 OPERATION

The simple design of the single tower dryer allows for easy operation. The dryer requires two procedures to ensure peak performance.

5.4-A DAILY DRAINING

The accumulated desiccant and water solution in the bottom of the dryer should be drained frequently. If a manual drain valve is installed on the dryer, it must be opened at least once every 4 to 8 hours to drain the dryer.

The dryer may require draining on a more frequent basis on humid days. If a pneumatic drain valve is installed on the dryer, it will drain automatically as needed.

CAUTION

If the dryer is not drained regularly, it may become flooded and the accumulated liquid may enter the air system and cause damage to downstream equipment.

5.4-B REFILLING THE DRYER WITH DESICCANT

During the drying process, the desiccant tablets dissolve slowly. The desiccant consumption rate is dependent on several factors, such as inlet temperature, flow and pressure. To check the level of the desiccant bed, look into one of the sight windows. If light can be seen through the opposite sight window, the desiccant supply must be replenished to ensure dryer performance.

Reference Section 6 for refilling instructions and estimated consumption rates.

IMPORTANT

The use of other than Van Air desiccant will void the warranty on the Blast Pak PRO.

6.1 DRAIN VESSEL DAILY

Drain the vessel by opening the drain valve and allowing the solution to discharge; then close the drain valve completely. The accumulated solution must be drained after every 4 to 8 hours of operation.

A pneumatic drain valve is available as an accessory to drain the vessel automatically as needed.

IMPORTANT

The drain solution may contain lubricants. Comply with all applicable regulations concerning the disposal of these chemicals.

6.2 CHECK DESICCANT LEVEL BEFORE OPERATION

Look into one of the sight windows. If light can be seen through the opposite sight window, the desiccant supply must be replenished to ensure dryer performance.

WARNING

IF THE SIGHT WINDOWS ARE DAMAGED IN ANY WAY, THEY MUST BE REPLACED IMMEDIATELY WITH VAN AIR PART NO. 26-0104 ONLY.

Check the operation of all equipment installed before and after the Blast Pak PRO.

Inspect the hatch cover for signs of corrosion and/or leaks. Replace the cover and/or gasket as necessary.

6.3 CHECK OIL LEVEL IN LUBRICATOR

Add oil as needed. See section 8 for oil part number.

6.4 CHECK FILTER IN FRL

Replace filter as needed. See section 8 for filter part number.

6.5 DRAIN OIL TRAP (EXHAUST FILTER)

Drain oil as required into a collection container.

IMPORTANT

Comply with all applicable regulations concerning the disposal of oil.

6.6 CHECK FILTER IN OIL TRAP (EXHAUST FILTER)

Replace filter as needed. See Section 8 for filter part number. See the following for procedure.

Turn manual valve on bottom of filter to ensure that it is completely depressurized.

WARNING

DO NOT REMOVE THE FILTER BOWL FROM HEAD UNTIL HOUSING IS COMPLETELY DEPRESSURIZED.

After all pressure is out, grasp the filter bowl firmly and turn it counter-clockwise (as viewed from the bottom) to remove it from the filter head. If preferred strap wrenches can be used to remove bowl. Make sure not to drop the bowl.

Remove the used element from filter head by pulling down. Discard used element properly.

Remove new element from the shipping package. Check to make sure that the o-ring is properly positioned in endcap and has been lightly greased.

Grasp clean element by bottom endcap and push element into filter head firmly.

Check o-ring at base of ACME threads in filter head. Replace if worn or damaged.

Clean and lubricate threads on bowl with light grease. This will facilitate removal of bowl at next servicing.

Carefully raise filter bowl over element and screw into head, then tighten. DO NOT OVERTIGHTEN.

Close manual drain valve.

6.7 CLEAN AFTERCOOLER CORE

The core should be cleaned regularly. Accumulation of dirt or other contaminants such as oils will greatly reduce the efficiency of the aftercooler.

Normal accumulation of dirt can be removed by blowing the core off with compressed air. If the core becomes contaminated with oil-laden particles, it can be steam cleaned. **Clean with extreme care as the aluminum fins can be easily damaged.**

6.8 ADDING DESICCANT

Shut down the air system and open the drain valve to allow the dryer to depressurize completely.

Loosen the nut on the hatch cover and push on the hatch cover. If the vessel is depressurized, the cover will unseal. Once the seal is broken, tilt the hatch cover and remove it from the dryer.

Add the amount of desiccant tablets required to raise the supply to the maximum operating level; then level off the tablet bed.

Amount of desiccant required to fill from sight window to maximum fill level:

MODEL	DRY-O-LITE
PRO-25	100 lb.
PRO-40	150 lb.
PRO-50	250 lb.
PRO-75	250 lb.
PRO-100	400 lb.

CAUTION

Make sure the desiccant level is below the screen on the outlet pipe.

Do NOT overfill the vessel. Adequate space must be left to allow the hatch cover to be installed.

Inspect the hatch cover and sealing surface. If there is any damage, replace the cover. Replace the cover every 5 years regardless of condition. The gasket should be replaced every time the hatch cover is removed or at least once a year.

Check the sealing surface of the opening. If it is contaminated with dirt or rust, it must be cleaned before installing the hatch cover. A contaminated surface may prevent the gasket from properly sealing.

Install the hatch cover and a new gasket. Tighten the nut on the hatch cover until it is snug. Overtightening will cause damage to the nut. The cover will seal when the vessel is pressurized.

Start up the dryer following the procedures in Section 5.3.

6.9 ESTIMATING DESICCANT USAGE

The desiccant bed level should be maintained to at least the sight window level at all times to ensure optimum drying capabilities.

The table on the right is a guide to estimate the desiccant usage for your installation. This chart is based on 1 shift for a one year period (2000 hours) @ 100 psig inlet pressure and 75° F inlet temperature into dryer vessel, 100% RH.

To use the chart, first determine the SCFM that is being processed through the Blast Pak PRO. Then locate the nearest flow rate listed in the chart and interpolate as needed.

The consumption rate is an approximation of how much desiccant will be added over a period of one year. It is proportional to the moisture loading. Each 20°F increase in inlet temperature changes the moisture loading by a factor of nearly 2:1.

The actual consumption may vary depending on actual conditions (i.e. 24 hour operation, higher inlet temperature, excessive liquid water content, contaminants, etc.)

For special applications requiring desiccants other than DRY-O-LITE, consult factory.

FLOW SCFM	DRY-O-LITE LBS/YEAR
200	264
400	528
600	792
800	1056
1000	1320
1200	1584
1400	1848
1600	2112

7.1 SHUTDOWN

Turn off air supply to Blast Pak PRO.

Open afterfilter drain valve and depressurize the system completely.

7.2 PREPARATION FOR STORAGE

The air motor needs to be flushed to remove excessive dirt, foreign particles, moisture and/or oil that accumulates in the air motor during normal operation. Flushing helps to maintain proper motor performance and extends service life.

Perform flushing procedure when Blast Pak PRO is to be idle for more than 5 days, or if it is to be placed in storage.

Use only Van Air Flushing Solvent (p/n 26-7157). **DO NOT use kerosene or ANY other combustible solvents to flush the air motor.**

FLUSHING PROCEDURE

1. Disconnect the Aftercooler/FRL Tube Hose assembly at the air motor inlet.

2. Disconnect air motor outlet Tube Hose assembly at the exhaust filter inlet.

3. Spray flushing solvent (Van Air p/n 26-7157) into air motor intake port for 5 to 10 seconds.

4. Rotate motor shaft/fan, by hand, for one minute in each direction.

5. Re-connect the Aftercooler/FRL Tube Hose assembly at the air intake and cover the exhaust connection with a cloth.

6. **You must wear eye protection for this step.** Restart the motor at a low pressure (approximately 10 PSIG) and run it until there is no trace of solvent in the exhaust air.

7. Listen for changes in the sound of the motor. If the motor sounds smooth, the Blast Pak PRO is ready for storage. If the motor does not sound like it is running smooth it will need to be serviced.

8. Reconnect the lines at the air motor outlet as appli cable.

9. Set the regulator for the air motor, per the chart on page 3.

7.3 STORAGE

Store the Blast Pak PRO in location that is free from extreme humidity and corrosive gasses, which can damage the unit.

DESCRIPTION	QTY	PRO-25	PRO-40	PRO-50	PRO-75	PRO-100
Aftercooler W/Air Motor	1	34-0954	34-0929	34-0923	34-0923	34-0887
Air Motor for Aftercooler	1	26-6277	26-6277	34-0926	34-0926	34-0925
Rebuild Kit for Air Motor	1	26-7687	26-7687	26-7688	26-7688	26-7689
Muffler for Air Motor	1	26-7130	26-7130	26-7131	26-7131	26-7132
Fan Blade	1	26-7480	26-7478	90-0620	90-0620	26-7499
Filter-Regulator-Lubricator (FRL)	1	26-7811	26-7811	26-7810	26-7810	26-7040
Element for FRL Filter	1	26-7814	26-7814	26-7027	26-7027	26-7041
Shutoff Valve for Air Motor	1	14-0450	14-0450	14-0450	14-0450	14-0451
Exhaust Filter for Air Motor (F200 AA Grade)	1	84-20250	84-20250	84-20250	84-20250	84-20400
Element for Exhaust Filter (E200 AA Grade)	1	26-10032	26-10032	26-10032	26-10032	26-10036
Oil for Lubricator (Quart)	1	26-7032	26-7032	26-7032	26-7032	26-7032
Flushing Solvent for Air Motor (14 Ounces)	1	26-7157	26-7157	26-7157	26-7157	26-7157
Dryer Hatch Cover	1	46-3769	46-3770	46-3770	46-3770	46-3770
Dryer Hatch Cover Gasket	1	18-0391	18-0394	18-0394	18-0394	18-0394
Dryer Sight Window	2	26-0104	26-0104	26-0104	26-0104	26-0104
Dryer Manual Drain Valve 1" NPT	1	14-0451	14-0451	14-0451	14-0451	14-0451
Filter Manual Drain Valve 1/2" NPT	1	14-0450	14-0450	14-0450	14-0450	14-0450
Cooler to Filter Hose Assembly	1	-	-	26-7830	26-7830	26-7917
Afterfilter/FRL Tube Hose Assembly	1	-	-	26-7914	26-7915	26-7916
Aftercooler/FRL Tube Hose Assembly	1	-	-	26-7832	26-7832	26-7822
Label Kit for PRO Series	1	30-1713	30-1713	30-1713	30-1713	30-1713
PRO Series Model Label	1	30-1707	30-1708	30-1702	30-1706	30-1701
Gasket for 2" RF Flange	*	18-0215 (2)	18-0215 (2)	-	-	-
Gasket for 2-1/2" Flange	*	-	-	18-0217 (2)	18-0217 (1)	-
Gasket for 3" RF Flange	*	18-0227 (1)	18-0227 (1)	18-0227 (1)	18-0227 (2)	18-0227 (3)
ACCESSORIES						
Relief Valve	1	14-1810	14-1810	14-2307	14-2307	14-2308
Combination Pressure/Temperature Gauge	1	29-0200				
Automatic Drain Valve PDV-500T	1	39-0284				
Drain Hose Assembly	1	26-7823				

*Quantity required for each Gasket is shown next to each Gasket part number in parenthesis (*).

DESICCANT	PART #	PRO-25	PRO-40	PRO-50	PRO-75	PRO-100
Quantity Required In LBS (Initial Fill)	-	250	400	500	750	1000
Dry-O-Lite Desiccant (50 LB Bag) (# of Bags)	33-0311	5	8	10	15	20
Dry-O-Lite Desiccant (500 LB Drum) (# of Drums)	33-0203	-	1	1	2	2

SAFETY PRECAUTIONS

Safety is everybody's business and is based on your use of good common sense. All situations or circumstances cannot always be predicted and covered by established rules. Therefore, use your past experience, watch out for safety hazards and be cautious.

2950 Mechanic Street
Lake City, PA 16423-2095
Phone: 814-774-2631
www.vanairsystems.com