

CONVEYAIR



Operator's Manual

CONVEYAIR



Operator's Manual

WARRANTY REGISTRATION

IMPORTANT: *To validate your warranty, mail within 10 days from date of purchase to*

VANA INDUSTRIES LTD.

92 De Baets Street
Winnipeg, Manitoba
Canada R2J 3S9

PURCHASER: _____

ADDRESS: _____

CITY/TOWN: _____

PROV/STATE: _____

POSTAL CODE/ZIP: _____

TELEPHONE NO: _____

MODEL NO: _____

SERIAL NO: _____

DATE OF PURCHASE: _____

DEALER: _____

TABLE OF CONTENTS

Introduction	1
Safety	
Starting Up	3
General Operation	4
Shut Down	5
Maintenance	5
Hydraulic System	5
Blower	5
Hearing Protection	5
Towing	5
Operation	
General	6
Hydraulics	6
Airlock	7
Blower (Air Pump)	8
Filter	8
General Guidelines	9
Start Up	9
Shut Down	9
Long Distance Blowing	10
Applications	10
Truck Loading Kit	10
Filling Bins	12
Lubrication	
Splined Shaft	12
Pto Shaft	12
Blower	12
Wheel Bearings	13
Maintenance	
Airlock	14
Airlock Clearance	14
V-Belt Drive	15
Trouble Shooting	16
Accessories	
Standard	18
Options	18
Specifications	19
Warranty	20

INTRODUCTION

This operator's manual provides you with the information to properly operate and maintain your Conveyair pneumatic grain conveyor.

Familiarize yourself with the information, observe all the operating aspects and safety procedures and your machine will give you many years of reliable service.

For your convenience and speedy service please record below the model and serial number of your machine (see figure 1) and the serial and part number of your blower. (see figure 2)

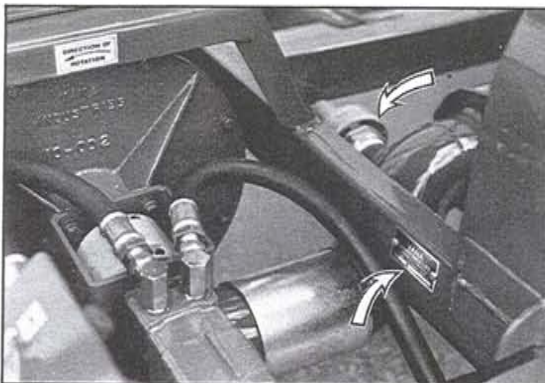
Machine

Model _____ Serial No. _____

Date Purchased _____ Dealer _____

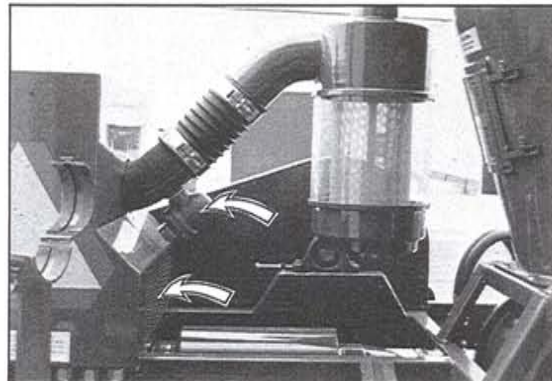
Blower

Serial No. _____ Part No. _____



Pressure relief valve

Figure 1



Vacuum relief valve

Figure 2

Serial # machine

Serial # blower

Part # blower

SAFETY

Safety involves common sense. Be conscientious and observe the rules outlined in this section.

Starting Up

- Be sure drawbar pin is secured.
- Be sure jack is locked in horizontal position.
- Attach power take-off (PTO) shaft properly to machine and to the 1000 RPM or 540 RPM PTO shaft of tractor, depending on CONVEYAIR model.
- Attach shield chains to prevent shield from rotating with PTO shaft. Be sure PTO shaft can rotate freely (see figure 3).
- PTO shaft should be in line with drawbar to assure proper transfer of torque.

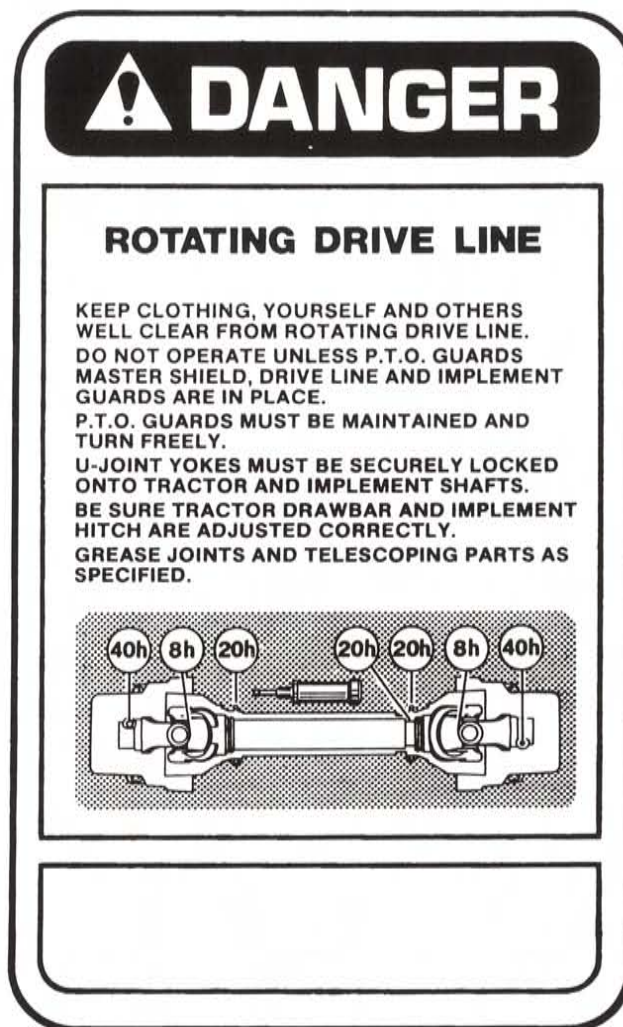


Figure 3

Safety involves common sense. Be conscientious and observe the rules outlined in this section.

Starting Up

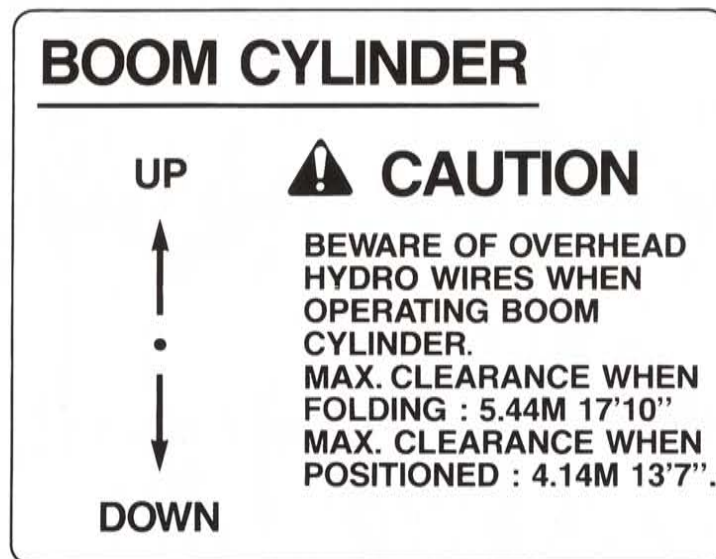
- Be sure drawbar pin is secured.
- Be sure jack is locked in horizontal position.
- Attach power take-off (pto) shaft properly to machine and to the 1000 RPM pto-shaft of tractor.
- Attach shield chains to prevent shield from rotating with pto-shaft.
- Be sure pto-shaft can rotate freely.
- Pto-shaft should be in line with drawbar to assure proper transfer of torque.



SAFETY

General Operation

- Attach hydraulic lines properly so airlock rotates as arrow indicates when airlock control is in forward position.
- Stay clear of pto-shaft, intake nozzle and discharge when engaging tractor pto.
- **Always engage tractor pto slowly and at low engine speed.**
- Never operate the machine without the shields in place.
- Stand clear of truck loading kit.
- When raising or lowering boom beware of overhead hydro wires.
(see figure 3a & b)
- Never open the receiver section clean-out door while the tractor is running or while the hydraulic hoses are attached to the tractor hydraulics.
(see figure 3c)
- When attaching cyclone to boom always be sure to lock levers in place with cotter pins.



*Decal — for hydraulically operated boom lift
Figure 3a*



*Decal — for manually operated boom lift
Figure 3b*



Decal — for all models

Figure 3c

Shut Down

- Stay clear of truck loading boom when folding the truck loading kit.

Maintenance

- Never service or lubricate when the machine is running.
- Relieve hydraulic pressure and disconnect the hoses before working on the hydraulic system.

Hydraulic System

- Be sure to maintain positive connections and keep all connectors and fittings clean.
- When searching for suspected leaks in the hydraulic system be sure to use proper hand and face protection.
- Fluid escaping from a small hole may be nearly invisible under high pressure . . . use a piece of cardboard to locate suspected leaks. (see figure 4)
- Fluid escaping under pressure from a small hole can penetrate the skin and cause infection and toxic reaction. If skin penetration occurs see a doctor immediately.

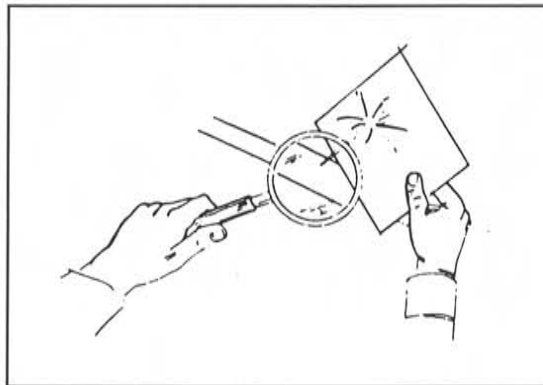


Figure 4

Blower

- Do not attempt to change the setting on vacuum and pressure relieve valves.
- Do not disassemble the blower without authorization since this will void the warranty.
- Do not operate blower with open inlet or outlet. Blower has rotating impellers . . . at all times avoid contact with rotating parts. Always keep shields in place.

Hearing Protection

- Prolonged exposure to excessive noise can cause impairment of hearing. Wear suitable protection such as earplugs or earmuffs.

Towing

- Your machine comes equipped with farm implement tires and a slow moving vehicle sign. Do not tow at speeds exceeding 30 kilometres (20 miles) per hour.

OPERATION

General

When operating the machine the pto-shaft should be in line with the drawbar of the Conveyor to avoid unnecessary wear and possible damage to the driveline components.

The blower is belt driven. In case slippage is observed check out the driveline and check whether the blower can rotate freely.

To check free movement of the blower lift up the V-belt cover, disconnect the pto-shaft and turn the big pulley by hand. (see figure 5)

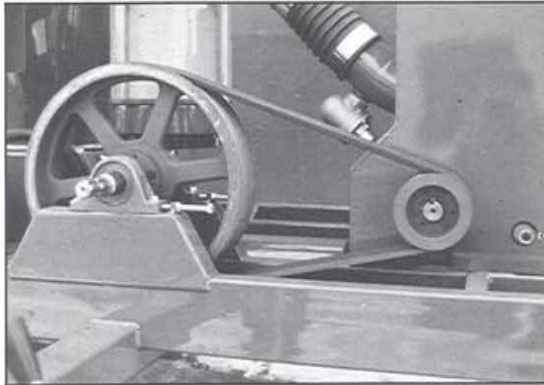


Figure 5

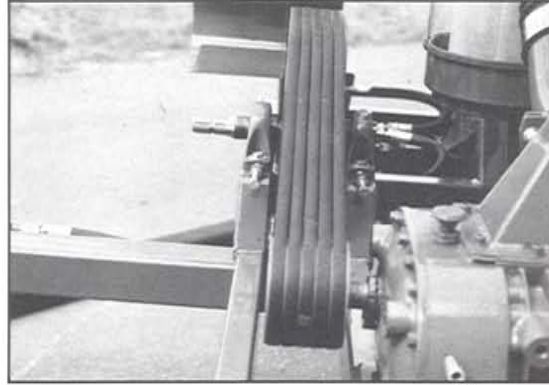


Figure 6

CAUTION — Always engage the pto of the tractor slowly and at a low RPM.

A slow engagement and a gradual acceleration of the pto-shaft saves the driveline of your machine and increases the belt life.

New belts should be adjusted after the first ½ hour of running. (see figure 6) For procedure to tighten belts see page 15.

Hydraulics

Model 2950 — When tractor hydraulics are engaged, the airlock should run in a counterclockwise direction as indicated by the arrow above the airlock. (figure 8) If the airlock turns the opposite way, reverse the hydraulic lines going to the tractor.

Model 3000 — When engaging the hydraulics always check whether the airlock turns the right way. When the airlock control is in the — FORWARD — position, (see figure 7) the airlock must turn counterclockwise as the arrow above the airlock indicates. (see figure 8)

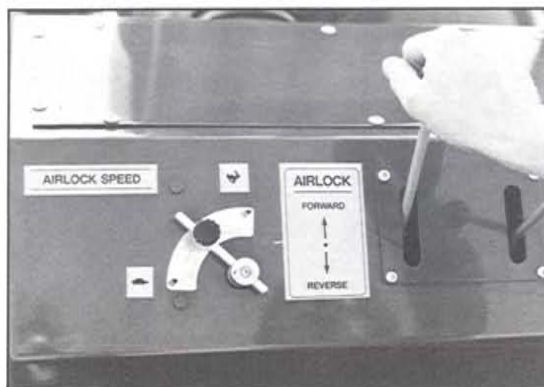


Figure 7



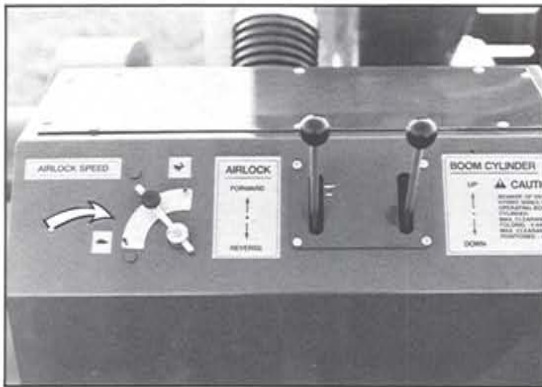
Figure 8

When the hydraulics function as described above, the hydraulic motor is protected against overload by the pressure relief of the flow control valve. (see figure 9 and 10)

The pressure relief at the flow control valve is set at 800 psi.

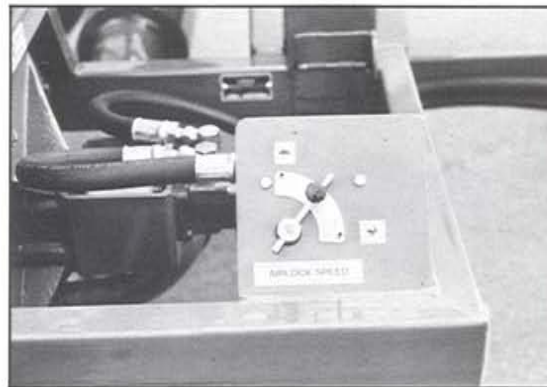
For tractors with closed center hydraulics leave the flow control at maximum and adjust the airlock speed with the tractor flow control.

For tractors with open center hydraulics use the flow control to adjust the airlock speed.



Flow control (3000)

Figure 9



Flow control (2950)

Figure 10

Model 3000 —

The boom cylinder is activated and the truck unloading kit unfolded when the cylinder control is pushed in the UP position. (see figure 11)

When folding the truck loading kit, push the cylinder control in the DOWN position.

Caution must be exercised when unfolding the truck loading kit. Beware of overhead hydro wires or other obstructions.

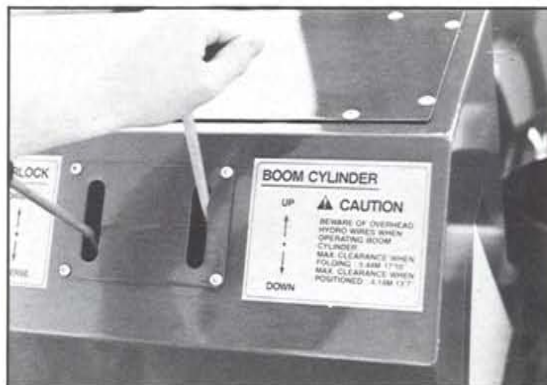


Figure 11

Airlock

The RPM of the airlock ranges from 45 to 70 RPM. Airlock speed is determined by the density of the grain that is being conveyed by the machine. The general rule applies that the heavier the grain the slower the airlock should turn and the lighter the grain the faster the airlock should turn.

OPERATION

Wheat 56 - 60 lbs/bushel = Airlock speed 45-55 RPM
Barley 47 lbs/bushel = Airlock speed 55-65 RPM
Corn 56 lbs/bushel = Airlock speed 45-55 RPM

Blower (Air Pump)

The Conveyair is equipped with a Schwitzer blower. The tractor pto powers the V-belts that drive the blower. For maximum capacity the pto should run at 1000 RPM. Check the oil level of the blower daily. Be sure that the machine is parked level when checking the oil. (see figure 12, figure 13)



Model 2950



Model 3000, with cabinet

Figure 13

Filter

At the suction side of the blower (between the receiver section and the blower) an external filter protects the blower and prevents particles from being drawn into the blower by the airstream.

In case the filter becomes dirty or clogged, easy clean-out can be achieved by loosening the wingnut at the bottom of the filter and removing the bottom cover. (see figure 14, figure 15)



Wingnut



Filter Cover

Figure 15

When replacing the bottom cover of the filter be sure that the rubber washer and flat washer above the wingnut are placed properly. This will avoid drawing false air.

General Guidelines

When transferring granular material with your Conveyair always try to keep the suctionline as short as possible and try to minimize the number of bends. This will reduce the wear on elbows and flexible hose and maximizes the capacity of the machine.

When the machine does not need to be used to full capacity e.g. when cleaning bins, throttle down the tractor.

For best capacity the tractor pto should run at 1000 RPM and the airlock between 50 and 60 RPM. The grain level in the receiver section should be kept to approximately the level of the inspection door. (see figure 16)

For lower capacity requirements or clean up, a 540 pto tractor with less horsepower can be used.

Start Up

When starting up the Conveyair run tractor pto at 1000 RPM. When conveying wheat or corn set airlock speed at 55 RPM, when conveying barley at 65 RPM.



Grain Level



Airlock Speed

Figure 17

Determine the RPM of the airlock by counting the number of revolutions of the chain coupler (see figure 17), increase or decrease number of revolutions by adjusting flow control (see figure 9, figure 10, page 7). Open airslide on intake nozzle approximately 2 inches. Insert intake in grain. **To achieve maximum capacity, adjust airlock speed to allow grain level inside the receiver tank to stay at the level of the inspection door.** Then slowly close the airslide to about $\frac{1}{2}$ " — 1". If necessary adjust airlock speed to maintain grain level inside the receiver tank to stay at the level of the inspection door.

When there is a build up of grain in the receiver tank and the airlock runs faster than 70 RPM, slow down the airlock until the grain level in the tank is at the level of the inspection door. If the airlock runs slower than 30 RPM, and there is a build up of grain in the receiver tank speed up the airlock until the grain level in the tank is at level of the inspection door.

When there is no build up of grain at all in the receiver tank, slow down the airlock until the grain level in the tank is at the level of the inspection door.

Shut Down

When shutting down the Conveyair, take nozzle out of grain, throttle down the tractor and when machine is cleaned out disengage the tractor pto.

OPERATION

When the Conveyair is shut down just to change trucks, it is not necessary to readjust the airlock speed and airlock slide setting.

When the machine has been used to convey oilseeds e.g. sunflower seeds, leave the Conveyair idling for approximately 5 minutes, then disengage the tractor pto.

Long Distance Blowing

Open airslide above filter approximately $\frac{1}{2}$ " for every 100 ft. of discharge line for long distance blowing *or* when blower runs very hot. (see figure 18) This allows additional air in the system to carry the material and to keep the unit from running hot. Should unit still run hot open airslide further.

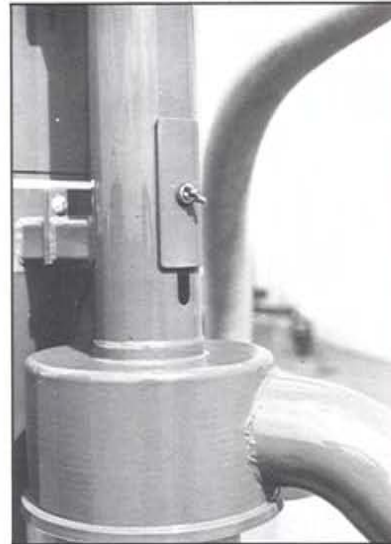


Figure 18

Applications

Your Conveyair can be used in many ways as a means to convey granular material from point A to point B. Power demand and blower speed will depend on the application and the desired capacity of the system. Extended intake or discharge lines reduce the capacity of the machine.

Truck Loading Kit

Model 2950 — Detach clamp (see figure 19) and jack the boom all the way up. Rotate boom by hand and attach flex hose with quick coupler to end of boom (see figure 20) and to airlock outlet (see figure 21).

Now lower the boom *slowly* (see instructions on the jack), attach cyclone and insert cotter pins behind self-locking levers (see figure 22). The boom and cyclone can now be jacked up and moved into place ready for truck loading. (see figure 23) Secure rotating boom in position with lock bolt. (see figure 20)

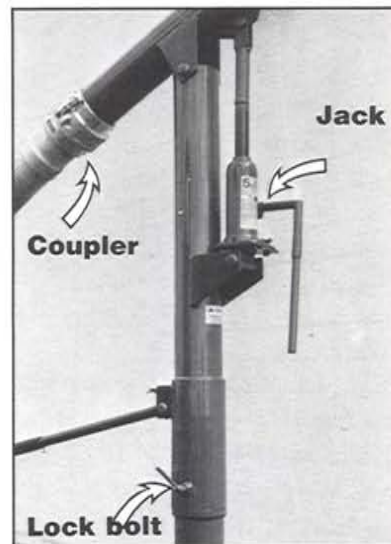
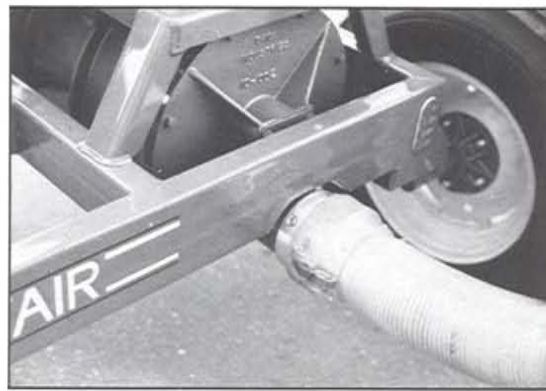


Figure 20



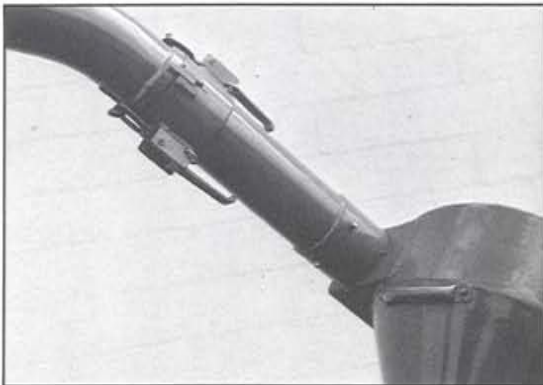
Clamp

Figure 19



Airlock outlet

Figure 21



Cyclone attachment

Figure 22



Unit ready for truck loading

Figure 23

Model 3000 — Detach clamp (see figure 24) and lift boom out of its seat. Rotate boom out of the way and attach cyclone to end of boom.

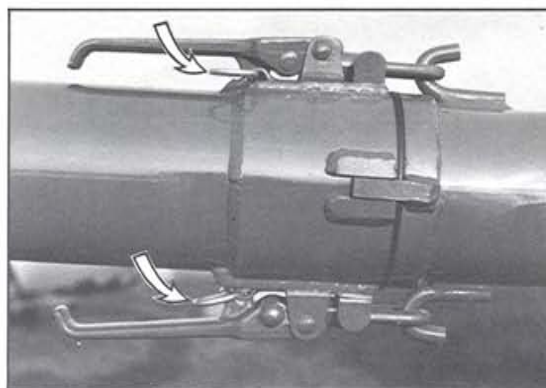
When boom is in the folded position the cyclone lock pin slides into its counter on the boom elbow. (see figure 26)



Clamp



Bottom
Elbow



Cotter pins

Figure 26

The self-locking levers assure a positive hook-up. Be sure to insert the cotter pins in behind the self-locking levers. Levers may unlock because of vibration if this is not done. (see figure 26)

The boom of the truck loading kit can rotate 180 degrees and be locked in position every 15 degrees. (see figure 27 and 28)

LUBRICATION



Figure 27

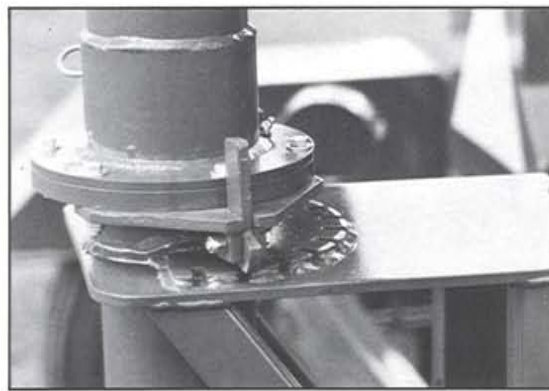


Figure 28

Filling Bins

2950 — When discharging into bins simply detach couplers from truck loading kit and hook up piping going to bins. (see figure 20)

3000 — When discharging into bins take off the bottom elbow behind the airlock (see figure 25), and hook up machine to stationary or other piping.

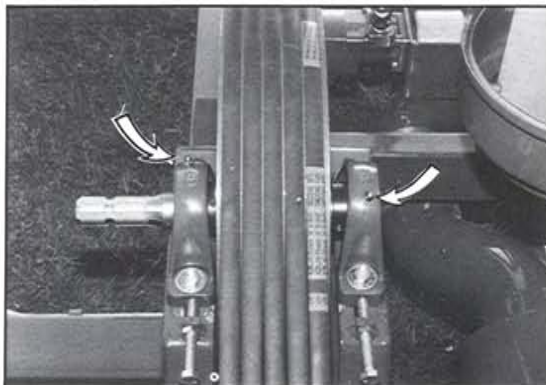
Lubrication

Splined Shaft

The splined shaft bearings should be lubricated *every 10 hours* of machine operation. (see figure 29)

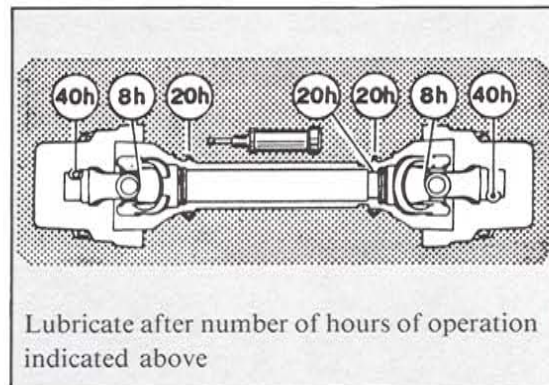
Pto Shaft

Lubrication of the pto-shaft bearings should be done as illustrated in figure 30.



Splined shaft

Figure 29

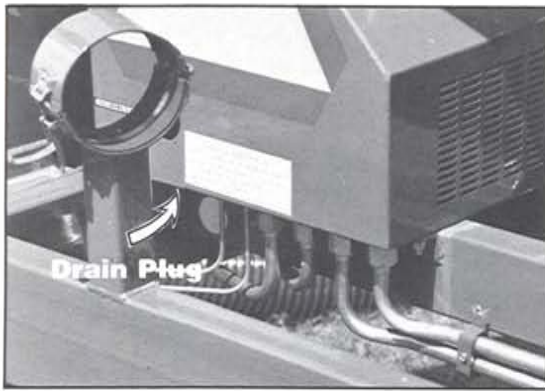


pto shaft

Figure 30

Blower

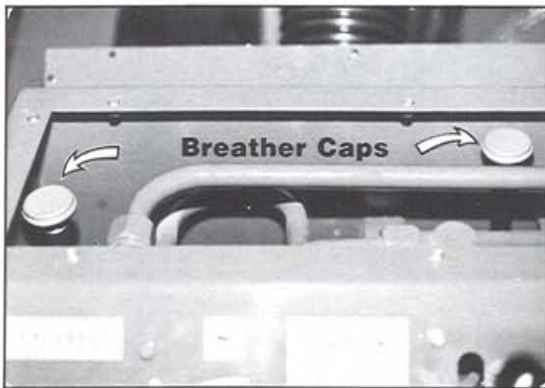
The blower has two oil compartments, one at either end. Check the oil level of *each* compartment after every 10 hours of operation. Oil should be in the center of the oil level glass. When checking the oil level be sure that machine is parked level. (see figure 31)



Model 3000



Model 2950 (no cabinet)



Model 3000 (with cabinet)



Figure 31

To add oil, (see figure 31) remove the cover of the cabinet, (on model 3000) unscrew the breather cap. Open up the cock valve, on the blower side that needs more oil, to vent the oil compartment. **DO NOT OVERFILL.** Too much oil will result in overheating and inadequate lubricating. Close cock valve and screw breather cover back on.

Change the oil every 100 hours of operation or every 6 months whichever comes first.

Drain the oil by removing the oil drain plugs at the bottom of the oil compartments at each end of the blower. Open the cock valves. (see figure 31)

After draining replace the drain plugs. Remove the breather caps and refill the oil compartments until the oil level stabilizes at the center of the level glasses. **DO NOT OVERFILL.**

Oil used in the blower must meet or exceed the requirements of SAE specifications "SE." Recommended is 15W-40 or 10W-40 multigrade oil.

Oil capacity is approximately 1620 cc (55 oz.), or 810 cc (27½ oz.) per compartment.

Check and clean the breather caps every 50 hours or 3 months whichever comes first. They can easily be cleaned by washing with a commercial solvent and drying with compressed air.

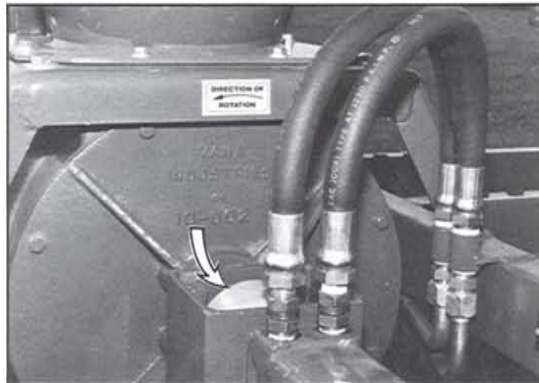
Wheel Bearings

The wheel bearings should be removed, cleaned and replaced with wheel bearing grease every year.

MAINTENANCE

Airlock

Very little maintenance is required to keep your airlock in good operating condition. The chain coupling should be repacked with grease annually. (see figure 32)



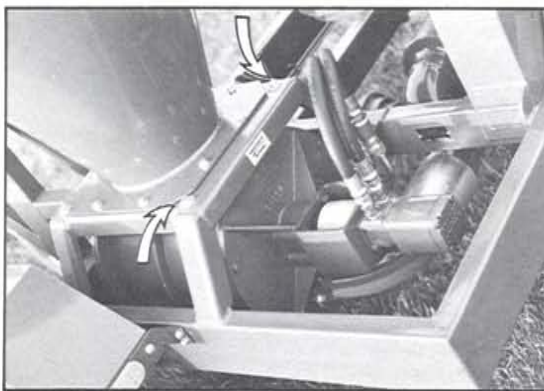
Chain Coupling

Figure 32

Airlock Clearance

For checking the clearance between the airlock tips and the inside of airlock shell, loosen the hydraulic motor. The airlock can now be rotated freely and the clearance can be checked through the inspection door with a feeler gauge. The clearance should not exceed .015 inches. If adjustment of the tips is necessary, the airlock needs to be taken off the machine.

When removing the airlock, disconnect the airlock intake and outlet tubes and the hydraulic hoses leading to the motor. Use a floor jack to support the airlock, loosen the four bolts which support it and lower the airlock carefully. (see figure 33) The airlock can then be pulled from under the machine.



Airlock Support Bolts

Figure 33

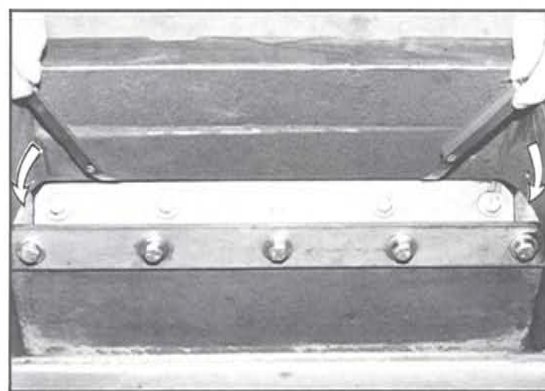


Figure 34

Loosen the airlock tip bolts and place two feeler gauges of .007 inches at either side of the rotor, in between the rotor tips and the housing. Check clearance on either side of the rotor between the tip and the airlock endplates. (see figure 34) Center tip and tighten bolts. Rotate once manually to check for free movement. Repeat procedure for every tip.

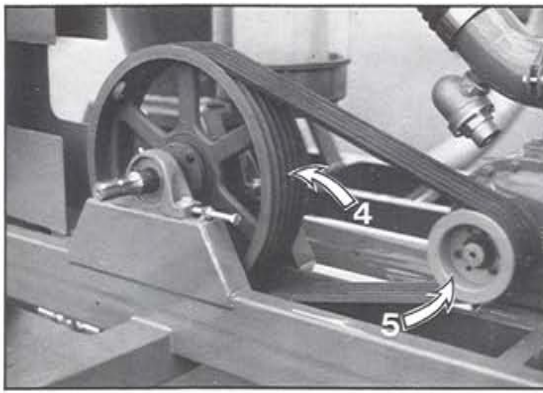


Figure 35

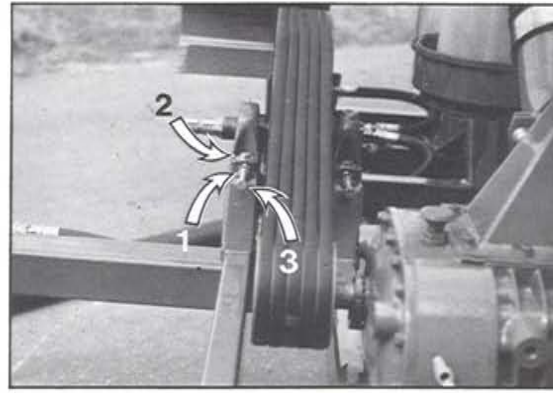


Figure 36

V-Belt Drive

Check the belt drive at regular intervals. When tightening belts, loosen jam nuts¹ and bearing bolts.² Tighten tension bolts³ until belts are properly adjusted. The V-belt drive must be carefully aligned. (see figure 35, figure 36)

Pto driven pulley⁴ and blower pulley⁵ must be parallel to each other and in the same plane within 2 mm (1/16").

Belt tension should be adjusted and belt tightened only enough to prevent slippage. Tighten bearing bolts and jam nuts. Overtightening of the belts leads to heavy bearing loads and unwarranted premature failure.

When belts need replacement always use a matched set.

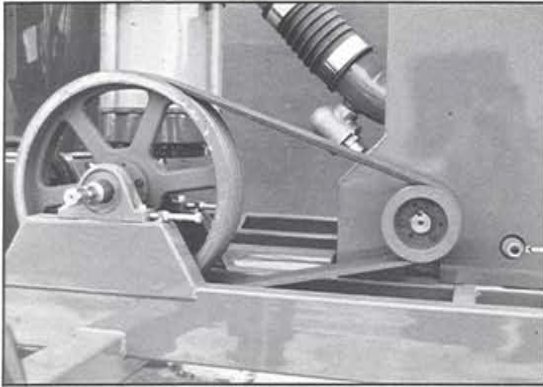


Figure 37

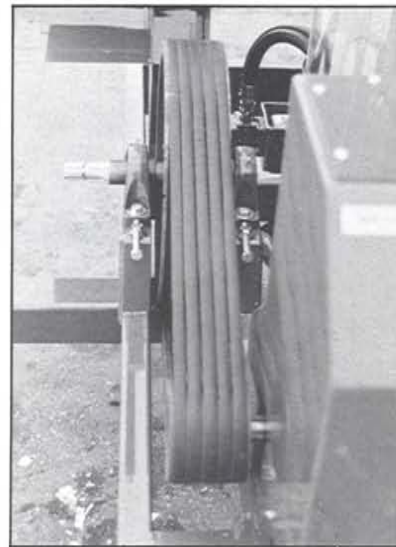


Figure 38

TROUBLE SHOOTING

Problem	Cause	Solution
Low capacity	Tractor pto runs slow Belts are slipping Airlock runs too fast Improper air intake Improper use of nozzle Airleaks intake Airleaks machine Improper piping Filter plugged Airlock tip clearance excessive.	Speed up tractor pto to 1000 RPM. Tighten belts (see page 14). Slow down airlock speed until grain builds up to level of inspection door. Adjust air intake (see start up, page 9). Use straight nozzle when submerging in grain. Use flared end for clean up. Check for worn coupler levers or coupler gaskets. Check flex hose and tubing. Check filter, receiver section, and airlock gaskets. Check pressure and vacuum relief valve. Keep suction lines as short as possible. Minimize bends. Remove bottom cover and clean out filter (see page 8). Adjust airlock tips (see page 14).
Excessive grain damage.	Too much air intake. Pto running too fast. Damaged tubing or flex hose.	Adjust air at intake nozzle. Throttle down tractor. Repair and replace when necessary.
Pulsation	Insufficient air at intake. Improper airlock speed. Pto running too slow Belts are slipping.	Open slide until grain flow becomes even. Adjust airlock speed. Until grain is at the level of the inspection door. (see Start Up, page 9). Increase pto RPM. Tighten belts (see page 14).

TROUBLE SHOOTING

Problem	Cause	Solution
Filter plugs up.	Airlock turning too slow. Airlock not turning at all.	Increase airlock speed, until grain is at the level of the inspection door. (see General Guidelines, page 9) Shift airlock control from FORWARD to REVERSE and back to FORWARD. If the obstruction does not clear up, shut off tractor and machine, open up clean out door and remove the cause of obstruction.
Airlock not turning fast enough.	Flow control valve for airlock speed set too low. Faulty tractor hydraulics.	Reset flow control to increase airlock speed. Use different tractor.
Airlock not turning.	Flow control valve for airlock speed set too low. Tractor hydraulics not properly engaged. Obstruction in airlock.	Reset flow control. Reset tractor hydraulics. Shift airlock control from FORWARD to REVERSE and back to FORWARD. Repeat if obstruction does not clear up. If obstruction does not clear up, shut off tractor and machine, open up clean out door and remove the cause of obstruction.
Hydraulic oil heating up excessively.	Faulty tractor hydraulics. Low oil level.	Use different tractor. Add oil.
Excessive wear flex hose and tubing.	Improper piping. Too much air intake. Pto running too fast	Minimize bends. Adjust air intake nozzle. Throttle down tractor.

IF YOU HAVE OTHER PROBLEMS, CONSULT YOUR LOCAL CONVEYAIR DEALER

ACCESSORIES



Model 2950



Model 3000

Standard

- one 4 or 5" diameter intake nozzle c/w rotary and air intake slide.
- one 4 or 5" diameter — 14 ft. light weight polyethylene hose c/w couplers
- two — 5" diameter — 10 ft. steel flexible hose c/w couplers

Options

- 5" — 4" diameter reducer c/w 5" male and 4" female coupler
- complete line of bin piping and accessories.
- self-contained hydraulics
- electric drive
- gas or diesel engine drive



Air intake slide



Clean up nozzle c/w rotary couplers

SPECIFICATIONS

	MODELS 3000	MODELS 2950
Length	2.77 M (8ft. 10.)	2.77 M (8ft. 10in.)
Width	2.34 M (7ft. 10in.)	2.34 M (7ft. 8in.)
Height (transport)	2.36 M (7ft. 9in.)	2.36 M (7ft. 9in.)
Height (extended boom)	4.14 M (13ft. 7in.)	4 M (13ft.)
Maximum Clearance (under cyclone when loading)	3.60 M (11ft. 10in.)	3.60 M (11ft. 10in.)
Weight	962 kg (2120 lbs.)	907 kg (2000 lbs.)
Tire Size	7.60 x 15	7.60 x 15
Tire Pressure	32 PSI	32 PSI
pto speed	1000 RPM	1000 RPM
pto power	80 - 100 HP	80 - 100 HP
	540 RPM	540 RPM
	30 - 50 HP	30 - 50 HP



Ready for transport

LIMITED WARRANTY

VANA INDUSTRIES LTD. ("Vana") warrants to the buyer that the new Conveyor ("the new machinery") is free from defects in material and workmanship.

This warranty is only effective as to any new machinery, which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by Vana or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with the new machinery, if they have not been manufactured by Vana.

Vana shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with Vana's operator's manual, specifications, or printed instructions.

Written notice shall be given, by registered mail, to Vana within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:

Vana Industries Ltd.
92 De Baets St.
Winnipeg, Manitoba, Canada R2J 3S9

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, Vana shall at its own cost and at its own option either repair or replace, any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labour, parts, transportation, or any other work, unless Vana has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Vana or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether express or implied, and without limiting the generality of the foregoing, excludes all warranties, express or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. Vana disclaims all liability for incidental or consequential damages.

VANA INDUSTRIES LTD.

CONVEYAIR

PNEUMATIC GRAIN HANDLING SYSTEMS

OPERATOR'S MANUAL

IMPORTANT

References to model **2950** also apply to model **3450**

References to model **3000** also apply to model **3500**

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