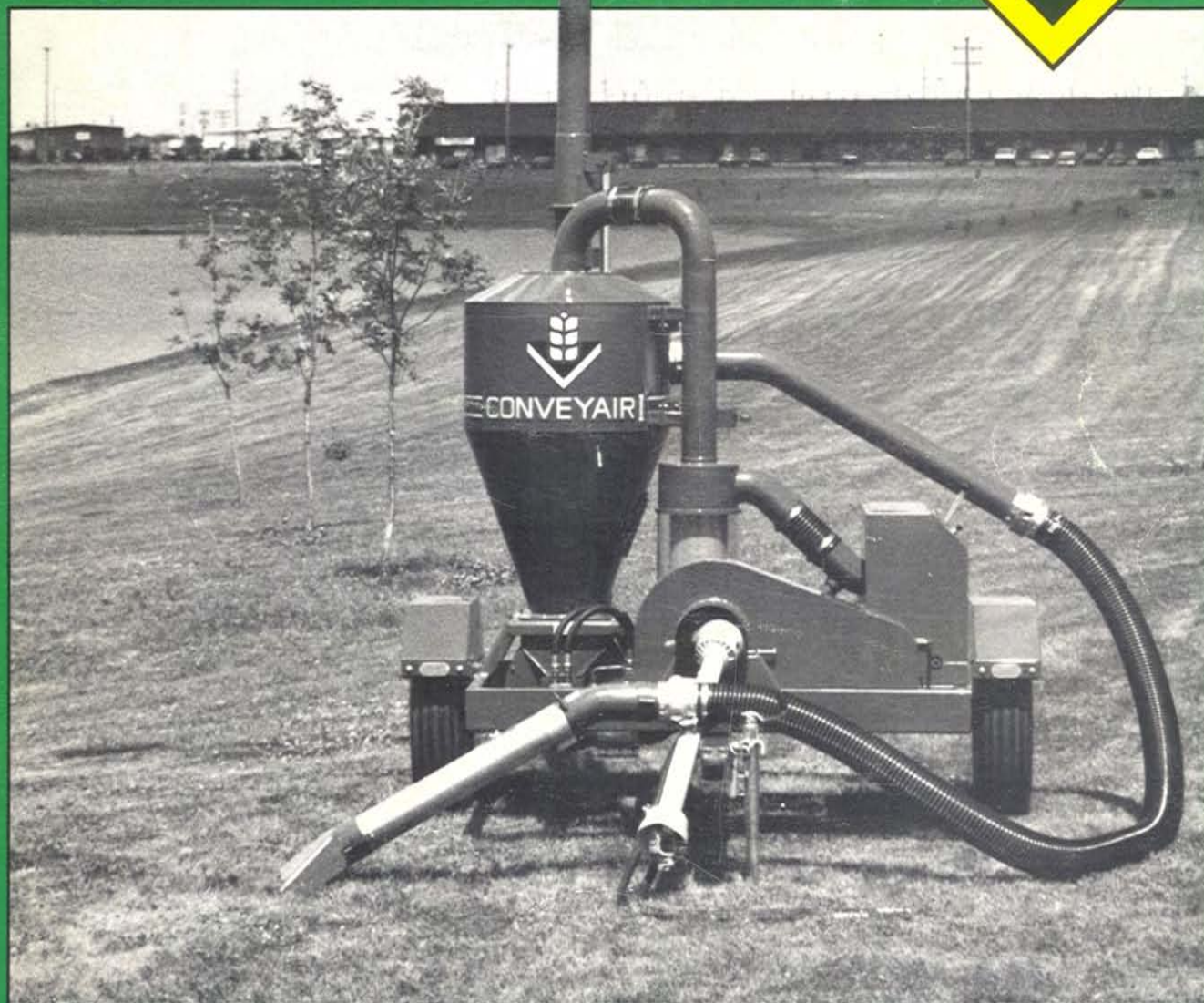


225271

CONVEYAIR I™



Operator's Manual

CONVEYAIR ITM

PNEUMATIC GRAIN HANDLING SYSTEM

OPERATOR'S MANUAL

AUGUST, 1983

PRINTED IN CANADA

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INTRODUCTION

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

Carefully 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. _____

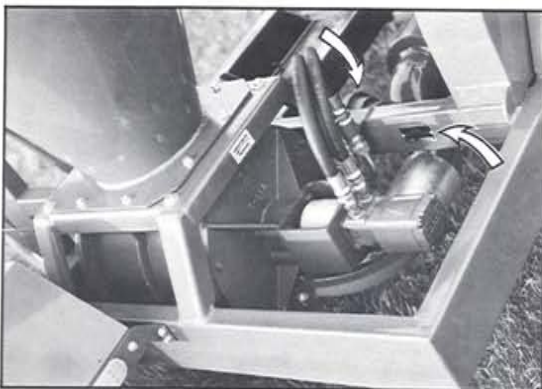


Figure 1

Pressure relief valve
Serial # machine



Figure 2

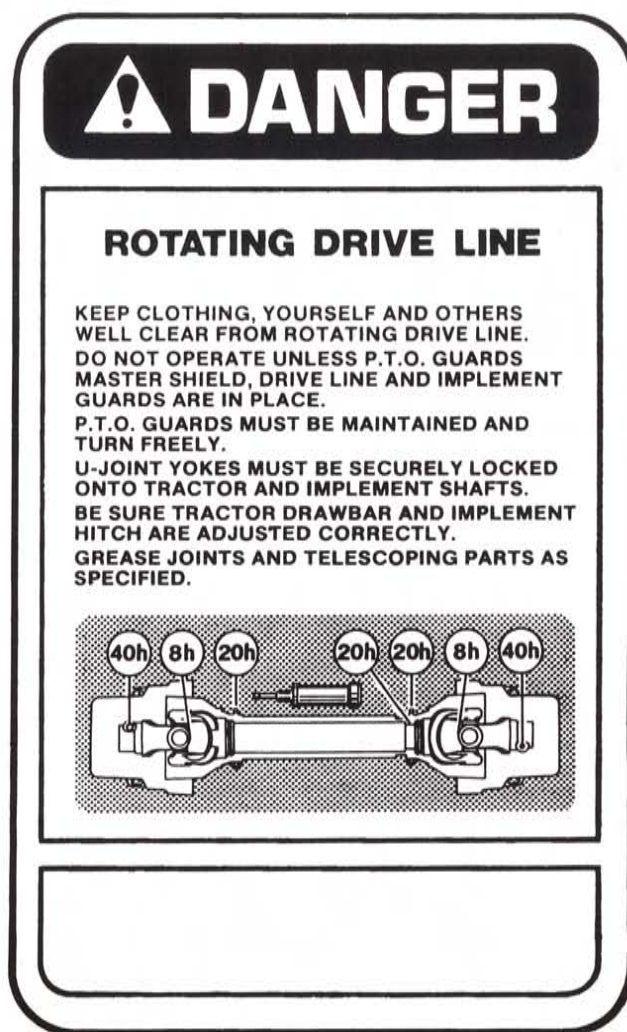
Serial # Blower
Part # Blower
Vacuum relief valve

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 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.



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 operating boom cylinder beware of overhead hydro wires. Maximum clearance when folding is 5.44 metres. (17 feet 10 inches) Maximum clearance when positioned is 4.14 metres. (13 feet 7 inches)
- Never open the receiver section clean-out door while the tractor is running or while the hydraulic hoses are attached to the tractor hydraulics.
- When attaching cyclone to boom always be sure to lock levers in place with cotter pins.

BOOM CYLINDER

UP



•



DOWN

⚠ CAUTION

BEWARE OF OVERHEAD
HYDRO WIRES WHEN
OPERATING BOOM
CYLINDER.

MAX. CLEARANCE WHEN
FOLDING : 5.44M 17'10"

MAX. CLEARANCE WHEN
POSITIONED : 4.14M 13'7".

⚠ CAUTION

**DO NOT OPEN DOOR WHEN
AIRLOCK IS TURNING**

Shut Down

- Stay clear of truck loading boom when activating the boom cylinder to fold 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 3)
- 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.

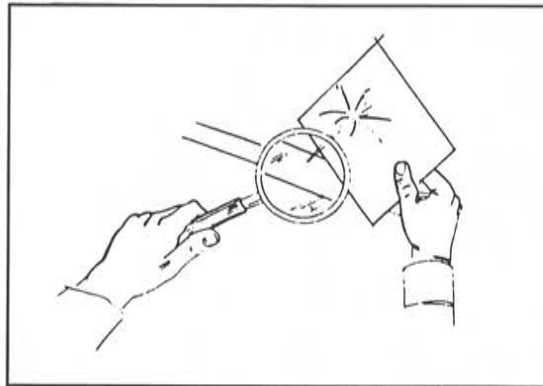


Figure 3

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.

SYSTEMS AND OPERATION

General

When operating the machine the pto-shaft should be in line with the drawbar of the Conveyair 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 4)

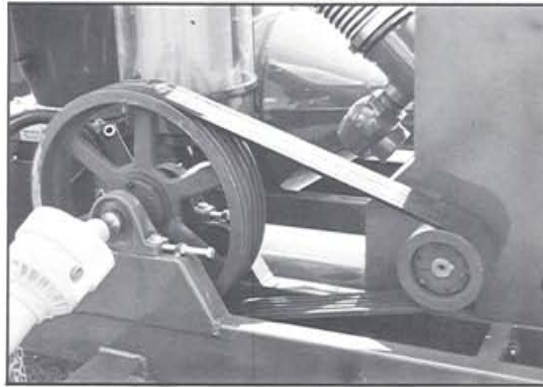


Figure 4

Another cause for slippage of the belts can be a sudden engagement of the pto-shaft.

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.

Hydraulics

When engaging the hydraulics always check whether the airlock turns the right way. When the airlock control is in the — FORWARD — position (see figure 5) the airlock must turn counterclockwise as the arrow above the airlock indicates. (see figure 6)

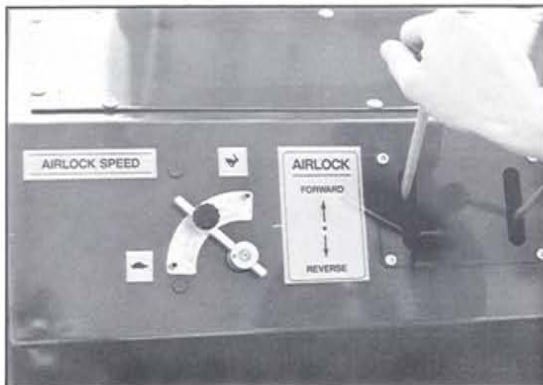


Figure 5

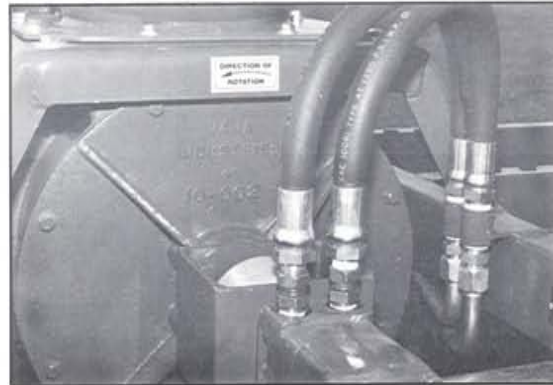


Figure 6

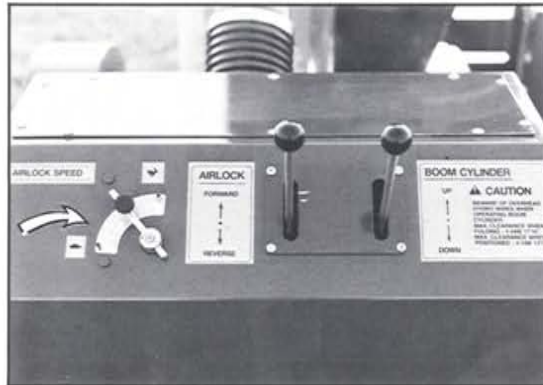
If the airlock turns the opposite way reverse the hydraulic lines going to the tractor.

When the hydraulics function as described above, the hydraulic motor is protected against overload by the pressure relief of the flow control valve.

The pressure relief at the flow control valve is set at 1000 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

Figure 7

The boom cylinder is activated and the truck unloading kit unfolded when the cylinder control is pushed in the — UP — position. (see figure 8)

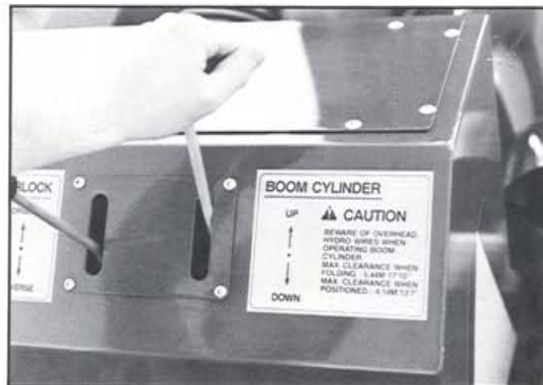


Figure 8

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.

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.

Wheat	60-65 lbs/bushel	= Airlock speed 45-55 RPM
Barley	45-50 lbs/bushel	= Airlock speed 55-65 RPM

Blower (Air Pump)

The Conveyair I is equipped with a Schwitzer blower Model 4512. The tractor pto powers the V-belts that drive the blower. Under normal conditions 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.

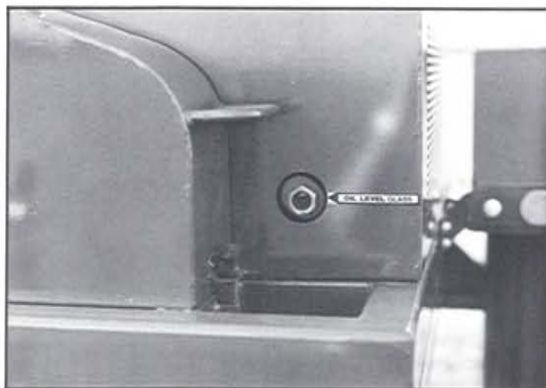


Figure 9

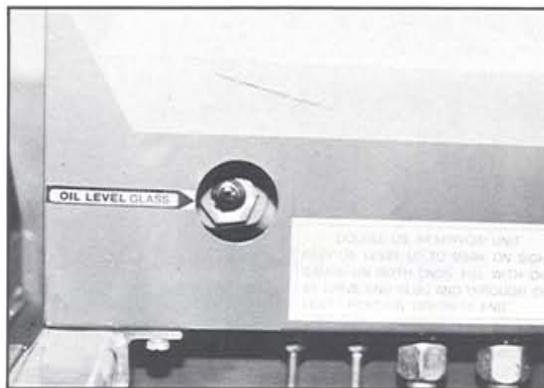


Figure 10

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 11, figure 12)

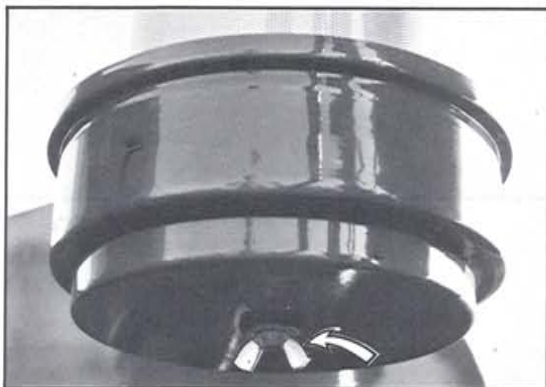


Figure 11
Wingnut



Figure 12
Filter Cover

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 grain with your Conveyair I, 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 normal operation 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 13)



Grain Level

Figure 13

An observed build up of grain inside the receiver section is an indication that the airlock can run a little faster and vice versa. When the level of grain remains at the height of the inspection door, the grain discharge is balanced with the grain intake.

Applications

Your Conveyair I can be used in many ways as a means to convey grain 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

When using the truck loading kit, detach clamp (see figure 14) and lift boom out of it's 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 it's counter on the boom elbow. (see figure 16)



Figure 14
Clamp



Figure 15
Bottom Elbow

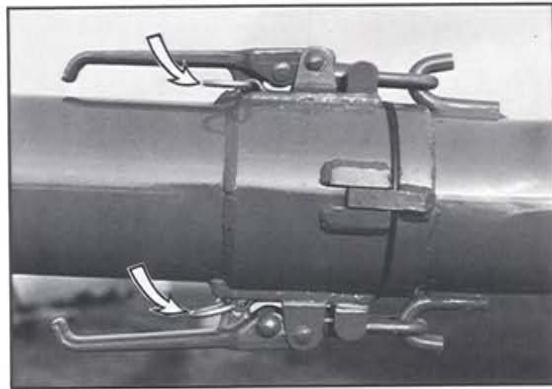


Figure 16
Cotter Pins

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 16)

The boom of the truck loading kit can rotate 180 degrees and be locked in position every 15 degrees. (see figure 17, figure 18)



Figure 17

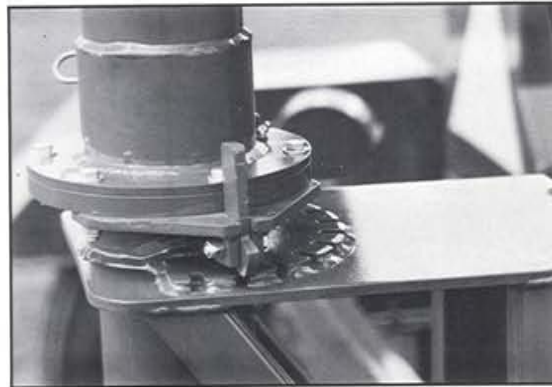


Figure 18

Bins

When discharging into bins take off the bottom elbow behind the airlock and hookup machine to stationary or other piping. (see figure 15)

Suction

When conveying grain from flat storage or bin, run the tractor pto at 1000 RPM, open up the air intake, submerge the nozzle to the grain and close air intake until machine starts to surge. Gradually open air intake until the Conveyair I runs smoothly.

LUBRICATION AND MAINTENANCE

Splined Shaft

The splined shaft bearings should be lubricated every 10 hours of machine operation. (see figure 19)

PTO Shaft

Lubrication of the pto-shaft bearings should be done as illustrated in figure 20.

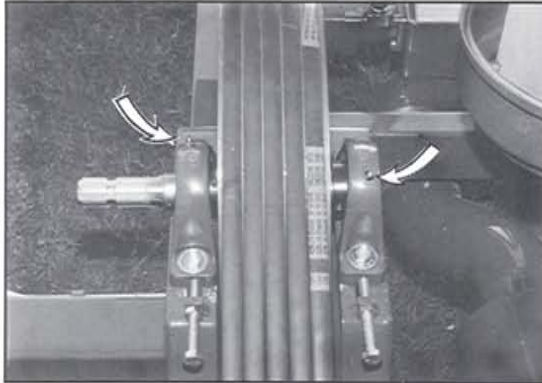


Figure 19

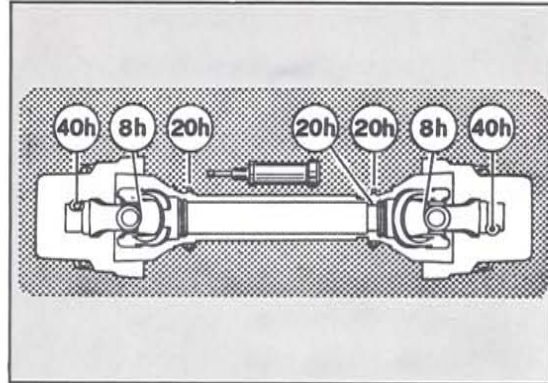


Figure 20

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 21, figure 22)

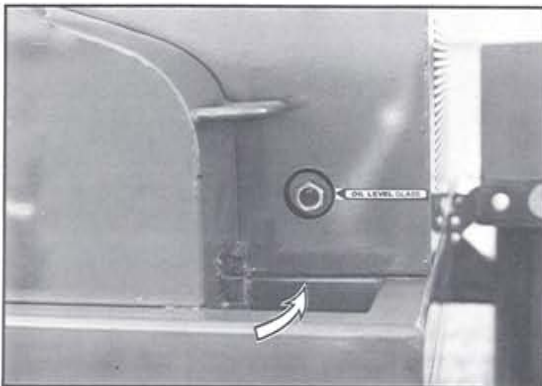


Figure 21
Drain Plug

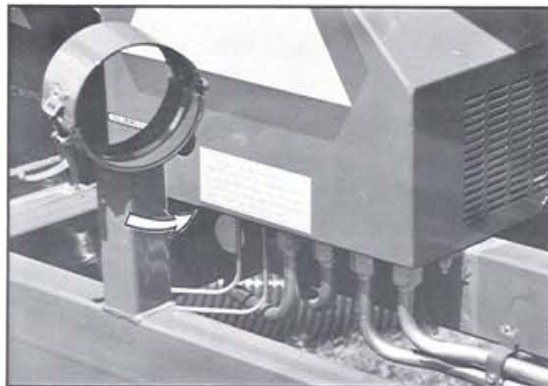


Figure 22
Drain Plug

When adding oil, remove the cover of the cabinet and unscrew the breather cap. (see figure 23) Open up the cock valve on the blower side that needs more oil to vent the oil compartment. (see figure 24) **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. (see figure 21, figure 22) Open the cock valves.

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.**

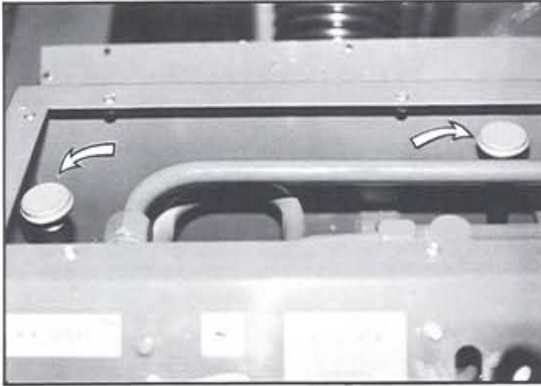


Figure 23
Breather Caps

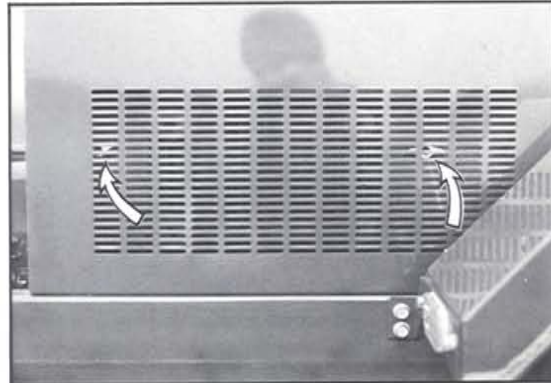


Figure 24
Cock Valves

Oil used in the blower must meet or exceed the requirements of SAE specification "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.

V-Belt Drive

Check the belt drive at regular intervals. When tightening belts, loosen jam nuts and bearing bolts. Tighten tension bolts until belts are properly adjusted. The V-belt drive must be carefully aligned.

Pto driven pulley and blower pulley 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 unwarrantable premature failure.

When belts need replacement always use a matched set.

Wheel Bearings

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

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 25)

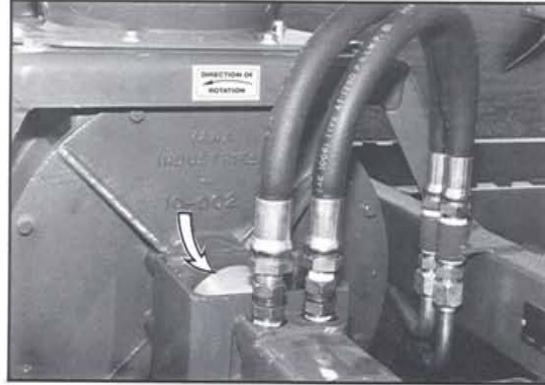


Figure 25
Chain Coupling

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 .012 inches. If adjustment of the tips is necessary, the airlock needs to be taken off of 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 26) The airlock can then be pulled from under the machine.

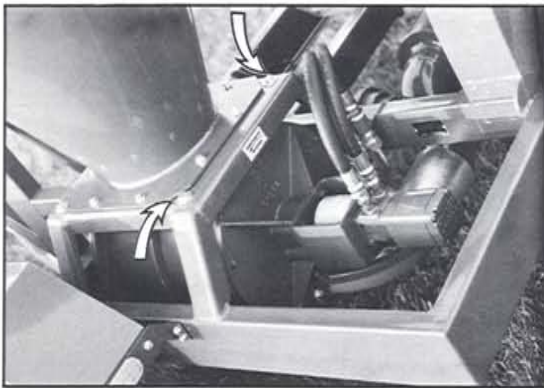


Figure 26
Airlock Support Bolts

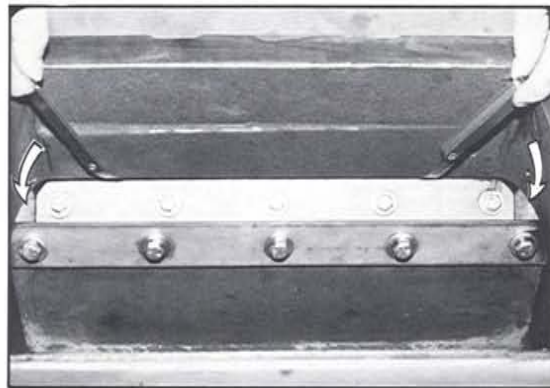


Figure 27

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 27) Center tip and tighten bolts. Rotate once manually to check for free movement. Repeat procedure for every tip.

TROUBLE SHOOTING

Problem	Cause	Solution
Low capacity	Tractor pto runs slow	Speed up tractor pto to 1000 RPM.
	Belts are slipping	Tighten belts (see page 12).
	Improper air intake	Adjust air intake (see page 10).
	Improper use of nozzle	Use straight nozzle when submerging in grain. Use flared end for clean up.
	Airleaks intake	Check for worn coupler levers or coupler gaskets. Check flex hose and tubing.
	Airleaks machine	Check filter, receiver section, and airlock gaskets. Check pressure and vacuum relief valve.
	Improper piping	Keep suction lines as short as possible. Minimize bends.
	Filter plugged	Remove bottom cover and clean out filter (see page 8).
Excessive grain damage.	Airlock tip clearance excessive.	Adjust airlock tips (see page 13).
	Too much air intake.	Adjust air at intake nozzle.
	Pto running too fast	Throttle down tractor.
Pulsation	Damaged tubing of flex hose.	Repair and replace when necessary.
	Insufficient air at intake.	Open slide until grain flow becomes even.
	Pto running too slow	Increase pto RPM.
	Belts are slipping.	Tighten belts (see page 12).

Problem	Cause	Solution
Filter plugs up.	Airlock turning too slow. Airlock not turning at all. Airlock overloaded.	Increase airlock speed. Shift airlock control from FORWARD to REVERSE and back to FORWARD. If the obstruction does not clear up, shut off the tractor and machine, open up clean out door and remove the cause for obstruction. Increase airlock speed and slow down tractor pto.
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.	Reset flow control. Reset tractor hydraulics.
	Obstruction in airlock.	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 for obstruction.
Hydraulic oil heating up excessively.	Faulty tractor hydraulic.	Use different tractor.
Excessive wear of 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 I DEALER.

ACCESSORIES

Standard

- 5'' diameter intake nozzle c/w rotary and air intake slide (see figure 29, figure 30)
- 5'' diameter quick disconnect flare
- 14 ft. - 5'' diameter light weight polyethylene hose c/w couplers (see figure 28)
- 2 - 10 ft. - 5'' diameter steel flexible hose c/w couplers



Figure 28



Figure 29

Options

- 5'' - 4'' diameter reducer c/w 5'' male and 4'' female coupler
- 4'' diameter intake nozzle c/w rotary and air intake slide (figure 31)
- 4'' diameter quick disconnect flare
- 14 ft. - 4'' diameter light weight polyethylene hose c/w couplers
- 4'' diameter - 14 ga steel tubing
- 5'' diameter - 14 ga steel tubing
- 4'' Male & Female Couplers
- 5'' Male & Female Couplers



Figure 30



Figure 31

4'' Intake Nozzle
5'' Intake Nozzle

SPECIFICATIONS

Length	2.77 M	(8 ft. 10 in.)
Width	2.34 M	(7 ft. 8 in.)
Height (transport)	2.36 M	(7 ft. 9 in.)
Height (extended boom)	4.14 M	(13 ft. 7 in.)
Maximum Clearance (under cyclone when loading)	3.60 M	(11 ft. 10 in.)

Weight	2120 lbs
Tire Size	7.60 x 15
Tire Pressure	32 psi
PTO Speed	1000 RPM
PTO Power	80 - 100 HP



WARRANTY

VANA INDUSTRIES LTD. ("Vana") warrants to the buyer that the new Conveyor I ("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 liability for repairs resulting from misuse, neglect, abuse, accident or improper application or installation of parts not completed in accordance with Vana's operator's manual, specifications, or printed instructions.

Written notice shall be given 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
Registered Mail

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.
WINNIPEG, MANITOBA, CANADA