

WALINGA®



OPERATOR'S & PARTS MANUAL MODEL 2614D

Walinga Inc.

Pneumatic Conveying System

Warranty Terms

Walinga Inc. is committed to providing a quality product that will meet or exceed your expectations for many years to come. Our warranty terms and our warranty claim process has been designed to ensure that each warranty claim will be resolved in an orderly, fair and timely manner.

The Warranty

Walinga Inc. ("Walinga") warrants that all new pneumatic products sold by Walinga Inc. will be free from defects in material and workmanship (the "Walinga Warranty").

Warranty Period

The warranty period for the Walinga Warranty shall expire on the date that is the earlier of: two (2) years after the date of delivery to the original customer; or upon the expiration of five hundred (500) hours of operation; whichever date comes first.

Limitations of and exclusions from the Walinga Warranty

- The Walinga Warranty applies to material and workmanship only.
- With respect to any component parts that are supplied or manufactured by others, the warranty coverage on such component parts will be strictly limited to the warranties of the manufacturers of such component parts.
- The Walinga Warranty shall only be for the benefit of the original purchaser of the pneumatic products.
- A Walinga Warranty may be transferable by the original purchaser to a third party for the balance of the warranty period then remaining, provided that Walinga consents in writing to such transfer of warranty.
- The Walinga Warranty is conditional upon proper storage, installation, use, maintenance, operation and compliance with any applicable recommendations of Walinga.

Warranty Claim Procedure

Should you encounter any difficulties with your unit within its warranty period, please contact your local Walinga dealer or sales representative, your local Walinga Service department or Walinga's Warranty Department to submit a warranty claim application.

To speak with a Walinga Warranty Coordinator, contact:

- Canada 1-888-WALINGA (ext 258)
International +1-519-824-8520 (ext 258)
Email – warranty.canada@walinga.com
- USA 1-800-466-1197 (ext 8)
Email – warranty.usa@walinga.com
- Australia 07-4634-7344
Email – mail@customvac.com.au

Required Warranty Claim information

The following information must be provided to Walinga in order for us to properly process and consider your warranty application:

- Customer name and contact information (email if available).
- The equipment serial number and/or Vehicle Identification Number (if applicable).
- Date of claimed failure.
- Equipment hours of operation.
- Details, description and photos (upon request) of the claimed failure and the corrective repairs attempted.

Warranty Conditions

- **Equipment must be registered within 30 days of being received by the buyer. It will be within the sole and unfettered discretion of Walinga as to whether it will honour its warranty on non-registered equipment.**

Warranty Conditions (continued)

- The buyer is responsible for promptly notifying Walinga of any defects to the equipment. The buyer is also responsible for making the equipment available to Walinga or its authorized repair facility for evaluation and repair.
- Prior to making any repairs or parts replacements, a warranty application and any estimated associated costs must be approved with the issuance of a claim number by an authorized Walinga representative. Undertaking any work prior to receiving warranty authorization may result in a partial or complete loss of warranty coverage.
- At Walinga's discretion, warranty repairs may be authorized to be completed at a repair facility convenient to the buyer. In such situations the estimated labour time must be approved by Walinga prior to undertaking any work. Labour hours will be reimbursed at the facilities posted hourly labour rate.
- At Walinga's request, parts in question must be returned to the nearest Walinga service facility for evaluation. In such situations a Returned Goods Authorization (RGA) number will be provided to the buyer. The returning shipment must be clearly labeled with the assigned RGA number and include a copy of the RGA form. Unless otherwise arranged, these parts are to be returned to Walinga within 30 days to ensure timely processing of your warranty claim. Failure to return such parts may result in partial or complete loss of warranty coverage.
- Replacement parts provided under warranty are covered for the remainder of the original equipment warranty period.
- Walinga reserves the right to use new, remanufactured or refurbished components when performing warranty repairs and replacements.
- Walinga is entitled to a reasonable amount of time and a reasonable number of attempts to assess the claim, diagnose the problem, and perform any necessary repairs.
- The warranty offered on used or refurbished equipment is limited to that specified on the purchase contract. Where a warranty period has not been stipulated on the purchase contract., and where such equipment is "used", then such equipment is considered by Walinga to be sold "as is, where is" without the Walinga Warranty. Where such equipment is refurbished, then the Walinga Warranty shall apply.

Without limitation, Walinga reserves the right to reject a warranty claim or for any one or more of the following reasons:

- The warranty claim information provided is insufficient.
- The product evaluation does not substantiate the claim.
- The unit has been operated above and beyond its capacity or not maintained or serviced properly, resulting in damages incurred to major components.
- If the unit was equipped with a factory installed hour meter which has been disconnected, altered or inoperative for an extended period of time; with the result being that the equipment's operating hours cannot be verified.
- It is apparent that the operator's manuals have not been followed.
- The equipment is not registered.

Without limitation, Walinga's Warranty does not cover:

- Damage or deterioration due to lack of reasonable care or maintenance.
- Damage caused or affected by unapproved modifications to the equipment.
- Damage caused by negligence or misuse of the equipment.
- Damage caused by using the equipment for purposes for which it was not designed or intended.

Walinga's liability under this warranty, whether in contract or tort, is limited to the repair, replacement or adjustment of defective materials and workmanship. In no event will Walinga be responsible for any direct, indirect, loss of time, incidental or consequential expenses including, but not limited to, equipment rental expenses, towing, downtime, inconvenience, or any losses resulting from the inability to use the equipment. Further, Walinga shall not be liable for any damages or inconvenience caused by any delay in the supply or delivery of any equipment or component parts thereof.

The selling Dealer/Sales Person makes no warranty of its own and has no authority to make any representation or promise on behalf of Walinga, or to modify the terms or limitations of the Walinga Warranty in any way.

Punitive, exemplary or multiple damages may not be recovered unless applicable law prohibits their disclaimer.

Warranty related claims may not be brought forward as a class representative, a private attorney general, a member of a class of claimants or in any other representative capacity.

The Walinga Warranty and all questions regarding its enforceability and interpretation are governed by the law of the country, state or province in which you purchased your Walinga equipment. The laws of some jurisdictions limit or do not allow the disclaimer of consequential damages. If the laws of such a jurisdiction apply to any claim against Walinga, the limitations and disclaimers contained here shall be to the greatest extent permitted by law.

Dear Customer,

Thank you for choosing WALINGA PNEUMATIC CONVEYING SYSTEMS. For your convenience, should you require any information related to Parts, Service or Technical Engineering, please contact one of the following Walinga Personnel in Guelph at 1-888 925-4642 unless noted

TECHNICAL - ENGINEERING:

Duane Swaving 226-979-8227 duane.swaving@walinga.com

Ken Swaving 519 787-8227 (ext:100) ks@walinga.com

WARRANTY CLAIMS:

Canada: Gary Nijenhuis (ext:258) gary.nijenhuis@walinga.com

USA: Jonathan Medemblik (800) 466-1197 (ext 8) jtm@walinga.com

SERVICE MANAGER:

Andy Nijenhuis (519) 763-7000 (ext:260) andy@walinga.com

SALES MANAGER:

Canada: Tom Linde (519) 787-8227 (ext 5) thl@walinga.com

USA: Peter Kingma (800) 466-1197 jpk@walinga.com

ORIGINAL PARTS SALES:

Ontario and Eastern Canada:

Jack Lodder (ext: 224) jel@walinga.com

Parts Department Fax: (519) 824-0367

Manitoba and Western Canada:

Chad Yeo 204-745-2951 chad.yeo@walinga.com

USA: John VanMiddlekoop (800) 466-1197 (ext 3) jym@walinga.com

CORPORATE HEAD OFFICE:

5656 Highway 6N

RR#5, Guelph, Ontario, N1H 6J2

PHONE: (888) 925-4642 FAX: (519) 824-5651

www.walinga.com

AGRI-VAC MANUFACTURING FACILITY:

938 Glengarry Cres., Fergus, Ontario Canada N1M 2W7

Tel: (519) 787-8227 Fax: (519) 787-8210

DISTRIBUTION AND SERVICE CENTRES:

5656 Highway 6N, Guelph, Ontario Canada, N1H 6J2

Tel: (888) 925-4642 FAX: (519) 824-5651

1190 Electric Ave. Wayland , MI.USA 49348

Tel: (800) 466-1197 Fax: (616) 877-3474

70 3rd Ave. N.E. Box 1790 Carman, Manitoba Canada R0G 0J0

Tel: (204) 745-2951 Fax: (204) 745-6309

24 Molloy Street, Toowoomba, Queensland Australia 4350

Tel: 07-4634-7344 mail@customvac.com.au

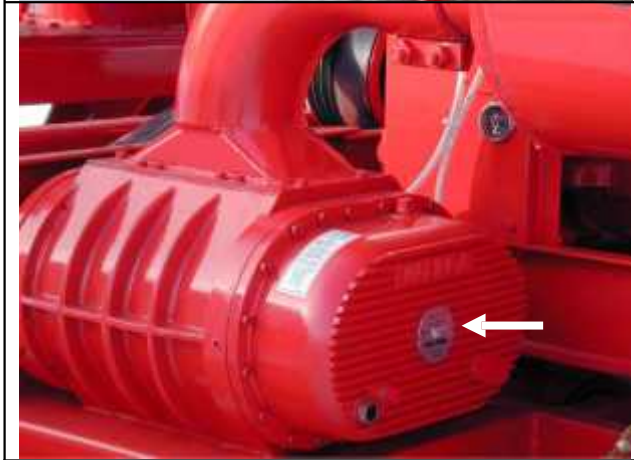
SERIAL NUMBER LOCATION

Always give your dealer the Serial Number of your Walinga unit when ordering parts or requesting service or other information.

The Serial Number plates are located where indicated. Please mark the number in the space provided for easy reference.



Machine Serial Number



Serial Number Location for Blowers

Driverside

Curbside

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1 INTRODUCTION

Congratulations on your choice of a Walinga Chem-Veyor to complement your operation. This equipment has been designed and manufactured to meet the needs of the discriminating buyer for the efficient moving of plastics, resins, and powders.

Safe, efficient and trouble free operation of your Chem-Veyor requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.



Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Walinga dealer if you need assistance, information or additional copies of the manual. Contact your dealer for a complete listing of parts.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means **ATTENTION!**
BECOME ALERT! YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the Walinga Chem-Veyor and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons : **Accidents Disable and Kill**
 Accidents Cost
 Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER, WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation, that if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

SAFETY

YOU are responsible for the **SAFE** operation and maintenance of your Walinga Chem-Veyor. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Chem-Veyor be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Chem-Veyor. Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended procedures and follows all the safety precautions. Remember, most accidents can be prevented. Do not risk injury or death.

2.1 GENERAL SAFETY

1. Read and understand the Operators Manual and all safety signs before operating, maintaining, adjusting or unplugging the Chem-Veyor.
2. Only trained competent persons shall operate the Chem-Veyor. An untrained operator is not qualified to operate the machine.
3. Have a first-aid kit available for use should the need arise and know how to use it.
4. Have a fire extinguisher available for use should the need arise and know how to use it.
5. Do not allow riders.
6. Wear appropriate protective gear. This list includes but is not limited to:
 - A hard hat
 - Protective shoes with slip resistant soles
 - Protective goggles
 - Heavy Gloves
 - Wet weather gear
 - Hearing protection



7. Before servicing, adjusting, repairing or maintaining unit, ensure that unit power source is completely shut down and can not start up.
8. Wear appropriate hearing protection when operating for long periods of time.
9. Know where overhead electrical lines are located and stay away from them. Electrocutation can occur without direct contact.
10. Review safety related items annually with all personnel who will be operating or maintaining the Chem-Veyor.



2.5 TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.

2.6 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your Distributor or the factory.

How to Install Safety Signs

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C)
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully smooth the remaining portion of the sign in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of a sign backing paper.

3 SAFETY DECAL LOCATIONS

The types of safety signs and locations on the equipment are shown on the following pages. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, of particular function related to that area, which requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



Fig. 1 SAFETY DECALS

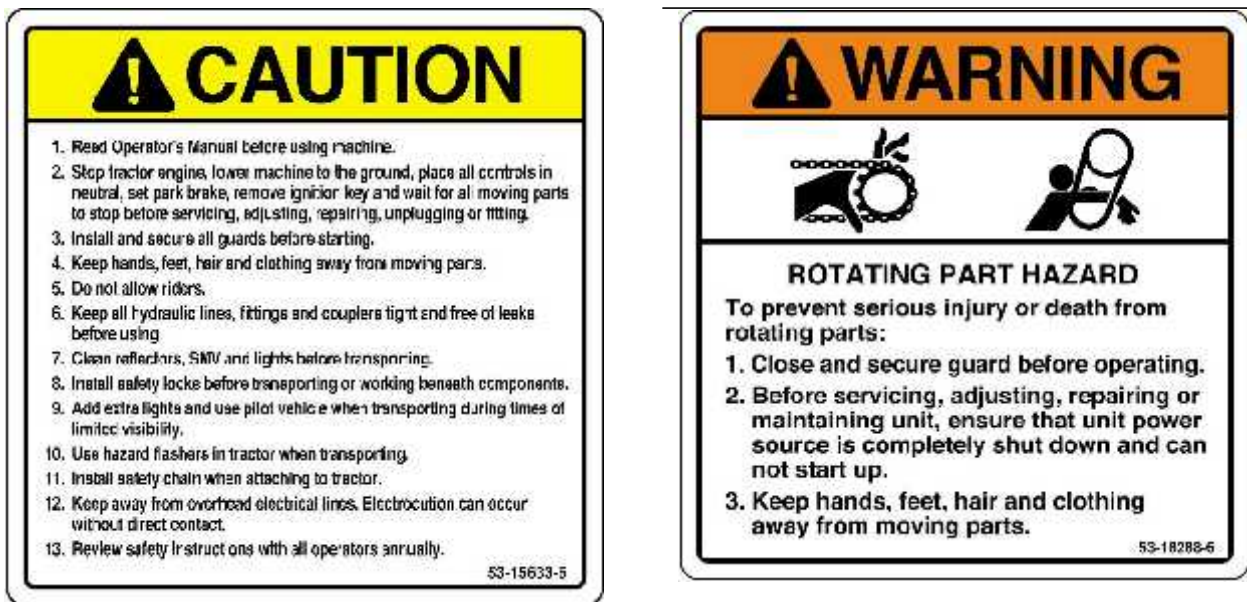


Fig. 2 TYPICAL SAFETY DECAL LOCATIONS

TYPICAL SAFETY DECALS



Fig. 3 TYPICAL SAFETY DECALS

REMEMBER - If safety signs have been damaged, removed, become illegible or parts are replaced without signs, new signs must be applied. New signs are available from your authorized dealer or factory direct.

4 OPERATION



OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before using.
2. Before servicing, adjusting, repairing or maintaining unit, ensure that unit power source is completely shut down and can not start up.
3. Do not operate when any guards are damaged or removed. Install and secure guards before starting.
4. Keep hands, feet, clothing and hair away from all moving and/or rotating parts.
5. Do not allow riders on the Chem-Veyor.
6. Clear the area of all bystanders, especially small children, before starting
7. Clean reflectors and lights before transporting.
8. Wear appropriate ear protection when operating for long periods of time.
9. Do not place intake nozzle near feet when standing on the top of material.
10. Review safety items with all personnel annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Walinga Chem-Veyor is specifically designed to vacuum up plastics, resins, and powders and move it in a stream of pressurized air. A high capacity air pump moves the air through the machine creating a vacuum on the intake side and pressure on the outlet side. Be familiar with all operating and safety procedures before starting.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your Chem-Veyor will provide many years of trouble-free service.

It is the responsibility of the owner and operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders, and the area around the worksite. Untrained operators are not qualified to operate the machine.

4.2 MACHINE COMPONENTS

The air pumps or blowers are the key components in the Chem-Veyor and are driven by the diesel engine through a belt drive system. One blower is used for vacuum and one for pressure, this reduces the conveying temperature and eliminates the possibility of contamination. The vacuum blower is connected to the vacuum delivery lines and draws the commodity into a receiver tank. Once this tank is full a valve is switched, and the pressure blower discharges the tank into the pressure delivery lines.

1. Fuel Tank
2. Hydraulic Oil Tank
3. Vacuum Blower Exhaust Muffler
4. Vacuum Blower
5. Vacuum Muffler
6. Drive Enclosure
7. Vacuum Blower Safety Filter
8. Discharge Manifold
9. Inlet Manifold
10. Vacuum Relief Valves(2)



Fig. 4 MACHINE COMPONENTS

4.2 MACHINE COMPONENTS (CONTINUED)

1. Engine controls
2. Belt Cover
3. Control Timer
4. Hydraulic Solenoid
5. Hydraulic Pressure Relief Valve
6. Flow and Pressure Adjustment Valves
7. Pressure Blower
8. Serial Plate
9. Pressure Blower Inlet Muffler
10. Pressure Relief Valves(2)
11. Battery Box
12. Pressure Blower Inlet Filter
13. Butterfly Valve



Fig. 5 MACHINE COMPONENTS

4.3 OPERATING INSTRUCTIONS

1. UNIT POSITION:

- a. Position unit parallel to the suction point approximately 6'-8' away.

2. INSPECTION:

- a. Check all fluid levels: Engine and blowers.
- b. Inspect all flap seals. Check for rips, tears, and general deterioration (replace as needed).
- c. When switching conveying commodities, inspect the tank filters (replace as needed).
- d. Check all conveying lines for leaks or wear.
- e. Inspect fuel-water separator filter (replace as needed).

3. WARM UP:

- a. Ensure clutch is disengaged.
- b. Start engine.
 - i. Do not depress starter for longer than 30 seconds.
- c. Run at an idle (1050 rpm) until the temperature gauge reads between 82-94F°.
 - i. Do not run engine over 1200 rpm until desired temp is achieved.
 - ii. Do not engage clutch until desired temp is achieved.
- d. Make sure the railcar and/or tanker is vented.
- e. Attach receiving and discharge hoses.
- f. Check all the gauges to ensure all systems are operating properly. Refer to the engine manual supplied for proper operating levels.
- g. Open the valve on top of the vacuum pump.
 - i. This allows the clutch to be engaged while the lines are attached to the car.
- h. Engage the clutch slowly.
- i. Allow the blowers to turn at an idle for +/- 5 minutes.
 - i. This allows the blowers to warm up.

4. OPERATION:

- a. Bring the engine rpm to 2200.
- b. Open the gate on rail car in order to introduce product into the air stream
- c. Check levels in the tanks using the sight glasses.
 - i. Ensure one tank is not ahead of the other.
 - ii. Product should come to the top of the upper sight glass before tanks switch.
 - iii. Adjust the electronic timing control as needed.

5. SHUT DOWN:

- a. Open the vacuum bypass lever to stop the flow of product from the rail car.
- b. Continue blowing product into the truck/vessel until both receiving tanks are empty.
- c. Decrease rpm to an idle (1050 rpm).
- d. Disengage clutch.
- e. Allow engine to idle for +/- 5 minutes in order to cool turbo
- f. Shut down engine and disconnect all conveying lines.

5 SERVICE RECORD

See Lubrication and Maintenance sections for details of service.
Copy this page to continue record.

Hour reading at time of service:										
Serviced By:										
Break-In (100 hours)										
Change blower oil.										
Check belt tension and alignment.										
12 hours or daily										
Check belt tension and alignment.										
Check blower oil level.										
Check engine oil level.										
Check hydraulic oil level.										
40 Hours										
Lubricate idler arms.										
Lubricate axle bushings.										
Lubricate outboard bearings.										
100 Hours or During Engine Oil Change										
Change blower oil.										
250 Hours or Annually										
Check Head Plate Vent.										
Check vacuum and pressure relief valves.										
Check all seals.										
Check blower filters.										
Check vacuum and pressure gauges.										
Check tank check valves.										
1000 Hours or Semi Annually										
Check hydraulic oil and filter condition.										
Check butterfly valves.										
Check belt quality and change if necessary.										

**For Blower Oil Use : WALINGA SUPER DUTY BLOWER OIL Part #98-13813-5 (4L)
For engine and clutch maintenance please refer to the separate manual provided.**

6 TROUBLE SHOOTING

The Walinga Chem-Veyor is a high capacity air pump that creates a vacuum for picking up material, and supplies pressurized air for moving material. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local Walinga dealer. Before you call, please have this Operator's Manual and the serial number of your Chem-Veyor ready.

PROBLEM	CAUSE	SOLUTION
Slow capacity on the suction side.	Receiver tank full, filter plugged.	Empty the receiver tank, or purge the filter.
	Leaking hoses or couplings.	Repair or replace.
	Butterfly valves not moving.	Check hydraulic pressure, it should be around 500 PSI. Check timer adjustment, and electric control.
	In tank filters plugged.	Replace wet filters. Purge filters.
	Rubber check valves not sealing.	Check the rubber flaps for rips or improper sealing. Replace if necessary.
	Improper blower speed.	Check belt tension. Engine RPM.
	Relief Valve.	Plugged discharge pipe. Check or replace.
	Timer control faulty.	Replace.
Slow capacity on the discharge side.	Receiver tank full, filter plugged	Close the regulator until product flows, then open and adjust to proper discharge pressure. NOTE: discharge pressure should be no lower than 5 psi to maintain clean filters, and no higher than 8 psi to maintain air temperatures below 180 Deg. F
	Butterfly valves not moving	Check hydraulic pressure, it should be around 500 psi. Check timer adjustment, and electric control.
	Rubber check valves not sealing	Check the rubber flaps for rips or improper sealing. Replace if necessary.

6 TROUBLE SHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
Slow capacity on the discharge side. (continued)	Improper blower speed.	Check belt tension. Engine RPM.
	Relief Valve.	Plugged discharge pipe. Check or replace.
	Timer control faulty.	Replace
Pulsation or erratic conveying.	Not enough air flow.	Control product flow, adjust air intake by the suction nozzle
		Open vent on railcar
Vacuum blower overheating.	Low oil level.	Add oil as required, check for oil leaks-repair.
	Vacuum gauge exceeding 15 HG.	Relief valve seized-free up
	Discharge muffler plugged.	Clean or replace.
Pressure blower overheating.	Noisy blower or knocking.	Consult factory or Dealer
	Low oil level.	Add oil as required, check for oil leaks-repair.
	Pressure gauge exceeding 9 psi.	Adjust product regulator. Discharge line plugged.
Hydraulic System Overheating.	Intake filter plugged.	Clean or replace.
	Low oil level.	Check and add oil, check for leaks.
	Oil filter plugged.	Replace a maximum of once per year.
Engine shutdown without warning.	Breather plugged.	Clean or replace.
	Low oil pressure switch.	Check oil level(see engine manual).
	High coolant temperature.	Check water level only on level gauge, DO NOT OPEN CAP WHEN HOT!
Loss in drive speed.	Low coolant level switch.	Check level, and check for leaks. DO NOT OPEN CAP WHEN HOT!
	Belts slipping.	Tighten belts as required, or replace.

7 SPARE PARTS

ITEM	DESCRIPTION	PART #
Engines	Cummins 5.9 BT 6 cylinder Turbo, with 150hp.	See engine manual for parts list.
	John Deere 6068T 6 cylinder Turbo, with 185hp.	See engine manual for parts list.
Clutch	Rockford #11 ½ HE Double Disc.	See clutch manual for parts list.
	Twin Disc # SP211-MP-X.	See clutch manual for parts list.
Blower	Rebuilt Model 614, 1800CFM rated at 2800RPM, Max 15HG on vacuum blower and 10psi on pressure blower.	50-20222-5
Tanks	Tank Filters(4 pcs).	11-15427-6
	Tank Check Valves(4 pcs).	11-17731-6
Blower drive.	Sheave, 8.5 x 4-5V x E	11-13252-6
	Bushing, Blowers, Vacuum and Pressure; E x 1 9/16 x 3/8 KW	11-13282-6
	Sheave, 9.25 x 8-5v x F, Engine.	11-19029-6
	Bushing, Engine, F x 2 1/2 x 5/8 KW	11-19032-6
	Flat pulley ,Idler 4.25 x 12OD	11-19033-6
	Belt 4RV5 x 900, banded belt, vacuum.	11-19061-6
	V-Belt, 4R5V X 800	11-19695-6
	Tensioner, MB 50x105,Complete Idler.	11-79819-6
	Walinga Super Duty Blower Oil .	98-13813-6
	Blower Mounting Gasket.	96-09117-6
Air system parts.	Blower Vent Assembly.	40-03983-6
	Pressure gauge(0-30).	27-00718-6
	Vacuum gauge(0-30).	27-1306606
	Vacuum relief valve.	39-00725-6
Pumps	Pressure relief valve.	39-00724-6
	Tyrone, used on Cummins 5.9 BTA.	54-19062-6
Valve	Casappa, used on John Deere 6068.	54-19473-6
	Solenoid	59-80196-6
	Base	59-80197-6

7 SPARE PARTS (CONTINUED)

ITEM	DESCRIPTION	PART #
Hydraulic parts.	Replacement filter.	61-17062-6
	Tank	79-15822-6
	Oil (Hydrex XV).	98-17741-6
Relief valve.	Set at 400 psi constant flow.	59-03193-6
Butterfly valve.		39-18700-6
Control Box.	Timer dual control.	11-17760-6
	Contact block 800FPX02	11-18035-6
	Contact block 800E2LX10 A-B	11-18038-6
	Fuse ATC 20 Amp.	82-04697-6

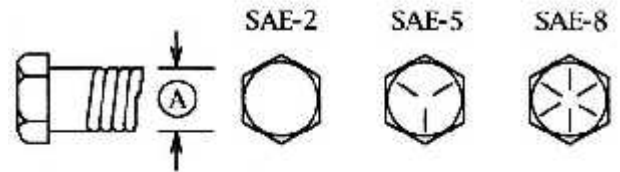
8 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and cap screws. Tighten all bolts to the torques specified on chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

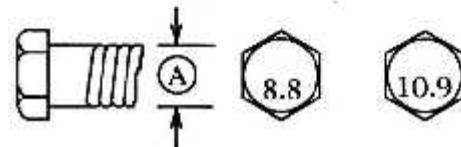
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2 (N.m) (lb-ft)		SAE 5 (N.m) (lb-ft)		SAE 8 (N.m) (lb-ft)	
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8 (N.m) (lb-ft)		10.9 (N.m) (lb-ft)	
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and cap screws are identified by their head markings.



Operator's & Parts Manual

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