Farm King

OPERATOR AND PARTS MANUAL

Grain Vac

Conveyair 6644

052012 FK377

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Manufacturer's statement: for technical reasons Buhler Industries Inc. reserves the right to modify machinery design and specifications provided herein without any preliminary notice.
Information provided herein is of descriptive nature. Performance quality may depend on soil fertility, applied agricultural techniques, weather conditions and other factors.

Introduction

Congratulations, you have selected a Farm King Grain Vac which is designed and engineered to help you make farming Easier, Healthier and Safer.

Our knowledgeable engineering and production staff have built both performance and durability into each Farm King Grain Vac. Our grain vacs have been sold to farmers in Canada, Europe, the USA, Australia and the Middle East.

To get the maximum benefit from your Farm King Grain Vac please read the owner's manual carefully.

We recommend that you study this manual from beginning to end BEFORE operating your new Farm King Grain Vac. We have tried to keep it brief and to the point. It is important that you pay special attention to the safety cautions in this book and on your equipment.

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

Please ensure that you reference the Cummins Diesel Manual, Twin Disc Clutch Manual and Dexter Manual to ensure safe and correct operation of all aspects of this implement.

Safety

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

Before You Start

Read the safety messages on the implement and shown in your manual.
Observe the rules of safety and common sense!

The alert symbol is used throughout this manual. It indicates attention is required and identifies hazards. Follow the recommended precautions.

The safety alert symbol means...
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Understand Signal Words

Note the use of the signal words DANGER, WARNING and CAUTION with the safety messages. The appropriate signal word for each 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 which, 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.

If you have questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or the manufacturer directly.

Important Safety Information

Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or operating to acquaint yourself with the machine. It is the owner's responsibility, if this machine is used by any person other than yourself, is loaned or rented, to make certain that the operator, prior to operating:

1. Reads and understands the operator's manuals.
2. Is instructed in safe and proper use.

CAUTION

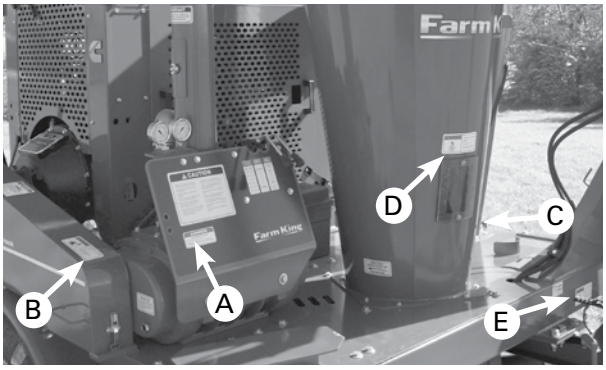
Do not modify the equipment in any way. Unauthorized modifications may impair the function and/or safety and could affect the life of the equipment.

Operation Safety

- Wear appropriate ear protection.
- Never wear ill-fitting, baggy or frayed clothing when working around or on any of the drive system components.
- Always know where all overhead electrical wires are located and stay away from them.
- Do not allow riders.
- Install and secure all guards and shields before starting or operating.
- Keep hands, feet, hair and clothing away from moving parts.
- Place all controls in neutral, stop engine, block tires, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Place all machine controls in neutral before starting.
- Never operate the Grain Vac and power unit inside a closed building.
- Clear area of bystanders, especially small children, before starting.
- Stay away from PTO clutch shaft, intake nozzle and discharge when engaging PTO clutch.
- Keep all hydraulic lines, fittings and couplers tight and free of leaks.
- Clean reflector and lights before transporting.
- Use proper lighting when transporting.
- Stay away from overhead electrical wires when operating boom or when moving.
- Do not remove receiver inspection window while engine is running.
- Do not remove elbow from airlock outlet when engine is running.
- Stay clear of truck loading boom when raising or folding it.
- Review safety instructions with all operators annually.

Safety Decal Locations

Decals with "CAUTION", "DANGER", "WARNING", and other information appear on your machine for your safety. Read the information carefully and replace the decals that are no longer legible.



DANGER

ELECTROCUTION HAZARD

To prevent serious injury from electrocution:
Stay away from overhead electrical wires when operating the discharge boom.
Electrocution can occur without direct contact.

68 056

Control Panel "A"

WARNING

ROTATING PART HAZARD

To prevent serious injury or death from rotating parts:

1. Close and secure guard before operating.
2. Shut-off engine and wait for moving parts to stop before opening to adjust, service, lubricate or unplug.
3. Keep hands, feet, clothing and hair away from moving parts.

Guard "B"

CAUTION

- Read and understand the Operator's Manual before starting and operating.
- Never operate the machine inside a closed building.
- Install and secure all shields before operating.
- Clear the area of people, especially small children, and the machine of foreign objects before using.
- Keep hands, feet, clothing and hair away from moving parts and inlet nozzle.
- Place all controls in neutral, stop engine, remove key and wait for all moving parts to stop before servicing, lubricating, adjusting or unplugging.
- Watch for overhead electrical wires and obstructions. Electrocution can occur without direct contact.
- Never operate machine with hydraulic leaks.
- Secure hitch, fasten safety chain and connect lights before transporting.
- Wear suitable ear protection for prolonged exposure to excessive noise.
- Chock wheels and block hitch before operating.
- Review safety items with all operators annually.

68.040

CAUTION

EMPTY DUST CANISTER
FREQUENTLY
AS PER OPERATORS MANUAL

Dust Canister "C"

⚠ WARNING

ROTATING AIRLOCK HAZARD

To prevent serious injury or death from airlock blades:

1. Do not place hands in tank when airlock is turning.
2. Shut-off engine and wait for moving parts to stop before opening door to adjust, service or unplug.

Receiver Tank "D"

⚠ WARNING

ROTATING AIRLOCK HAZARD

To prevent serious injury or death from airlock blades:

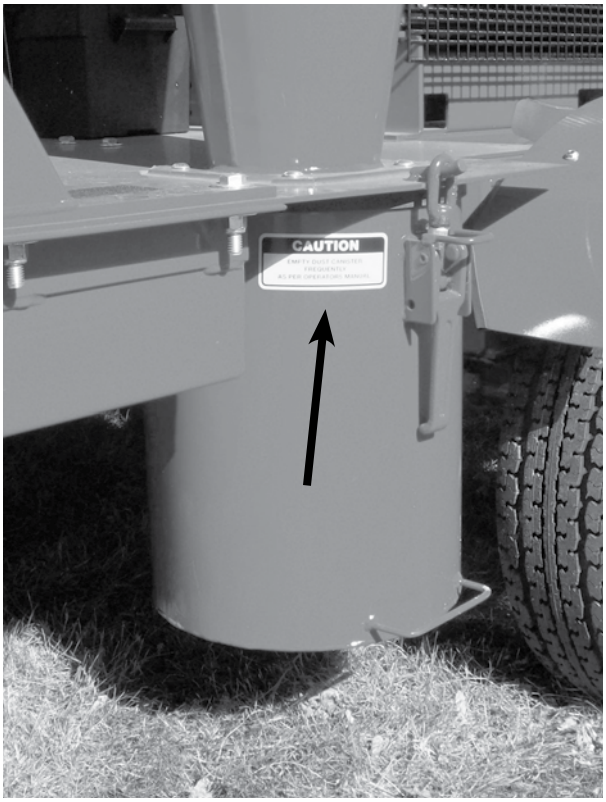
1. Do not place hands in tank when airlock is turning.
2. Shut-off engine and wait for moving parts to stop before opening door to adjust, service or unplug.

Back Frame "E"

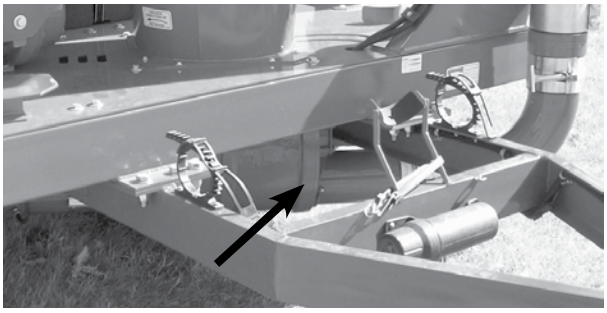
⚠ WARNING

Do not place intake tube near feet when standing on top of grain. Sufficient material can be removed to draw the operator and intake tube into the grain. Submersion in grain can cause suffocation.

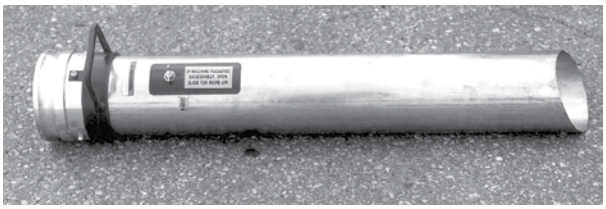
Bin Nozzle "F"



Dust Canister "D"



"F" Airlock behind frame



Bin Nozzle "G"

Transport

The Farm King Grain Vac is designed to be easily moved from location to location. When transporting, follow this procedure:

- The towing vehicle must have a class IV Hitch.
- Do not allow anyone to ride on the grain vac during transport.
- Do not exceed 60mph (100 km/h). Reduce speed on rough roads and surfaces.
- Use a retainer on ball and socket hitch, and install a safety chain before transporting (make sure the locking jaws are pinned securely in position).
- Always use proper lighting and braking system on towing vehicle when transporting. The towing vehicle must be connected to the vac's wiring harness so that the braking system, brake and signal lights are operational.
- Stay away from overhead electrical wires. Electrocution can occur without direct contact.
- Make sure all components and accessories are retracted and securely stowed before moving.

BPS and Receiver Tank Screens

Before moving grain or other materials ensure both BPS screen and main receiver tank screen are installed in machine properly at all times. (see: location on drawing, page 14)

Oil Level

Check the oil level in the blower reservoir. Add correct oil as required.

Operation

Boom Swivel

1. Unlatch boom transport clamp, flip up the boom lock and swing boom back until it clears the transport step.
2. Remove cover from vertical boom joint.
3. Set speed control at rear of control panel between 1 and 2 to raise boom.
4. Use hydraulic boom lever (Up to raise, down to lower). Carefully raise boom high enough to allow cyclone assembly (at end of boom) to swivel into position.
5. Secure cyclone into position, using overcenter clamp.
6. Now lift boom all the way into working position.
7. Secure boom with Over Centre Clamp.
8. Attach suction line to the receiver tank intake coupler. Close camlock couplers.

	WARNING	All bystanders should stay well clear of boom when raising or lowering it.

	DANGER	Stay atleast 5 m (15 ft.) away from overhead power lines when moving the boom. Electrocution can occur without direct contact.

Airlock Rotation

WARNING Do not run the airlock in the reverse direction. Damage may occur to the hydraulic motor.

For Best Performance:

1. Working area should be reasonably level and dry.
2. The Farm King Grain Vac should be located so the intake line is as straight and as short as possible.
3. When using the Farm King Grain Vac to load trucks, make sure there is adequate room for the receiving vehicle to get under the discharge cyclone.

Check the rotation of the airlock. Coupler should turn as indicated by arrow.

Breaking In

Your machine has been operated for a short time at the factory to assure good performance. It can however not be considered broken in. It normally takes 5 to 10 hours of operation for all parts to be polished by the grain stream and for the machine to come up to full capacity.

We recommend the following checks during the break in period:

After operating for 1/2 hour

1. Check for overheated bearing. Lubricate or adjust as required*.
2. Check for oil leaks. Tighten or replace part and oil as required*
3. Retorque all hardware - Wheel bolts and fasteners.
4. Check belt tension and adjust as required*.

WARNING High pressure fluids can penetrate the skin and cause infection and toxic reaction.

5. Check the oil levels in the blower reservoirs. If low, add oil as required. Check for leaks and correct if problem persists*.

* Check maintenance section for proper procedures. (Also see page 26 for hydraulic safety)

After operating for 2 to 10 hours

1. Perform the same checks and inspections as done at 1/2 hour.
2. After the 10 hour inspection, go to normal service and maintenance procedures.

Set Airlock Speed

For maximum performance adjust speed most suitable for material moved.

Material consistency varies widely in the field. Airlock speed is also affected by suction and discharge length. To obtain maximum performance, try different airlock speed, using above guide.

A rule of thumb is the larger and heavier the kernel, the faster the airlock should turn.

Tip - with light oats, or other light grains, slow PTO speed down to 900 or 950 RPM.

Material	Airlock Speed (RPM)
Barley	50 - 60
Canola	45 - 60
Corn	45 - 60
Flax	35 - 55
Wheat	45 - 60
Oats	45 - 60

Adjusting Speed

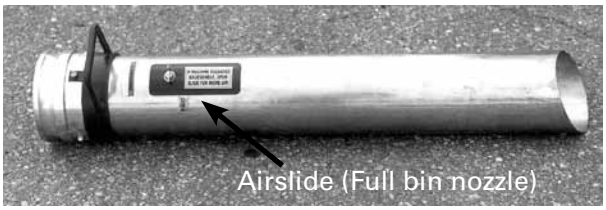
Using a stop watch, the airlock can be set by counting the number of turns the coupler makes. Coupler is visible through the three slots in the deck of the machine (photo right). One turn per second equals 60 RPM.

Adjust airlock RPM by moving the airlock speed lever on your control panel towards # 10 to increase speed, toward # 1 to slow down. Move lever slowly, a small movement will make a significant change in airlock speed.

Short Distance Transfer

Insert bin nozzle.

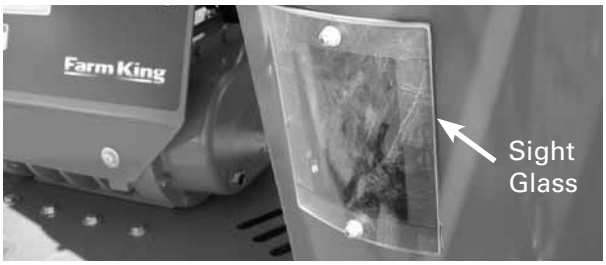
Connect hose from receiver intake to bin nozzle. Set the air slide on the full bin nozzle all the way open and push the nozzle into the material to be moved.



WARNING Do not cover airslide with grain.

The line of the grain can be horizontal, angled or vertical depending on conditions.

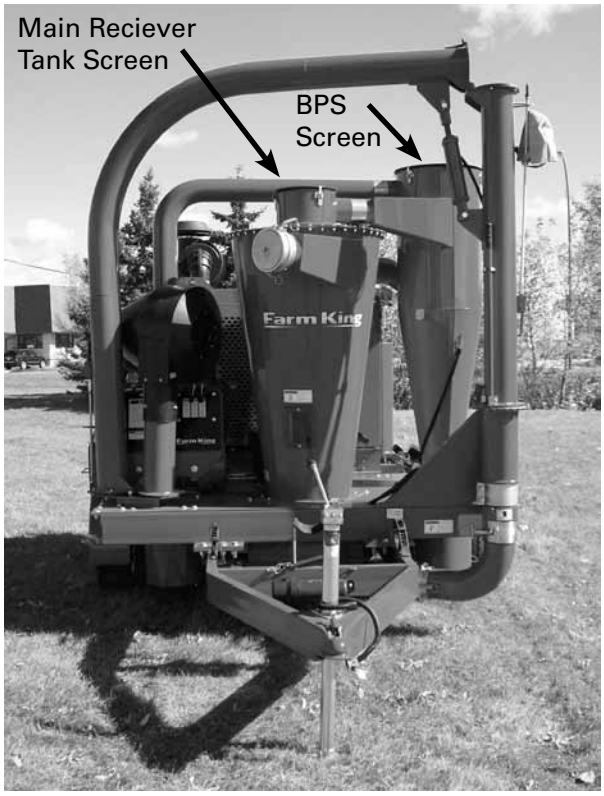
Adjust the airslide on the full bin nozzle so that the material moves across the sight glass window of the receiver tank to approximately half way (no more than 2/3) up the window. If the machine starts to surge, slowly open slide till surging stops.



NOTE: Should the material stop moving and completely cover the sight glass window in the receiver tank, the machine will quickly plug. Immediately open the air slide fully, on the full bin nozzle, to allow the machine to clear itself. Remove the nozzle from the grain and forward and reverse the airlock several times to empty the tank. Then ensure the airlock is turning counter clockwise and resume operation as normal. Otherwise follow the next 6 steps:

IMPORTANT: If the machine still does not clear itself do the following:

- Stop machine by slowly reducing engine RPM to an idle, then disengage PTO clutch. Remove dust pail which will allow any material in the bottom of Blower Protection Cyclone (BPS) to run out.
- Remove nozzle from grain source
- Start the machine and allow the Receiver tank to empty itself. Then stop machine again
- Remove the top on the BPS and clean out any material in the top of the cyclone and in the pipe between the receiver tank and the BPS.
- Replace the Dust pail and the Top on the BPS.
- Start machine, (RECHECK AIRLOCK SPEED, page 14) and reset the air slide as per start up instructions.



NOTE: Airlock should not turn faster than 65 RPM or slower than 30 RPM.

Long Distance Transfer

WARNING

Do not use P.V.C. or other plastic tubing for long distance application. The build-up of static electricity could lead to an explosion.

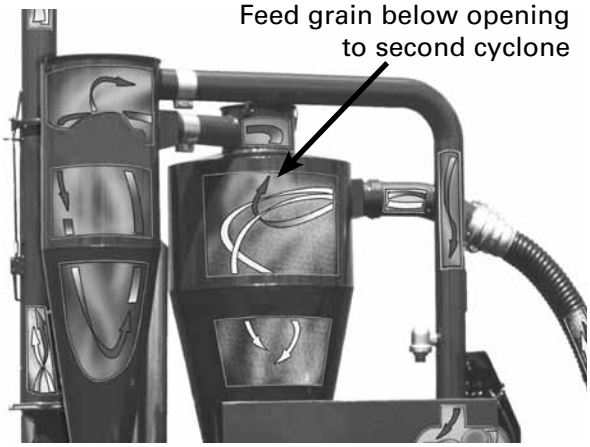
Auxiliary airslide. Located on the airline between the receiver tank and the air pump.

If discharge length is more than 40 ft. (12 m) or if blower gets too hot to the touch, open the airslide approximately 1/4" - 1/2" (6 - 12 mm) for every 100 ft. (30 m) discharge. Open further if blower still gets hot.

Opening the airslide too far will affect capacity as adversely as not opening it at all.

Top Loading (push only)

For top loading, remove top cover of large cyclone. To avoid feedback be sure grain enters below opening to BPS (smaller) cyclone.



Long Distance Suction

For sucking grain more than thirty feet, use straight piping where possible!

Remember: The straighter the suction line the greater the capacity of the grain vac.

Clean-up

When the machine needs not to be at full capacity, e.g. when cleaning bins, the engine can be throttled down.

The rougher walls of the steel flex hose and the poly intake hose provide more resistance than smooth pipe. Capacity may be lowered by 20% to 40% compared to straight piping.

Use Poly hose for clean-up only.

For regular cleanup use a combination of steel flex line, straight piping and poly hose. This will give you the needed flexibility to easily get into corners and around obstructions without sacrificing too much capacity.

NOTE: Do not dent, stretch or overbend steel flex line excessively.

Do not store poly hose, steel flex, aluminum tubes, wands and nozzles outside in the elements. Avoid sharp obstructions that could cut or puncture the hose.

Seed Drill Clean Out

When using the seed drill clean out kit, operate the engine at idle only to reduce suction air flow. The receiver tank can be used as a holding tank by stopping the airlock until the seed can be discharged into a truck or storage

Cleanup of Spills and Ground Stored Grain

Extreme caution should be exercised when cleaning spills or grain stored on dirt. Sand and dirt may cause excessive wear to blower, and life expectancy of the unit can be reduced significantly.

Filling Bins and Temporary Storage

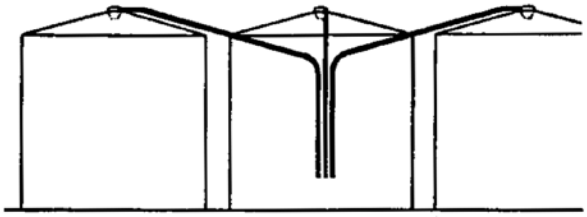
Rear discharge option required.

When discharging into bins, remove the airlock discharge elbow and couple the machine to stationary or movable piping.

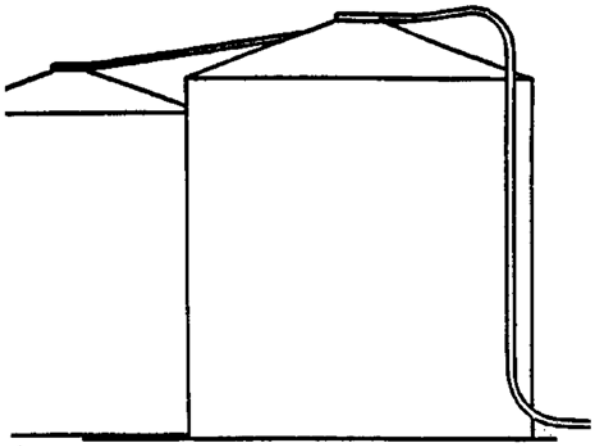
For best performance, review recommended installation schematics. Use OEM parts to insure good sealing and maximum performance.

Contact your dealer for more information.

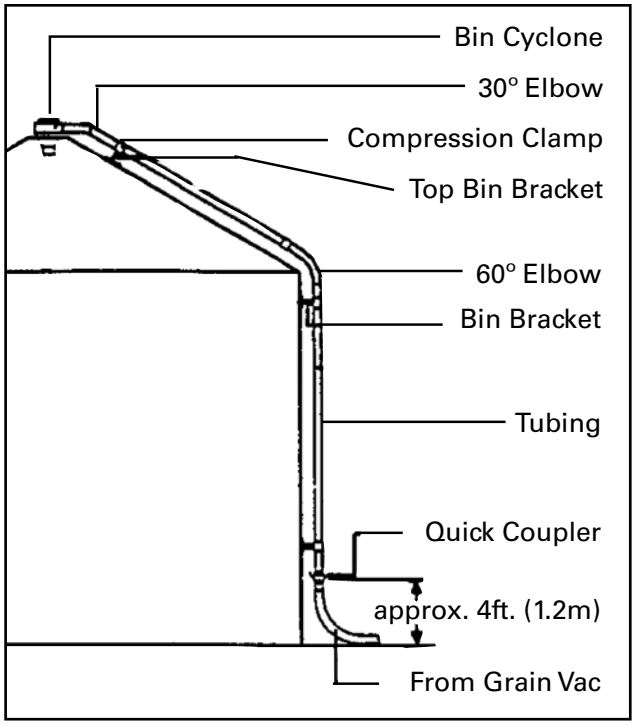
Silos over 100 feet tall can be filled with your Farm King Grain Vac!



Multiple Bins (Parallel)



Multiple Bins (Series)

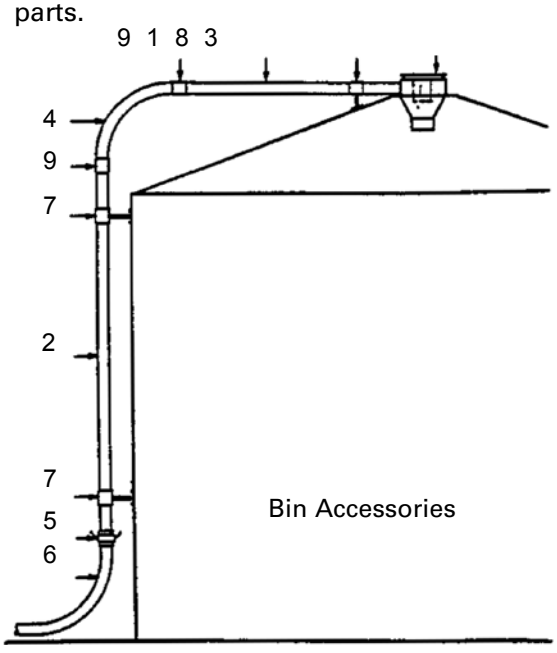


Bin Fill System

Accessories

1. Horizontal Pipe Section.
   - Steel or aluminum. Matched to Farm King Grain Vac.
2. Vertical Pipe Section. Specs as above. Sections may be welded or coupled together with 3-bolt clamp.
3. Bin Top Cyclone. Cyclones come equipped with a rain cap and can also double as aeration vents.

   For temporary installations, use the lightweight poly cyclone and attach with quick couplers.
4. 90 degree long radius elbow. Weld in place or secure with 3-bolt clamp.
5. 6" Female quick couplers.
6. Delivery from the grain vac to bin. Use a combination of short stainless lined steel flex and long radius 90 degree elbow.
7. Side wall bin brackets.
8. Angle top mount bracket.
9. 3 Bolt clamp.
10. See parts list for standard hose and other parts.



Bin Accessories

Cam Lock Couplers

Cyclone Extension Boot

Seed Drill Clean out Kit

Lubrication

Fluids and Lubricants

Reference the Cummins Diesel Manual, Twin Disc Clutch Manual and Dexter Axle Manual for lubrication requirements of those components.

Grease

Use any SAE multi -purpose high temperature grease with extreme pressure (EP) performances and containing at least 1.5% molybdenum disulfide or SAE Multi-Purpose Lithium Base Grease. Use cold temperature grease during the winter.

Oil

Only use Blower Oil HD Synthetic Gear & Bearing Oil. Do not blend with other oil. Available through your nearest Farm King Dealer.

- Part # GV14220
  - Capacity drive end 850 ml/28.7 fl. oz US
  - Capacity gear end 1000 ml/33.8 fl oz US

- Hydraulic Oil Reservoirs: Self Contained Hyd.
  - AW32 Hydraulic oil equal to or exceeding
  - SAE “SF” specifications.
  - Capacity - (31 qt. US)

Cleaning agent

- WD40 or equivalent.

CAUTION

1. Stop engine and remove ignition key.
2. Before applying pressure to a hydraulic system, make sure all lines, fittings and couplers are tight and in good condition.
3. Relieve pressure from hydraulic circuit before servicing.

Greasing

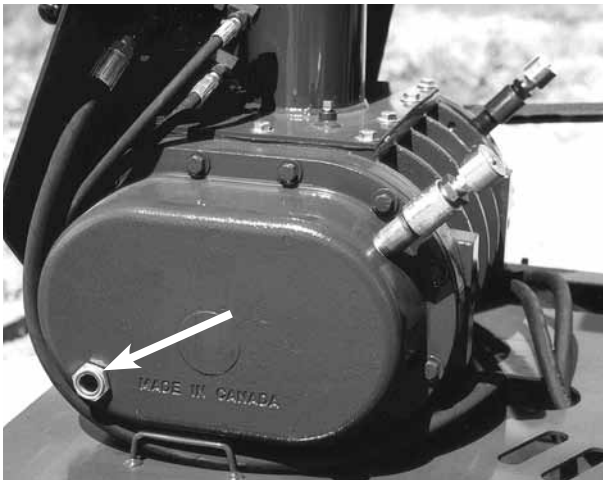
1. Use only a manual grease gun for all greasing. Air powered grease guns may damage the seal on bearings, leading to early bearing failure.

IMPORTANT Do not over grease, it can damage bearing seals.

2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.

CAUTION Machine is shown with guard open for illustrative purposes only. Do not operate machine with guard open.

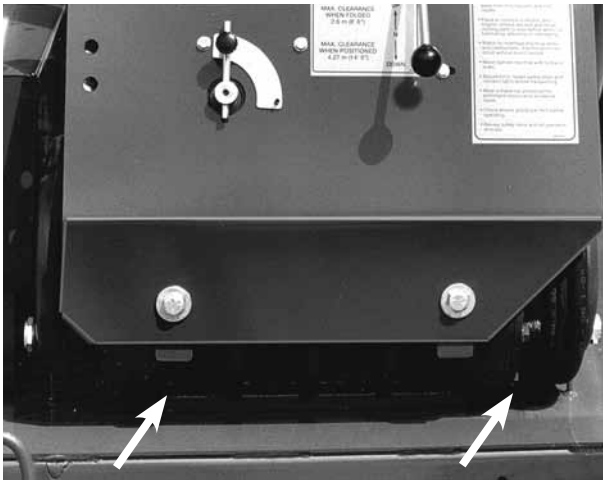
8 Hours or Daily



Check air pump oil levels in reservoirs, front and rear (2 locations). Add as required

NOTE:
Check when the oil is cold and the machine is level.

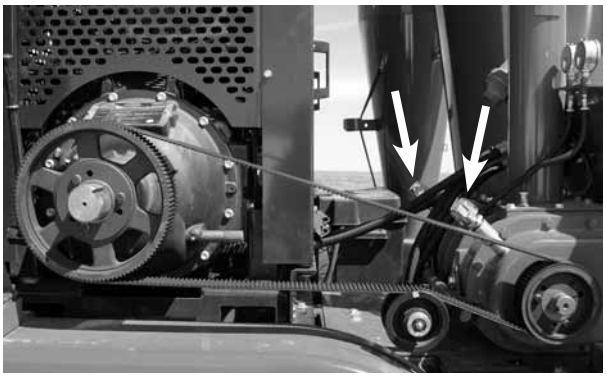
100 Hours or 6 Months



Change the oil in air pump reservoirs, front and rear.

NOTE:
Change every 30 hours if operating in very dusty conditions

50 Hours



Clean oil reservoir breather caps (2 locations)

200 Hours or Annually

Repack wheel bearings (4 locations)

Daily

Grease elbow clamps. Use winter friendly white lithium grease

Monthly

Rotate air pump at an idle and inject WD40 for 45-60 seconds. See page 37.

Service Record

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

Action: ✔ - Check **C** - Change **CL** - Clean
L - Lubricate **R** - Repack

Maintenance \ Hours / Serviced By																	
8 Hours or Daily																	
✔ *Belt Tension*																	
✔ *Air Pump Oil Level in Reservoir (2)*																	
✔ & **CL** - *System Filter*																	
L - *Boom Grease Nipples*																	
Monthly																	
L - *Air Pump Inside*																	
50 Hours																	
CL - *Oil Reservoir. Breather Caps (2)*																	
100 Hours or 6 Months																	
C - *Oil in Air Pump Reservoir Front & Rear*																	
Annually or 12,000 Miles																	
R -*Wheel Bearings (4) **																	
CL - *Machine*																	

NOTE: Reference the Cummins Diesel Manual, Twin Disc Clutch Manual and Dexter Manual for service and maintenance requirements.

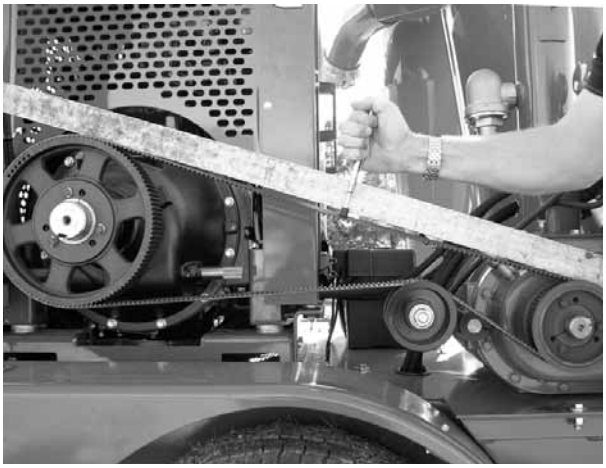
* Refer to Dexter Manual

Maintenance

1. Place PTO clutch and hydraulic controls in neutral and shut-off engine.
2. Unlatch belt shield cover and open cover.
3. Place a straight edge across the faces of the two pulleys. Maximum allowable misalignment is 1/16" (2 mm) on any of the pulley edges. Adjust as required. Keep in mind that pulleys are not always the same width. So make sure you measure pulleys and allow for this when you are checking alignment.
4. Check and ensure all hardware holding pulleys, auto tensioner idler brackets in place are tightened to correct torque specifications, on a monthly basis.
5. Be sure the belt tension is correct.*
6. Close and latch belt cover.

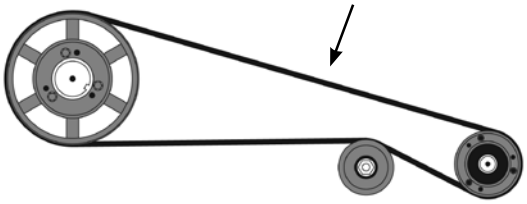
CAUTION

Machine is shown with guard open for illustrative purposes only. Do not operate machine with guard open.



BELT TENSION

Belt should be tensioned to 8 lbs at 5/8" deflection, dead center between the sheaves.



Check belt tension after initial one (1) to two (2) hours of operation and daily thereafter.

Belt tension testers are available at most belt service centres.

Airlock Tips

Check Airlock Tips clearance when there is a noticeable drop in capacity of the grain vac.

If clearance exceeds 0.015" (0.38mm) adjust as shown below.

Checking clearance:

1. Disengage PTO clutch and shut off engine. Wait for all moving parts to stop.
2. Remove hydraulic lines from the airlock drive motor to allow rotation of the airlock.

	CAUTION	High pressure fluids can penetrate the skin and cause infection and toxic reaction.

3. Open the inspection door on the receiver tank. Use a feeler gauge to check the clearance between the tips and the shell.

Airlock Tip Adjustment

1. Remove the connector on the air line between the BPS and the receiver tank.
2. Attach an overhead hoist to the receiver tank.
3. Remove the eight bolts securing the receiver tank to the airlock mount plate. Remove the receiver tank from the frame.
4. Position tip next to top of shell.

5. Loosen slightly the 5 bolts attaching the tip to the blade of the airlock.
6. Move the tip until you have 0.006" (0.15 mm) clearance between tip end and clockwise side of shell.
7. Tighten the bolts and torque to 20-25 ft. lbs. (34-40 Nm).

	CAUTION	**Rotating Airlock Hazard** To prevent serious injury or death from airlock blades: 1. Do not place hands in tank when airlock is turning. 2. Shut-off engine and wait for moving parts to stop before opening door to adjust, service or unplug.

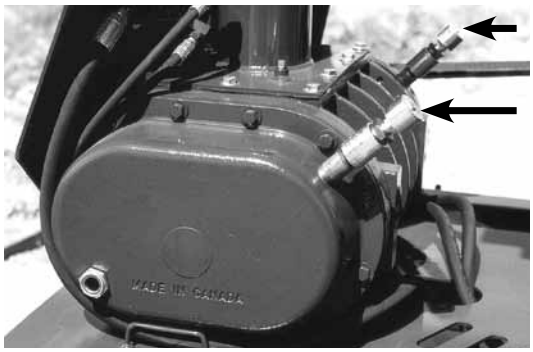
8. Rotate the rotor clockwise to ensure that there is no contact between the tips, end plates and the shell. Adjust if there is contact.
9. Mark the tip with a felt pen as done and proceed with remaining tips till all have been adjusted.
10. Replace receiver tank and check that all connections are airtight.

.....
Blower Serial Number

Reservoir Breather

Clean every 50 hours

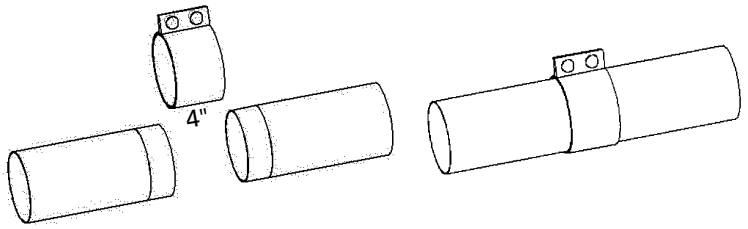
Clean breathers allow the pressure in the oil reservoir to equalize with the outside as the temperature changes.

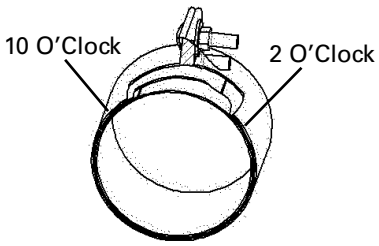


1. Remove breather from the top of the reservoirs.
2. Soak/Wash in a good grade of solvent.
3. Dry with an air hose and re-install.

Clamp #GV26042 Installation Instructions

Remove burrs, dirt, grease from pipe ends.



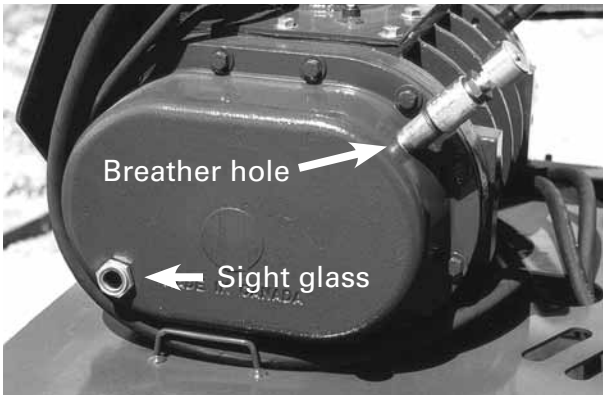


1. Measure and mark both ends of the pipe at a distance that is half the length of the coupling.
2. Slide coupling over one pipe until it meets your mark, Insert next pipe section until pipes butt. Avoid disturbing gasket or inner sleeve.
3. Partially tighten the center bolt first, then uniformly alternate tightening all the bolts to 65 lbs torque.
4. Tighten until top of flange is touching and there is approx. 3/16" of space at bottom of flange.
5. Make sure gasket joint and inner sleeve joint are at proper locations. (10 o'clock - 2 o'clock)

Air Pump Reservoir

Change oil every 100 hours, more often if conditions are very dusty

1. Place small pan under the drain plug and remove plug. Drain for 10 minutes.
2. Re-install and tighten the drain plug.
3. Remove breather and add oil through the breather hole. Fill to center of the sight glass and re-install breather.
4. Repeat on other reservoir.



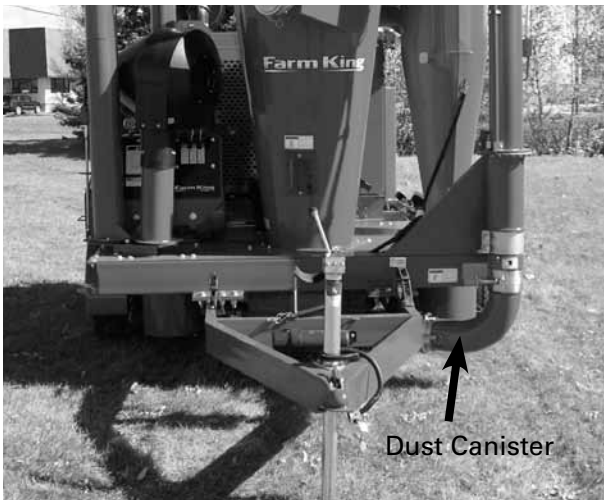
CAUTION

- Overfilling causes heating from the oil churning
- Underfilling causes heating from lack of lubrication

BPS
(Blower Protection System)

The air which is sucked from the receiver tank and drawn toward the air-pump contains dust which is harmful to the pump. This dust is trapped by the BPS system and collected in the dust canister. The amount of dust collected depends on the amount of dust and fines in the grain being moved.

Remove and empty dust canister regularly. Do not allow to overfill. When canister is three quarters full it should be considered full!



NOTE:

If machine is allowed to overfill (plug):

- Remove screen on top of BPS and clean if required and reinstall.
- Empty canister and also allow any grain which may have accumulated in BPS to run out.

Refer to unplugging instructions under Operation.

CAUTION

Do not strike the screen with any hard object as damage to the screen will diminish its effectiveness.

Hydraulic Safety

1. Make sure that all components in the hydraulic system are kept in good condition.
2. Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.
3. Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.
4. Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify leak.
5. If injured by a concentrated high pressure stream of hydraulic fluid, seek attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

	CAUTION	Do not use tape, clamps or cement to repair hydraulic lines. The hydraulic system operates under high pressure, creating a hazardous unsafe condition when such repairs fail suddenly.

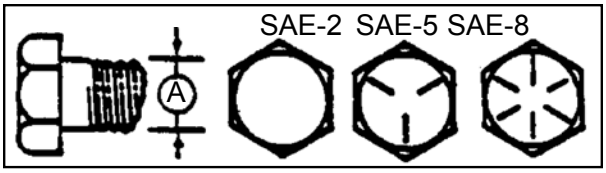
	WARNING	High pressure fluids can penetrate the skin and cause infection and toxic reaction.

Bolt Torque

Check tightness of bolts periodically, using bolt torque chart as a guide. Always replace hardware with the same strength bolt.

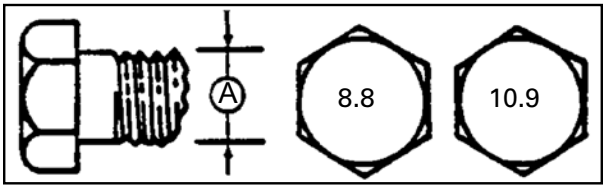
English Torque Specifications

Bolt dia.	Bolt Torque*		
"A"	SAE 2	SAE 5	SAE 8
	N.m (lb-ft)	N.m (lb-ft)	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 (70)	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 (920)



Metric Torque Specifications

Bolt dia.	Bolt Torque*	
"A"	8.8	10.9
	N.m (lb-ft)	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)
M15	225 (166)	310 (228)
M20	435 (321)	610 (450)
M24	750 (553)	1050 (774)



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

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

Hydraulic Fitting Torque

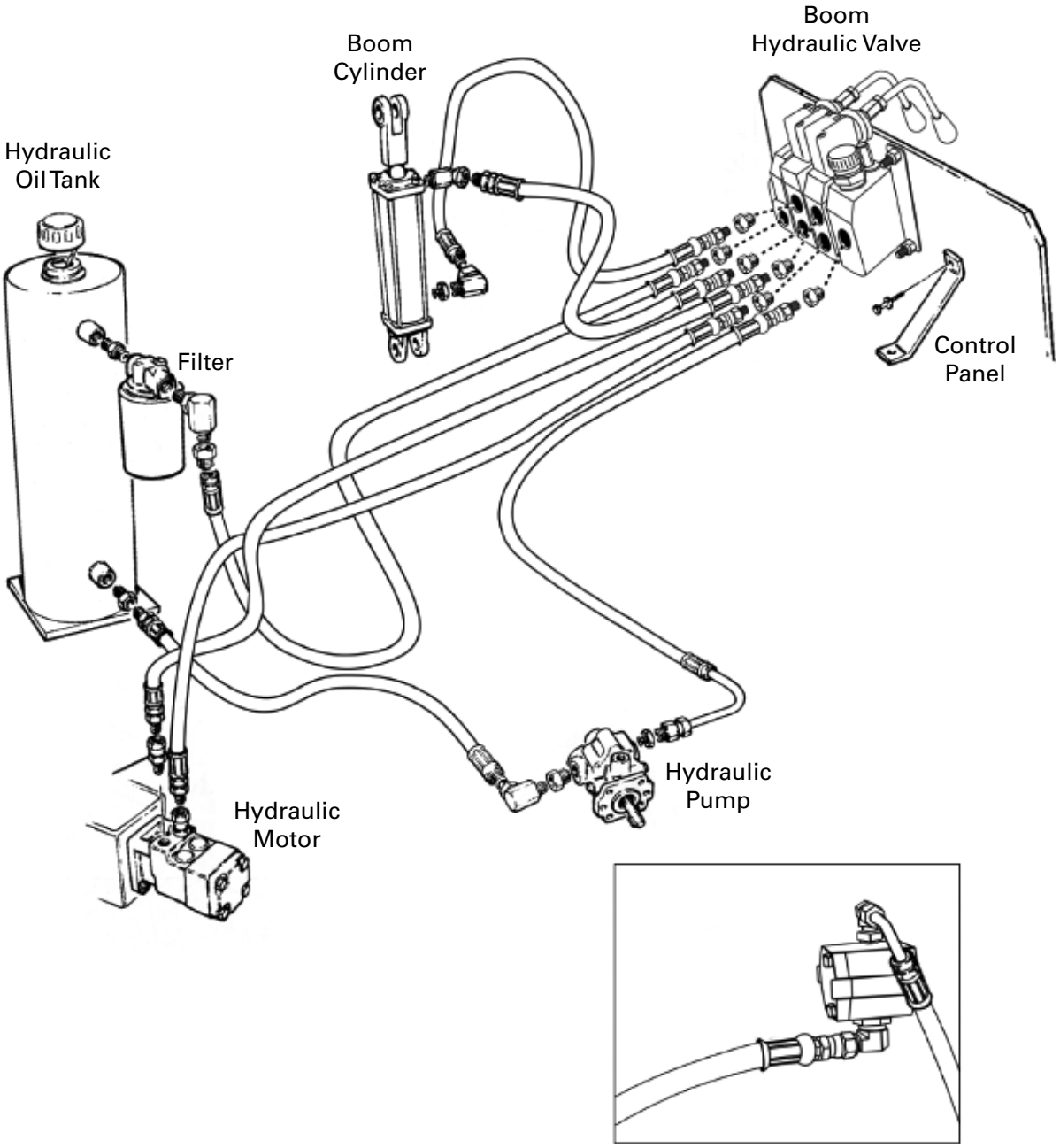
Tighten Flare Tube Fittings*

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Tube size O.D.	Nut size across flats	Torque value*	Recommended turns to tighten (after finger tightening)	
in.	in.	N.m (lb-ft)	Flats	Turns
3/16	7/16	8 (6)	1	1/6
1/4	9/16	12 (9)	1	1/6
5/16	5/8	16 (12)	1	1/6
3/8	11/16	24 (18)	1	1/6
1/2	7/8	46 (34)	1	1/6
5/8	1	62 (46)	1	1/6
3/4	1–1/4	102 (75)	3/4	1/8
7/8	1–3/8	122 (90)	3/4	1/8

* The torque values shown are based on lubricated connections as in reassembly.

Hydraulic Hose Drawing



Troubleshooting

The heart and lungs of the Grain Vac are the airlock and the blower (air pump). Both components must be operating at their recommended speed to obtain maximum efficiency from the machine.

The blower is driven by a belt and pulley system from the drive system attached to the engine. The airlock is driven by a hydraulic motor that is attached to the diesel engine.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local dealer or the factory. Before you call, please have this Operators Manual and the serial numbers from your Grain Vac ready.

In North America call (204) 822-4467

Problem	Cause	Solution
Low capacity	Belts are slipping.	Tighten belts.
	Airlock runs too fast.	Slow down airlock speed until grain builds up to the level of inspection door.
	Improper air intake.	Adjust air intake.
	Improper use of nozzle.	Use full bin nozzle for larger piles and full bins. Use cleanup nozzle with flair for cleanup only. Do not submerge airslide in grain.
	Air leaks - Intake.	Check for worn coupler levers or missing coupler gaskets.
	Air leaks - Machine.	Check BPS, receiver section, and airlock gaskets. Check pressure and vacuum relief valve. Check clamps on airline between receiver tank and BPS and between BPS and blower.
	Improper piping.	Keep suction lines as short as possible. Minimize bends. Use straight length of pipe wherever possible. Use the poly hose for clean up only!
	Airlock tip clearance high.	Adjust airlock tips.
	Airlock end plate clearance	If rotor to end plate clearance is more than 0.015", consult the dealer or factory.
Excessive grain damage.	Too much air intake.	Adjust air intake nozzle.
	Blower running too fast.	Throttle down engine.
	Damaged tubing or flexline.	Repair or replace.
	Insufficient grain supply.	Reposition nozzle.

Problem	Cause	Solution
Pulsation	Insufficient air at intake.	Open slide until grain flow becomes even.
	Airlock turning too fast.	Adjust airlock speed until grain is at level of the inspection door.
	Improper piping.	Replace steel flex or poly hose with rigid tubing wherever possible.
	Suction line too small.	Use proper line size.
	Engine running too slow.	Increase engine RPM to recommended speed.
	Belts are slipping.	Tighten belt.
	Excessive airlock tip clearance.	Adjust airlock tips.
	Airlock turning too slow.	Adjust airlock speed until grain is at the proper level on the inspection door.
	Obstruction in suction.	Shut down machine and clear line obstruction.
BPS plugs	Airlock turning too slowly.	Increase airlock speed until grain is at the proper level on the inspection window.
	Airlock turning too fast.	Decrease airlock speed until the grain is at the proper level on the inspection door.
	Airlock not turning.	Check for and remove obstruction in airlock
Airlock not turning at all.	Flow control valve wrong.	Reset flow control.
	Obstruction in airlock.	Shift Forward/Reverse lever from FORWARD to REVERSE and back to FORWARD. Repeat if obstruction does not clear up. If obstruction does not clear up, shut off engine, open inspection door and remove cause of obstruction.
Hydraulic oil heating up excessively.	Low oil level.	Add oil.
Excessive wear on air lines.	Improper piping.	Minimize bends.
	Too much air flow.	Adjust airslides and airlock speed.
	Insufficient grain supply.	Reposition intake nozzle. Open grain supply doors.
	Excessive engine speed.	Operate at proper recommended engine speed.

NOTE: Also reference the Cummins Diesel Manual, Twin Disc Clutch Manual and Dexter Manual for proper troubleshooting instructions.

Storage

Prior to storage we recommend that you thoroughly inspect your Grain Vac.

1. Replace any worn or damaged components.
2. Wash and clean the machine. After cleaning, run machine at low idle for 2-3 minutes to dry the internal components.
3. a - While machine is running at an idle, open the cleaning port and inject a cleaning agent such as WD40 for 45 - 60 seconds. This will coat the inside of the air pump to help prevent rusting.

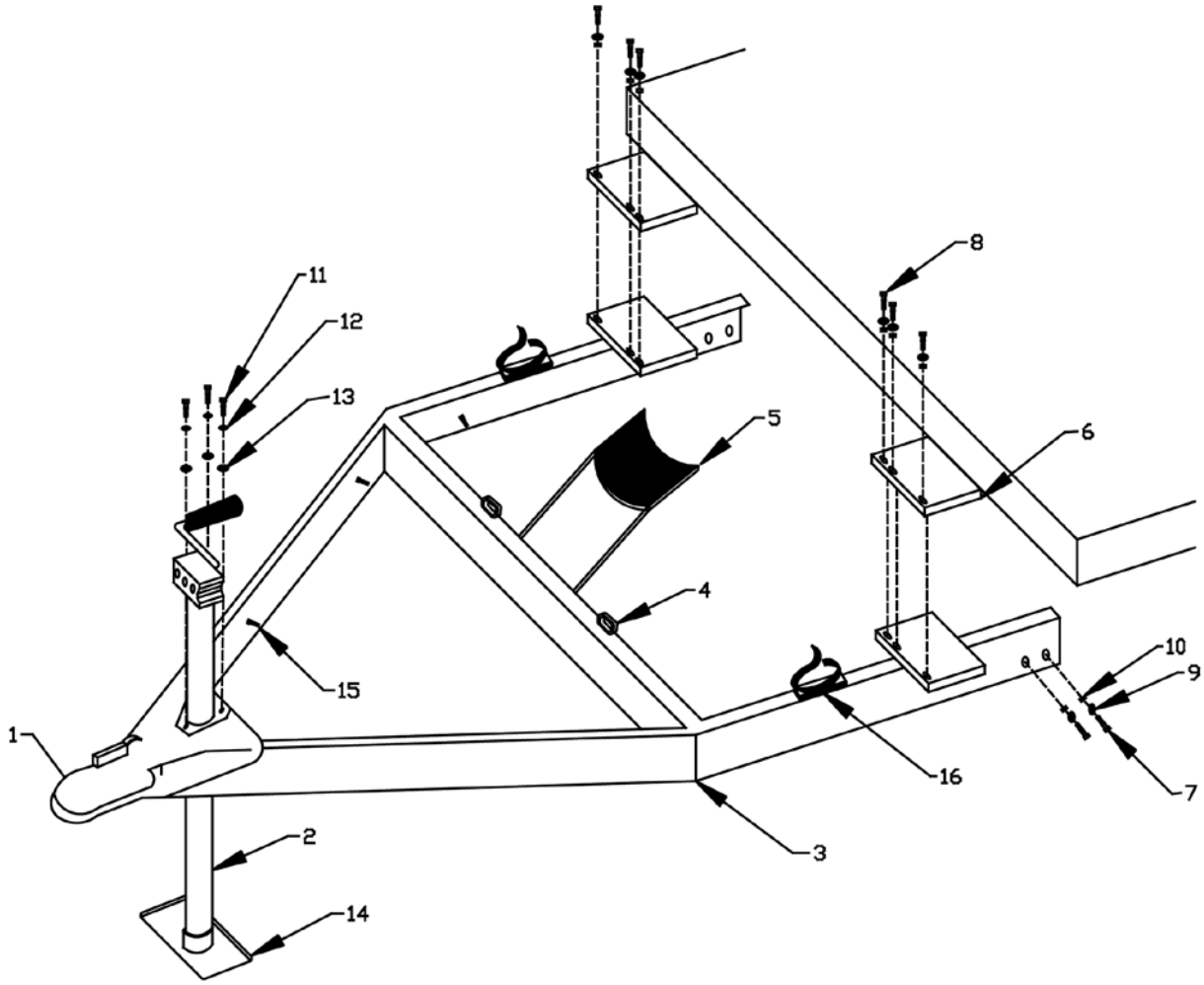
   b - During storage or not in use for longer periods of time, perform the following procedure. Monthly, rotate air pump by hand to ensure turning free. (Close belt cover and fasten hood fastener latch.) Now rotate air pump at an idle, open airslide above air pump and inject a cleaning agent such as WD40 for 45-60 seconds. This coats the inside of the air pump to help prevent rust.
4. Lubricate all grease points. Make sure all grease cavities have been filled with grease to remove any water residue.
5. Retract and stow all components and

   accessories and install cover over the boom pivot. (Keeps out dirt and small animals).
6. Inspect all hydraulic hoses, couplers, fittings and lines. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or is separating from the fitting.
7. Inspect, clean or empty the BPS.

8. Check the fluid level in the air pump oil reservoirs. Add oil as required.
9. Touch up all paint nicks and scratches to help prevent rusting.
10. For storage, select an area which is dry and level. Make sure unit is firmly blocked and will not tip or sink into a soft area. Place a plank under jack for added support.
11. **Do not** store poly hoses, steel flexes, aluminum tubes, wands or nozzles outside in the elements. Always store them inside in a dry atmosphere and lay them straight and flat. Do not store them outdoors at any time.
12. When machine is not in use, plug all inlets. Ensure lids and covers are installed and sealed properly.

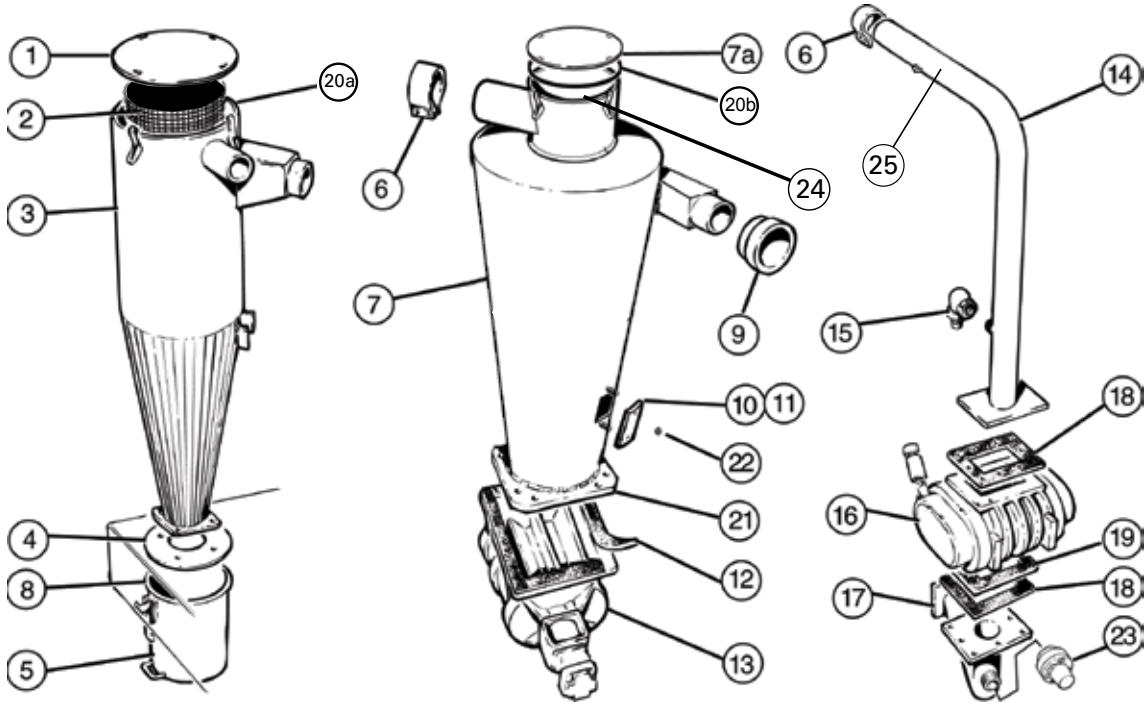
NOTE: Reference the Cummins Diesel Manual, Twin Disc Clutch Manual and Dexter Manual for proper storage instructions.

Hitch Drawing



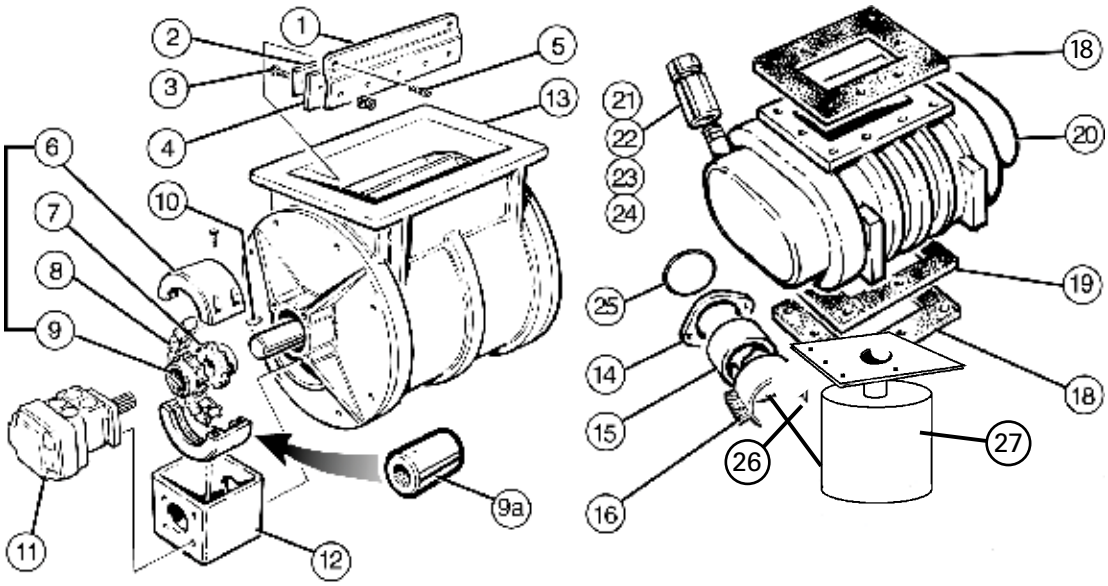
Item No.	Part No.	Description	Quantity
1	36705	A Frame Coupler (Shelby)	1
2	36703	A Frame Jack	1
3	36719	Hitch Sub Assembly	1
4	60016	Wand Band Attach	2
5	36730	Wand Rack	1
6	36706	Attach Plates	4
7	36716	3/4" x 3-1/2" Gr8 Bolt	2
8	36715	3/4" x 2-1/2" Gr8 Bolt	8
9	36717	3/4" Sae Washer Gr8	20
10	36718	3/4" Lock Nut Gr8	10
11	56016	3/8" x 1-1/4" Bolt	3
12	56036	3/8" Lock Washer	3
13	56035	3/8" Washer Flat Sae	3
14	36704	Foot Detachable	1
15	56071	1/4" x 1" Bolt	5
16	36013	Rubber Attach Clamp	2

Receiver Tank and Dust Collector Drawing



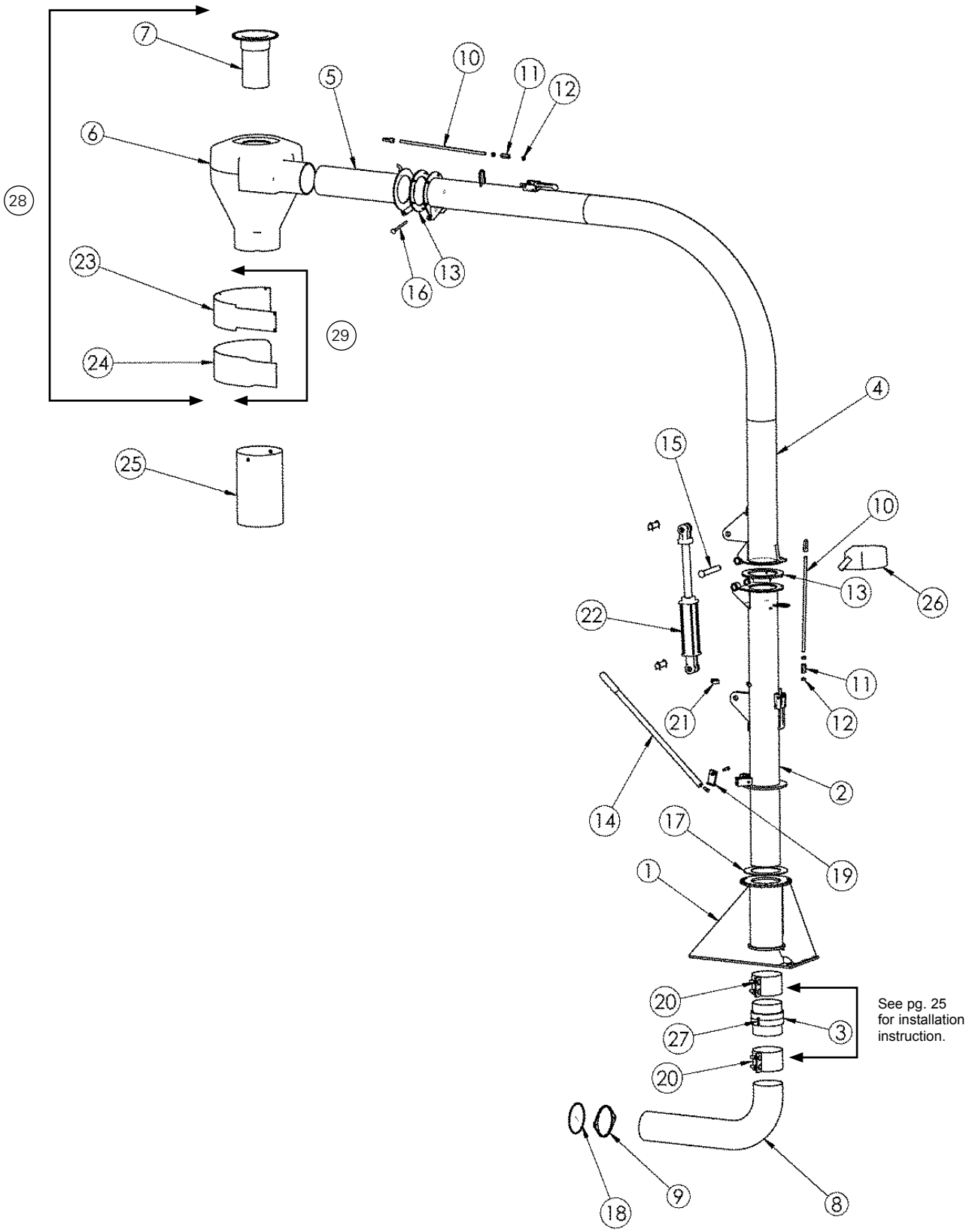
Item No.	Part No.	Description	Quantity
1	GV19504	Dust Cyclone Top Plate	1
2	GV19514	Screen, Blower Protection System	1
3	GV36860	Dust Cyclone	1
4	GV15525	Ring, Pail Seal	1
5	GV19512	Dust Cyclone Pail	1
6	GV26011	5" Seal Clamp	2
7	GV36850	Top Loading Receiver Tank Without Coupler	1
7a	GV15632	Receiver Tank Top Plate	1
8	GV64510	Pail Gasket, 825 - 045 - 4' Required	1
9	GV26052	Female Coupler	1
10	GV64001	Foam Gasket -1/4" x 1" - 3' Required	1
11	GV15520	Window Receiver	1
12	GV64504	Foam Gasket - 6' Required	1
13	GV10627	Airlock - See Page 36	1
14	GV36870	Airline Blower Inlet	1
15	GV26119	Vacuum Relief Valve	1
16	GV14400	Blower Complete w/ Oil Filter - See Page 36	1
17	GV45630	2 Piece Airline Blower Output - See Page 36	1
18	GV64030	Gasket Blower, 1/8"	2
19	GV64501	Gasket Blower, 1/16"	1
20a	GV64500	Rubber Channel, 1/4 x 3/8 - 5' Required	
20b	GV64500	Rubber Channel, 1/4 x 3/8 - 4' Required	
21	GV64503	Foam Gasket - 5' Required	
22		1/4" Flat Washer & Lock Nut	2
23	GV26013	Pressure Relief Valve	1
24	GV15651	Screen Main Receiver Tank (Anti-Plug)	1
24	GV15653	Screen Handle, Factory Installed	1

Airlock and Blower Assembly Drawing



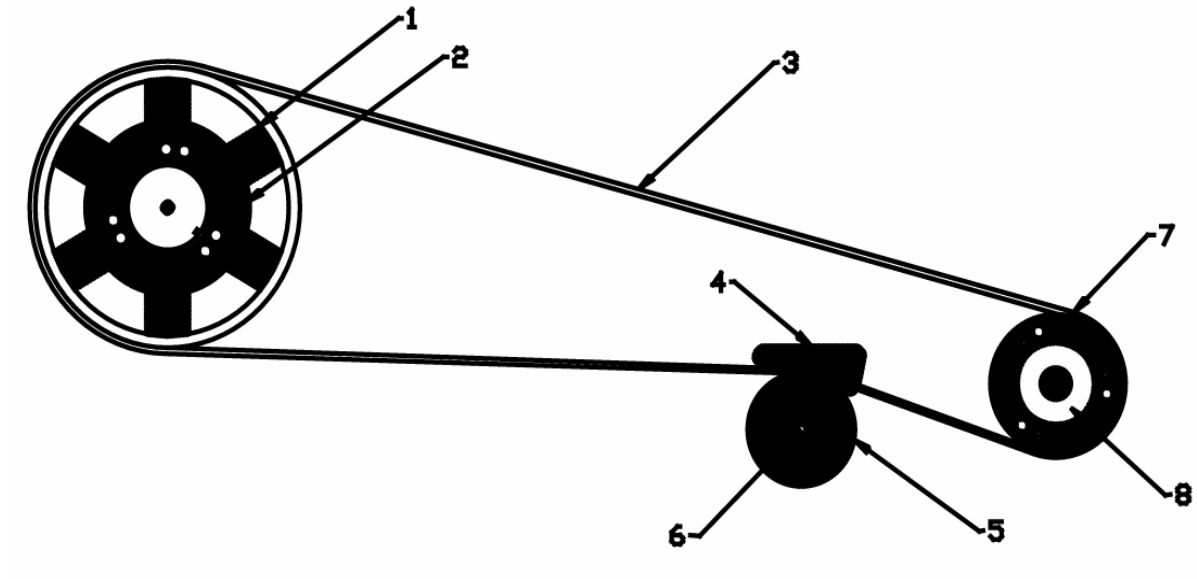
Item No.	Part No.	Description	Quantity
	GV10627	Airlock Assembly, Complete w/ Motor	1
1	GV10630	Wiper	1
2	GV10631	Retainer Wiper	1
3		Bolt, 1/4" x 1-1/2" Complete w/ Flat/L Washer & Nut	3
4	GV10632	Flex Tip Wiper	1
5		Bolt, 1/4" x 1-1/2" Complete w/ Flat/L Washer & Nut	2
6	GV20011	Chain Coupler Cover (To mid 1997)	1
7	GV20007	Chain Coupler Sprocket (To mid 1997)	1
8	GV20010	Chain - Chain Coupler (To mid 1997)	1
9	GV10021	Chain Coupler Sprocket - Splined (To mid 1997)	1
9A	GV10513	Coupler Weldment (Mid 1997 models and up)	1
10	GV20006	Woodruff Key	1
11	GV22228	Hydraulic Motor - White	1
12	GV10017	Bracket for Mounting Airlock Motor	1
13	GV10637	Airlock, Less Motor	1
	GV14400	Blower Complete With Breather Vents	1
14	GV45603	Flange Airlock Inlet	1
15	GV26044	Reducer 6" to 5"	1
16	GV26011	Seal Clamp. 5"	1
18	GV64030	Gasket Blower, 1/8"	2
19	GV64501	Gasket Blower, 1/16"	1
20	GV14400A	Blower Less Breathers	1
21	GV22136	Galvanized Steel Nipple, 3/4" x 2-1/2"	2
22	GV22044	Galvanized Coupler Nipple, 3/4"	2
23	GV22149	Galvanized Hexagon Bushing, 3/4" x 2-1/2"	2
24	GV14431	Breather Vent	2
25	GV20015	O-Ring	1
26	GV26013	Pressure Relief Valve	1
27	GV45650	Silencer	1

Boom and Cyclone Drawing



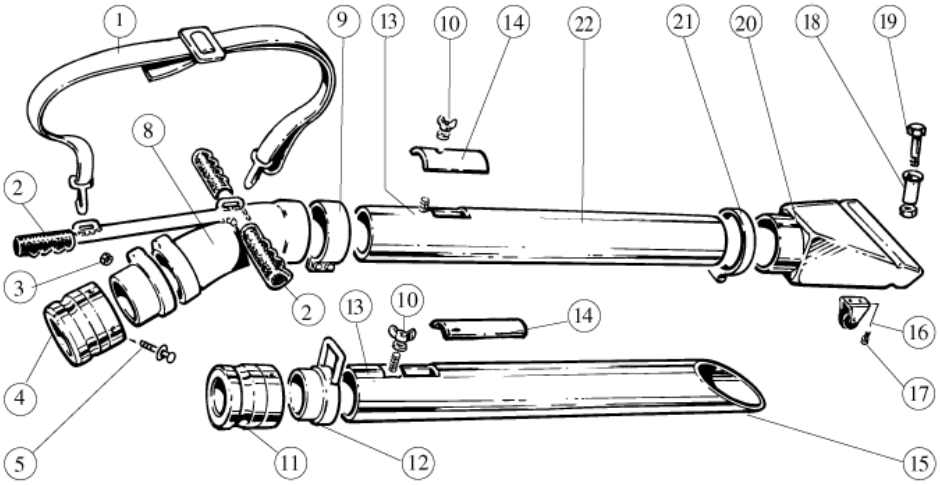
Item No.	Part No.	Description	Quantity
1	GV36500	Boom Mount Assembly	1
2	GV29690	Bottom Boom Standard	1
	GV29691	Bottom Boom for High Boom	1
3	GV43688	Discharge Swivel	1
4	GV29698	Upper Boom	1
5	GV29630	Boom Extension	1
6	GV31046	Poly Cyclone Shell	1
7	GV31039	Cyclone Thimble Assembly	1
8	GV45695	Elbow Airlock Outlet	1
9	GV45603	Airlock Outlet Flange	1
10	GV29507	Threaded Rod Boom Clamp	2
11	GV56051	1/2" Coupler Nut	2
12	GV56003	1/2" Jam Nut	4
13	GV64033	Boom Gasket	2
14	GV27032	Boom Handle 32"	1
15	GV29508	Boom Hingle Pin	1
16	GV29535	Boom Extension Hinge Pin	1
17	GV29643	Boom Bearing Washer	1
18	GV20015	O-Ring	1
19	GV29540	Boom Lock	1
20	GV26042	2 Bolt Compression Clamp	2
21	GV60032	Boom Handle Clamp	1
22	GV22502	HYD Cylinder (2508 ASE c/w Pins)	1
23	GV31007	Cyclone Steer Liner Long	1
24	GV31010	Cyclone Poly Liner Long	1
25	GV60033	Cyclone Extension Boot	1
26	GV60030	Boom Cover	1
27	GV20019	Grease Fitting - 1/4 x 28	3
28	GV31004	Poly Cyclone Assembly	1
29	GV31038	Cyclone Liner Kit	1

Direct Drive Assembly Drawing



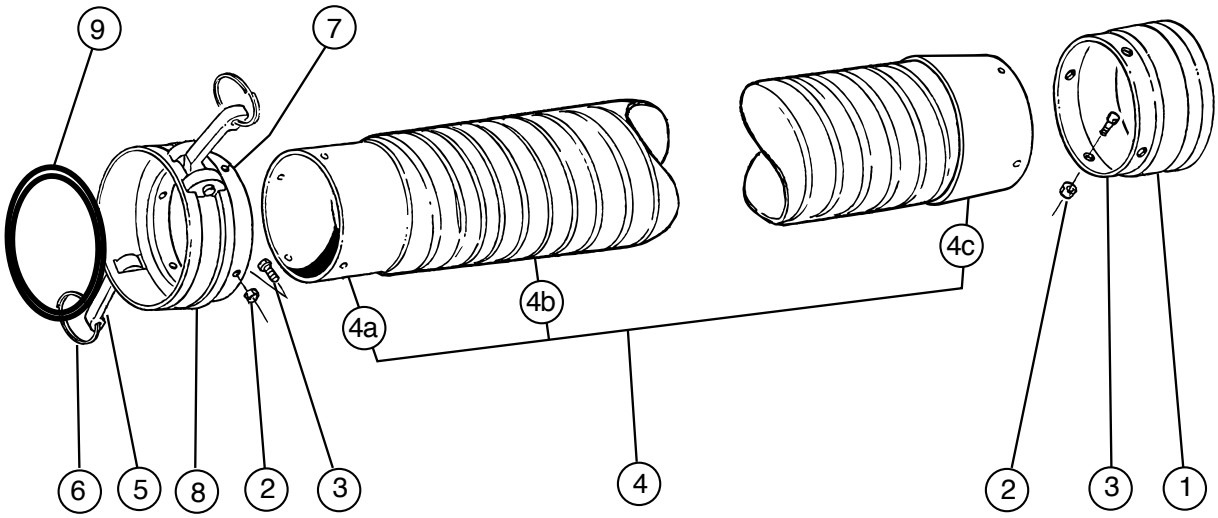
Item No.	Part No.	Description	Quantity
1	36645	Direct Drive Pulley	1
2	36648	2-1/2" Bushing	1
3	36644	Drive Belt	1
4	36657	Auto Tensioner	1
5	36651	Idler Pulley	1
6	36654	Tensioner Shaft	1
7	36646	Blower Pulley	1
8	36647	1-7/16" Bushing	1

Cleanup and Full Bin Nozzles Drawing



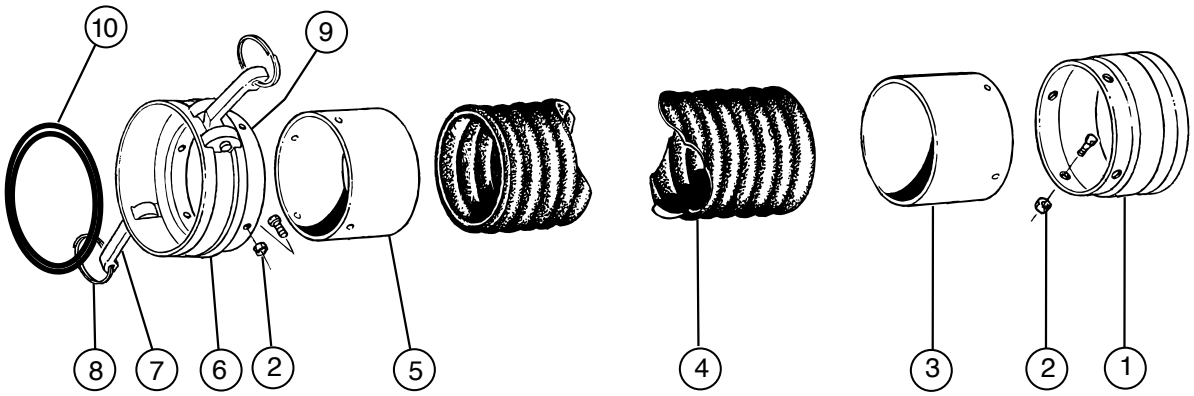
Item No.	Part No.	Description	Quantity
	GV43030	Cleanup Assembly Complete	1
1	GV60021	Shoulder Strap	1
2	GV60008	Handle Grip	1
3		Nylon Nut 3/8"	2
4	GV26006	Male Coupler	1
5		Carriage Bolt, 1/4" x 3/4" Complete w/ Flat Washer	4
8	GV43525	Rotary Elbow Weldment	1
9	GV26011	Seal Clamp	1
10		Wing Nut & Flat Washer, 3/8"	2
13	GV43004	Bottom Slide Assembly	2
14	GV43003	Top Slide	2
16	GV60009	Rigid Caster	2
17		Carriage Bolt, 1/4" x 3/4". Complete w/ Washer & Nut	1
18	GV43060	Spacer Pipe Intake Flare	1
19		Machine Bolt, 1/4" x 3", Flat Lock Washer & Nut	1
20	GV43129	Bored Intake Flare	1
21	GV26063	Quick Release T-Bolt Clamp	1
22	GV43031	Aluminum Tube	1
	GV43082	Intake Flare Assembly,16 to 20 (T-bolt clamp not included)	1
	GV43610	Full Bin Nozzle Assembly	1
10		Wing Nut And Flat Washer, 3/8"	2
11	GV26051	Male Coupler	11
12	GV43608	Handle	1
13	GV43004	Bottom Slide Assembly	2
14	GV43003	Top Slide	2
15	GV43609	Tube	1

Steel Flex Hose and Couplers Drawing



Item No.	Part #	Description	Quantity
	GV43047	Steel Flex Hose Assembly - Includes 1-9	1
1	GV26051	Male Coupler	1
2	GV56030	Lock Nut, 1/4" NC x 3/4"	8
3	GV56027	Carriage Bolt, 1/4" NC x 3/4"	8
4	GV43048	Steel Flex Hose, 10 ft.	1
4a	GV43050	Tubing	1
4b	GV26073	Steel Flex Poly Lock, 10 ft.	1
4c	GV26047	Hose End Reducer	1
5	GV26086	Cam Lever	2
6	GV26085	Finger Ring	2
7	GV26082	Cam Lever Pin	2
8	GV26052	Female Coupler Assembly - Includes 5-7	1
9	GV64029	Coupler Gasket	1

Cleanup Hose and Couplers Drawing



Item No.	Part No.	Description	Quantity
	GV43034	Complete Hose Assembly - 4" x 14', 4" Female x 5" Male	1
1	GV26006	Male Coupler, 5"	1
2	GV56027	Carriage Bolt, 1/4" NC X 3/4", Lock Nut & Washer	8
3	GV26028	Reducer, 5" - 4"	1
4	GV26112	Poly Hose, 4" x 14'	14 ft.
5	GV43035	Tube	1
6	GV26005	Female Coupler, 4" - Includes 7 - 9	1
	GV43056	Complete Hose Assembly - 5" x 14', 5" Female x 6" Male	1
1	GV26051	Male Coupler, 6"	1
2	GV56027	Carriage Bolt, 1/4" NC x 3/4", Lock Nut & Washer	8
3	GV26044	Reducer, 6" - 5"	1
4	GV26113	Poly Hose, 5" x 14'	14 ft.
5	GV43029	Tube	1
6	GV26007	Female Coupler, 5" - Includes 7 - 9	1
	GV43019	Complete Hose Assembly - 6" x 14', 6" Female x 6" Male	1
1	GV26051	Male Coupler, 6"	1
2	GV56027	Carriage Bolt, 1/4" NC x 3/4", Lock Nut & Washer	8
4	GV26120	Poly Hose, 6" x 14'	14 ft.
5	GV43050	Tube	2
6	GV26052	Female Coupler, 6" - Includes 7 - 9	1
	GV43079	Complete Hose Assembly - 5" x 14', 5" Female x 5" Male	1
1	GV26006	Male Coupler, 5"	1
2	GV56027	Carriage Bolt, 1/4" NC x 3/4", Lock Nut & Washer	8
4	GV26113	Poly Hose, 5" x 14'	14 ft.
5	GV43029	Tube	2
6	GV26007	Female Coupler, 5" - Includes 7 - 9	1
		Coupler Parts	
7	GV26086	Cam Lever, For 4" & 5"	2
8	GV26085	Finger Ring	2
9	GV26081	Pin Cam Lever, For 4" & 5"	2
9	GV26082	Pin Cam Lever, For 6"	2
10	GV64027	Coupler Gasket, For 4"	2
10	GV64028	Coupler Gasket, For 5"	2
10	GV64029	Coupler Gasket, For 6"	2

Warranty Policy

Buhler Industries Ltd. (hereafter referred to as “Buhler”) products are warranted for a period of twenty-four (24) months from the date of delivery to the original purchaser, to be free from defects in material and workmanship when used under correct, normal agricultural use and proper applications.

Buhler’s obligation under the warranty shall be limited to the repair or exchange (at Buhler’s option) of any part which proves to be defective as provided.

The buyer shall be responsible for all expenses incurred as a result of repairs, labour, parts, transportation or any other work unless a Buhler dealer has authorized such expenses in advance. It is the responsibility of the dealer to get approval from Buhler before authorizing warranty work being done. Buhler reserves the right to either inspect the product at the buyer’s location or have the defective part returned to the factory for inspection.

The above warranty does not extend to goods damaged or subject to accidents, abuse or misuse after shipment from Buhler’s factory, nor to goods altered or repaired without authorization from Buhler.

Buhler makes no Express Warranty other than those which are specifically described. Anydescription of goods, including any reference to specifications in catalogues, circulaires, and other written material published, is for the sole purpose of identifying goods and shall conform to such descriptions. Any sample or model is for illustration purposes only, and does not create an Express Warranty that the goods conform to the sample or model.The dealer is solely responsible for determining the suitability of goods sold.

BUHLER MAKES NO WARRANTY OF
MERCHANTABILITY OF FITNESS FOR A
PARTICULAR PURPOSE.

This warranty is expressly in lieu of all other warranties expressed or implied. Buhler will in no event, be liable for any incidental or consequential damages, nor for any sum in excess of the price received for the goods for which liability is claimed.

Claims for warranty must be made on Buhler Warranty Claim Forms within 10 days of the failure occurrence. Warranty Authorization numbers are available from the factory and must be indicated on the Warranty Claim Form for all claims over a total dollar value of $100.00.

The labour rate for warranty work where applicable will be credited at a rate determined by Buhler.

IMPORTANT: Components or accessories, including blower, airlock, flex, hose and hose accessories that come in contact with material being moved, carry no warranty for wear. Warranty is void when unit is used for moving material other than cereal grains, grass seeds or pulse crops. With respect to vendor warranty items such as Cummins engines and TwinDisc clutch which shall be warranted by their manufacturer, or local representative thereof.

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