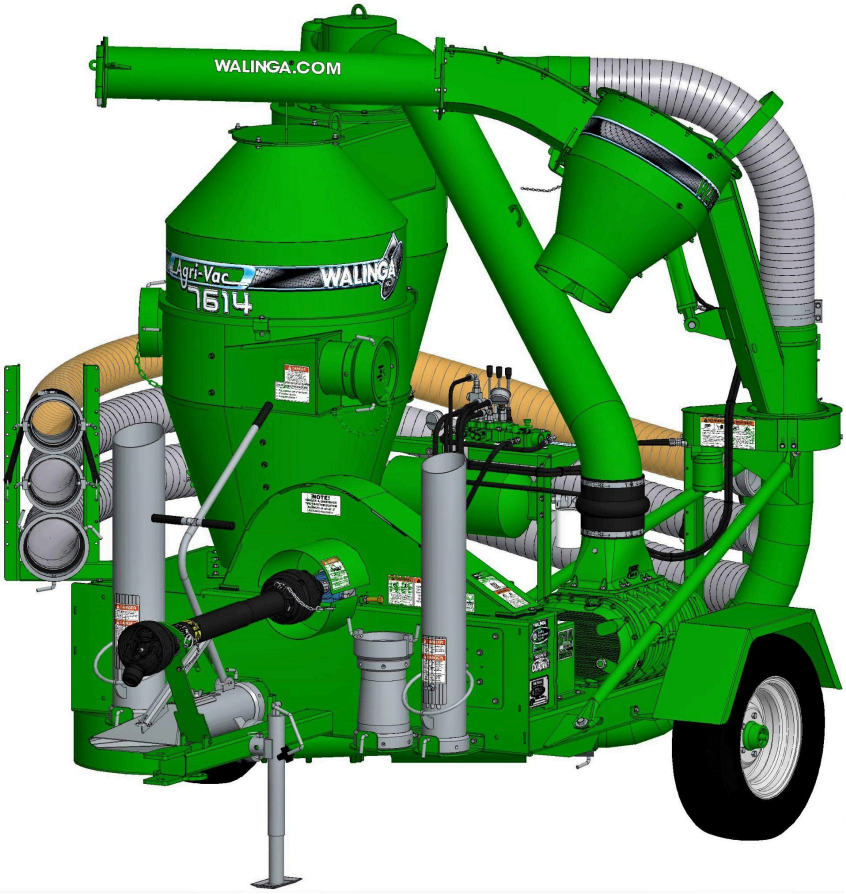


OPERATOR'S MANUAL

Agri-Vac 7614

English

WALINGA®
TOUGH TO BEAT IN THE LONG RUN

00-151077-0 C
2025-01-13

TO OUR VALUED CUSTOMERS:

The Walinga network of distribution centers and authorized dealers are dedicated to providing worldwide coverage of original parts and accessories for Walinga Pneumatic Conveying Systems. Our parts reflect Walinga's continued commitment to provide our customers with the highest quality parts and service.

For your convenience, should you require any information related to technical support, warranty, service, parts, or sales, please contact one of the following Walinga personnel:

TECHNICAL SUPPORT

	1-833-233-8227	pcs.techsupport@walinga.com

WALINGA WARRANTY COORDINATORS

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

SERVICE

Guelph, ON, Canada	1-888-WALINGA (ext 228)	guelph.service@walinga.com
Carman, MB, Canada	1-800-668-6344 (ext 418)	carman.service@walinga.com
Barrhead, AB, Canada	1-780-572-6082 (ext 1001)	todd.swaving@walinga.com
Wayland, MI, USA	1-800-466-1197 (ext 508)	wayland.service@walinga.com
Sioux Center, IA, USA	1-800-845-5589 (ext 804)	siouxcenter.service@walinga.com
Toowoomba, QLD, Australia	07-4634-7344	mail@customvac.com.au

ORIGINAL PARTS SALES

Eastern Canada and International	1-888-WALINGA (ext 224)	parts.canada@walinga.com
Western Canada	1-800-668-6344 (ext 421)	parts.carmen@walinga.com
Eastern USA	1-800-466-1197 (ext 507)	parts.usa@walinga.com
Western USA	1-800-845-5589 (ext 802)	parts.siouxcenter@walinga.com
Australia	07-4634-7344	parts.australia@walinga.com

SALES MANAGER

Tim Linde	1-519-787-8227 (ext 109)	tim.linde@walinga.com

CORPORATE HEAD OFFICE

5656 Highway 6N
RR#5, Guelph, Ontario, N1H 6J2
Tel: 888-925-4642 Fax: 519-824-5651
www.walinga.com

FACTORY DISTRIBUTION AND SERVICE CENTERS

938 Glengarry Crescent, Fergus
Ontario, Canada N1M 2W7
Tel: 519-787-8227 Fax: 519-787-8210

70 3rd Ave. NE Box 1790, Carmen
Manitoba, Canada R0G 0J0
Tel: 204-745-2951 Fax: 204-745-6309

6116 46 St., Bloomsbury
Alberta, Canada T0G 0J0
Tel: 780-572-6082

1190 Electric Avenue, Wayland
Michigan, USA 49348
Tel: 800-466-1197 Fax: 616-877-3474

579 4th St. NW, Sioux Center
Iowa, USA 51250
Tel: 800-845-5589 Fax: 712-722-1128

24 Molloy St., Toowoomba
Queensland, Australia 4350
Tel: 07-4634-7344 Email: mail@customvac.com.au

Table of Contents

This manual contains important information regarding the safety, operation and maintenance of your Walinga Agri-Vac.

Some illustrations and diagrams may show safety shields, guards, or covers removed for clarity. **DO NOT** operate the machine without these guards in place.

Identification of Machine

The identification of machine section outlines the applicable models included in this manual. It identifies the location of the machine serial number and serialized components and provides space for recording these numbers.

Introduction

The introduction section outlines the importance of this document and provides details for the interpretation and understanding of information presented in this manual.

Configuration

The configuration section gives an overview of the various configurations available for the specified model and identification between the different configurations.

Safety

The safety section lists important safety precautions and procedures as well as providing the meaning, location and visual representation of all safety signs and labels on the machine. Read and understand all precautions before operating, maintaining or transporting the machine.

Machine Life-Cycle Procedures

The machine life-cycle procedures section provides information on the reception, assembly and initial set-up, transportation, storage, and end of life procedures.

Operation

The operation section gives detailed information on the controls and displays of the machine, specific operating instructions including starting, operating all functions, and stopping the machine, as well as clearing any blockages. This section also provides troubleshooting information for fault diagnosis and solutions to issues that may be encountered.

Maintenance and Adjustments

The maintenance and adjustments section provides the recommended maintenance schedule and task instructions for both calendar and operation hour intervals, maintenance should be performed at the first occurrence of these two intervals.

Specifications

The specifications section details technical data of the particular model to achieve a high standard of operational performance and outlines relevant standards and regulations.

Warranty

The warranty section outlines the terms and limitations of the warranty coverage.

Accessories and Attachments

The accessories and attachments section lists available attachments for the machine.

Parts List

The parts list section provides information for the identification of replacement assemblies, subassemblies and parts.

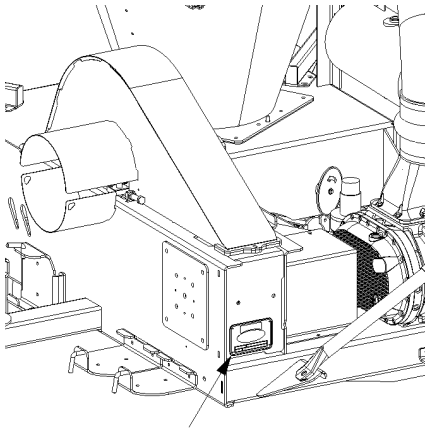
WALINGA® INC.

Identification of Machine

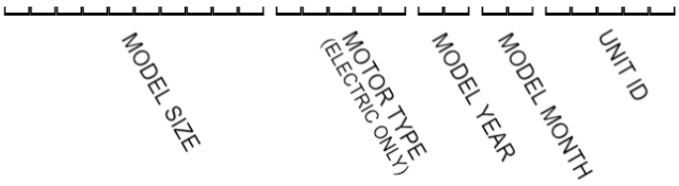
AGRI-VAC MODEL 7614

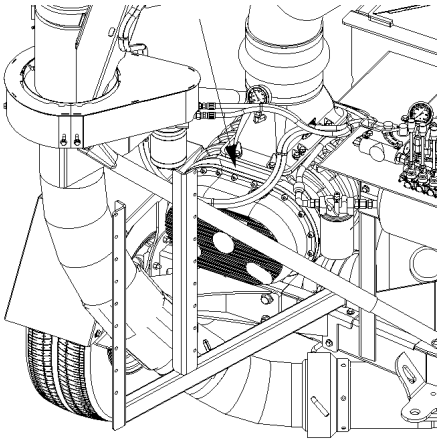
SERIAL NUMBERS

Be prepared to provide the serial number of the unit, blower and/or airlock to your Walinga dealer or representative when ordering parts or requesting service or other information. For easy reference, record the required serial numbers as follows:

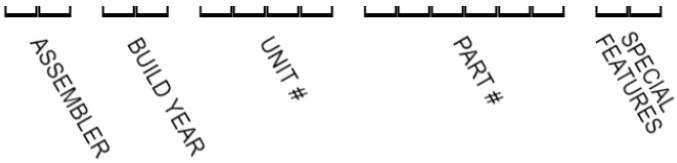


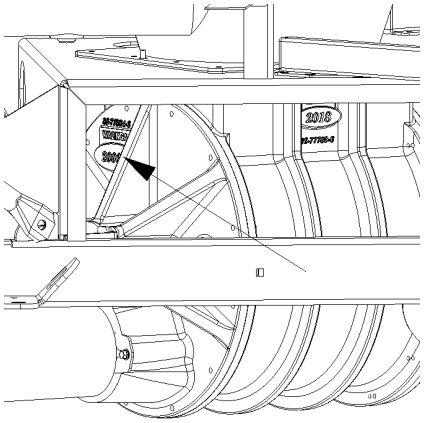
Machine Serial Number
Located on the front lower left side of the frame.



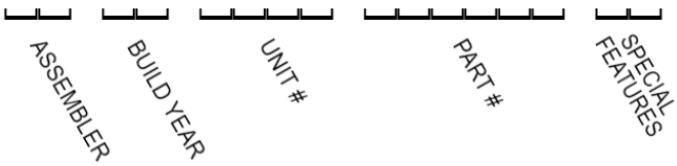


Blower Serial Number
Located on the top of the rear headplate of the blower.





Airlock Serial Number
Located on the outer rib of the endplate of the airlock.



WALINGA
Start-Up/Commissioning Form

This form must be filled out by the sales representative and/or dealer, and signed by both the sales representative and/or dealer and the customer at the time of delivery.	
Delivery Date: MM/DD/YYYY	
Owner Operator Name	Sales Representative / Dealer Name
Phone	Phone
Email	Email
Address	Address
City Prov/State	City Prov/State
Postal/ZIP Code Country	Postal/ZIP Code Country
Unit Serial Number	
Blower Serial Number	Airlock Serial Number

	CONFIRMATION OF ACTIONS COMPLETED
	All items and features accounted for
	Pre-delivery inspection
	Review of warranty terms
	Review of standard notes and terms
	Review of operating and safety instructions
	Operator manual supplied
	Supplemental documents supplied
	Guards installed and secured
	All safety signs identified and reviewed
	Discussion regarding applicable standards (see statement on reverse)

WALINGA
Start-Up/Commissioning Form

It is the responsibility of the Owner Operator to review and determine compliance to local and federal regulations. These regulations include, but are not limited to, local and federal laws as well as standards published by the NFPA (National Fire Protection Agency), ISO (International Organization for Standardization), OSHA (Occupational Safety and Health Administration) or OH&S (Occupational Health and Safety Standards), and ANSI (American National Standards Institute). *Please note: It is a requirement in NFPA 652 that the final operator completes a dust hazard analysis (DHA) of their facility and the products and processes it contains*. Based on this, Walinga understands that a DHA is required to be completed by the owner/operator prior to start-up/commissioning. In the event that a DHA is not available at start-up/commissioning, the owner/operator must provide written acknowledgement of their responsibility and intention to complete a DHA. The owner/operator also agrees that they shall be solely responsible for ensuring that any applicable NFPA standards and regulations shall be satisfied in conjunction with the incorporation of Walinga's equipment into the buyer's specific system of operations.

Date: _____ Owner Operator's Signature: _____

The above equipment has been received by me and I confirm that the sales representative / dealer has completed the start-up/commissioning process.

Date: _____ Owner Operator's Signature: _____

I have completed the actions listed above and confirm that the owner operator has completed the start-up/commissioning process.

Date: _____ Dealer Representative's Signature: _____

I have completed the actions listed above and confirm that the owner operator has completed the start-up/commissioning process.

Date: _____ Manufacturer Representative's Signature: _____

Additional Notes:

WALINGA® INC.

Introduction

AGRI-VAC MODELS

STATEMENT OF IMPORTANCE

Congratulations on your choice of a Walinga Agri-Vac to complement your operation. This equipment has been designed, engineered and manufactured to meet the needs of the discriminating buyer for the efficient moving of select free-flowing granular materials.

Your safety and the performance of your Agri-Vac are the top priorities. This operator's manual has been created for the express purpose of keeping you safe and providing education for the efficient use of your Agri-Vac.

Safe, efficient and trouble-free operation of your Agri-Vac requires that you and any individuals operating or maintaining the machine, read and understand all sections of this operator's manual. An operator who has not familiarized themselves with the contents of this manual constitutes an untrained operator. Untrained operators are not qualified to operate the machine.

Keep this manual available for frequent reference and for provision to new operators or owners.

Your machine's appearance or structural design may differ from illustrations shown in the manual. Continuous design improvements for optimized field performance are on-going and may have been made to your machine since the publication of the manual. Specifications, descriptions and all other information in the manual are subject to change and/or correction without notice. Contact your local dealer or Walinga representative for the most current revision of your machine's manual or if you have any questions.

INTENDED USE

The Walinga Agri-Vac has been designed for use in agricultural or similar operations in an outdoor environment for the moving of select granular commodities. Use of the machine in any other manner is considered as contrary to the intended use. Compliance with and strict adherence to the methods of operation, maintenance, and repair, as specified by Walinga in this manual, also constitute essential elements of the intended use.

The Agri-Vac must be operated, maintained and serviced only by persons who are familiar with its particular characteristics and have been acquainted with the relevant safety procedures in this manual. Any individual who has not familiarized themselves with the content of this manual is considered untrained. Untrained persons are considered unqualified to operate, maintain or service an Agri-Vac. It is the responsibility of the owner and/or operator to train new operators and ensure they have read and understood this manual.

Accident prevention regulations, all other generally recognized regulations on safety and occupational health and safety, and all road traffic regulations must be observed at all times.

Any unauthorized modifications carried out to the Agri-Vac may relieve Walinga of liability for any resulting damage or injury and is considered contrary to the intended use.

PNEUMATIC CONVEYING SYSTEMS

Pneumatic conveying systems use air to move materials and work best with powdered or granular materials like cereal grains. The efficient operation depends on many factors including air flows, line sizes, engine power, operating methods, and suction and discharge line arrangements, among others. Pneumatic conveying systems enhance safety, as there are no moving parts at the intake point; improve cleanliness, producing less dust in the grain removal area; and increase versatility, unrestricted by changes in direction, as compared to traditional auger conveying systems.

A simplified representation of a pneumatic conveying system can be seen in ***Figure 2-1***. At the heart of the Walinga system is a positive-displacement blower, sometimes referred to as an air pump. The blower unit creates a negative pressure (vacuum) in the primary air material separator (AMS), also known as the intake cyclone. This vacuum effect pulls the material and air into the intake cyclone through lines attached to its intake point(s).

As grain and air enter the primary AMS, they are separated through cyclonic action. The conveyed material falls downwards to a rotary airlock while the air moves upwards and out to the blower. The air may move through a secondary AMS before it reaches the blower. This secondary cleaning action further reduces wear on the blower by removing abrasive dust from the air-stream.

Located at the bottom of the primary AMS is the airlock. It acts as a seal between the vacuum and pressure sides of the system. As the airlock rotor turns, the upward facing rotor pocket fills with falling material. As the pocket rotates, material is moved to the bottom of the airlock where it enters the pressurized air-stream.

Pressurized air from the blower moves through a discharge line past the bottom of the rotary airlock feeder. The conveyed material and pressurized air are then moved to a discharge point. Most systems use a discharge cyclone at the delivery end of the line to efficiently separate the material from the air and drop it directly downwards.

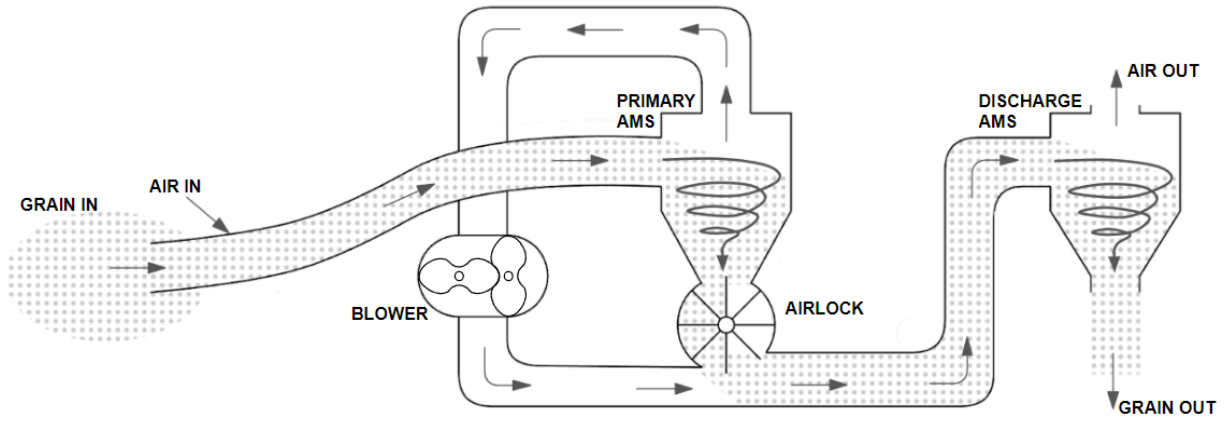
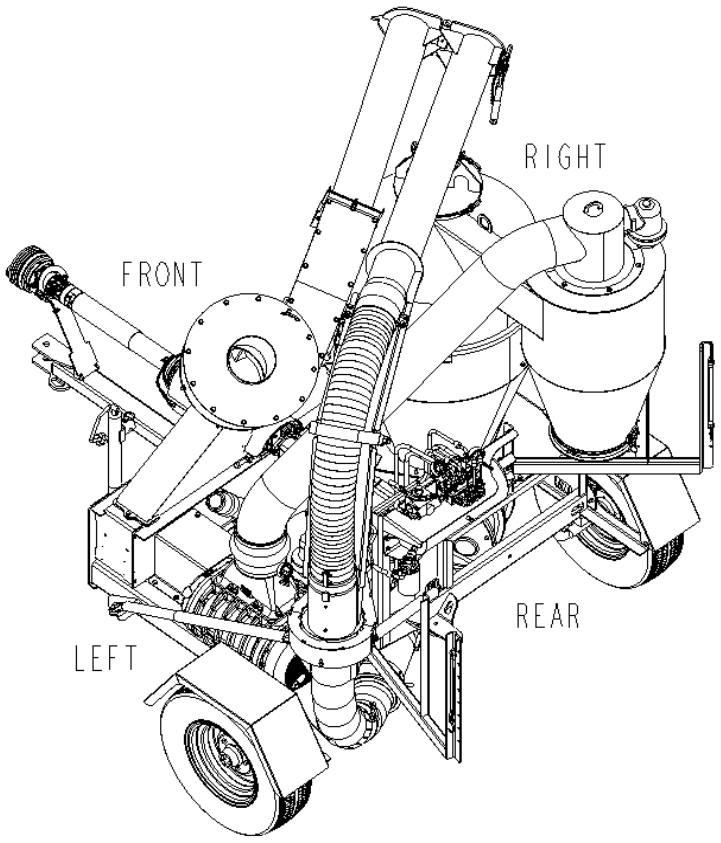


Figure 2-1: Simplified Walinga pneumatic conveying system

Standard Walinga systems function under suck/blow operation, meaning the machine lifts and moves product into the machine under vacuum (sucks) and then transfers it in a stream of pressurized air (blows) to the discharge point. However, there are some units that can function under blow-only operation. On these units, the top section of the primary AMS is removed and the airlock is fitted with an intake guard as well as a muffler attached to the blower inlet. Models without a removable top section on the primary AMS require a purpose-built intake hopper. In blow-only operation, material drops directly into the intake hopper and the airlock meters it into the pressurized discharge line. Be advised that standard units are not supplied with blow-only kits. Walinga does not authorize the use of standard machines in blow-only operation without additional operational and safety hardware installed. If a standard unit is modified for blow-only operation, it is the responsibility of the owner and/or operator to ensure that all moving parts and air inlets are adequately guarded.

To avoid confusion, the directions shown in ***Figure 2-2*** are used as the standard throughout the manual:



FRONT	The hitch end of the Agri-Vac
REAR	The primary and secondary AMS and airlock end of the Agri-Vac
RIGHT	The right-hand side as viewed from the REAR of the Agri-Vac
LEFT	The left-hand side as viewed from the REAR of the Agri-Vac

Figure 2-2: Directional references

WALINGA® INC.

Machine Configuration

AGRI-VAC 7614 MODEL

MODEL VARIATIONS

STANDARD (STD)

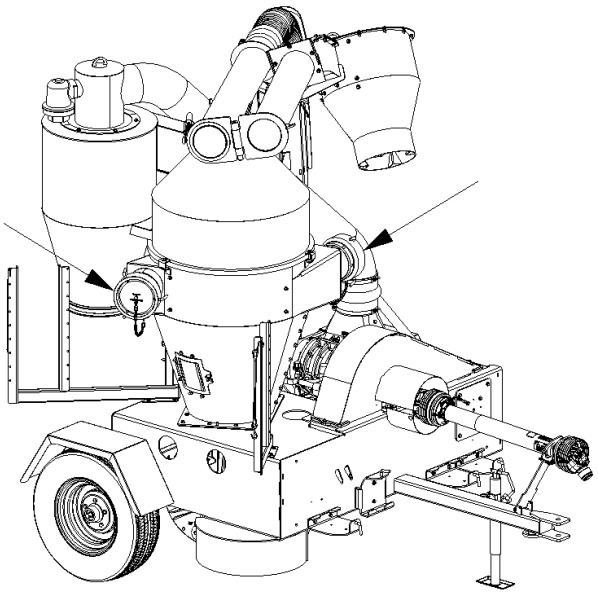
The base system provides full functionality of a pneumatic conveying system featuring 7 in (18 cm) lines, a 614 Walinga Sound Reduction Technology blower, a 1618 airlock, partial Rhino Hyde lining, a tractor-driven hydraulic system, and can have additional features incorporated into the design of the machine.

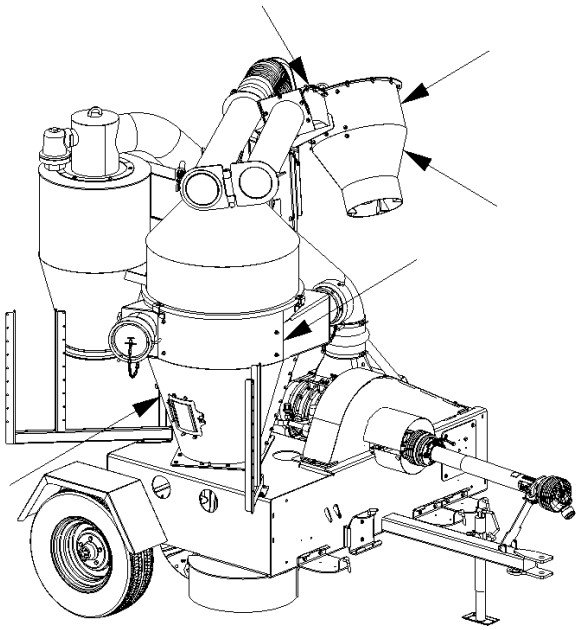
DELUXE (DLX)

The deluxe model includes a self contained hydraulic system, dual inlet primary AMS, a secondary AMS, and can be combined with additional features including full Rhino Hyde liner (FRL) and heavy duty (HD).

DUAL INLET (DI)

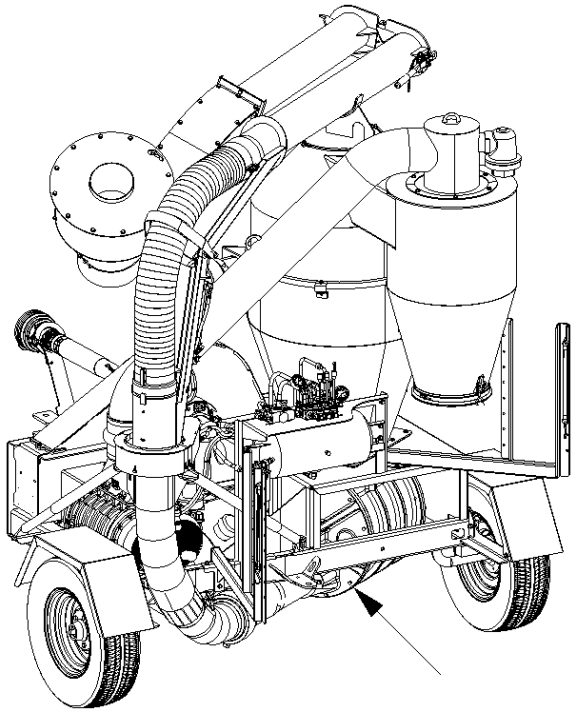
The primary AMS is equipped with two inlet ports for more convenient intake line connections. This feature is only incorporated on deluxe models.





FULL RHINO LINER (FRL)

In addition to the standard Rhino Hyde liner in the primary and secondary AMS, FRL also includes liners in the discharge AMS cone and inlet elbow for increased wear resistance.

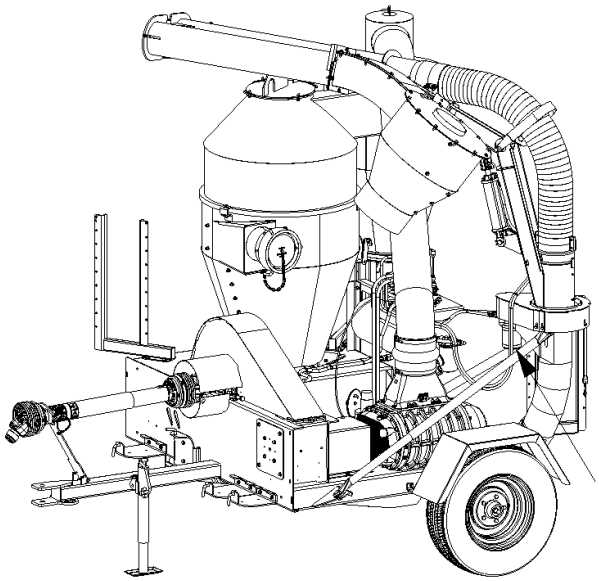


HEAVY DUTY (HD)

Heavy duty applications feature the 2018 airlock for increased capacity and comes standard on all 7614 Agri-Vac models.

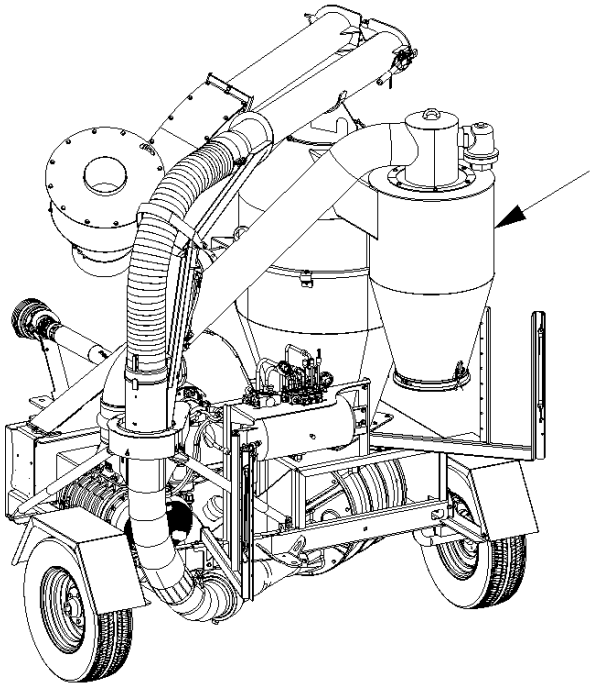
HYDRAULIC BOOM ROTATION (HBR)

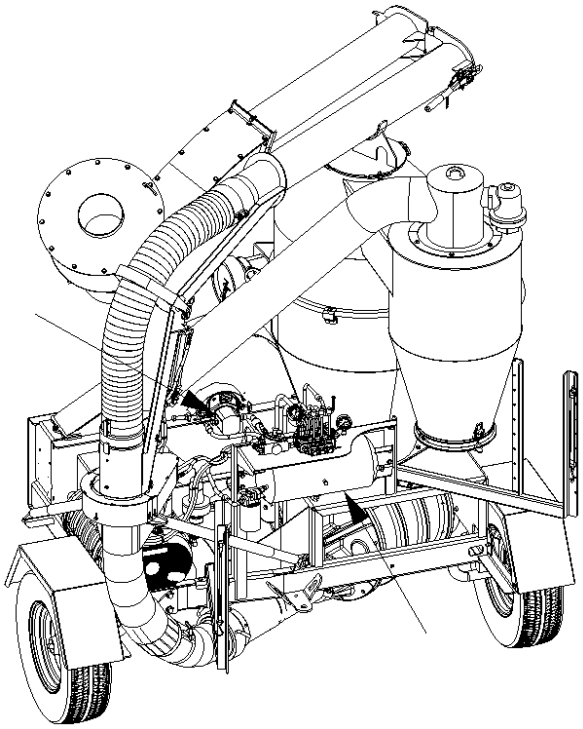
The boom is equipped with a hydraulic motor for easier rotation and positioning of the discharge cyclone. All 7614 Agri-Vac units are equipped with this feature.



PRE-CLEANER (PC)

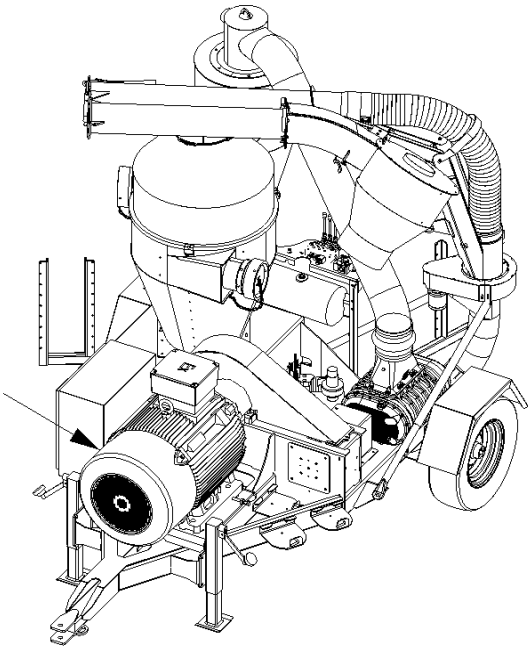
A secondary AMS, positioned between the primary AMS and blower intake, greatly reduces premature wear of the blower.





SELF CONTAINED HYDRAULICS (SCH)

The machine includes a hydraulic pump and reservoir to eliminate the need for a hydraulic connection to a tractor.



ELECTRIC (E)

The machine is driven by an electric motor and does not require a PTO connection to a tractor.

PAGE INTENTIONALLY LEFT BLANK

WALINGA® INC.

Safety

PTO AGRI-VAC MODELS

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 Agri-Vac and in the operator's manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Safety is one of the top priorities and should always be taken into consideration because:

- Accidents disable and kill
- Accidents cost
- Accidents can be avoided

SIGNAL WORDS

Take note of the signal words **DANGER**, **WARNING**, and **CAUTION** when used with a safety message, as well as the use of the words **IMPORTANT** and **NOTE**. 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 limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded. The associated color is red.
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. The associated color is orange.
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. The associated color is yellow.
IMPORTANT	Indicates a potentially hazardous situation that, if not avoided, may result in damage to the machine. It may also be used to alert against unsafe practices. The associated color is blue or white.
NOTE	Indicates supplementary information that the operator must be aware of for the safe or proper use of the machine. The associated color is blue or white.

GENERAL SAFETY

You are responsible for the ***safe*** operation and maintenance of your Agri-Vac. ***You*** must ensure that you and anyone else who will operate, maintain, or work around your Agri-Vac is familiar with the operating and maintenance procedures and safety information contained in this manual. This manual will provide information for safety practices that must be adhered to while operating an Agri-Vac. Remember, ***you*** are the key to safety. Good safety practices not only protect you, but also the people around you. Make good safety practices a working part of your safety program. Be certain that ***everyone*** operating the Agri-Vac is familiar with the recommended procedures and follows all safety precautions. Remember, most accidents can be prevented; do not risk injury or death.

Agri-Vac owners must provide operating instructions to operators or employees before initially allowing them to operate the equipment, and must review this information at least annually thereafter. The most important safety feature of an Agri-Vac is a ***safe*** operator. It is the operator's responsibility to read and understand all aspects of this manual and to follow all safety and operational instructions. An individual who has not read, understood, and been trained to follow all operation and safety procedures is considered an untrained operator and is unqualified and unauthorized to operate an Agri-Vac. Untrained operators expose themselves and bystanders to potential serious injury or death.

Before servicing, adjusting, repairing, or unplugging an Agri-Vac, place all controls in neutral, stop the engine or disconnect all electrical sources, set the park brake on the tractor or towing vehicle, remove the ignition key and wait for all moving parts to stop.

In case of emergency, keep a first-aid kit and fire extinguisher readily available and stored in a highly visible place. Be familiar with the use of each of these tools. Also keep the phone number for the emergency medical center for your area readily available.

Use appropriate personal protective equipment including, but not limited to: a hard hat, protective shoes with slip-resistant soles, protective glasses or goggles, heavy gloves, wet weather gear, and hearing protection. Long hair and loose clothing must be secured to avoid potential injury as a result of coming into contact with moving or rotating components of the Agri-Vac. Hands and feet must also be kept clear of any moving or rotating components.

Ensure all electrical equipment is properly grounded. All electrical connections made to the Agri-Vac must be in compliance and accordance with the National Electric Code (NFPA 70). During set-up, operation and transportation, identify and avoid overhead obstructions and power lines. Be aware that electrocution can occur without direct contact.

In order to provide a better view or visualization, certain diagrams in this manual may show an assembly or machine feature with a safety shield or guard removed. This is for illustrative purposes only. Equipment must never be operated in this condition. Keep all guards and shields in place. If it is necessary to remove a shield or guard for maintenance or adjustment, the shield or guard must be replaced prior to use.

Replace any safety sign or instructional sign that has been damaged or become illegible. The location and a reproduction of the safety signs located on the Agri-Vac are outlined later in this section. In addition to the design and configuration of this implement, including safety signs and safety equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer to the safety messages and operational instructions in each of the appropriate sections of the auxiliary equipment and machine manuals. Pay careful attention to the safety signs affixed to the auxiliary equipment and the machine.

Never use alcoholic beverages, narcotics, or other intoxicants which could hinder alertness or coordination while operating an Agri-Vac. Consult your doctor about operating this machine while taking prescription medications.

Under no circumstances should young children be allowed to work with this equipment. Do not allow children or any other individuals to climb on, play around, or ride on the Agri-Vac at any time. This equipment is dangerous to children and individuals unfamiliar with its operation. The operator must be a responsible, properly trained, and physically able person familiar with farm machinery and trained in the Agri-Vac's operation. If there are elderly individuals assisting with farm work, their physical limitations must be recognized and accommodated. Do not allow any individuals to operate or assemble this machine until they have read and understood the safety precautions and operational procedures in this manual.

Never exceed the limits of a piece of machinery. If its ability to perform a task, or to do so safely, is in question, do ***not*** attempt it. Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death and may impair the function, safety or life of the equipment, as well as void the warranty.

PRE-OPERATION SAFETY

- Safety is a primary concern in the design and manufacturing of Walinga products. However, these efforts can be negated by a single careless act of an operator or bystander.
- It is the responsibility of the operator to read and understand all safety and operational instructions contained within the operator's manual and the manuals of any auxiliary equipment. Working with unfamiliar equipment can lead to careless injuries. Ensure you and any individual who will be working with or around the Agri-Vac understands the information provided in the operator's manuals and is instructed in the safe and proper use of the machine.
- Become familiar with the controls of the Agri-Vac and know how to stop the Agri-Vac and any other auxiliary equipment quickly in the event of an emergency.

- Properly train all new personnel and review instructions frequently with existing workers. Ensure only a properly trained and physically able individual will operate the machine. Any individual who has not read and understood all operating and safety procedures is not qualified to operate the machine.
- Ensure all necessary personal protective equipment including a hard hat, safety glasses or goggles, safety shoes, gloves, wet weather gear, and hearing protection are in good condition. Do not allow loose long hair, loose fitting clothing, or jewelry to be around the equipment. Prolonged exposure to loud noise may cause permanent hearing loss. Motors or attached equipment can often produce enough noise to cause permanent, partial hearing loss. It is recommended that hearing protection is always used if the noise levels at the operator's position exceeds 80 dB. Noise over 85 dB on a long-term basis can cause severe hearing loss. Noise over 90 dB in close proximity to the operator over a long-term basis may cause permanent, total hearing loss. Hearing loss from loud noise is cumulative over a lifetime without the hope of natural recovery.
- Clear the working area of debris, trash or hidden obstacles that may be hooked or snagged, causing injury, damage or tripping hazards.
- Operate only in daylight or with sufficient artificial lighting.
- Ensure the machine is properly anchored, adjusted and in good operating condition. Check the machine over for any loose bolts, worn parts, cracks, leaks, frayed belts, etc., and make any necessary repairs. Always follow the maintenance instructions.
- Ensure that all safety shielding and guarding and safety signs are properly installed and secured, and are in good condition.

INSTALLATION SAFETY

- Disconnect and remove all mechanical locks, anchor chains and any other transport devices that would hinder or prohibit the normal function of the Agri-Vac upon start-up. Serious damage to the machine and/or personal injury to the operator or bystanders may result from attempting to operate the machine while mechanical locking devices are still attached and secured.
- Position the machine on firm, level ground. Ensure the frame is level before use, and anchor the Agri-Vac securely.
- Ensure there is a minimum of one additional individual available for assistance with elevating, moving, or connecting other equipment.
- For any required electrical connections, ensure that sufficient amperage at the proper voltage and frequency is available before connecting power on electric models. Have a licensed electrician provide power to the machine. Always follow ANSI/NFPA 70 standard and all local codes and regulations when providing electrical power.

OPERATIONAL SAFETY

- Read and understand the operator's manual and all safety signs before use.
- Do not operate when any guards are damaged or removed. Install and secure all guards before operating. Ensure the PTO shaft includes restraining anti-spin chains and that the lock clips are functional.
- Keep hands, feet, clothing, hair, and jewelry away from all moving and/or rotating parts.
- Do not allow any individuals to climb or ride on the Agri-Vac at any time.
- Clear the area of all bystanders, especially small children, before operation.
- Ensure the Agri-Vac is attached securely to the tractor or towing vehicle by using a retainer on the drawbar pin and a safety chain.
- Ensure the PTO driveline telescopes and rotates freely on the shaft before installing. Attach the restraining safety chains on the guard to prevent the guard from rotating. If the PTO shaft is missing any safety guards or safety signs, it must not be used.
- Keep clear of overhead obstructions and electrical lines when extending the boom during operation. Be aware that electrocution can occur without direct contact.
- Keep yourself and others clear of the discharge boom when moving, adjusting, or setting.
- Keep all safety signs, reflectors, slow moving vehicle signs, and lights clean and unobstructed, especially before transport.
- Wear appropriate personal protective equipment while operating.
- Do not operate the Agri-Vac if there are any leaks in the hydraulic or air systems. Ensure all hydraulic system components are tight and that all steel lines, hoses and couplings are in good condition before applying pressure to the system.
- Do not place the intake nozzle near your feet when standing on top of the conveyed material; the suction of the Agri-Vac is sufficient enough to pull the nozzle and operator into the pile. If the pile is deep enough, the operator can become submerged in the material and suffocate.
- Establish a formal Lock-Out Tag-Out program for your operation and train all operators and service personnel before allowing them to work with or around the Agri-Vac. Provide tags at the work site and a sign-up sheet to record tag-out details. Do not perform any service or maintenance work unless the motor and engine are OFF and the power is locked out. Safety lockout devices are available through your Walinga dealer parts department.
- In the event of a blockage in the airlock, operate the airlock in reverse for a short period of time until the blockage clears. Do not operate the airlock in reverse for extended periods of time or damage to the rotor will occur. Never reach into the airlock with hands or tools while in operation to clear an obstruction. Hydraulic pressure must be relieved before the access door/discharge elbow are opened to manually dislodge obstructions.

STORAGE SAFETY

- Store the Agri-Vac on a firm, level surface in a dry area away from human activity.
- Secure the Agri-Vac in place with wheel chocks if necessary.
- Support the hitch jack with an additional footing support if required, especially on softer surfaces.
- Do not permit children to play on or around the stored machine.
- Ensure all mechanical locks are safely and positively connected.

MAINTENANCE SAFETY

- Read, understand and follow all operating, maintenance and safety information in the operator's manual.
- Clear the area of bystanders, especially small children, when carrying out any maintenance or repairs or making any adjustments.
- Follow good shop practices:
    - Keep the service area clean and dry.
    - Ensure electrical outlets and tools are properly grounded.
    - Use adequate lightning for the job at hand.
- Ensure a fire extinguisher and first aid kit are readily available, and know how to use them.
- Place all controls in neutral, stop the tractor or electric power source, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or maintaining. Lock-out tag-out machine.
- Use required personal protective equipment previously outlined.
- Support the machine with blocks or safety stands when changing tires or working beneath the machine.
- Use only tools, jacks and hoists of sufficient capacity for the job.
- Keep hands, feet, hair, clothing, and jewelry away from all moving and/or rotating parts.
- Before applying pressure to a hydraulic system, ensure all lines, fittings and couplers are tight and in good condition.
- Relieve pressure from the hydraulic circuit before servicing or disconnecting from the tractor.
- Ensure all guards are in place and properly secured when maintenance work is complete.

TRANSPORTATION SAFETY

- Be aware of any specific local regulations regarding transporting agricultural equipment on public roads and highways and ensure your Agri-Vac is in compliance.
- Be aware that the standard Agri-Vac is a slow moving implement. Additional safety and structural features must be used for high-speed transportation. Reference **Section 10: Accessories and Attachments** for available highway packages.
- Ensure all lights and reflectors required by local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking, oncoming and cross traffic.
- Ensure the discharge boom is placed and secured in the transport position and is resting in the boom saddle, and ensure all other components are in their transport position.
- Attach the Agri-Vac securely to the towing vehicle using a retainer on the drawbar pin and a safety chain.
- Do not allow any individuals to ride on the Agri-Vac or towing vehicle during transport.
- Reduce speed on rough roads and surfaces.
- Keep clear of overhead obstructions and power lines. Be aware that electrocution can occur without direct contact.
- Always use hazard warning flashers on the towing vehicle when transporting, unless prohibited by law.
- Add extra lights or use pilot vehicles when transporting during times of limited visibility or as required by local regulations.
- Reference ANSI/ASAE S279.17 July, 2013 as a minimum standard for lighting and marking of agricultural equipment on highways whether towing the Agri-Vac during the day or night.

HYDRAULIC SAFETY

- Ensure all components in the hydraulic system are kept in good condition and are clean.
- Before applying pressure to the hydraulic system, ensure all components are tight and that lines, hoses and couplings are not damaged.
- Replace any worn, cut, abraded, flattened, or kinked hoses or metal lines immediately.
- Relieve pressure before working on the hydraulic system.
- Do not attempt makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high pressure and such attempts will fail suddenly and create hazardous and unsafe conditions.
- 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 identify and isolate a leak.
- If injured by a concentrated, high pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reactions can develop from hydraulic fluid piercing the skin's surface.

TIRE SAFETY

- Failure to follow proper procedures when mounting a tire on a wheel or rim can result in a tire blow-out which may cause serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience.
- Have a qualified tire dealer or repair service perform any required maintenance.
- Ensure all tires are kept inflated to the proper pressure.
- When replacing worn tires, ensure the replacements meet the original tire specifications. Never undersize a replacement tire.

SAFETY AROUND STORAGE STRUCTURES

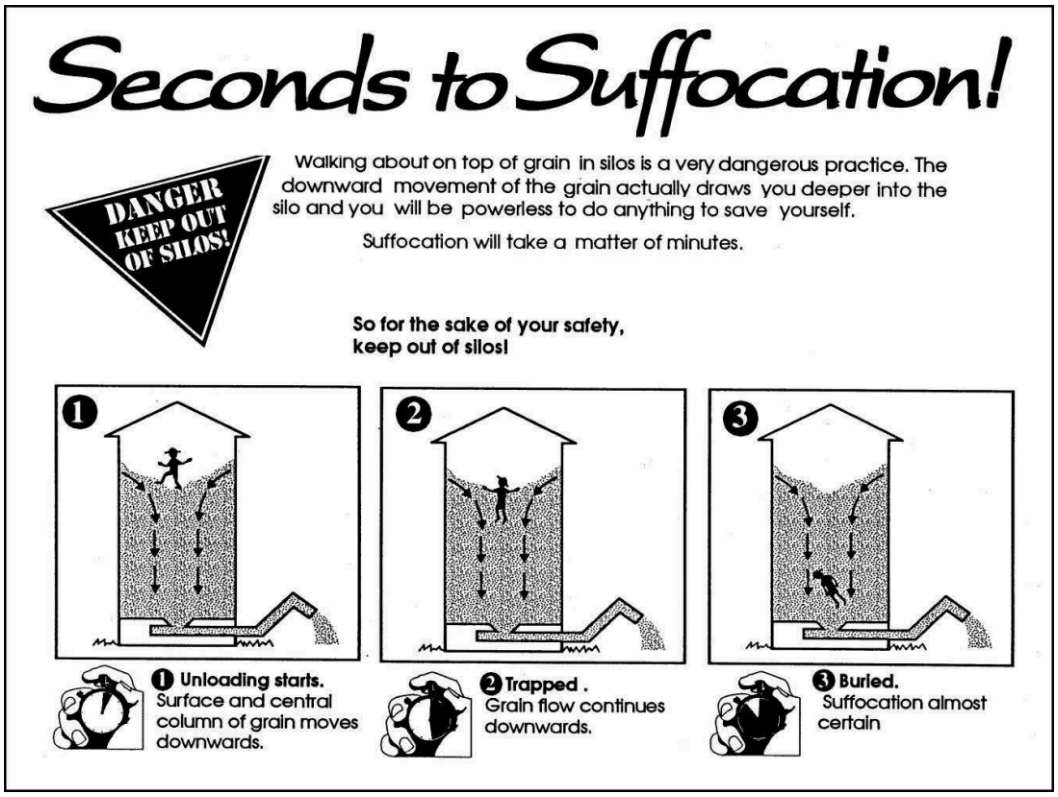
Agri-Vac operators and all other personnel in the vicinity or assisting with operation must strictly adhere to the procedures outlined below before entering a storage structure. For additional details regarding these procedures, reference Occupational Safety and Health Administration standards, or your local regulations.

Entering a bin, silo, tank, or other type of storage structure is hazardous. You can suffocate and die from the materials stored within these structures. There may also be explosive, harmful or poisonous gas or dust in the air.

The following safety procedures are adapted from the Occupational Safety and Health Administration 1910.272 standard relating to grain handling facilities:

- The machine operator(s) and all assisting personnel must be aware of the actions they will take in the event of an emergency.
- The machine operator(s) and all assisting personnel must be trained in the general procedures and safety practices for entering and working in bins, silos, tanks, or other storage structures, as well as the safety procedures for handling special tasks concerning entering and working within such structures.
- The atmosphere within a bin, silo, tank, pit, basement, or storage structure must be tested for the presence of combustible gasses, dusts, vapors, and toxic agents.
- Ventilation must be provided until any unsafe conditions are eliminated or as long as there is still a possibility of recurrence of the unsafe conditions within the bin, silo, tank, pit, basement, or storage structure while occupied by personnel.
- Any individual entering the bin, silo, tank, pit, basement, or storage structure must wear an appropriate respirator and protective clothing as long as there is the possibility of any unsafe atmospheric conditions.

- When entering bins, silos, tanks, or storage structures from the top, personnel must wear a body harness with a lifeline or use a boatswain's (bosun's) chair.
- An observer equipped to provide assistance and trained in rescue procedures, including notification methods, must be stationed outside the bin, silo, tank, or storage structure being entered. Visual, voice or signal line communications must be constantly maintained between the observer and the individual in the bin, silo, tank or storage structure.
- Equipment for rescue operations that is specifically suited to the bin, silo, tank, or storage structure being entered must be provided and readily accessible.
- Do not enter bins, silos, tanks, or storage structures under a bridging condition, or where a buildup of materials could fall and bury you. Do not walk or stand on grain or other materials where the depth is greater than waist height.
- Be aware of the extremely high suction at the intake nozzle of the Agri-Vac. Keep clear of the nozzle intake area and never place the intake nozzle into material near your feet.
- Always check with the bin manufacturer before starting to unload a bin from the side. Side unloading may cause bin collapse.
- Do not enter silo bags. Always slice the sides of the silo bags open and roll back the sides before removing the grain.



MACHINE SAFETY SIGNS

The safety signs affixed to the Agri-Vac provide important information regarding your safety and the safe operation of the machine. Familiarize yourself with all safety signs before operation.

- Safety signs must be clean and legible at all times.
- Replace any safety signs that are missing, damaged, or have become illegible.
- Any replaced parts that previously displayed a safety sign, must display the current safety sign.
- Safety signs are available at no cost from your representative, dealer, or directly from Walinga.

If a safety sign has become damaged, illegible or a new safety sign must be installed on a replacement component, proceed as follows:

1. Ensure the installation area is clean and dry
2. Ensure the temperature of the Agri-Vac is above 50 °F (10 °C).
3. Locate the correct position of the safety sign before removing the backing paper. Reference ***Figure 4-1*** through ***Figure 4-9*** for the correct location of each sign.
4. Remove the smallest portion of the split backing paper.
5. Align the safety sign over the correct position and carefully press the small portion with the exposed adhesive backing in place.
6. Slowly peel back the remaining paper and carefully smooth the remaining portions of the safety sign in place.
7. Small air pockets can be pierced with a pin and smoothed out using the backing paper.

Safety signs affixed to an Agri-Vac are standardized as follows:

- Danger safety signs are red in color
- Warning safety signs are orange in color
- Caution safety signs are yellow in color
- Informational safety signs are white or blue in color
- Each safety sign is printed with its respective Walinga part number located in the bottom right corner. Reference this number on the safety sign, or identified in the following reproductions, to obtain replacement safety signs.

The safety signs affixed to an Agri-Vac are as follows:

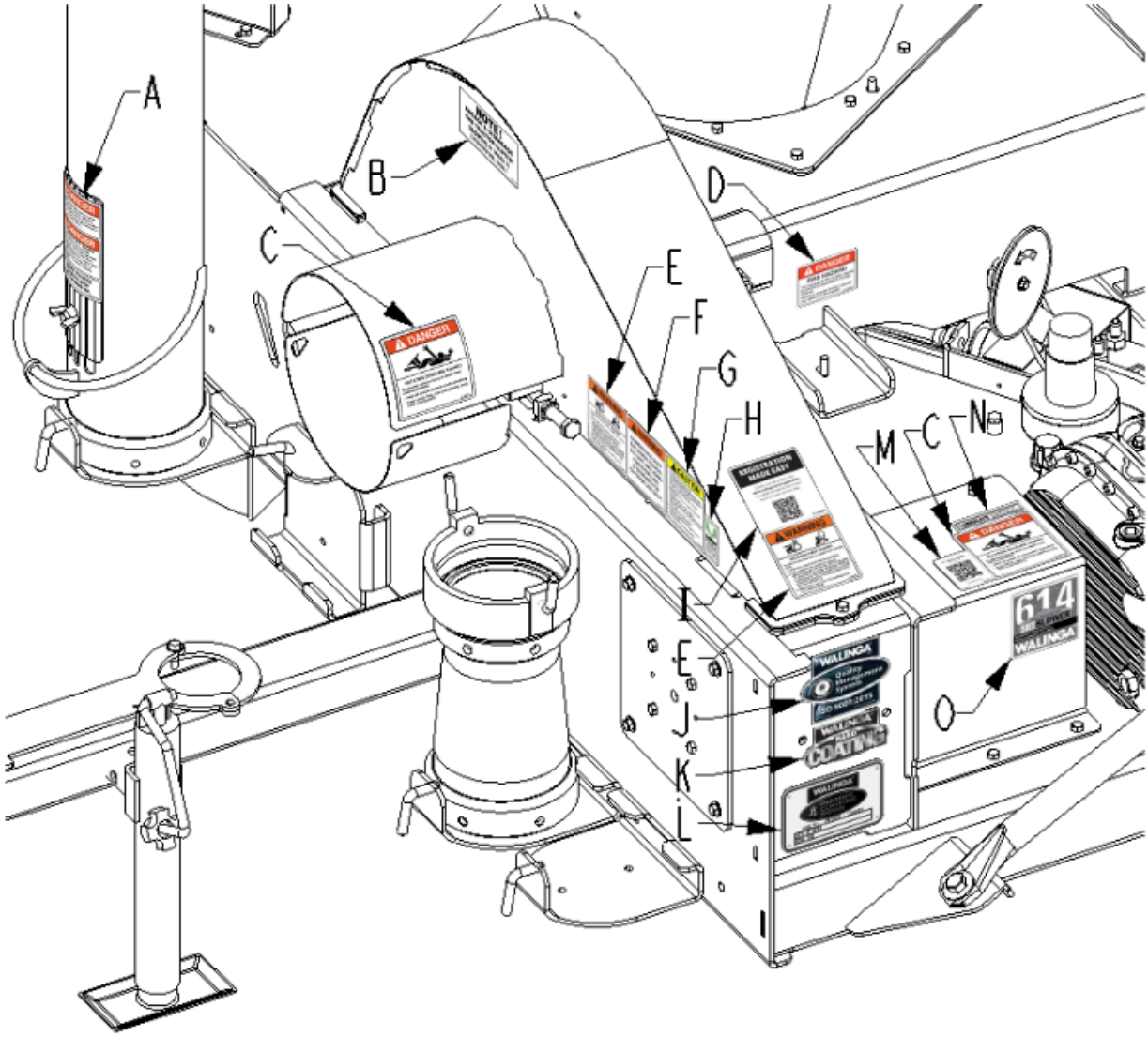


Figure 4-1: Front left side of Agri-Vac safety signs

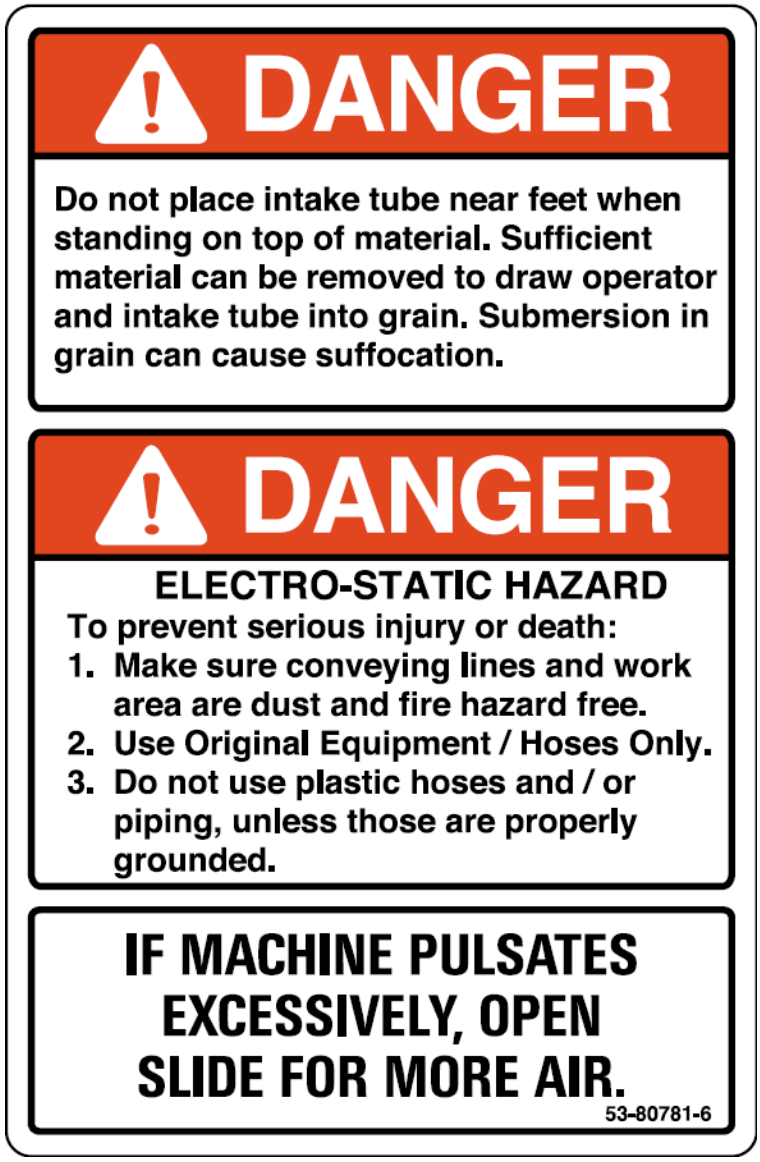


Figure 4-1 A

Part Number: 53-80781-6

Location: the air slide of intake nozzles and the side of the intake tube on sweep nozzles

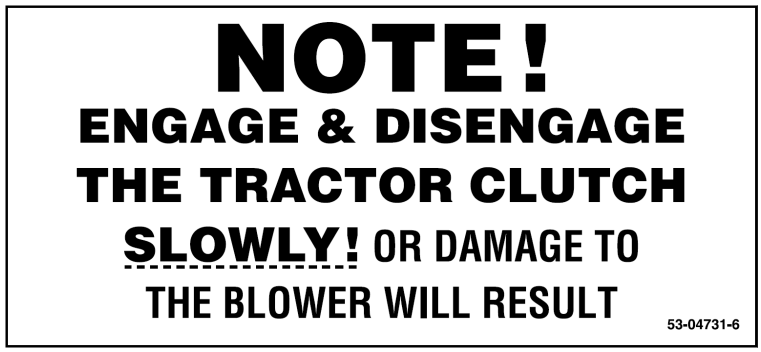


Figure 4-1 B

Part Number: 53-04731-6

Location: the front side of the belt guard, centered above the PTO shaft guard

Figure 4-1 C

Part Number: 53-15635-6

Location: the left side of the upper section of the PTO shaft guard, and the top side of the blower drive shaft guard

Figure 4-1 D

Part Number: 53-129804-6

Location: the left side of the frame supporting the primary AMS, centered above the muffler

Figure 4-1 E

Part Number: 53-18288-6

Location: the lower edge of the front side of the belt guard and the lower edge of the inclined left side of the belt guard

Figure 4-1 F

Part Number: 53-135151-6

Location: the lower edge of the front side of the belt guard

Figure 4-1 G

Part Number: 53-15633-6

Location: the lower edge of the front side of the belt guard

Figure 4-1 H

Part Number: 53-98505-6

Location: the lower edge of the front side of the belt guard

Figure 4-1 I

Part Number: 53-102592-6

Location: the lower edge of the inclined left side of the belt guard

Figure 4-1 J

Part Number: 53-116164-6

Location: the upper edge of the left side of the frame below the belt guard

Figure 4-1 K

Part Number: 53-120857-6

Location: the left side of the frame below the belt guard

Figure 4-1 L

Part Number: 53-94818-6

Location: the left side of the frame below the belt guard

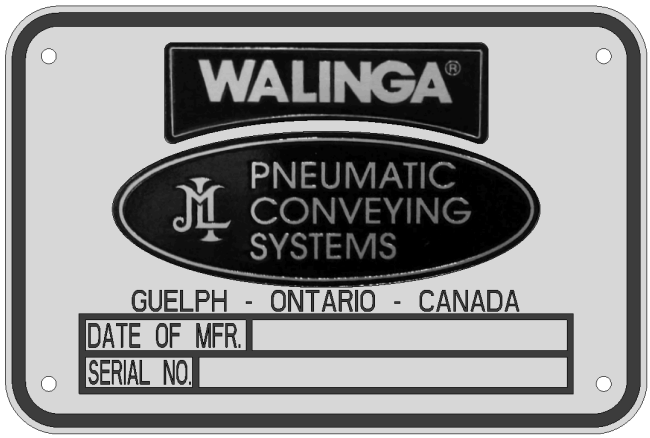


Figure 4-1 M

Part Number: 53-106784-6

Location: the top of the blower drive shaft guard

Figure 4-1 N

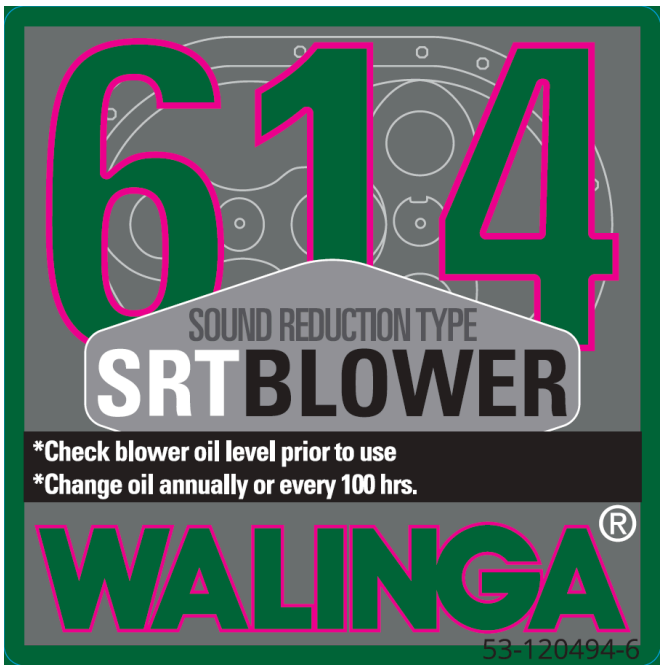
Part Number: 53-77753-6

Location: the top of the blower drive shaft guard

Figure 4-1 O

Part Number: 53-120494-6

Location: the left side of the blower drive shaft guard



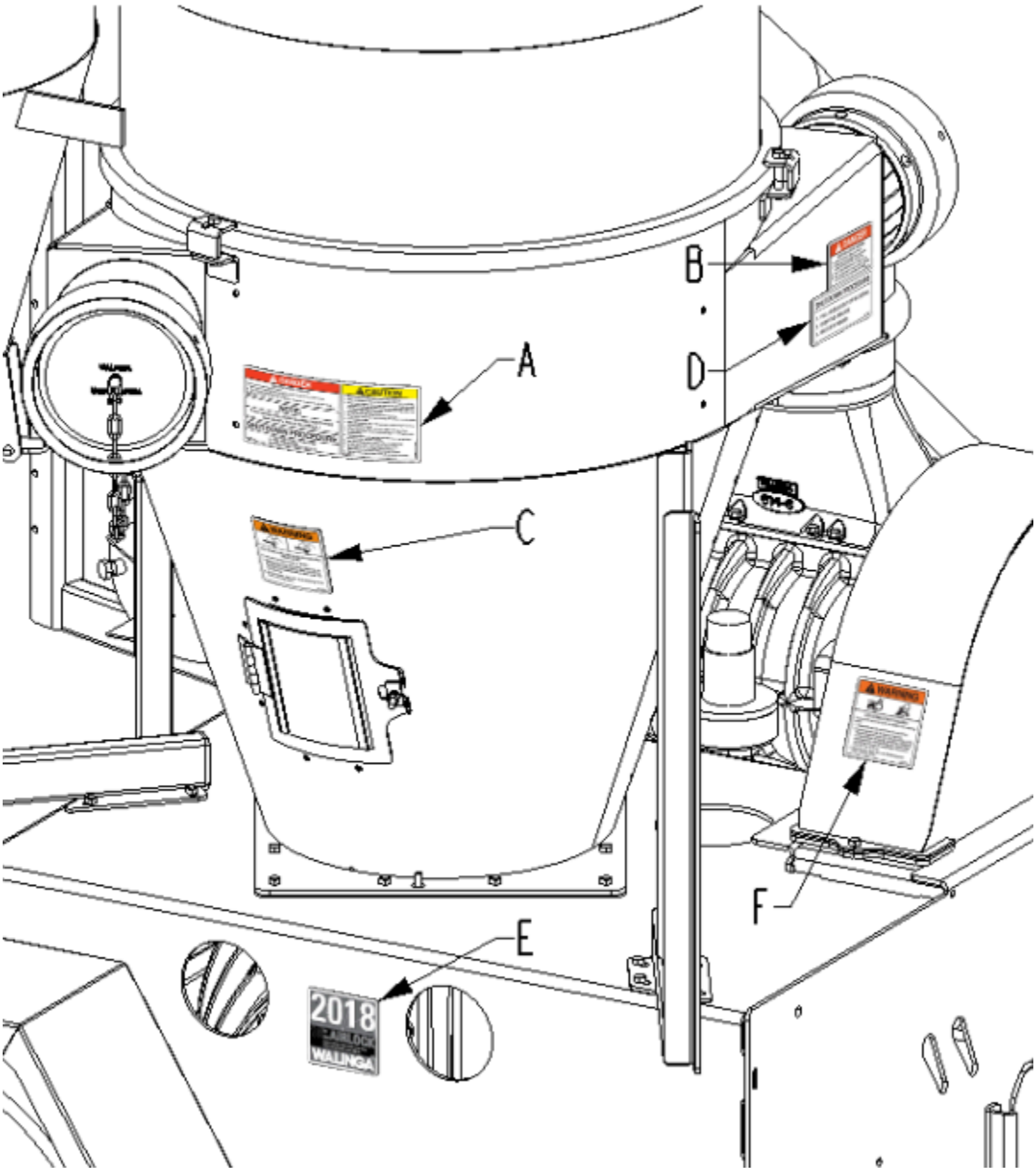


Figure 4-2: Front right side of Agri-Vac safety signs

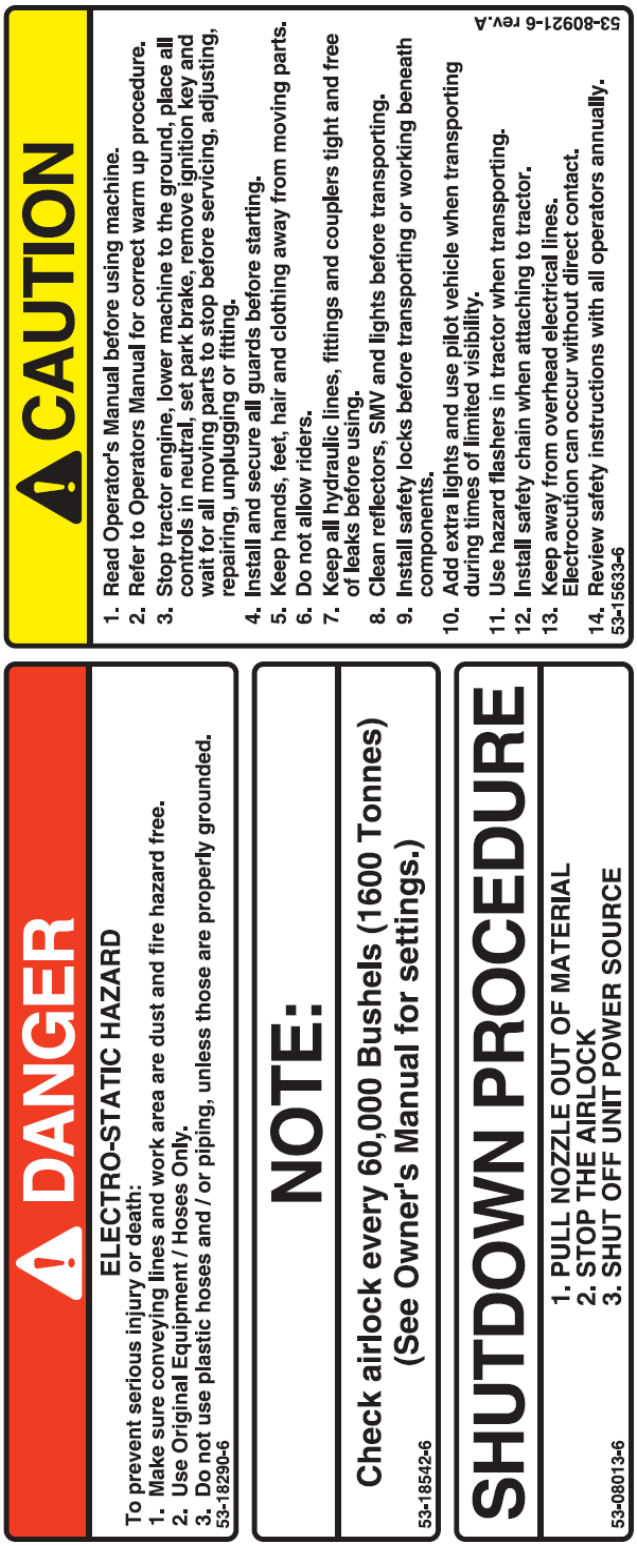


Figure 4-2 A

Part Number: 53-80921-6

Location: the right side of the primary AMS body, to the front of the right-facing inlet

Figure 4-2 B

Part Number: 53-18290-6

Location: the front side of the left-facing primary AMS inlet

Figure 4-2 C

Part Number: 53-18289-6

Location: the right side of the primary AMS body, centered above the access door

Figure 4-2 D

Part Number: 53-08013-6

Location: the front side of the left-facing primary AMS inlet

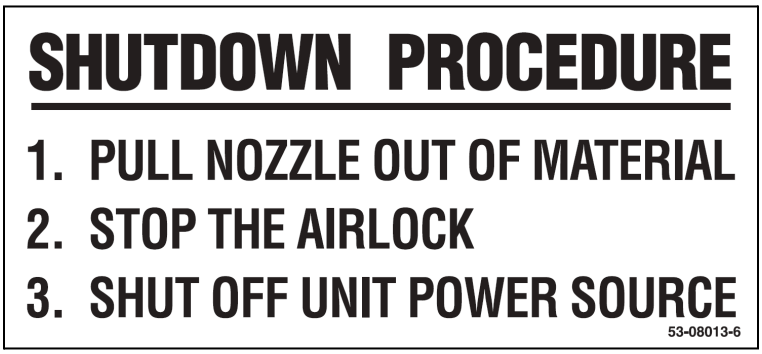


Figure 4-2 E

Part Number: 53-120498-6

Location: the right side of the frame, below the primary AMS

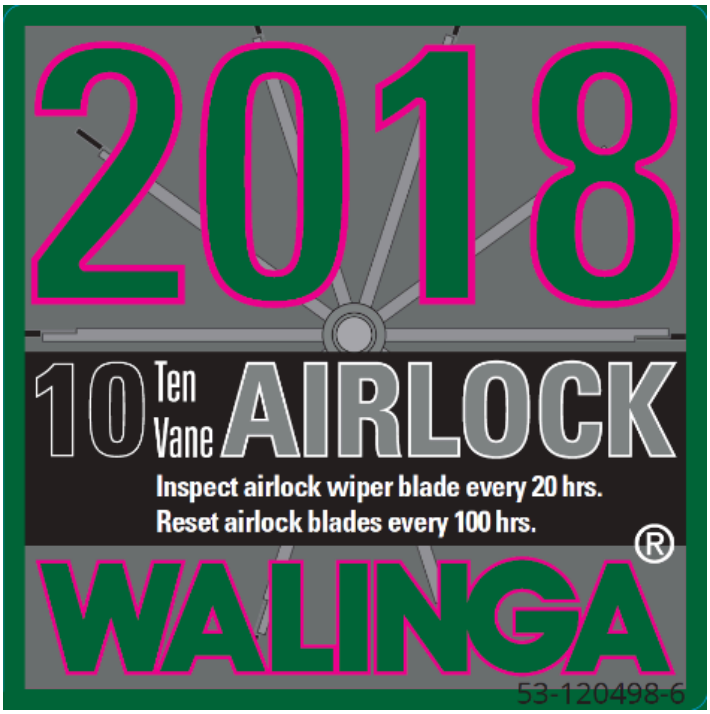


Figure 4-2 F

Part Number: 53-18288-6

Location: the lower edge of the inclined right side of the belt guard

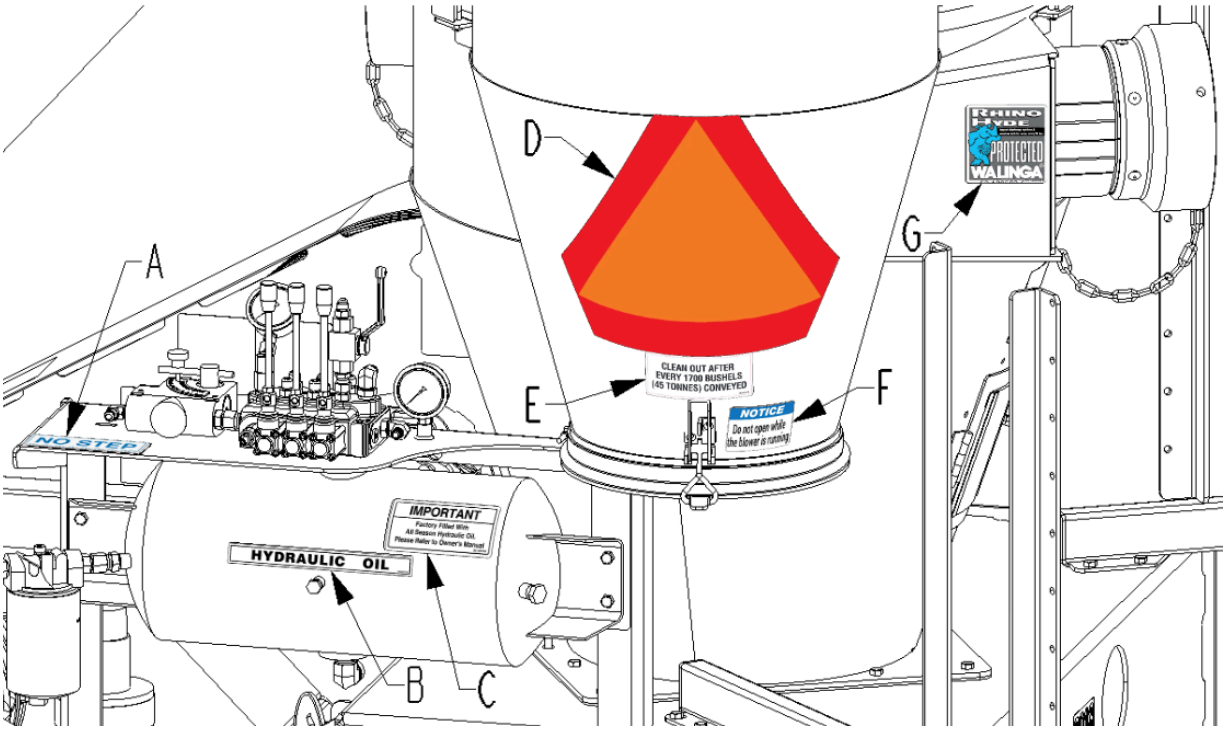


Figure 4-3: Rear right side of Agri-Vac safety signs

Figure 4-3 A

Part Number: 53-16131-6

Location: the rear left corner of the top side of the hydraulic controls mounting bracket

Figure 4-3 B

Part Number: 53-04707-6

Location: centered on the rear of the hydraulic reservoir tank

Figure 4-3 C

Part Number: 53-18057-6

Location: the right side of the rear of the hydraulic reservoir tank

Figure 4-3 D

Part Number: 53-03732-6

Location: the rear side of the secondary AMS, centered above the latch

Figure 4-3 E

Part Number: 53-18291-6

Location: the rear side of the secondary AMS, centered above the latch

Figure 4-3 F

Part Number: 53-137791-6

Location: the rear side of the secondary AMS

Figure 4-3 G

Part Number: 53-120503-6

Location: the rear side of the right-facing primary AMS inlet

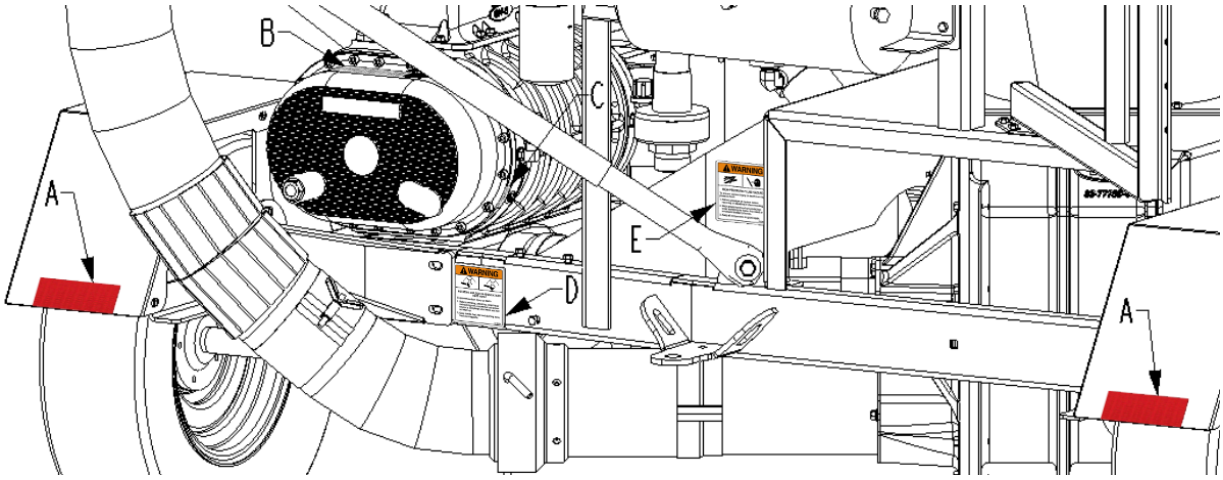


Figure 4-4: Lower rear side of Agri-Vac safety signs

Figure 4-4 A

Part Number: 82-18269-6

Location: the lower edge of the rear side of both the left and the right fender

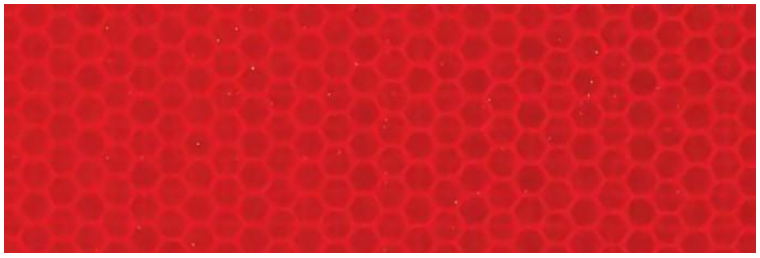


Figure 4-4 B

Part Number: 53-05646-6

Location: the rear of the top side of the blower, legible from the left side of the Agri-Vac

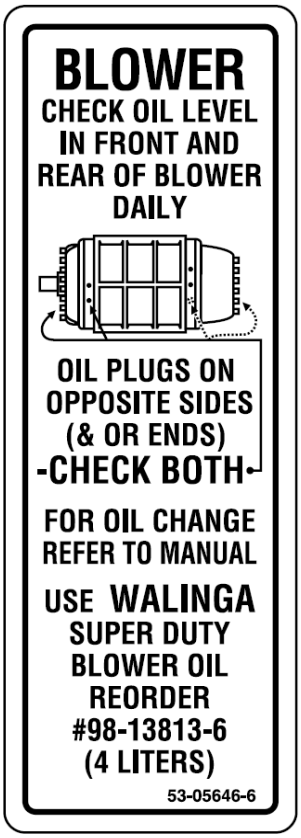


Figure 4-4 C

Part Number: 53-05647-6

Location: lower right side of the blower, centered with the oil level plug

Figure 4-4 D

Part Number: 53-18289-6

Location: The rear of the lower frame, positioned to the left of the airlock outlet coupling

Figure 4-4 E

Part Number: 53-15638-6

Location: the rear of the frame, below the hydraulic reservoir tank

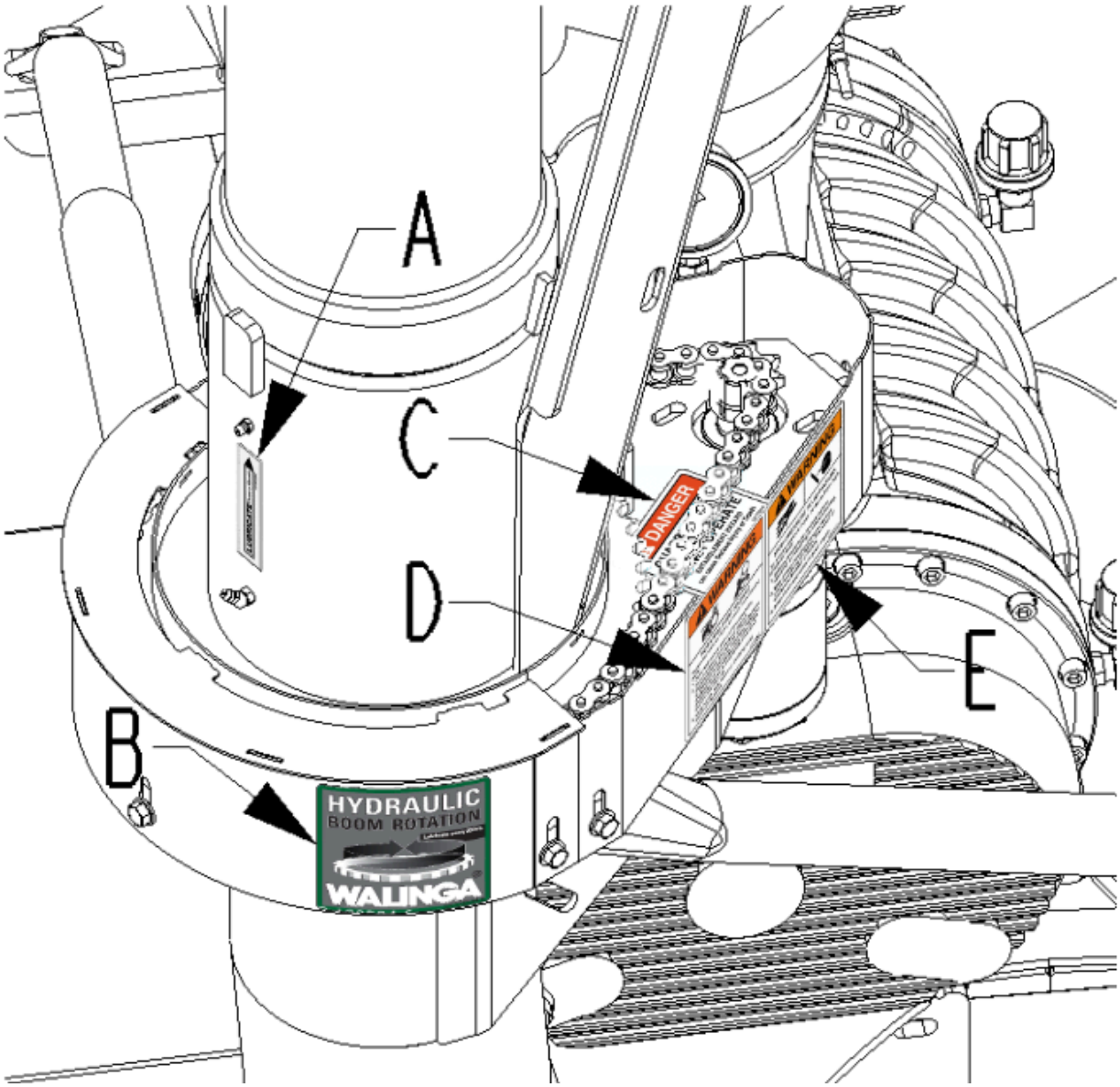


Figure 4-5: Rear side of boom vertical of Agri-Vac safety signs

NOTE: Part of the top portion of the boom rotation chain guard has been removed to show the placement of a safety sign. Do NOT operate the Agri-Vac without all guards in place.

Figure 4-5 A

Part Number: 53-08560-6

Location: the left side of the boom swivel

Figure 4-5 B

Part Number: 53-120504-6

Location: the rear side of the boom rotation chain guard

Figure 4-5 C

Part Number: 53-17704-6

Location: the top side of the lower portion of the boom rotation chain guard

NOTE: the top portion of the guard has been removed for visualization. Do NOT operate the Agri-Vac without all guards in place.

Figure 4-5 D

Part Number: 53-18288-6

Location: the rear side of the boom rotation chain guard

Figure 4-5 E

Part Number: 53-15638-6

Location: the rear side of the boom rotation chain guard

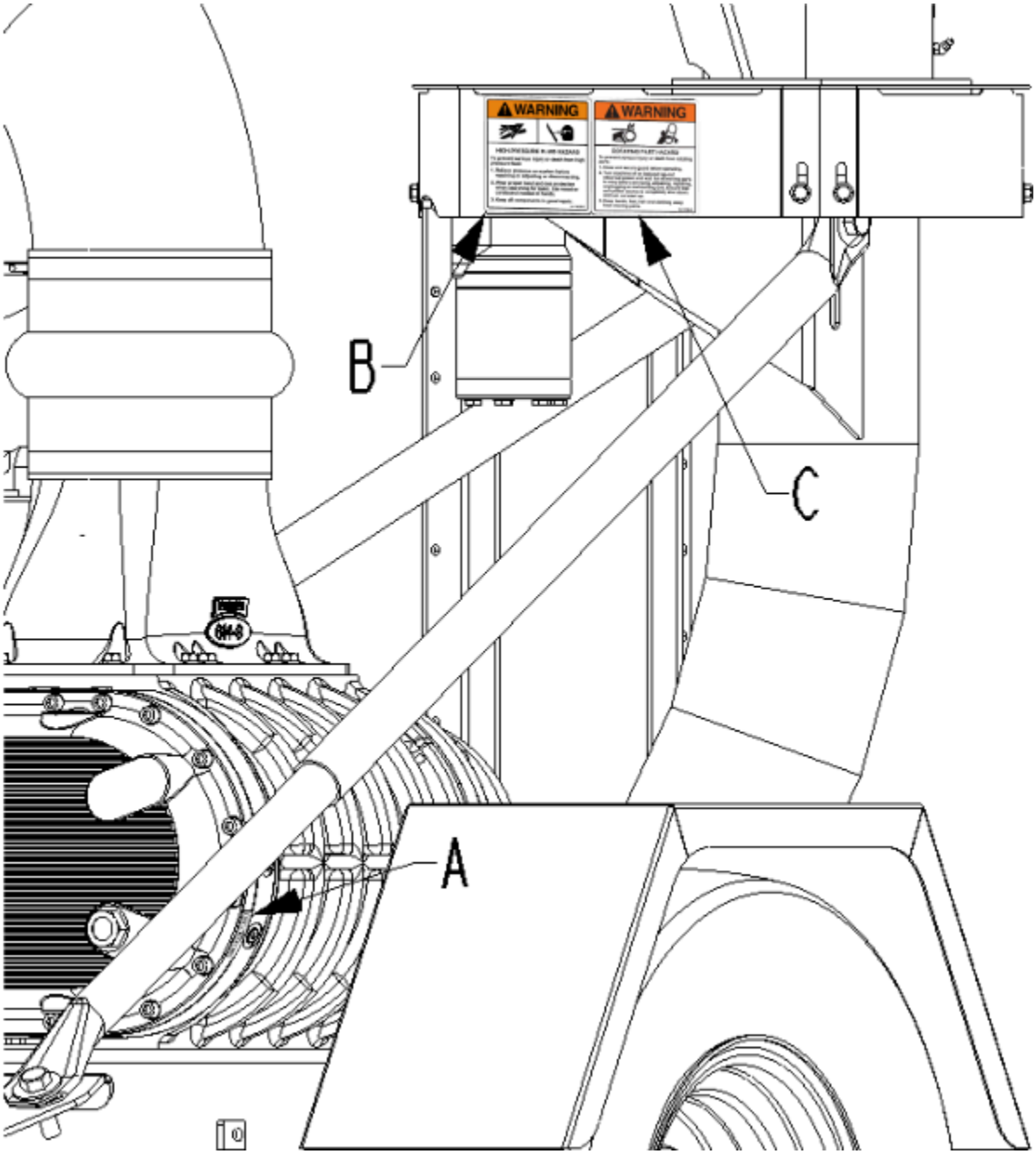


Figure 4-6: Front side of boom vertical of Agri-Vac safety signs

Figure 4-6 A

Part Number: 53-05647-6

Location: lower left side of the blower, centered with the oil level plug

Figure 4-6 B

Part Number: 53-15638-6

Location: the front side of the boom rotation chain guard

Figure 4-6 C

Part Number: 53-18288-6

Location: the front side of the boom rotation chain guard

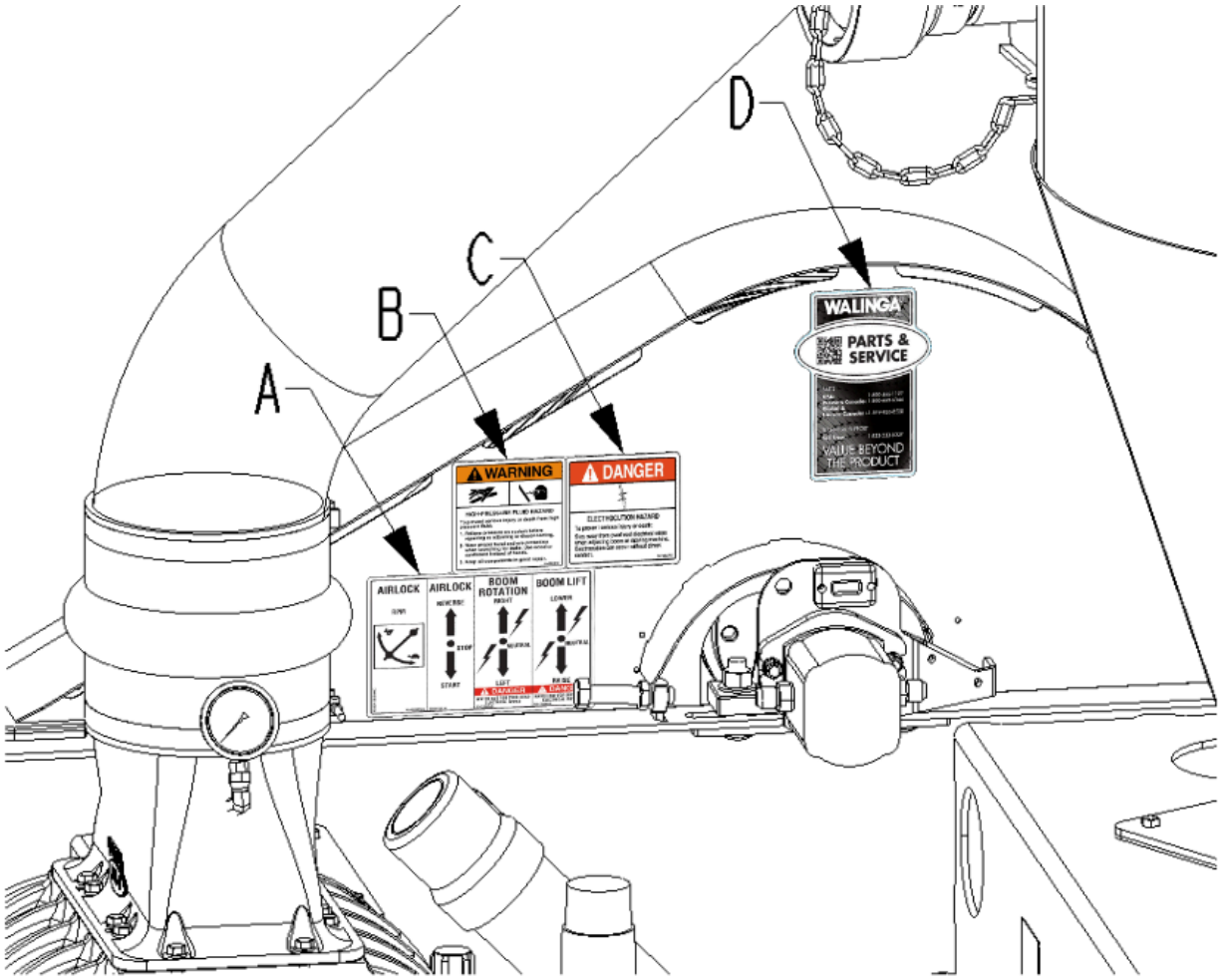


Figure 4-7: Rear side of belt guard of Agri-Vac safety signs

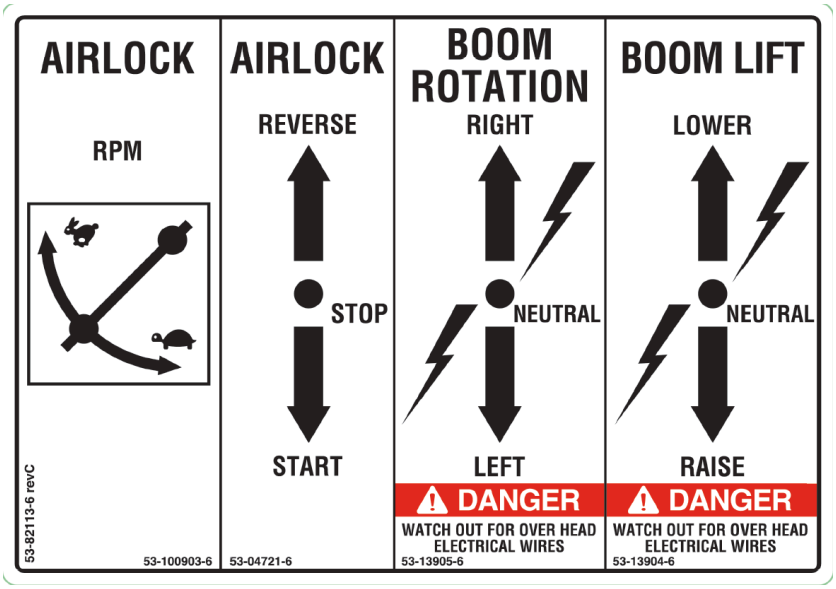


Figure 4-7 A

Part Number: 53-82113-6

Location: the lower edge of the rear side of the belt guard

Figure 4-7 B

Part Number: 53-15638-6

Location: the rear side of the belt guard, above the hydraulic controls safety sign

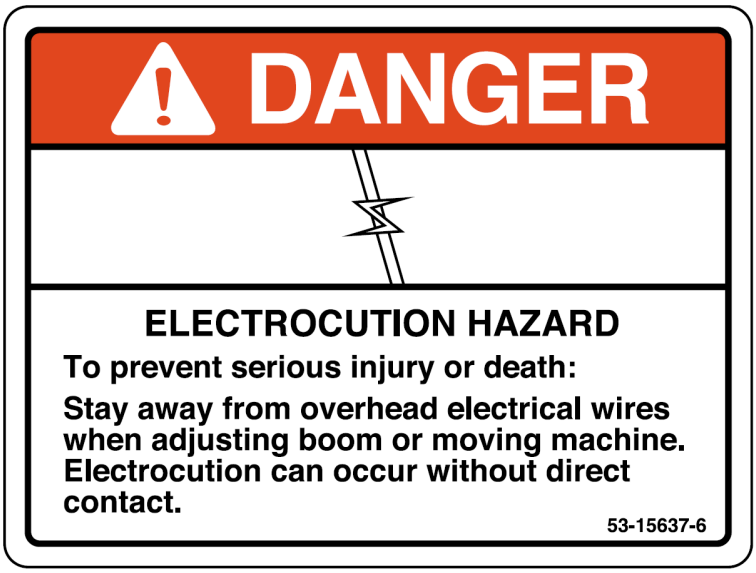


Figure 4-7 C

Part Number: 53-15637-6

Location: the rear side of the belt guard, above the hydraulic control safety sign

Figure 4-7 D

Part Number: 53-77858-6

Location: centered at the top of the rear side of the belt guard

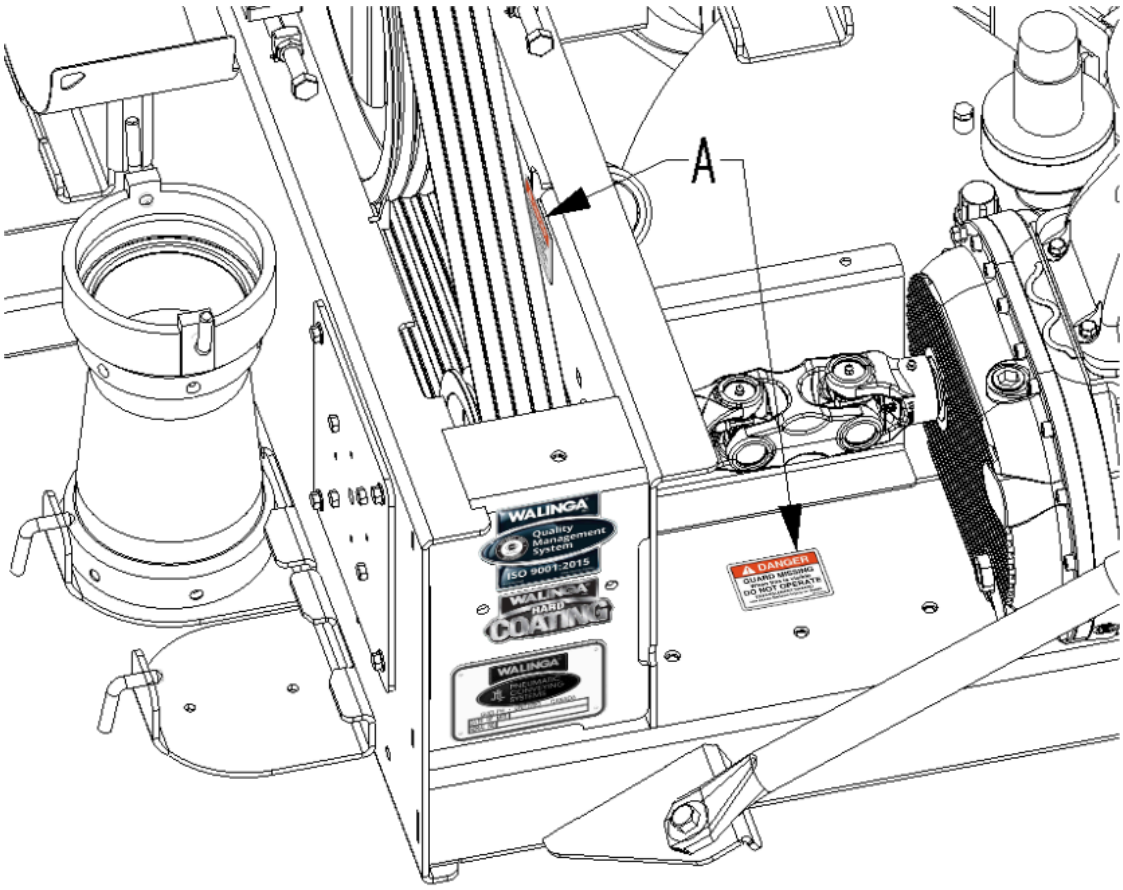


Figure 4-8: Front left of Agri-Vac with belt guard and blower drive shaft guard removed

Figure 4-8 A

Part Number: 53-17704-6

Location: the top side of the frame below the blower drive shaft and the front side of the frame to the rear of the drive belt

NOTE: the belt guard and blower drive shaft guard have been removed for visualization. Do NOT operate the Agri-Vac without all guards in place.

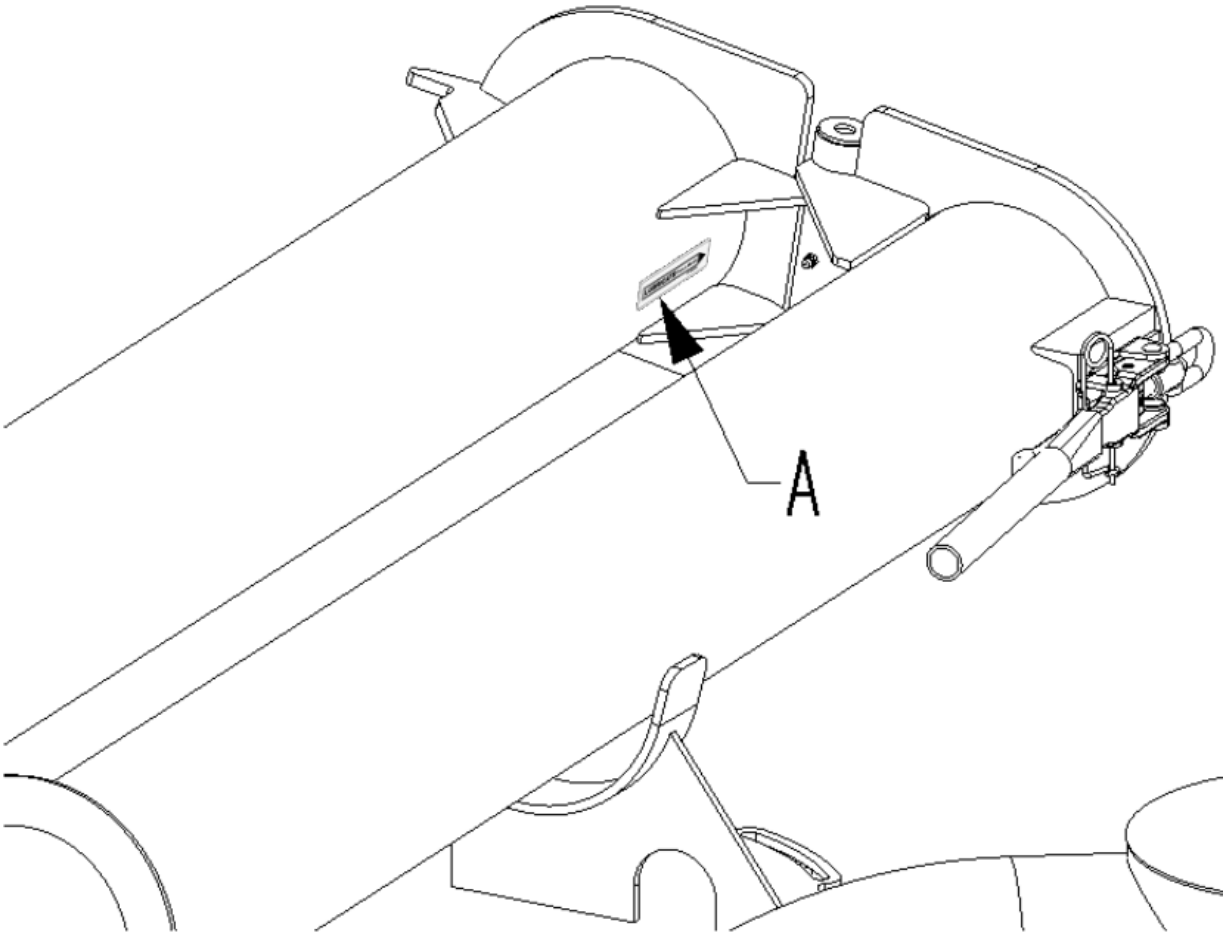


Figure 4-9: Boom hinge of Agri-Vac safety sign

Figure 4-9 A

Part Number: 53-08560-6

Location: the rear side of the discharge cyclone section of the boom when in the transport position, to the left of the boom hinge

SAFETY TRAINING SIGN-OFF FORM

Walinga Inc. follows the general safety standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Agri-Vac must read and clearly understand all safety, operating and maintenance information presented in this manual.

Do not operate or allow any other individual to operate this equipment until such information has been reviewed. Annually review this information with personnel.

Make periodic reviews of safety and operations a standard practice for all of your equipment. An untrained operator is unqualified to operate an Agri-Vac.

The following sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the operator's manual and have been instructed in the operation of the equipment.

DATE	EMPLOYEE'S NAME	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

DATE	EMPLOYEE'S NAME	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

PAGE INTENTIONALLY LEFT BLANK

WALINGA® INC.

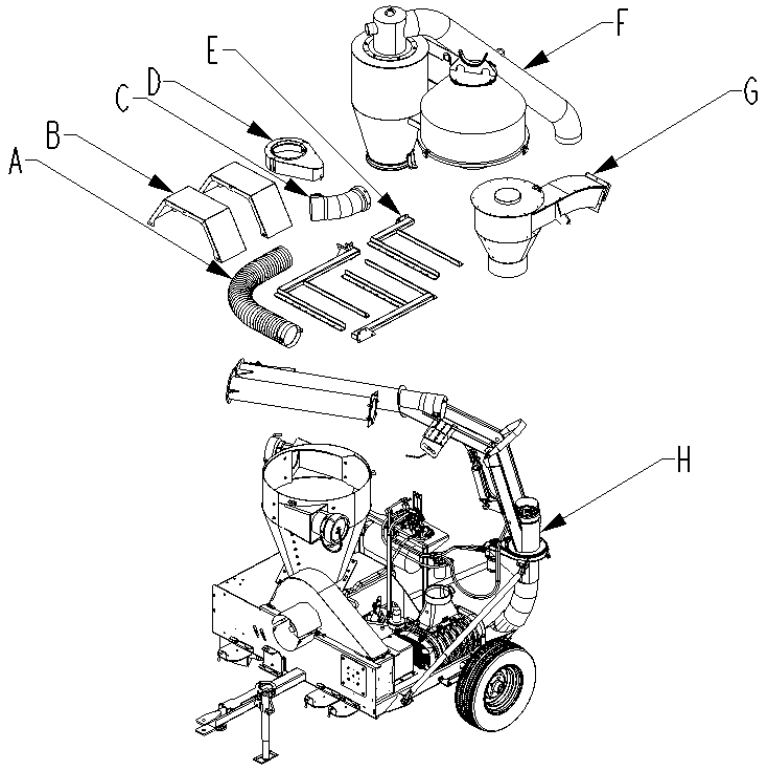
Machine Life-Cycle Procedures

PTO AGRI-VAC MODELS

RECEPTION, ASSEMBLY AND INITIAL SET-UP

ASSEMBLY

To allow for efficient shipping, your Agri-Vac may arrive partially disassembled. **Section 11: Parts List** of your operator's manual provides a complete list of components, however, ***Figure 5-1*** identifies the partially disassembled main Agri-Vac assembly and the components of your Agri-Vac that may be disassembled upon initial reception.



A Boom flex hose

B Fender

C Lower boom elbow

D Boom rotation chain guard

E Hose carrier brackets

F Primary and secondary AMS and blower inlet

G Discharge cyclone

H Main assembly

Figure 5-1: Disassembled components for shipment

To reassemble your Agri-Vac, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Position the machine on a solid, dry and flat surface that is clear of all other equipment. Ensure the machine is stable and place wheel chocks if necessary.
3. Remove all plastic wrap and strapping from the unit.
4. Using an approved solvent for the application of your machine, especially in food-grade applications, wash off the protective coating that has been applied to the non-painted areas of the unit. Ensure any non-food-grade solvents have been cleaned from the machine if necessary.
5. Install the blower inlet hose and primary AMS as follows:

a. Align the black hump hose with the blower inlet, with the t-bolt clamp positioned loosely over both ends of the hose.

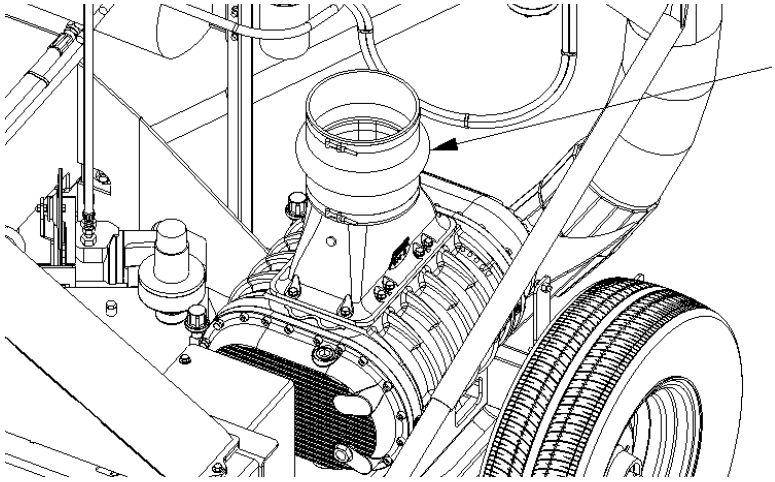


Figure 5-2: Hump hose positioning on blower inlet

b. Lift the upper portion of the primary AMS into position above the lower portion of the primary AMS and align the blower inlet and primary AMS tube using the lifting eyes identified in ***Figure 5-3***.

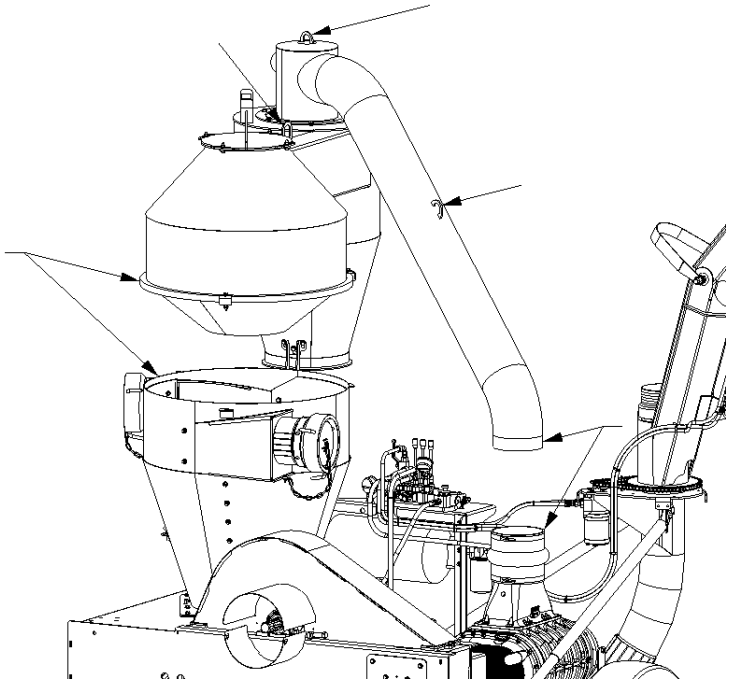


Figure 5-3: Primary AMS lifting points and positioning

c. Secure the upper and lower portions of the primary AMS with the supplied hardware, including plate washers, bolts and nuts.

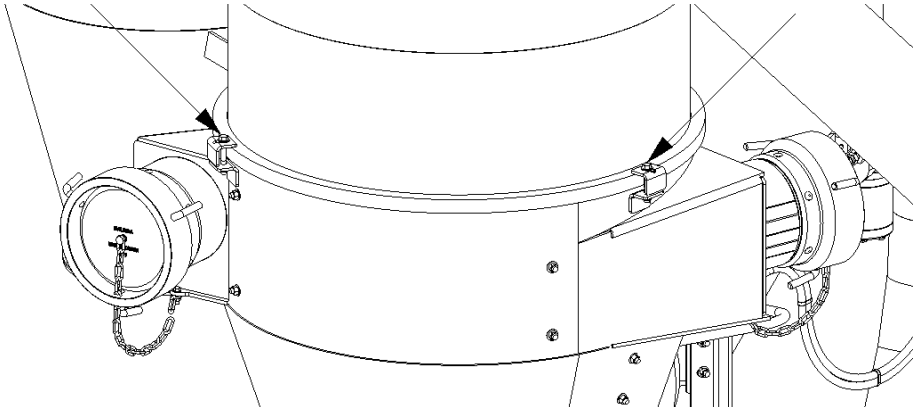


Figure 5-4: Primary AMS assembly connection

d. With the hump hose positioned on the top of the blower inlet and bottom of the primary AMS tube, tighten the t-bolt clamps to secure the hump hose.

6. Install the fenders as follows:

a. Align the slotted holes of the fender with the holes and weld nuts on the frame and fender brackets on the Agri-Vac.

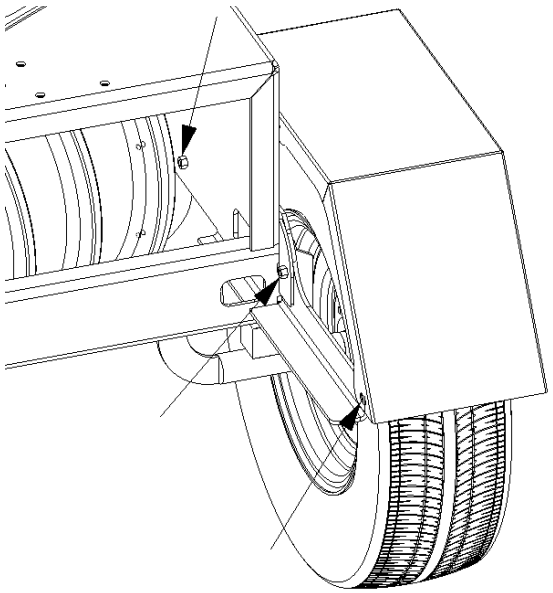


Figure 5-5: Fender positioning

b. Secure the fenders with the supplied hardware including plate washers and bolts.

7. Install the lower boom elbow as follows:
    a. Align the DM coupler of the lower boom elbow with the DF coupler of the airlock outlet, and align the quick coupler of the lower boom elbow with the lower boom.

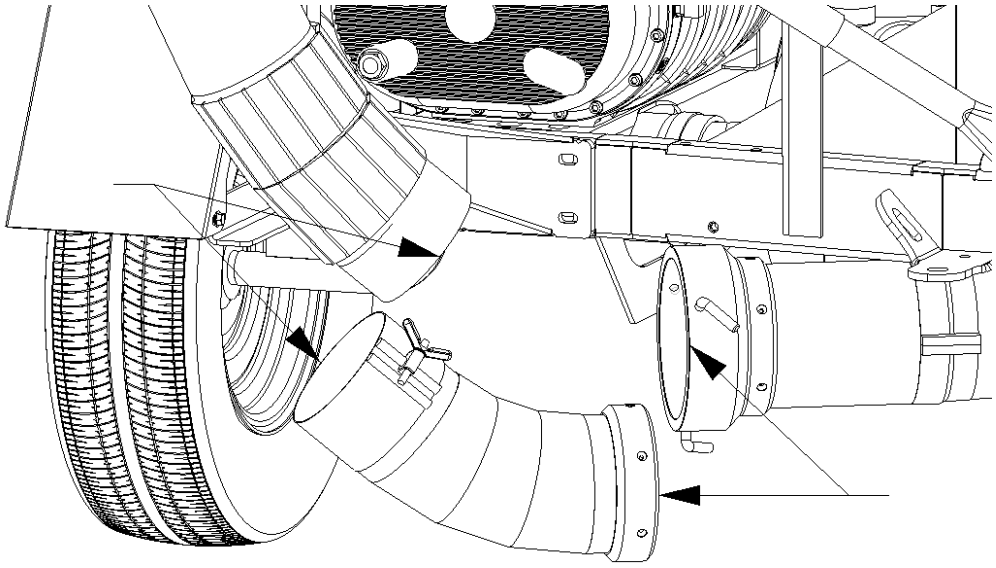


Figure 5-6: Lower boom elbow alignment

    b. Secure the lower boom elbow into both couplers by tightening the tail bolts of the DF coupler and the wingnut of the quick coupler.

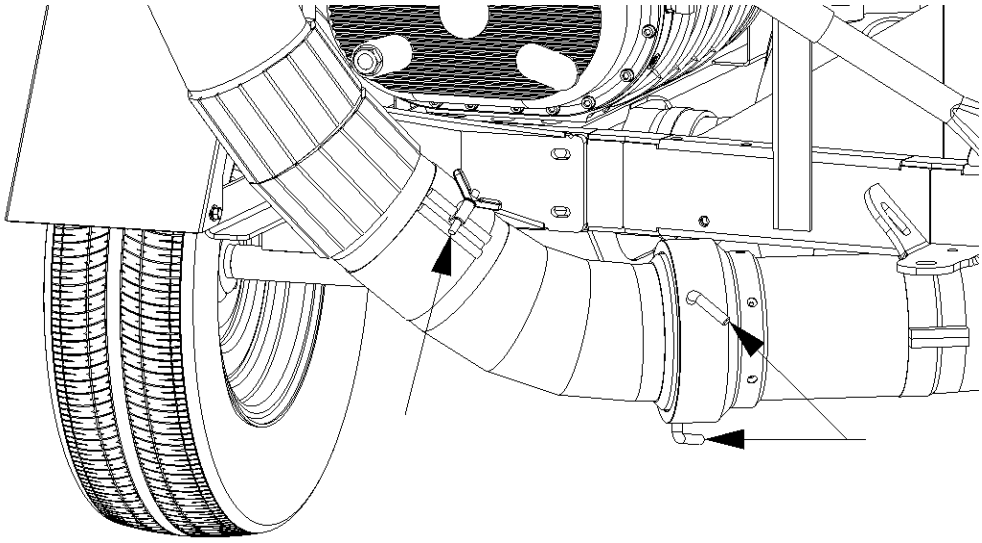


Figure 5-7: Secure lower boom elbow

8. Install the discharge cyclone as follows:
    a. Using the lifting eye identified in ***Figure 5-8***, lift the discharge cyclone into place by aligning the notches and bolt holes of the discharge cyclone mounting plate with the boom mounting plate.

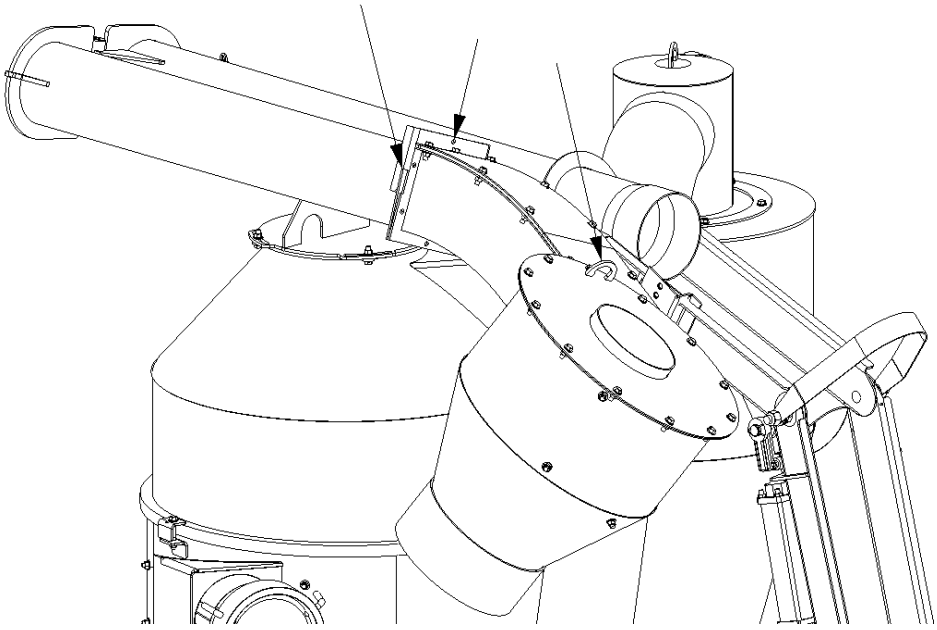


Figure 5-8: Discharge cyclone alignment

    b. Secure the discharge cyclone with the provided hardware including plate washers, bolts and nuts.

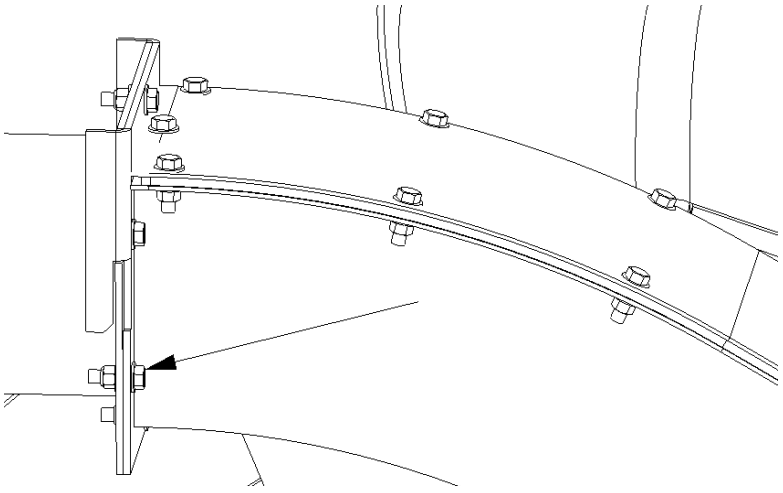


Figure 5-9: Discharge cyclone mounting hardware

9. Install the hydraulic boom rotation chain guard as follows:
    a. Align the slots of the two halves of the boom rotation chain guard with the mounting brackets of the boom rotation base plate and ensure the inner bands of the two halves are flush. Ensure there is no interference between the guard and the hydraulic fittings of the boom rotation motor. Pay careful attention that the hydraulic lines running to the boom lifting cylinder are not pinched and remain clear and outside of the guard.

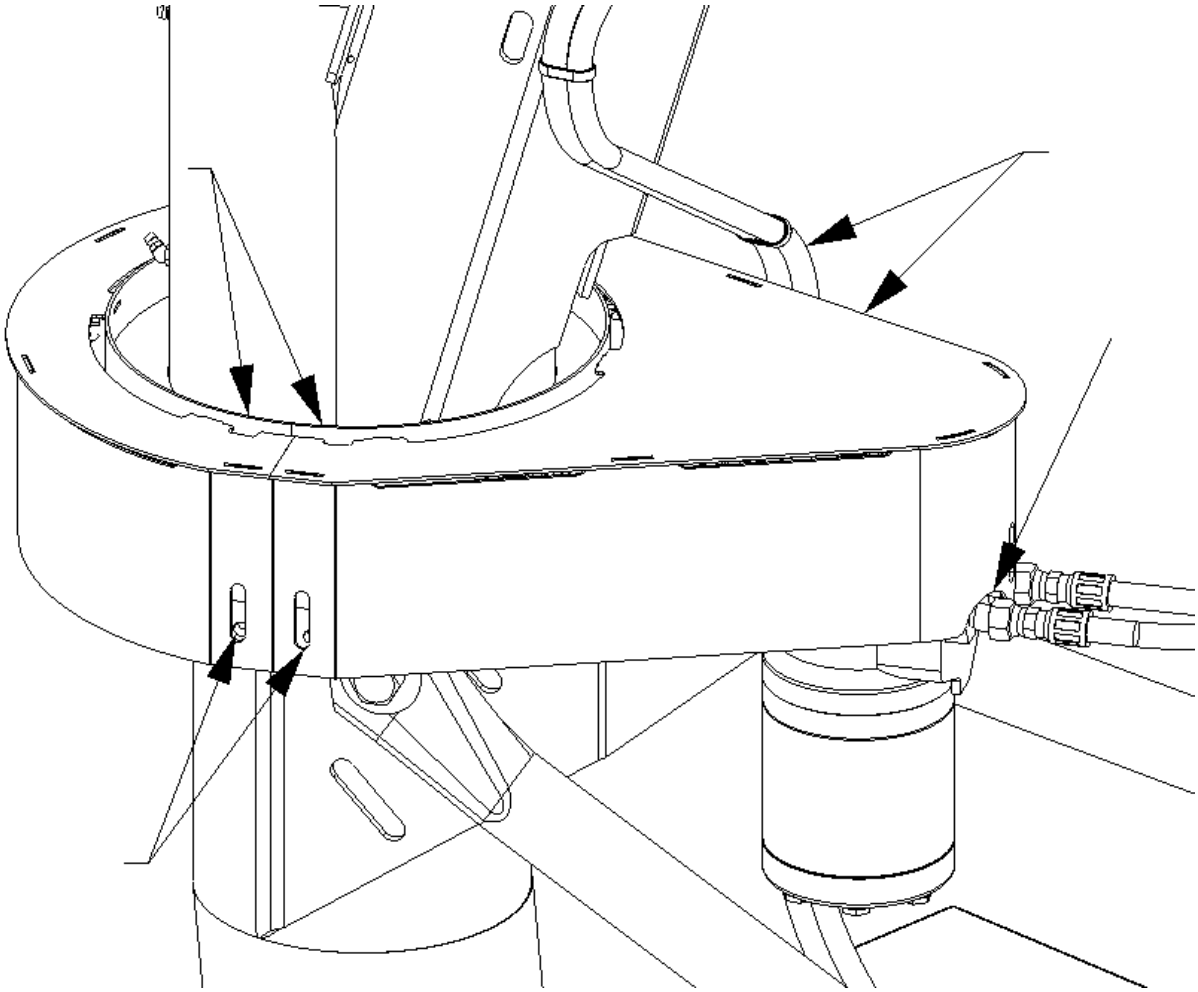


Figure 5-10: Chain guard alignment

b. Secure the guards in place using the provided hardware including plate washers, bolts and nuts.

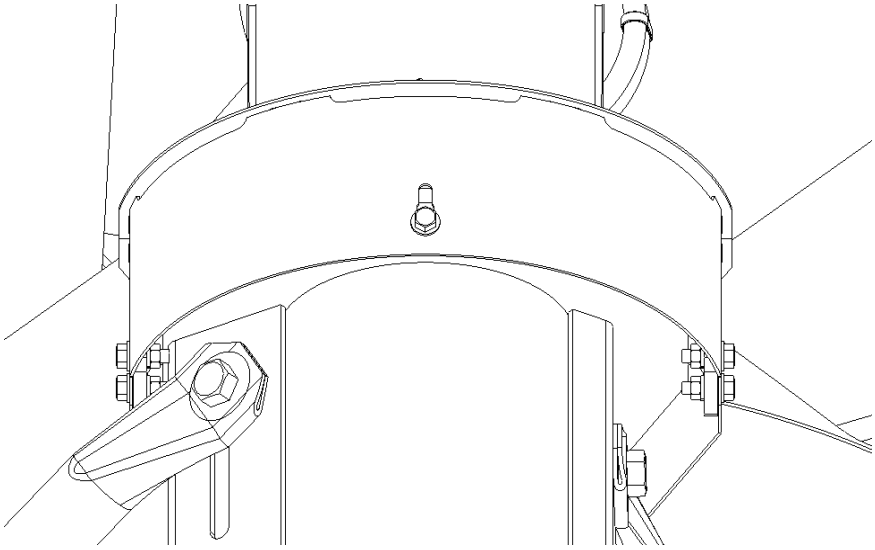


Figure 5-11: Chain guard hardware

10. Install the boom flex hose as follows:

a. With the boom lowered to the transport position for easy access, apply silicone to the inner surface of the discharge tube of the boom.

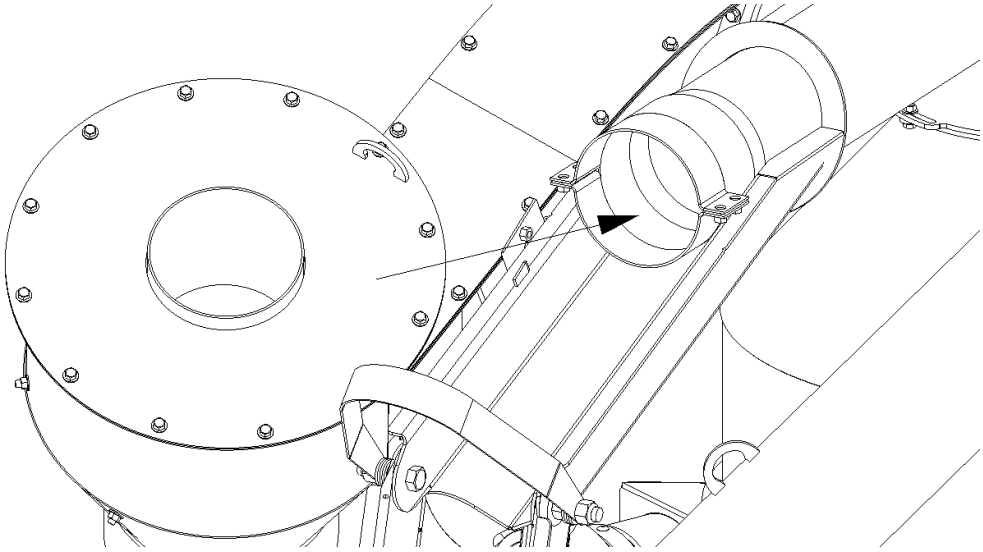


FIgure 5-12: Boom discharge tube silicone application

b. Insert one end of the flex hose into the discharge tube of the boom with the clamp in place and assemble the hardware of the clamp.

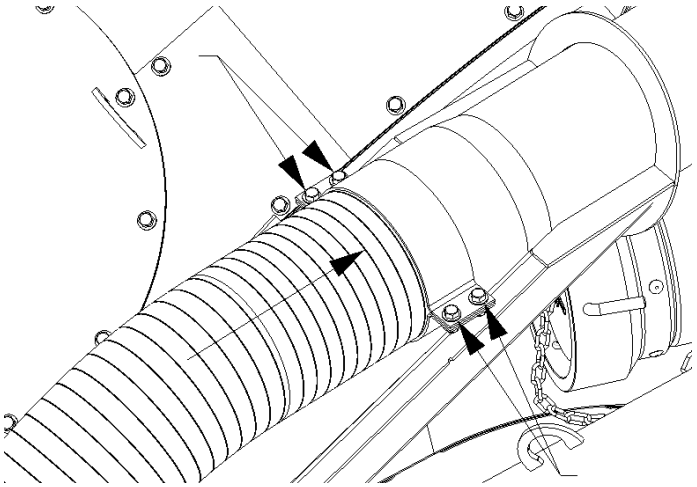


FIgure 5-13: Upper flex hose positioning

c. Apply silicone to the inner surface of the bottom end of the flex hose.

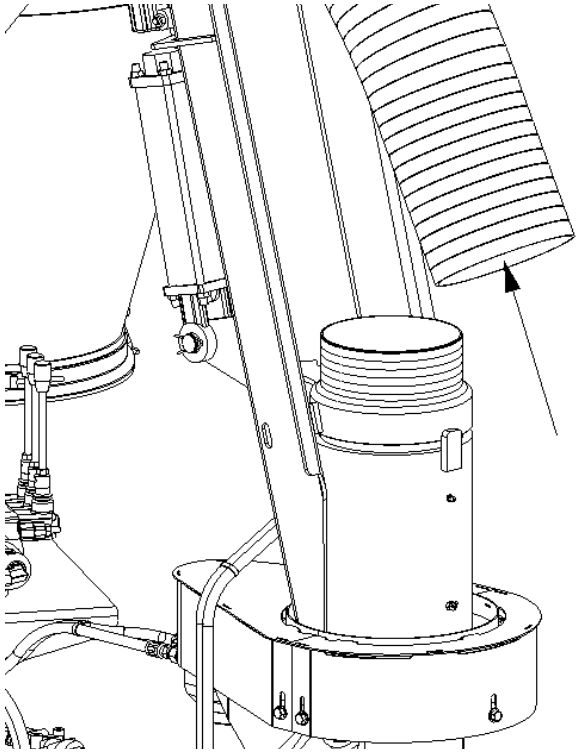


FIgure 5-14: Flex hose base silicone application

d. Position and install the bottom of the flex hose onto the boom swivel tube, raising the boom slowly to assist with correct positioning.

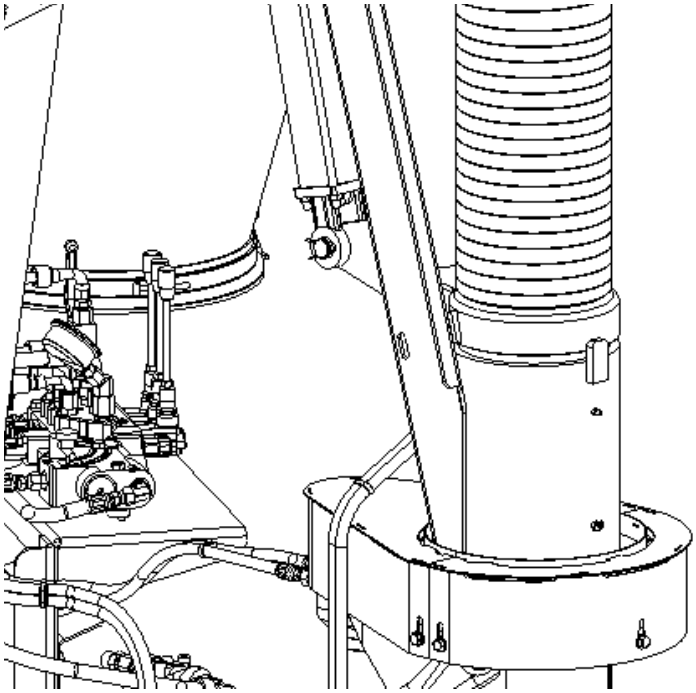


FIgure 5-15: Flex hose base positioning

e. Assemble the lap joint clamp at the base of the flex hose. Ensure the clamps at the top and bottom end of the flex hose have all the required hardware installed and tightened.

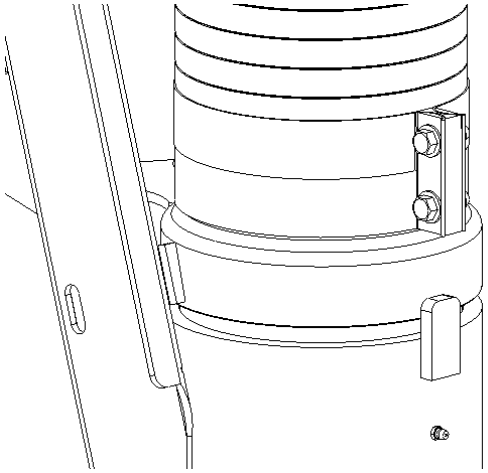


FIgure 5-16: Flex hose clamp hardware

11. Install the hose carrier brackets as follows:
    a. Align the slots in the base of the hose carrier brackets with the holes and weld nuts on the frame of the Agri-Vac. The hose carrier brackets should be located as follows:
        - The bracket with the base with a 90° bend is to be mounted near the rear left corner of the frame.
        - The bracket with the flat base and the longer arm is to be mounted near the rear right corner of the frame.
        - The bracket with the flat base and the shorter arm is to be mounted near the front right corner of the frame.

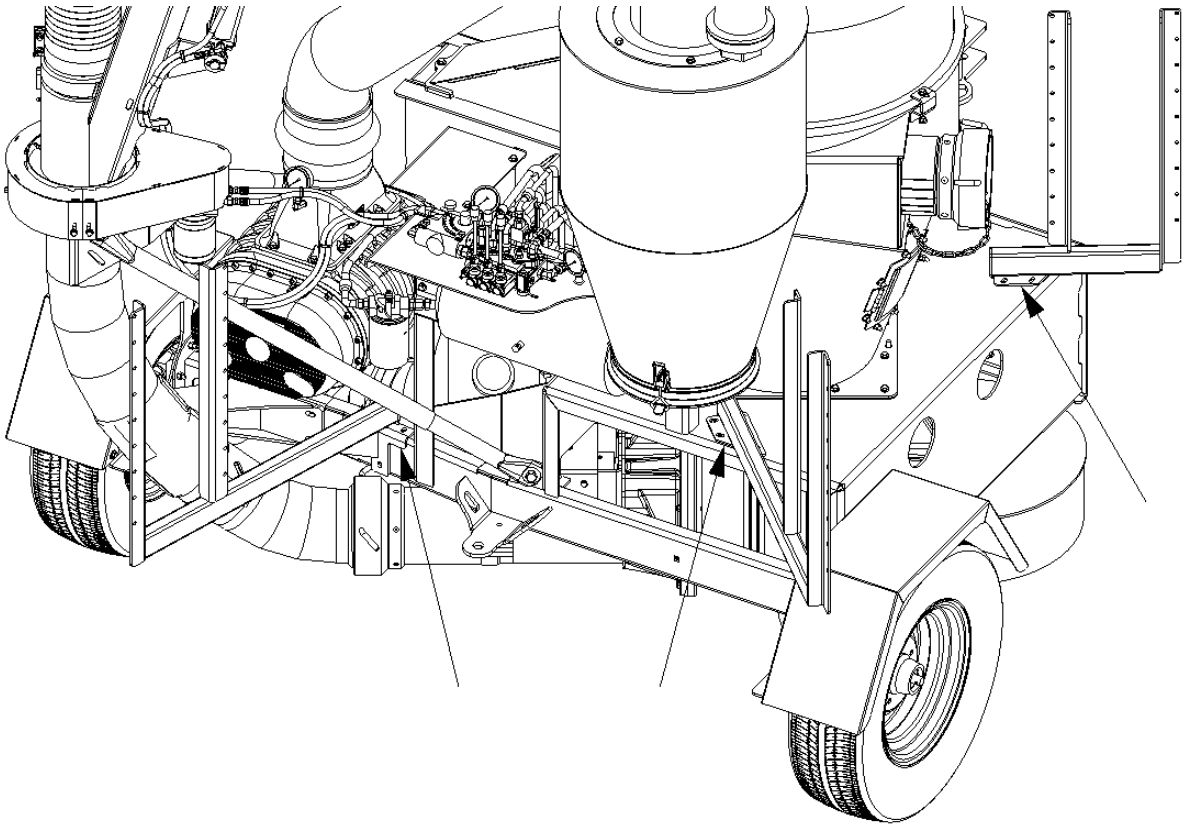


Figure 5-17: Hose carrier bracket alignments

b. Secure the brackets with the provided hardware including washers and bolts.

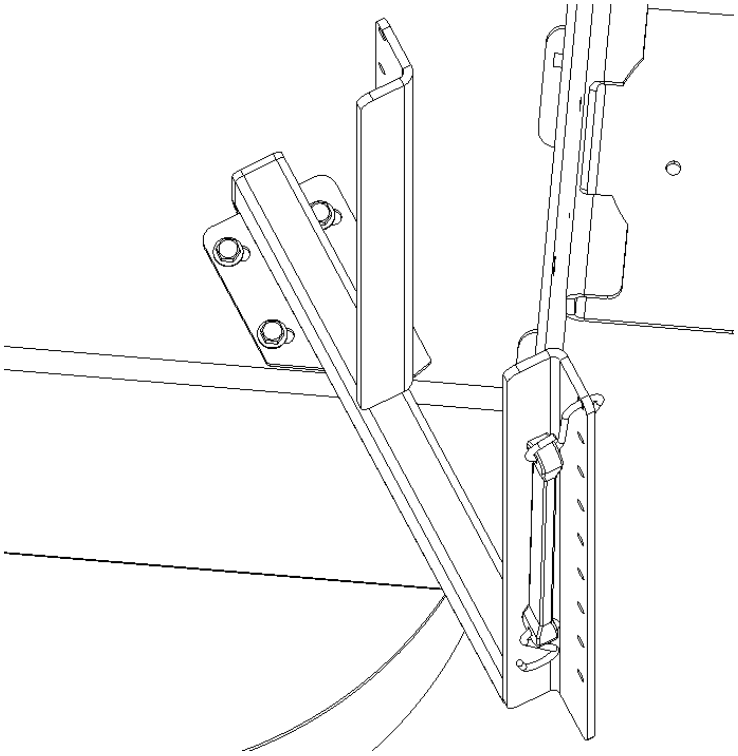


Figure 5-18: Hose carrier bracket hardware

INITIAL SET-UP

To ensure safe and efficient operation, upon complete assembly and before initial use of the machine, perform the following inspections:

- Ensure the dust hazard analysis as required by NFPA 652 has been completed and the incorporation of the Walinga equipment complies with all relevant standards and regulations.
- Ensure the area is clear of any bystanders and individuals not involved in the operation of the machine, especially small children.
- To maintain proper stability, locate the machine on a flat surface that is solid, dry and clear of any other equipment. Engage the holding brake (if fitted) and place wheel chocks as necessary.

- Ensure that any individuals involved in the operation of the machine or in close proximity to the machine are equipped with the required personal protective equipment as outlined in **Section 4: Safety**, including but not limited to: a hard hat, protective shoes with slip-resistant soles, protective glasses or goggles, heavy gloves, wet weather gear, and hearing protection. Long hair and loose clothing must be secured and jewelry should be removed to avoid personal injury as a result of coming into contact with moving or rotating components.
- Ensure that tires are fastened securely and are inflated to the correct pressure as detailed in **Section 8: Specifications**.
- Check to ensure all lubrication and grease points have been properly lubricated. Reference **Section 7: Maintenance and Adjustments** for detailed lubrication procedures and the required lubrication frequency.
- Inspect the drive system to ensure the drive belts are in good condition and there are no obstructions lodged in the belts, pulleys or bearings. With reference to **Section 7: Maintenance and Adjustments**, check the pulley alignment and belt tension.
- Ensure the blower rotates freely by placing the flat of the hand only on the top surface of the drive belts and pushing to gently and slowly rotate the blower input shaft. Take extreme care to not place fingers or hands between the drive belts and the sheaves or pulleys. With reference to **Section 7: Maintenance and Adjustments**, check the oil level and condition in the reservoirs at both ends of the blower. Improper lubrication of the blower can lead to significant damage.
- Ensure the secondary AMS is free of any dust or foreign materials by opening the lower door and clearing out any materials. Ensure the secondary AMS door is securely shut before operation and at all times during operation to prevent significant damage to the blower.
- Inspect the muffler for any foreign material and ensure any materials have been removed with reference to **Section 7: Maintenance and Adjustments**. The internals of the muffler should be routinely inspected for foreign materials. Failure to remove any foreign material may result in a fire hazard.
- Inspect the hydraulic system to ensure the hydraulic reservoir of self-contained hydraulic machines is filled to the required level with reference to **Section 8: Specifications**. Inspect all fittings and couplings to ensure they are free of dirt and debris and clean if necessary. Ensure there are no pinched, kinked or otherwise obstructed hydraulic lines. Inspect the system for any leaks.
- Check to ensure all guards are correctly positioned, closed and secured before operation to prevent any personal injury or damage. All guards must be closed and secured with fasteners before any operation.
- Proceed to the pre-operation checks as outlined in **Section 6: Operation** with reference to the additional break-in operational checks required as outlined below.

BREAK-IN INSPECTIONS

There are no operational restrictions on the Agri-Vac when used for the first time, however, during the initial break-in period, the following mechanical features should be inspected more frequently than the recommended maintenance schedule. With reference to **Section 7: Maintenance and Adjustments**, inspect the Agri-Vac as follows:

After operating the Agri-Vac for half an hour:

1. Clear the area of all bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Re-torque all wheel bolts to the required specifications.
4. Remove the drive belt guard.
5. Re-torque the drive belt bearings to the required specifications.
6. Check the alignment of the drive belt and adjust as required.
7. Disconnect the PTO driveline and turn the blower by hand, ensuring that it turns freely.
8. Open and clean the secondary AMS door and tank.
9. Inspect the hydraulic system and ensure no hoses are pinched, rubbing or crimped and adjust as required. Check for any leaks and repair before continuing.
10. Check the oil level of the blower reservoirs and add oil as required.
11. Lubricate all grease fittings.
12. Ensure all guards have been installed and secured before resuming operation.

After operating the Agri-Vac for 5 hours:

1. Clear the area of all bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Re-torque all wheel bolts, fasteners and hardware.
4. Check the drive belt tension and adjust as required.
5. Inspect the hydraulic system and ensure no hoses are pinched, rubbing or crimped and adjust as required. Check for any leaks and repair before continuing.
6. Remove the drive belt guard and disconnect the PTO driveline and turn the blower by hand, ensuring that it turns freely.
7. Open and clean the secondary AMS door and tank.
8. Check the oil level of the blower reservoirs and add oil as required.
9. Ensure all guards have been installed and secured before resuming operation.

After operating the Agri-Vac for 10 hours:

1. Clear the area of all bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Re-torque all wheel bolts, fasteners and hardware.
4. Check the drive belt tension and adjust as required.
5. Inspect the hydraulic system and ensure no hoses are pinched, rubbing or crimped and adjust as required. Check for any leaks and repair before continuing.
6. Remove the drive belt guard and disconnect the PTO driveline and turn the blower by hand, ensuring that it turns freely.
7. Open and clean the secondary AMS door and tank.
8. Check the oil level of the blower reservoirs and add oil as required.
9. Ensure all guards have been installed and secured before resuming operation.
10. Resume the normal recommended maintenance schedule.

TRANSPORTATION

The Agri-Vac has been designed for easy, safe and convenient transport between working locations. Refer to **Section 4: Safety** for specific transportation safety requirements.

To prepare the Agri-Vac for transport, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Ensure the Agri-Vac is properly connected to the tractor/towing machinery. Reference **Section 6: Operation** for hitching instructions. Pay careful attention to ensure the drawbar of the tractor is securely attached to the hitch pole of the Agri-Vac with a mechanical retainer as well as a safety chain.

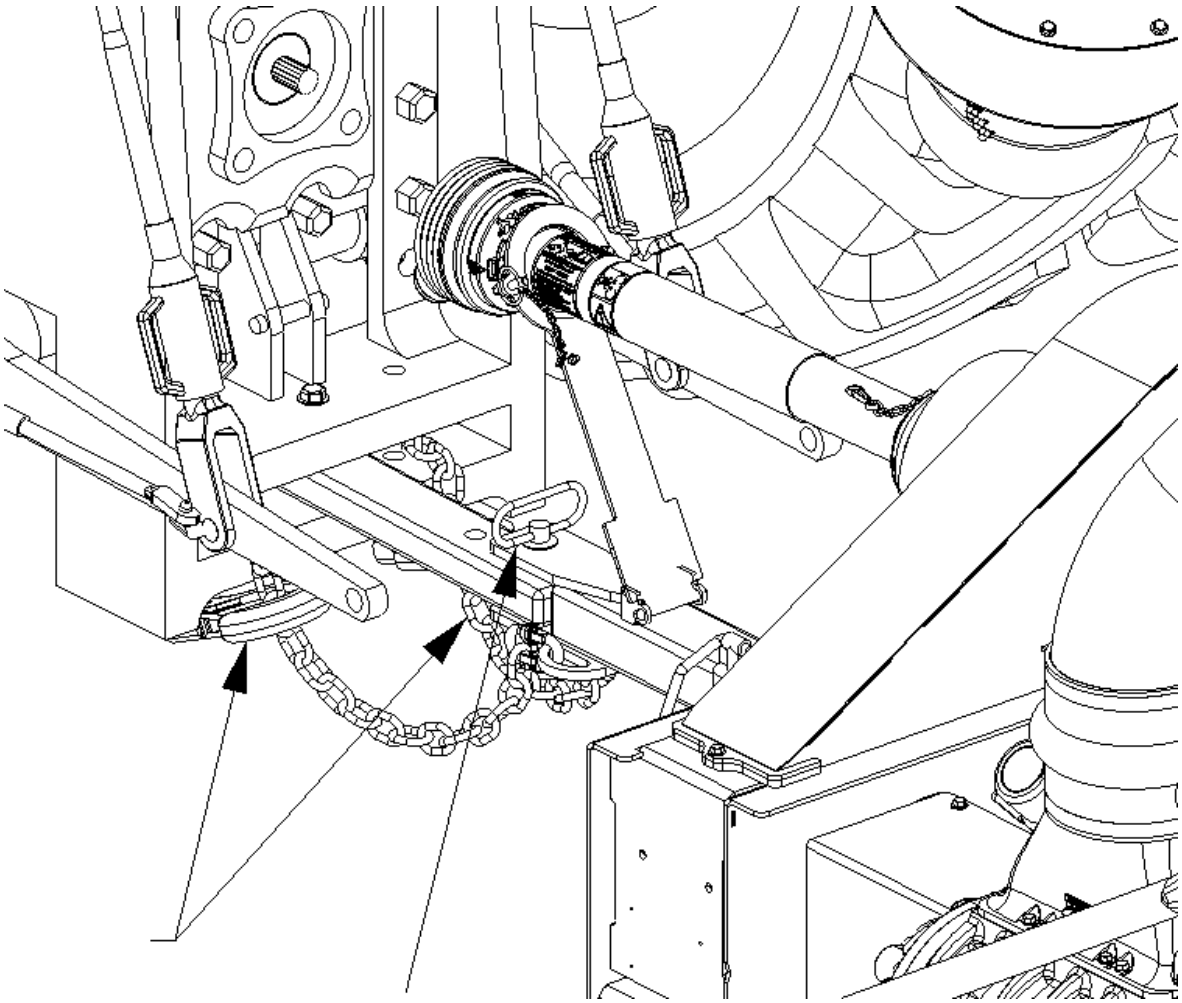


Figure 5-19: Attachment to tractor

3. Secure the boom in the transport position as follows:
    a. Ensure the area around the Agri-Vac is clear of any overhead obstructions or electrical lines. Be aware that electrocution can occur without direct contact.
    b. Using the hydraulic controls, lower the boom from the working position. Ensure the boom lift ball valve is in the open position.

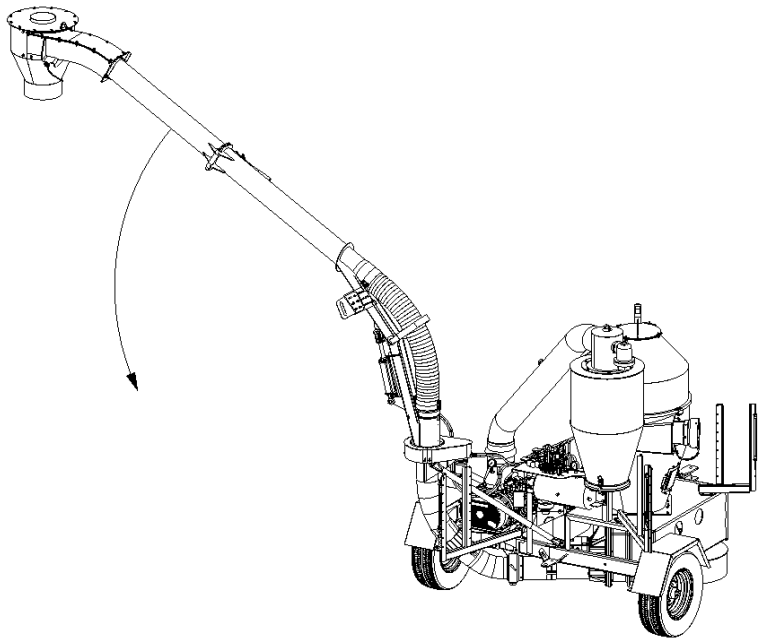


Figure 5-20: Boom lowering

    c. Remove the security pin in the latch handle and release the latch eye from the hook at the boom extension joint.

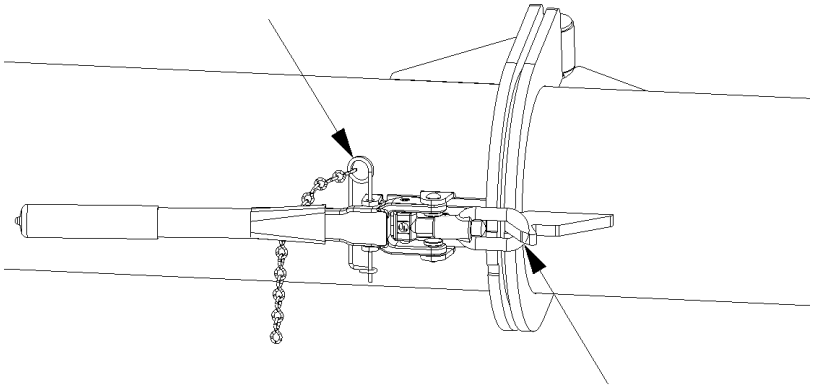


Figure 5-21: Split boom joint

d. Fold the extension to the transport position and secure the extension to the main boom using the attached lynch pin.

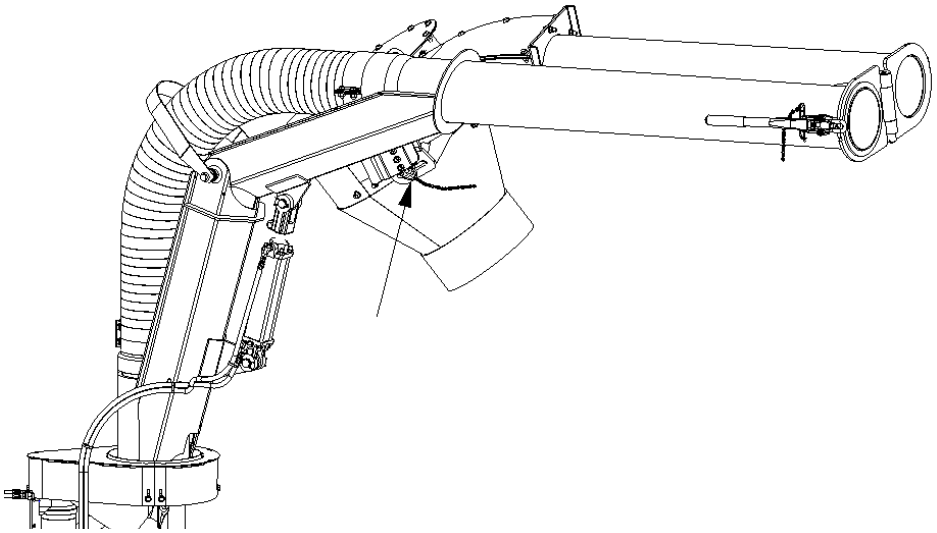


Figure 5-22: Boom extension transport position

e. Rotate the boom from the working position to the transport position so the boom is aligned with the boom saddle on the primary AMS by using the arm located next to the boom pivot or the hydraulic boom rotation controls on HBR units.

f. Ensure the saddle and boom are aligned and lower the boom until it is resting securely in the saddle.

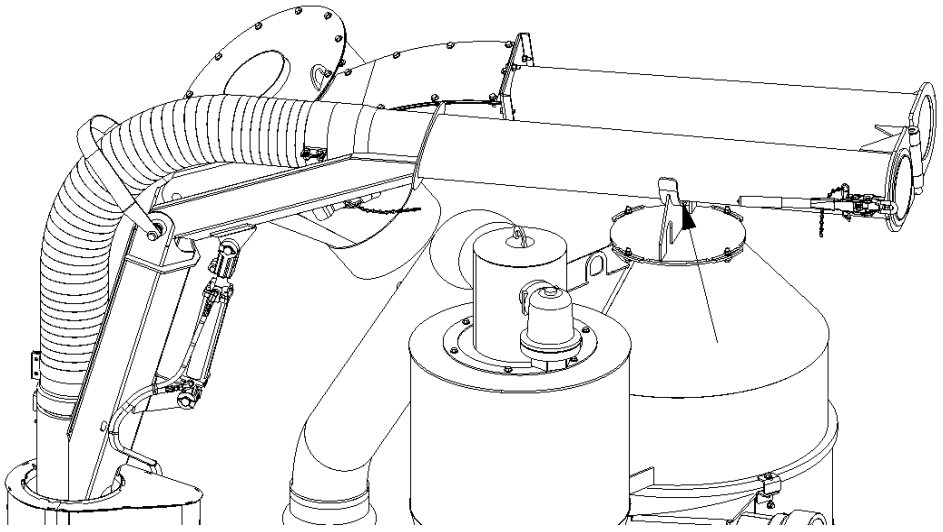


Figure 5-23: Boom transport position

g. Secure the split boom security latch. The security latch must be engaged for transport.

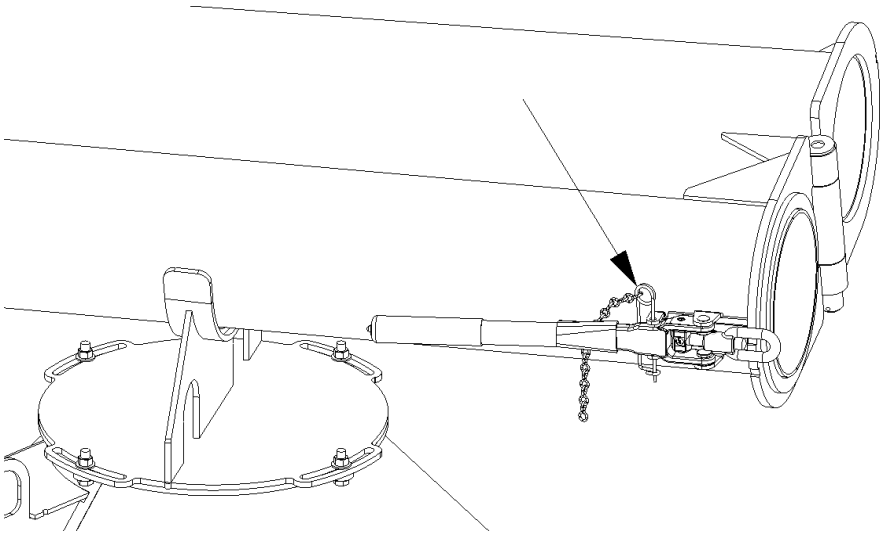


Figure 5-24: Boom security latch

4. Secure all plugs in the primary AMS inlet(s) as follows:
   a. Loosen the tail bolt of the primary AMS inlet and remove any intake hose or tubing attached.

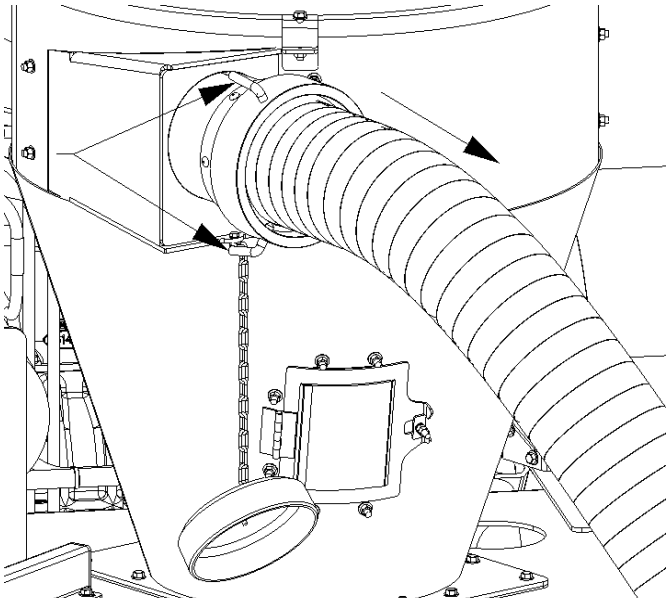


Figure 5-25: Intake line disconnection

b. Ensure the inlet is clear of any dirt or debris.

c. Insert the attached plug(s) into the primary AMS inlet(s). Secure the plug(s) by tightening the tail bolts.

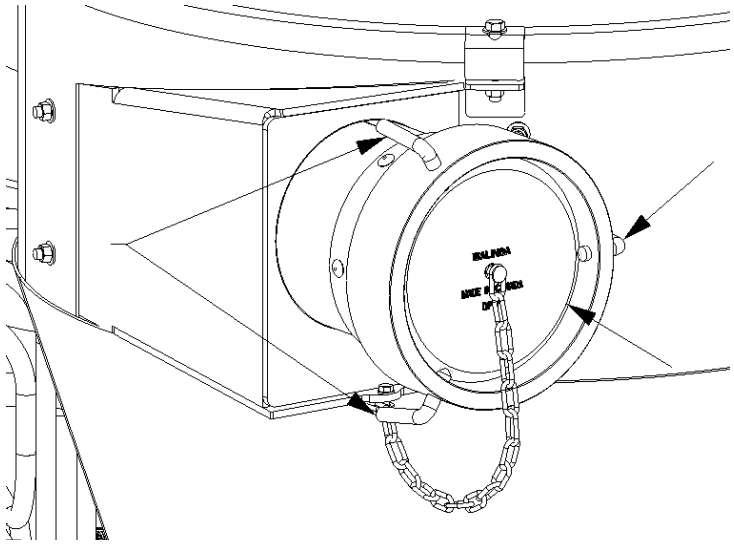


Figure 5-26: Primary AMS inlet plug insertion

5. Secure all nozzles and adapters in the transport position as follows:

   a. Prepare the individual components for transportation by tightening all tail bolts and wingnuts. For sweep nozzles, remove the lower pin of the handle brace and move it to the forward hole to angle the handle, preventing interference with the main components of the Agri-Vac.

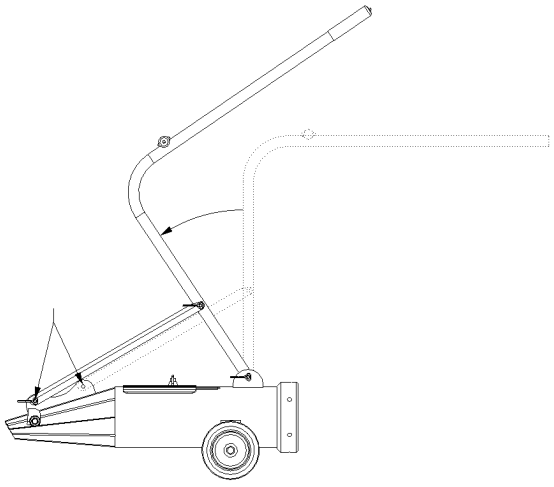


Figure 5-27: Sweep nozzle handle modification

b. Place intake nozzles and adapters in the provided brackets at the front of the unit. The straight nozzles and adapters should be placed in their corresponding horizontal brackets, note that the size of the brackets matches the size of the coupling at the base. The sweep nozzle should be placed in the vertical bracket.

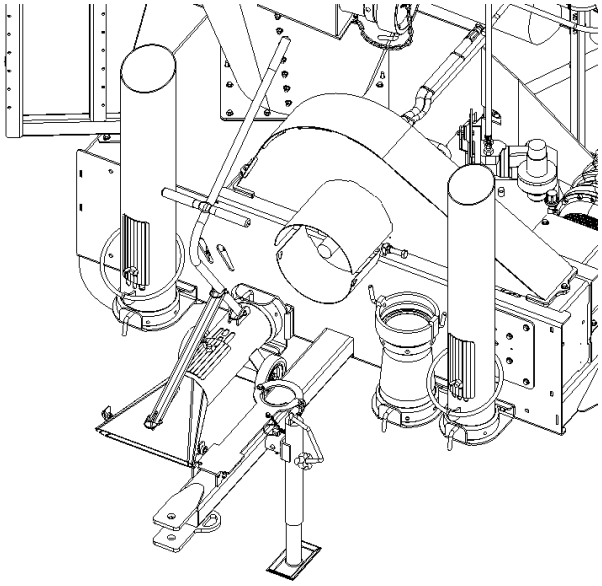


Figure 5-28: Nozzle and adapter placement

c. Secure all attachments by tightening the tail bolts on the brackets.

6. Secure all intake lines in the transport position as follows:

a. Lay all intake hoses and lines in the hose carrier brackets.

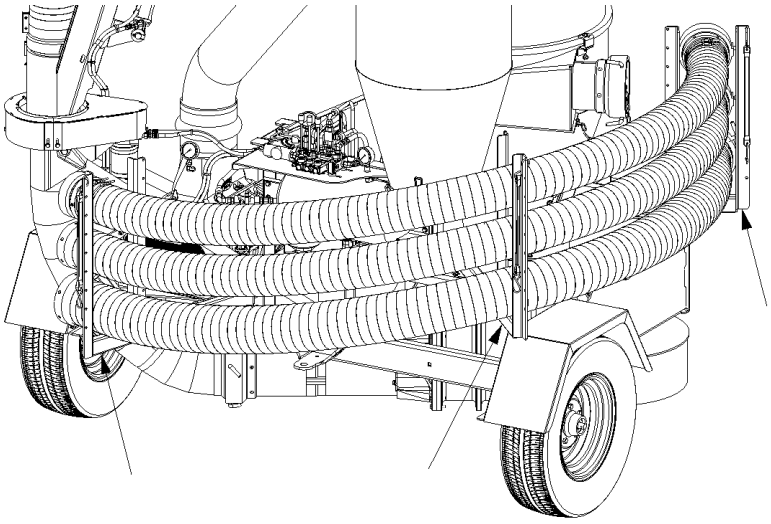


Figure 5-29: Intake hose positioning

b. Secure the lines with the provided straps.

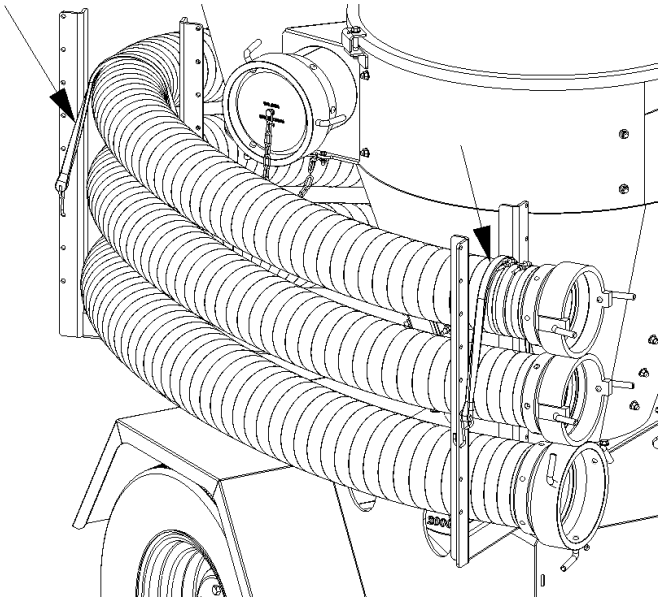


Figure 5-30: Hose carrier bracket straps

7. Secure the secondary AMS door in the transport position as follows:
   a. Ensure the secondary AMS and rubber p-extrusion seal are clear of any dirt and debris and firmly shut the door against the seal.

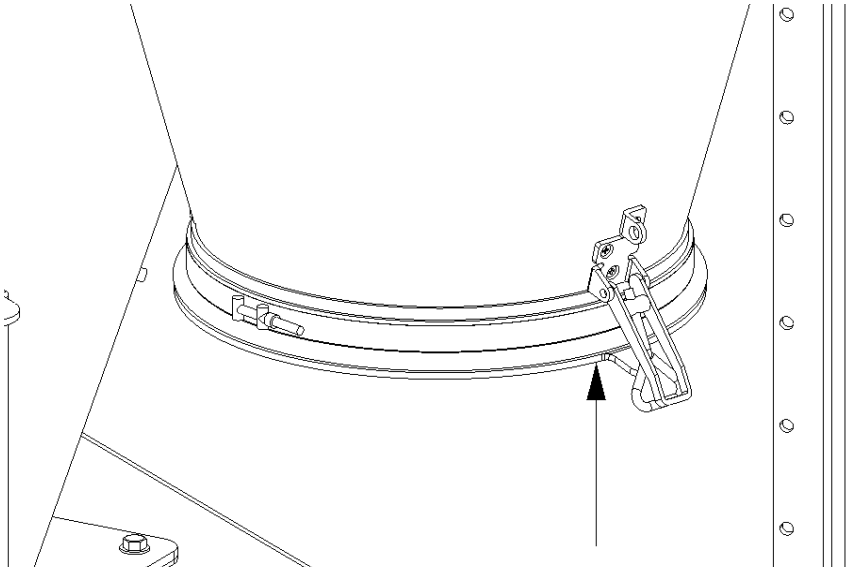


Figure 5-31: Secondary AMS door

b. Secure the door in the transport position by fastening the latch over the tab of the door, raising the drawbar and insert a locking pin or other locking device to secure it in place.

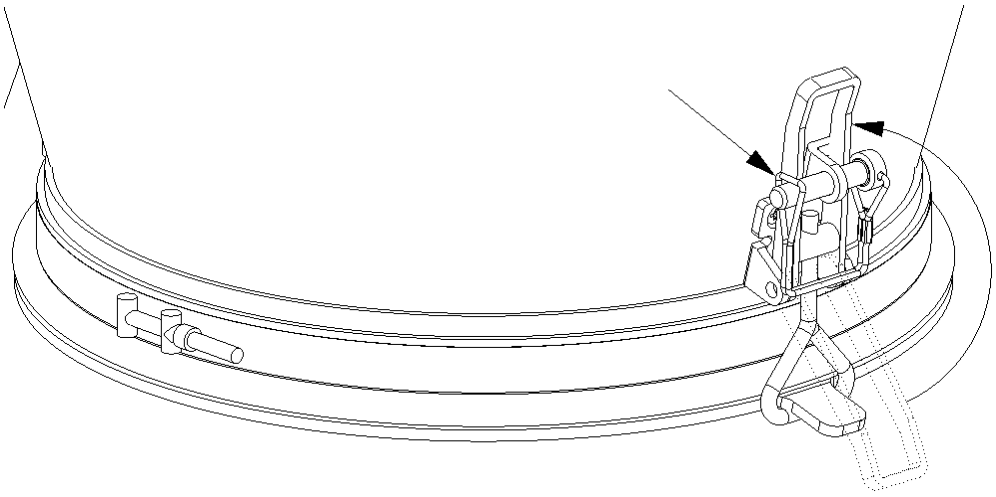


Figure 5-32: Securing secondary AMS door in transport position

8. Secure the primary AMS access door in the transport position as follows:
   a. Ensure the access door seals are clear of any dirt or debris and shut the door firmly against the primary AMS.

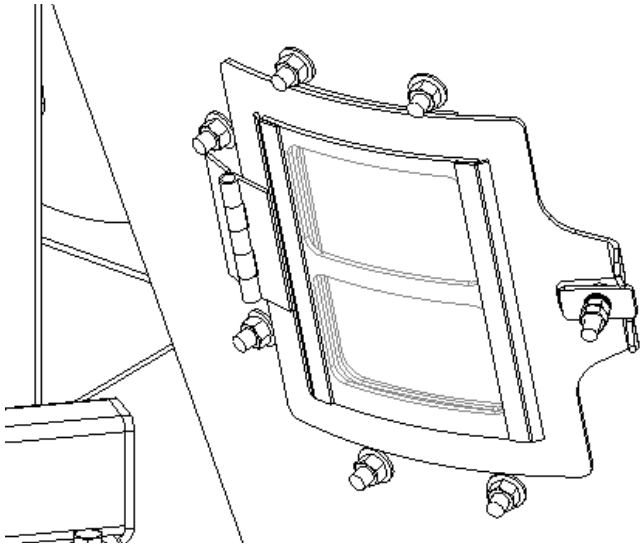


Figure 5-33: Primary AMS access door

b. Rotate the door lock 90° and tighten the nuts to secure the access door in the transport position.

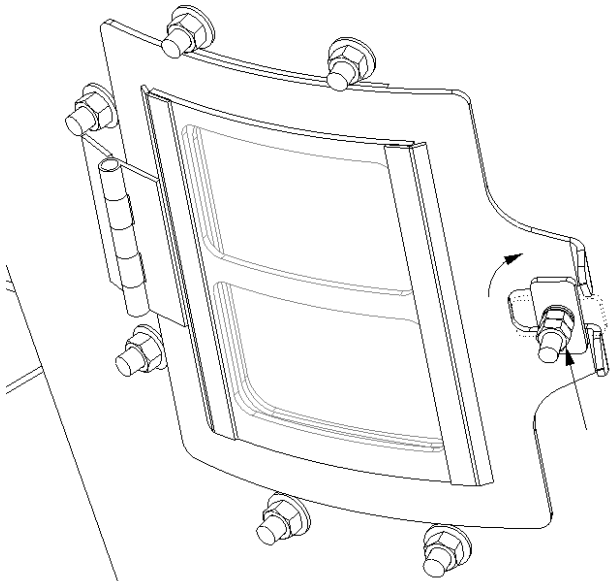


Figure 5-34: Securing primary AMS access door in transport position

9. If towing the Agri-Vac with a truck, remove the PTO shaft entirely and transport the shaft inside the vehicle, otherwise, if towing with a tractor, secure the PTO shaft in the transport position as follows:
    a. Remove the lynch pin in the PTO rest and open the upper lock ring.

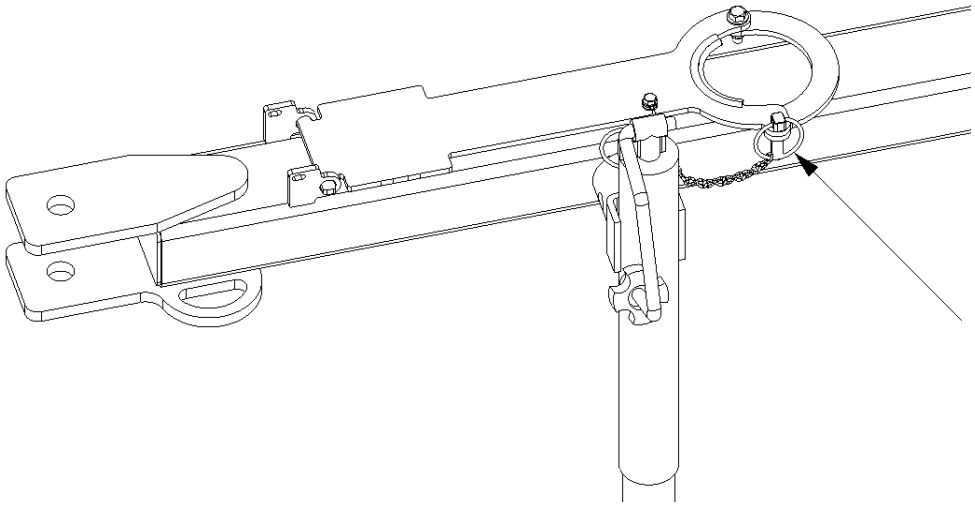


Figure 5-35: PTO rest preparation

b. Raise the rest so that the PTO sits against the rubber of the lower lock ring.

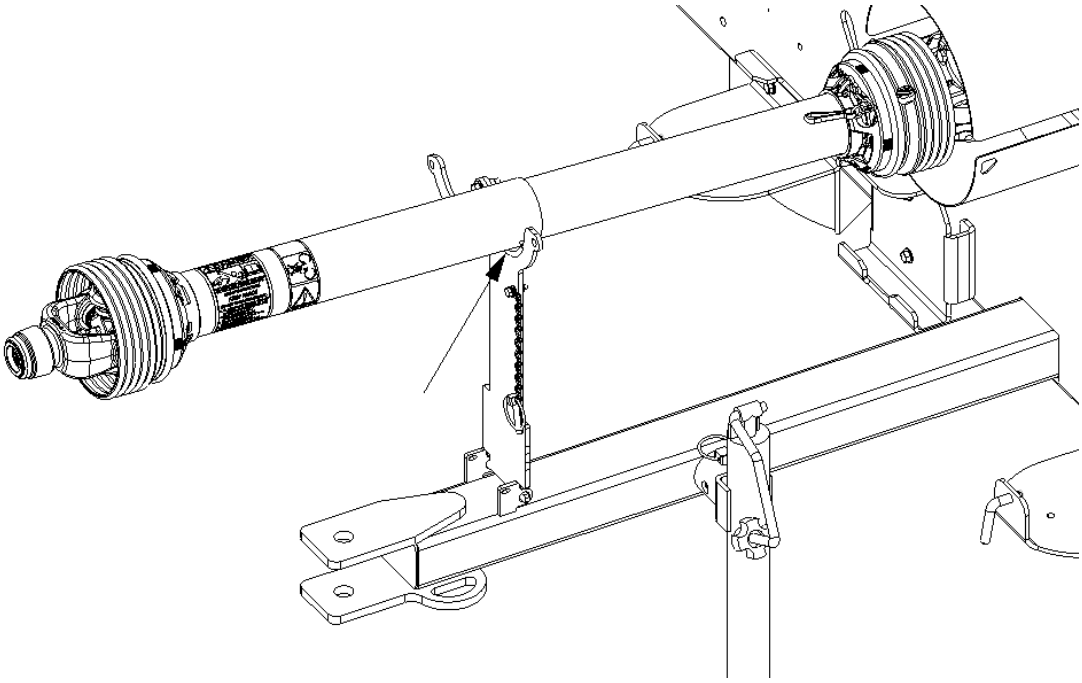


Figure 5-36: PTO rest initial positioning

c. Close the upper lock ring around the PTO and secure in place with the lynch pin.

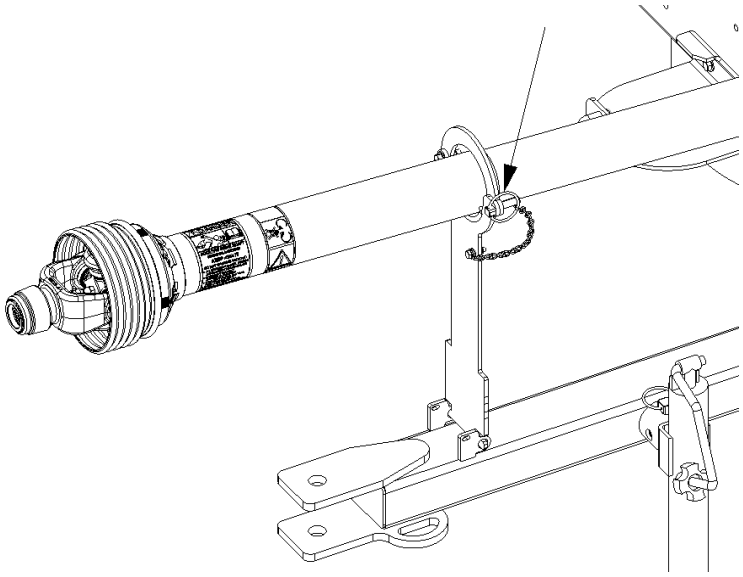


Figure 5-37: PTO rest secured

d. Disconnect the anchor chains of the PTO guard from the tractor. Retract the locking pin, or pull on the lock collar, of the PTO and slide the yoke off of the tractor shaft to disconnect the PTO.

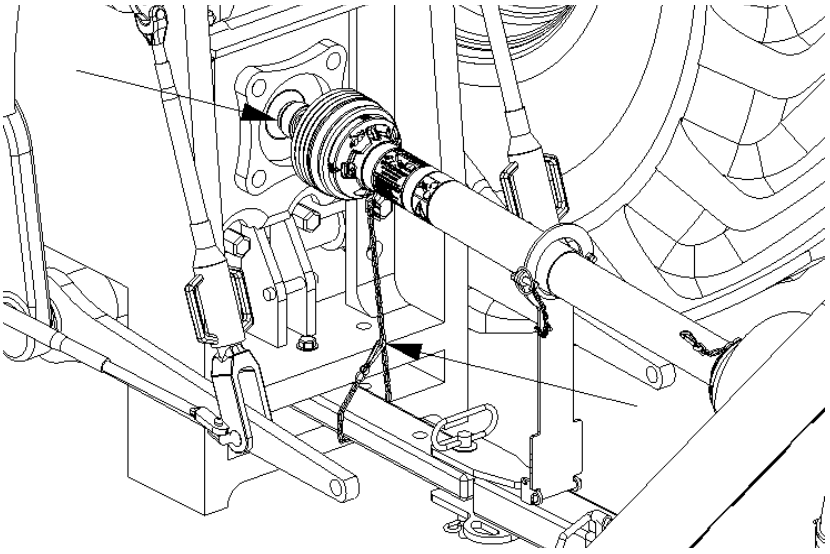


Figure 5-38: PTO detachment from tractor

e. Reposition the PTO shaft and PTO rest as needed to ensure it will not move during transport. The rest should sit against the yoke guard.

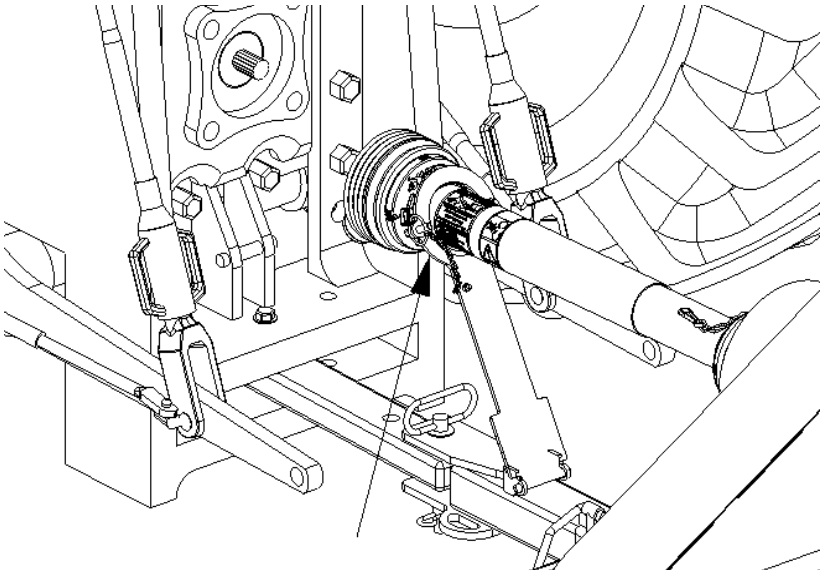


Figure 5-39: Positioning of PTO rest in transport position

10. Secure the jack in the transport position as follows:
    a. With the Agri-Vac securely attached to the towing vehicle, raise the foot of the jack so that it can rotate freely without contacting the ground or any component of the Agri-Vac.

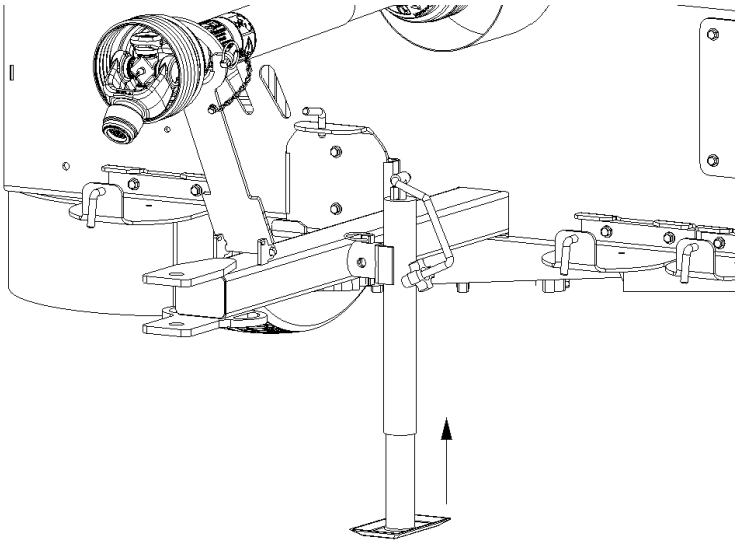


Figure 5-40: Raising the jack foot

    b. Remove the lynch pin from the rotating collar.

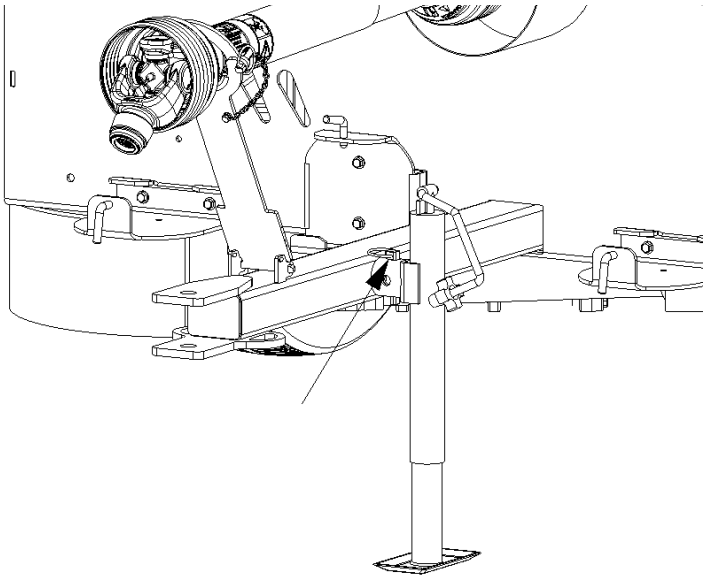


Figure 5-41: Jack lynch pin removal

c. Rotate the jack 90° so the foot is positioned towards the frame of the Agri-Vac.

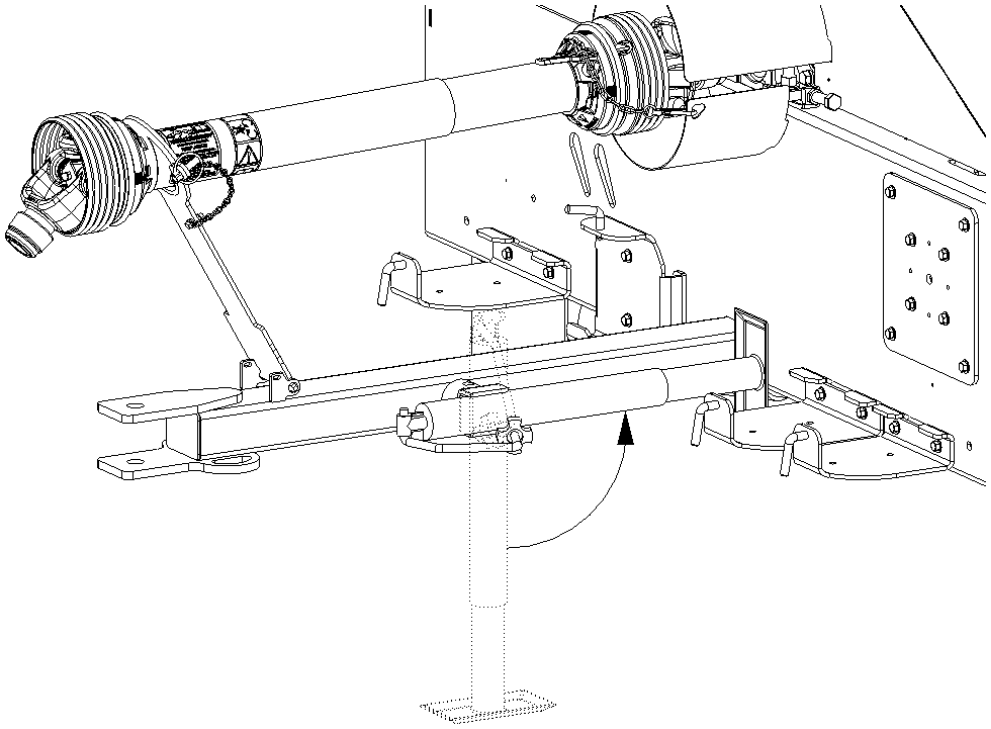


Figure 5-42: Jack transport position

d. Reinsert the lynch pin in the rotating collar to secure the jack.

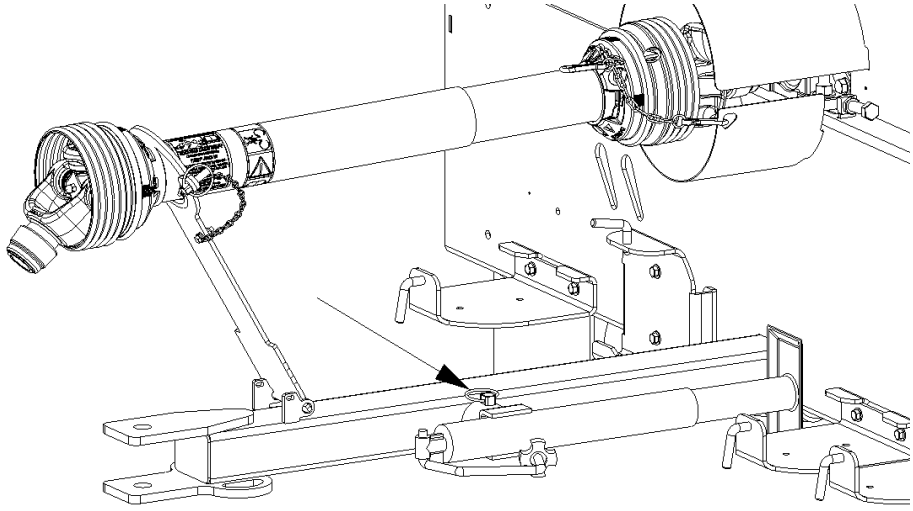
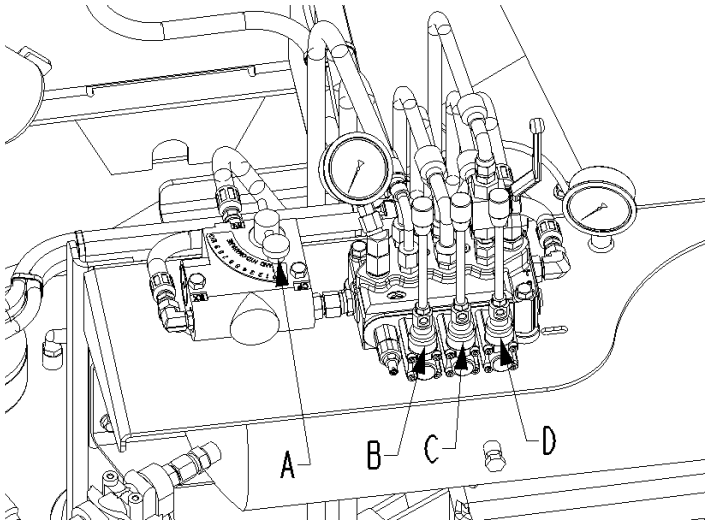


Figure 5-43: Jack secured in transport position

11. Ensure the hydraulic system is prepared for transport as follows:
    a. Place all hydraulic controls in the neutral position. The boom lift control, boom rotation control, and airlock direction control should all be in the center position. The flow divider for the airlock speed can remain at the operational position.



A Flow Divider

B Airlock Direction

C Boom Rotation

D Boom Lift

Figure 5-44: Hydraulic control positions

    b. For self-contained hydraulic units, proceed to **Step 12**. For tractor-driven hydraulic units, complete **Step 11 c** through **d**.
    c. Disconnect the hydraulic lines from the tractor and insert plastic plugs to protect from dirt contamination and accumulation.
    d. Route the disconnected hoses along the hitch and secure in position to prevent entanglement and damage during transport.

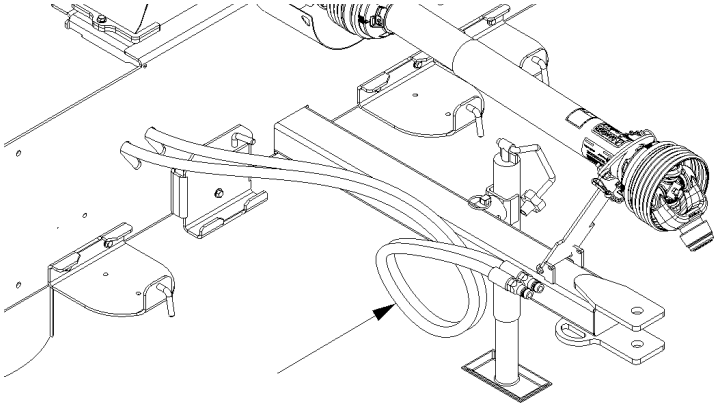


Figure 5-45: Disconnected hydraulic lines

12. Ensure your Agri-Vac is in compliance with all local regulations regarding transporting agricultural equipment on public roads and highways.
    - Use ANSI/ASAE S279.17 July 2013 as a minimum standard for lighting and marking of agricultural equipment on highways whether towing the Agri-Vac during the day or night.
    - While in the transport position, If the Agri-Vac obstructs any lights, reflectors or slow moving vehicle (SMV) emblems on the towing vehicle, the lights, reflectors or SMV emblems that are obstructed must be installed on the Agri-Vac with reference to the ANSI/ASAE S279.17 July 2013 standard.
    - Be aware that your local regulations may require or disallow certain lamps, such as beacons, and/or operating modes, such as flashing red lamps. Any such regulations take precedence in their area of jurisdiction over the requirements of ANSI/ASAE S279.17 July 2013.
13. Check the condition of the required transport safety features installed on the Agri-Vac such as an SMV emblem, lights and reflectors, and ensure that all features are in place, clean and are clearly visible to all overtaking and oncoming traffic. Be aware that an SMV emblem may only be displayed when towing at speeds under 25 mph (40 km/h), with reference to ANSI S276.7.7.2.3; if towing above this speed, the SMV emblem must be removed or covered.

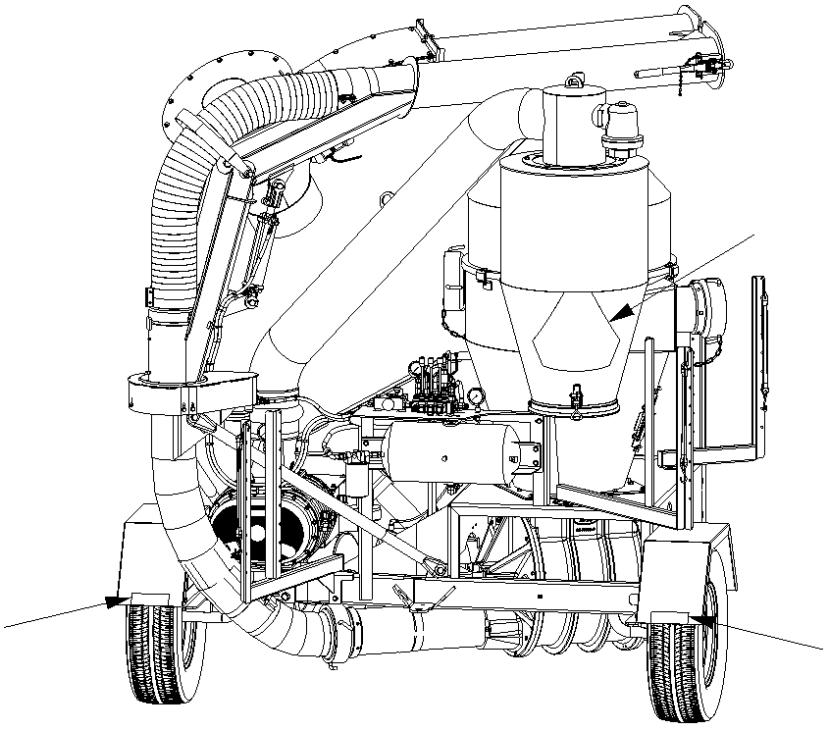


Figure 5-46: Agri-Vac transport safety features

14. During transport, remain aware of potential overhead obstructions and maintain a safe distance for clearance. Be aware that electrocution can occur from overhead power lines without direct contact.
15. Do not allow any individuals to ride on the Agri-Vac or tractor during transport.
16. Unless prohibited by local regulations, use hazard flashers on the tractor/towing vehicle for increased visibility. During times of limited visibility, use pilot vehicles or the addition of extra lights to the Agri-Vac.
17. It is not recommended that the Agri-Vac be towed at speeds over 20 mph (32 km/h). Reference **Table 5-1** for the recommended towing speed based on the weight ratio of a fully equipped and loaded Agri-Vac relative to the weight of the tractor/towing vehicle. Reference **Section 8: Specifications** for the weight of the Agri-Vac. The towing speed should be further reduced on rough roads or surfaces.

Table 5-1: Weight ratio and recommended towing speeds

Weight Ratio	Road Speed
1 to 1 or less	Up to 20 mph (32 km/h)
2 to 1 or less	Up to 10 mph (16 km/h)
Greater than 2 to 1	Do not tow

To prepare the Agri-Vac for use after transportation, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Check the Agri-Vac for any damage that may have occurred during transport, paying careful attention for any loose components or damage to any hydraulic lines or fittings. Repair or replace any loose or damaged components as necessary.
3. Check for any accumulation of dirt or debris and clean or clear as necessary.
4. Refer to **Section 6: Operation** and proceed with normal operating procedures.

STORAGE

To prevent unnecessary down-time when preparing the machine for use after storage, it is important to carefully follow the storage preparation procedures.

To prepare the Agri-Vac for storage, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Thoroughly inspect the Agri-Vac for any damaged or worn components; repair or replace any components as required before storage with reference to **Section 7: Maintenance and Adjustments** to prevent down-time at the beginning of the next season.
3. Inspect all the hydraulic hoses, fittings, lines, couplers, and valves. Tighten any loose fittings and replace any damaged components. Replace any hose that has been cut, nicked, abraded, or shows signs of separation at the crimped end of the fitting.
4. Empty and clean out the secondary AMS with reference to **Section 7: Maintenance and Adjustments**.

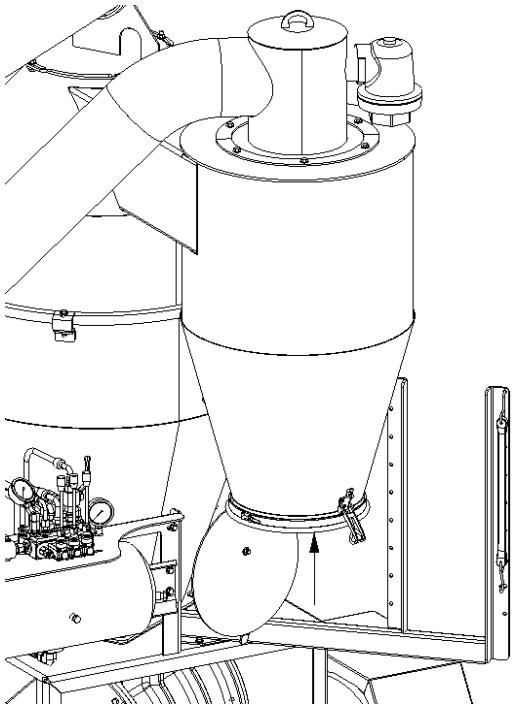


Figure 5-47: Secondary AMS preparation

5. Wash the entire machine thoroughly using a water hose or pressure washer to remove all dirt, dust, debris, and residue. The internal surfaces of the Agri-Vac can be cleaned through flushing. To flush the internal surfaces, proceed as follows:
    a. Position the boom to allow free discharge of water.

b. Run the system, including the blower, at a high idle speed with the airlock rotating.

c. Suck clean water into the machine through an inlet port on the primary AMS or through a suction hose for several minutes, allowing time for the water to wash out the primary AMS interior, the rotating airlock blades, and the discharge area.

d. Stop the water flow into the machine and continue to run the Agri-Vac for several minutes to allow all interior surfaces to completely dry.

e. When conveying materials with oily characteristics or high moisture content, including milled feeds, the Agri-Vac may need to be flushed on a more regular basis to remove residue build-up. Oily residues may require flushing and soaking with a suitable solvent to dissolve build-up. Any non-food-grade solvents must be cleaned from the machine using hot water and/or detergent flushing. Ensure that any solvent used is acceptable for the intended market of the conveyed products.

6. Retract and secure all accessories and components of the Agri-Vac into their transport position. Reference the above *Transportation* section for specific procedures.
7. With reference to **Section 7: Maintenance and Adjustments**, lubricate all grease points. Ensure all grease cavities have been filled with grease to remove any water residue from washing.
8. With reference to **Section 7: Maintenance and Adjustments**, check the oil level of the blower reservoirs and adjust the oil levels as necessary.
9. Install the plug(s) into the primary ASM inlet(s) and secure in place by tightening tail bolts.

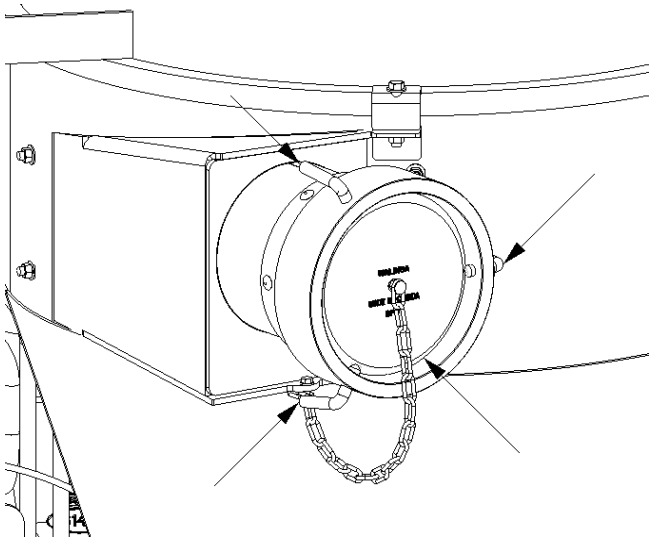


Figure 5-48: Primary AMS inlet plug installation

10. Open the access door and ensure the primary AMS is empty.

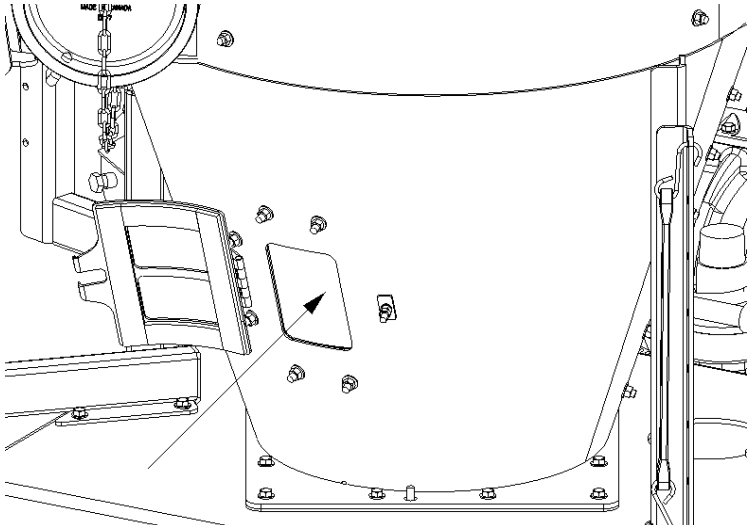


Figure 5-49: Primary AMS inspection

11. Apply never seize to the boom cylinder ram.

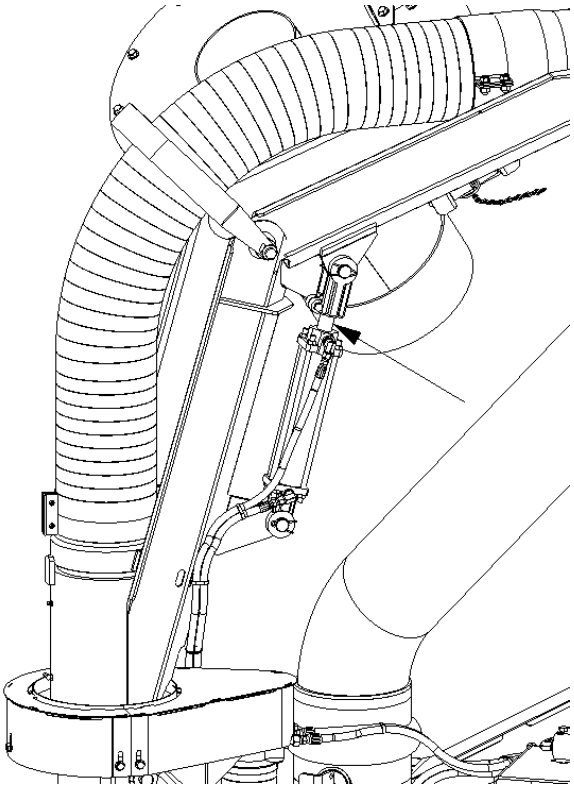


Figure 5-50: Boom cylinder ram

12. Remove the PTO shaft, storing it indoors in a dry and secure area, apply never seize or grease to the PTO input shaft, and place the vinyl cover over the PTO input shaft.

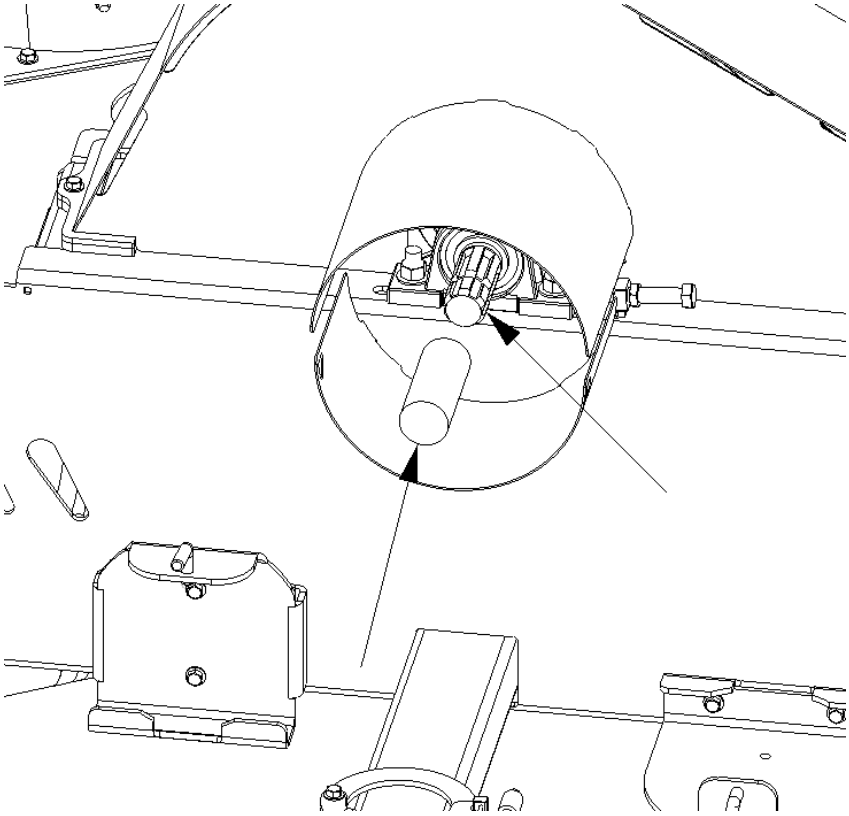


Figure 5-51: PTO input shaft

13. Touch up all paint nicks and scratches to prevent rusting.
14. Store all hoses inside or under a shelter in a dry and secure area.
15. Move the Agri-Vac to its storage position. The storage position should be chosen as a location that is dry, level and free of debris, and does not have frequent human activity in the vicinity.
16. Secure the Agri-Vac in place with wheel chocks if necessary.
17. Support the hitch jack with an additional footing support if required, especially on softer surfaces.
18. Unhook the machine from the tractor/power unit with reference to **Section 6: Operation**.

After storage, refer to **Section 7: Maintenance and Adjustments** to ensure all necessary maintenance tasks are completed. Once the required maintenance tasks have been completed, proceed to the standard pre-operation checks as outlined in **Section 6: Operation** and resume normal operation.

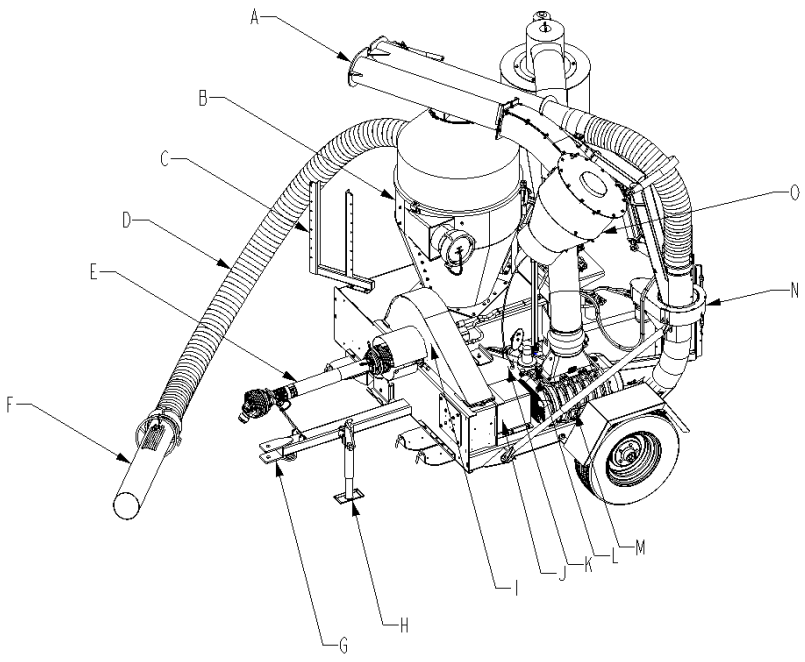
PAGE INTENTIONALLY LEFT BLANK

WALINGA® INC.

Operation

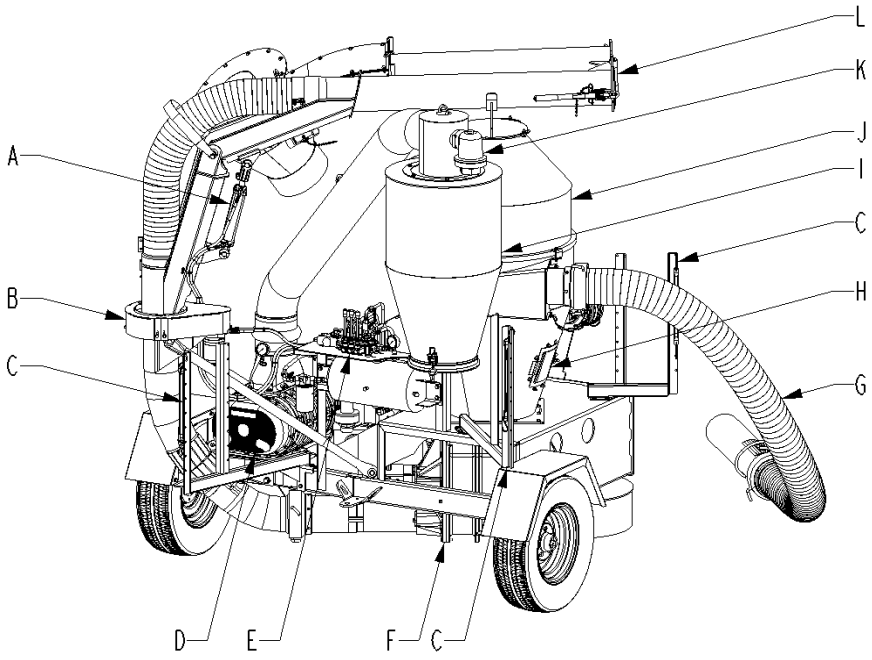
PTO AGRI-VAC MODELS

MACHINE FEATURES AND COMPONENTS



A Boom
B Primary AMS
C Hose Carrier
D Intake Line
E Tractor PTO Shaft
F Intake Nozzle
G Hitch Pole
H Jack
I Belt Drive
J Blower PTO Shaft
K Muffler
L Pressure Relief Valve
M Blower
N Boom Rotation
O Discharge Cyclone

Figure 6-1: Agri-Vac key components (front)



A Boom Lift Cylinder
B Boom Rotation
C Hose Carrier
D Blower
E Hydraulic Controls
F Airlock
G Intake Line
H Access Door
I Secondary AMS
J Primary AMS
K Vacuum Relief Valve
L Boom

Figure 6-2: Agri-Vac key components (rear)

CONTROLS AND DISPLAYS

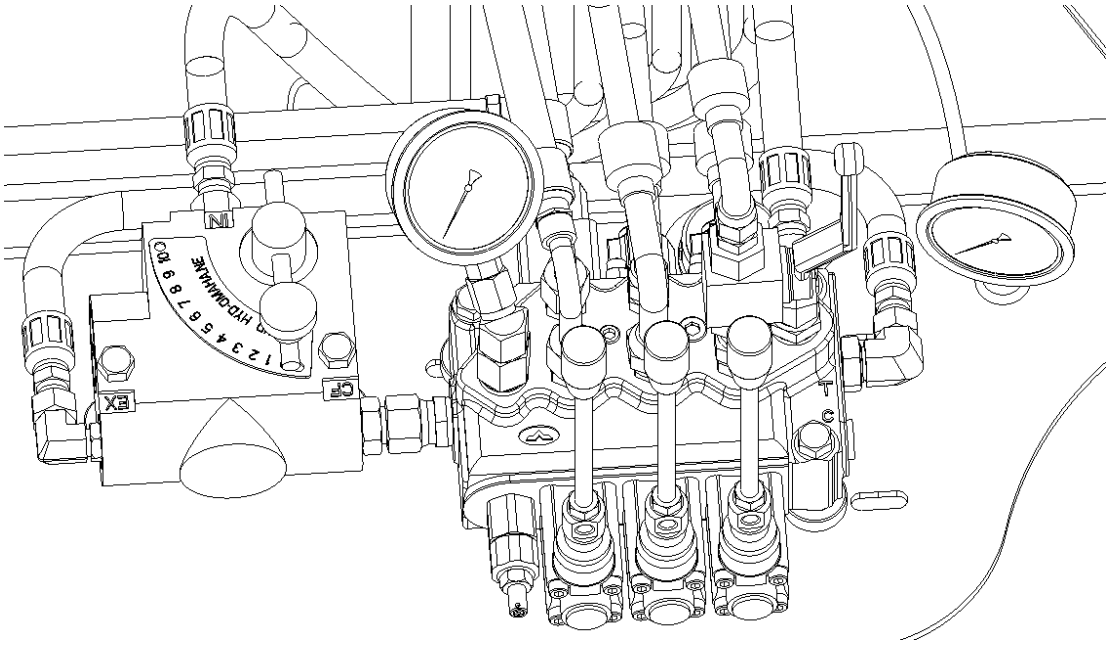


Figure 6-3: Self-contained hydraulic (SCH) controls

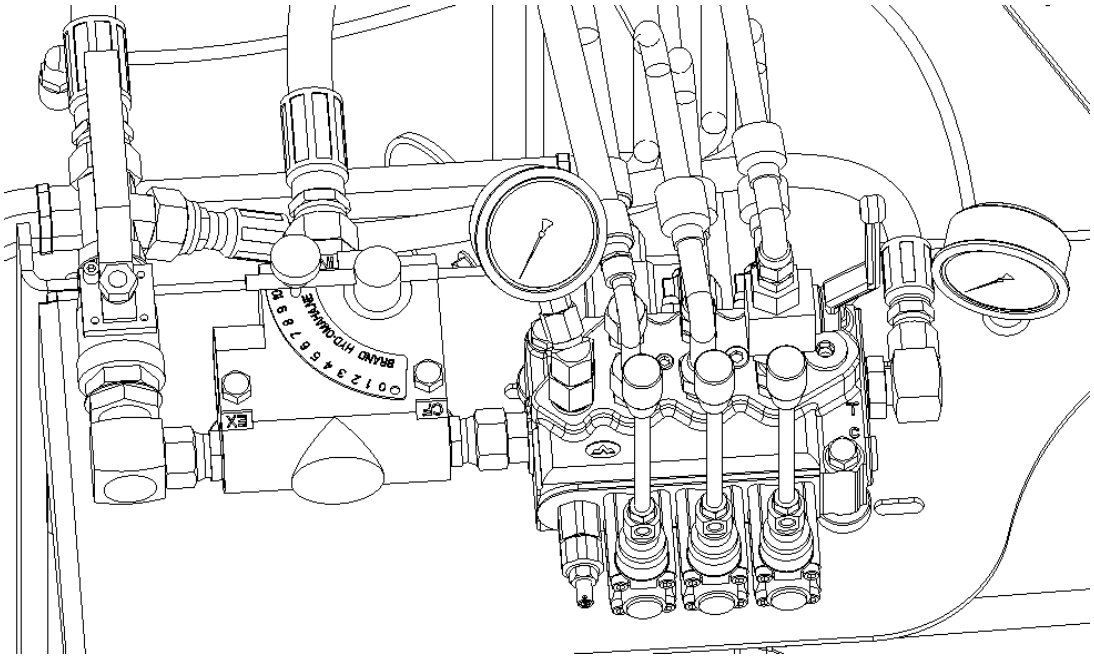


Figure 6-4: Tractor-driven hydraulic (TDH) controls

Function: The speed of the airlock is controlled by the flow divider. The speed is set by moving the knob along the arc path.

Range: The flow divider allows the speed to be set from no flow at the 0 position to maximum flow at the 10 position.

Connections:
A is connected from the flow divider ***IN*** port to the ***Out*** port of the hydraulic pump.
B is connected from the flow divider ***EX*** port to the ***T*** port of the hydraulic control valve bank.
C is connected from the flow divider ***CF*** port to the ***P*** port of the hydraulic control valve bank.

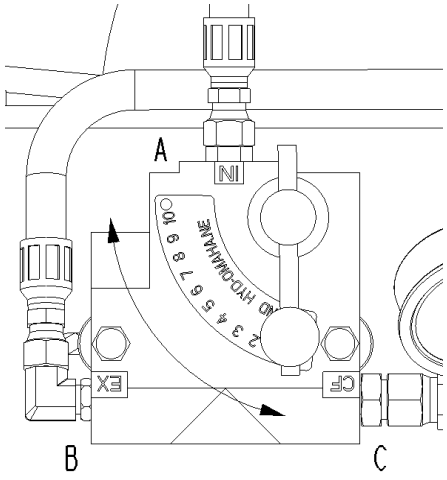


Figure 6-5: SCH airlock speed control

Function: The speed of the airlock is controlled by the flow divider. The speed is set by moving the knob along the arc path. The ball valve is used for compatibility between the Agri-Vac and the open or closed-center hydraulic system of the tractor, with the handle rotated 90° to switch between positions.

Range: The flow divider allows the speed to be set from no flow at the 0 position to maximum flow at the 10 position. The ball valve can be set to the open position for open-center tractor hydraulic systems or set to the closed position for closed-center tractor hydraulic positions. ***Figure 6-6*** shows the ball valve in the open position.

Connections:
A is connected from the ball valve tee to the tractor's ***IN*** port.
B is connected from the ball valve teed to the ***T*** port of the hydraulic control valve bank.
C is connected from the flow divider ***IN*** port to the tractor's ***OUT*** port.
D is connected from the flow divider ***EX*** port to the ball valve.
E is connected from the flow divider ***CF*** port to the ***P*** port of the hydraulic control valve bank.

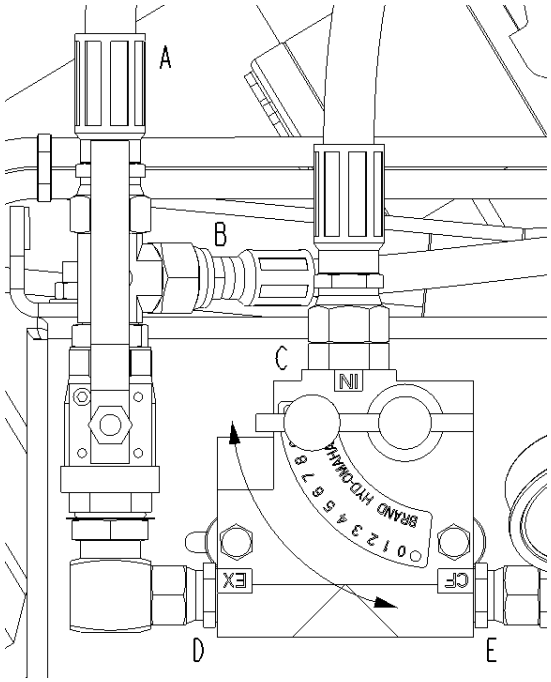


Figure 6-6: TDH airlock speed control and ball valve

Function: The leftmost lever of the hydraulic control bank controls the direction of the airlock motor.

Range: The lever is spring-loaded to return to the neutral center position with a detent in position two. In reference to ***Figure 6-7***, when the lever is pushed upwards, the airlock motor is set to the reverse direction. When the lever is in the center it is in the neutral position and will stop the airlock motor. When the lever is pulled downwards (position two), the airlock motor is set to the normal operational direction, this position has a detent and does not need to be held in place to run the airlock, push the lever back the the center position to stop the airlock.

Connections:
A is connected from the hydraulic control bank ***A3*** port to the airlock motor ***B*** port.
B is connected from the hydraulic control bank ***B3*** port to the airlock motor ***A*** port.

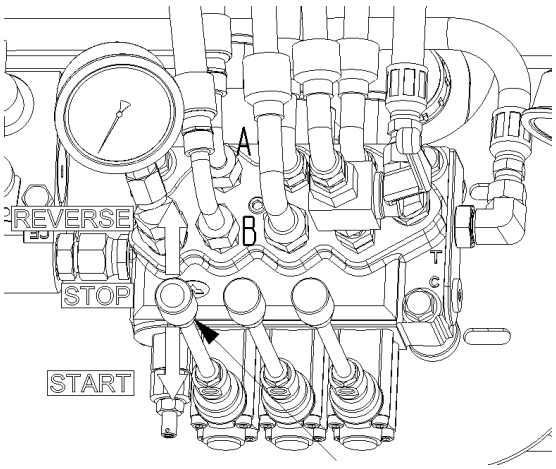


Figure 6-7: Airlock direction control

Function: The center lever of the hydraulic control bank controls the direction of the rotation of the boom for units equipped with hydraulic boom rotation.

Range: The lever is spring-loaded to return to the neutral center position. In reference to ***Figure 6-8***, when the lever is pushed upwards, the boom will rotate to the right (clockwise). When the lever is pulled downwards, the boom will rotate to the left (counter-clockwise).

Connections:
A is connected from the hydraulic control bank ***A2*** port to the boom rotation motor ***B*** port.
B is connected from the hydraulic control bank ***B2*** port to the boom rotation motor ***A*** port.

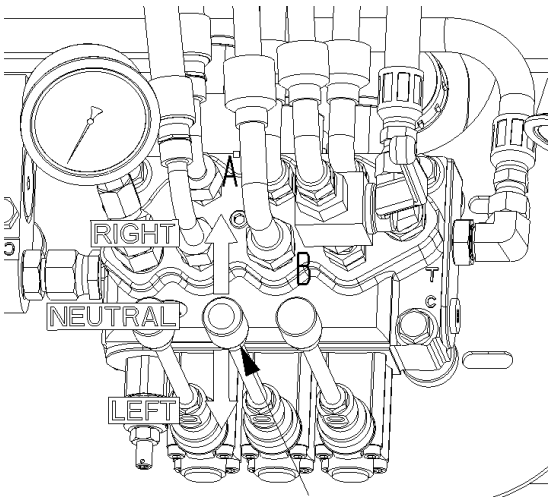


Figure 6-8: Boom rotation control

Function: The rightmost lever of the hydraulic control bank controls the lifting of the boom. The ball valve locks the boom in a raised position to prevent hydraulic bleeding in the system causing a fully loaded boom to lower.

Range: The lever is spring-loaded to return to the neutral center position. In reference to ***Figure 6-9***, when the lever is pushed upwards, the boom will lower. When the lever is pulled downwards, the boom will raise. The ball valve should be in the open position when changing the position of the boom and set in the closed position when the boom has been raised.

Connections:
A is connected from the hydraulic control bank ***A1*** port to the boom cylinder top port.
B is connected from the hydraulic control bank ***B1*** port to the ball valve to the boom cylinder bottom port.

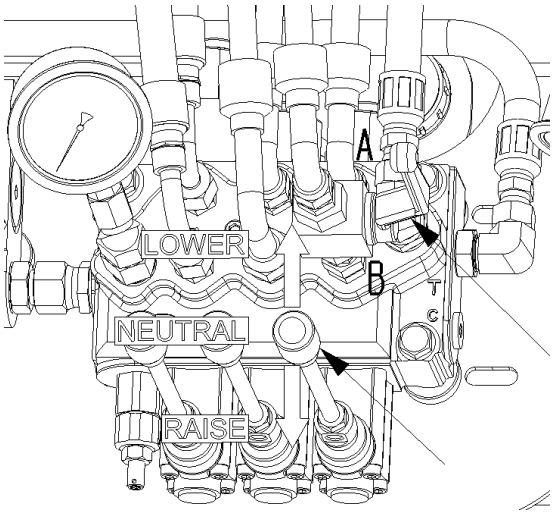


Figure 6-9: Boom lift control and ball valve

Function: The vacuum relief valve allows air to enter the intake side of the system when the vacuum pressure is exceeded to prevent the blower from overheating and excessive vacuum levels in situations where the intake has become restricted in some manner. The valve will automatically reseal when the excess vacuum pressure is reduced.

Range: The vacuum relief valve is set to open at 16 in Hg (54 kPa).

Connections: The valve is connected to the intake side of the system along the blower inlet pipe.

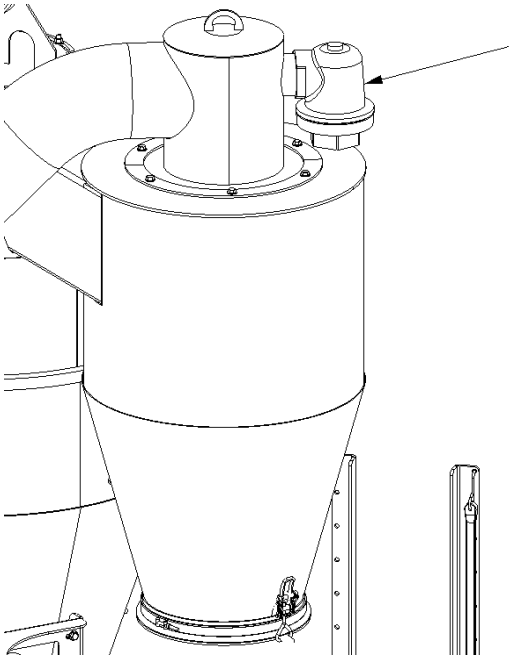


Figure 6-10: Vacuum relief valve

Function: The pressure relief valve allows air to exit the discharge side of the system when the outlet pressure is exceeded to relieve the pressure buildup in situations where the discharge has become restricted in some manner. The valve will automatically reseal when the excess pressure is reduced.

Range: The pressure relief valve is set to open at 15 psi (103 kPa).

Connections: The valve is connected to the discharge side of the system on the top side of the muffler body.

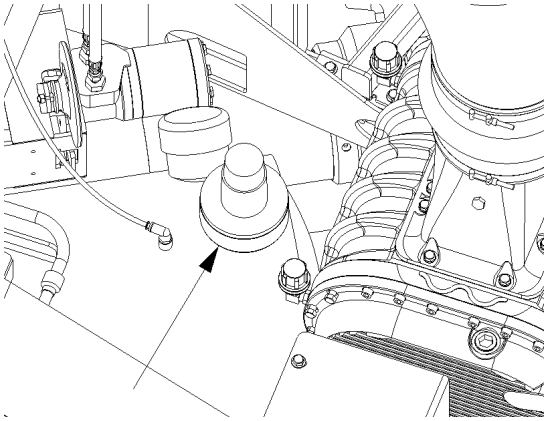


Figure 6-11: Pressure relief valve

Function: The tachometer/hour meter records the total running hours of the Agri-Vac. As well as providing a measurement for the current rotational speed of the PTO input shaft.

Range: The meter is capable of recording total running hours from 0 to 999999 H and rotational shaft speeds from 0 to 20000 rpm.

Connections: The rare Earth magnet is mounted on the PTO input shaft with the speed pickup sensor of the tachometer mounted within 2 mm on the sensor bracket.

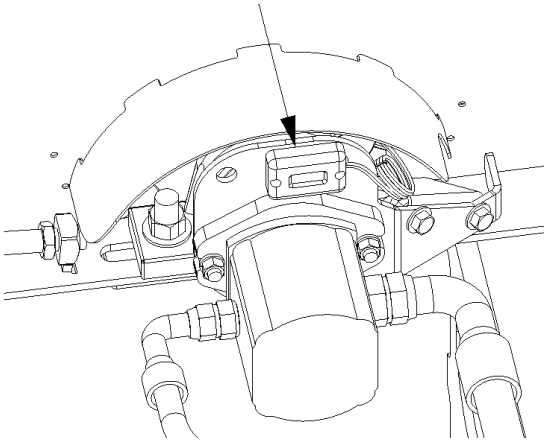


Figure 6-12: Tachometer/hour meter

Function: The vacuum pressure gauge measures the pressure on the intake side of the system.

Range: The gauge is capable of measuring from -30 in Hg (-101.6 kPa) to 30 psi (206.8 kPa). Under normal conditions, the vacuum pressure should be between -10 in Hg (-33.8 kPa) and -15 in Hg (-50.8 kPa).

Connections: The gauge is mounted on the blower inlet.

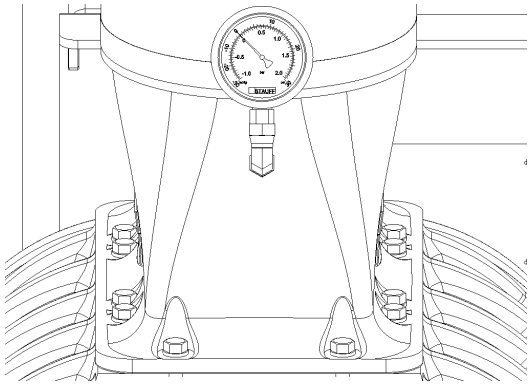


Figure 6-13: Vacuum pressure gauge

Function: The outlet pressure gauge measures the pressure on the discharge side of the system.

Range: The gauge is capable of measuring from 0 psi (0 kPa) to 15 psi (103.4 kPa). Under normal conditions, the outlet pressure should be between 7 psi (48.2 kPa) and 13 psi (89.6 kPa).

Connections: The gauge is mounted on the hydraulic control mounting bracket and connected to the top side of the muffler body.

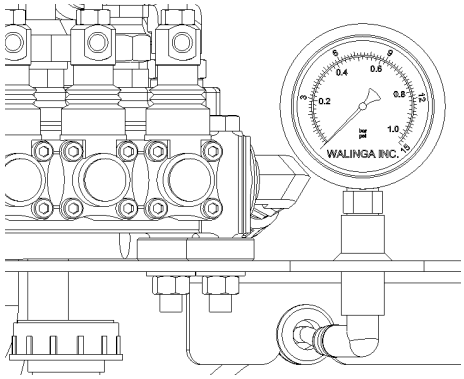


Figure 6-14: Outlet pressure gauge

Function: The hydraulic pressure gauge measures the pressure of the Agri-Vac hydraulic system.

Range: The gauge is capable of measuring from 0 psi (0 MPa) to 3000 psi (20.7 MPa). Under normal conditions, the hydraulic pressure should be between 500 psi (3.4 MPa) and 1900 psi (13.1 MPa).

Connections: The gauge is mounted on the hydraulic control bank.

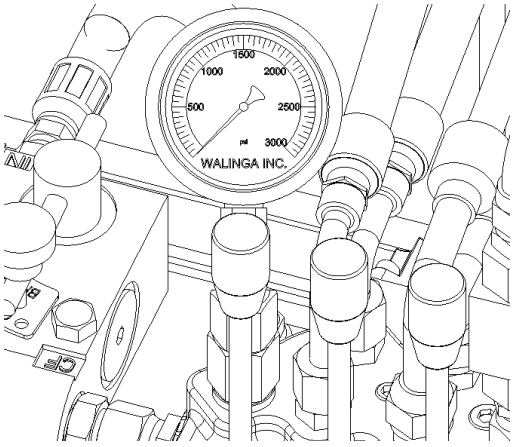


Figure 6-15: Hydraulic pressure gauge

Function: The airlock indicator wheel shows the direction of the rotation of the airlock and can also be used to determine the airlock speed.

Range: The arrow cut-out on the wheel indicates the normal operational direction of the airlock. Under normal conditions, the airlock should be run at speeds between 25 to 70 rpm.

Connections: The indicator wheel is mounted on the airlock motor bracket and connected to the airlock coupling by the indicator belt.

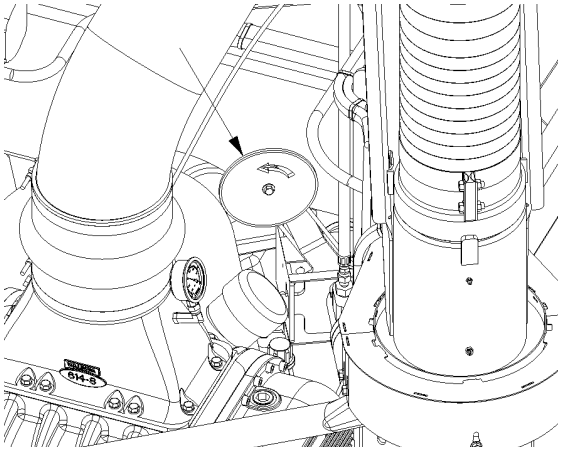


Figure 6-16: Airlock indicator wheel

OPERATION

Pre-Operation

For personal safety and to ensure the Agri-Vac is in good mechanical condition, the following checks must be performed before operation of the Agri-Vac:

1. Ensure the Agri-Vac has been properly lubricated as per the described methods and schedule as outlined in **Section 7: Maintenance and Adjustments**.
2. Ensure the tractor or power unit to be used is of adequate power to operate the Agri-Vac as described in **Section 8: Specifications** and with reference to **Table 6-1: Required equipment specifications**.
3. Ensure the Agri-Vac is properly secured to the tractor/power unit including both a mechanical retainer in the drawbar pin as well as safety chains.

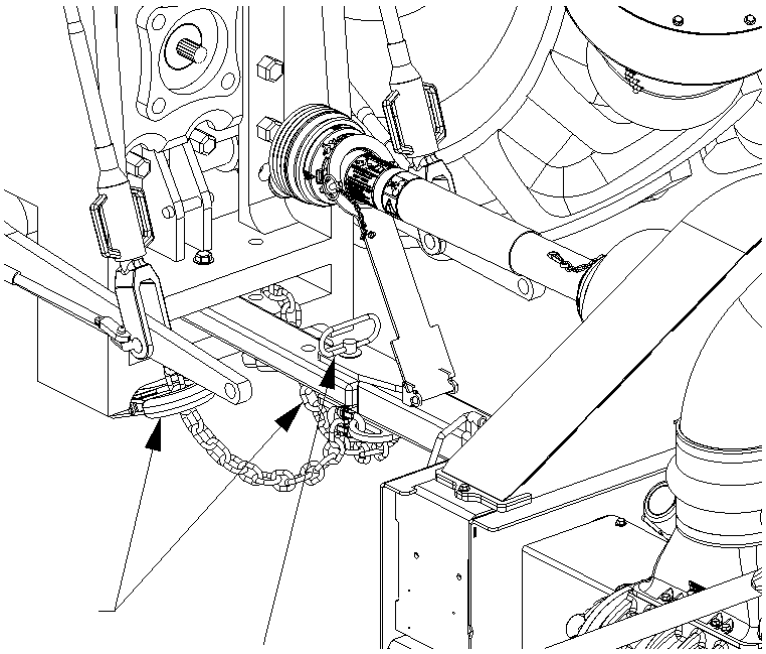


Figure 6-17: Proper attachment to tractor

4. Check the oil level in the blower reservoirs and adjust as necessary with reference to **Section 7: Maintenance and Adjustments**.
5. Inspect the hydraulic system to ensure the hydraulic reservoir of self-contained hydraulic machines are filled to the required level with reference to **Section 8: Specifications**. Inspect all fittings and couplings to ensure they are free of dirt and debris and clean if necessary; use a clean cloth to wipe any accumulated dirt from the couplers before connecting the Agri-Vac to the hydraulic system of the tractor/power unit. Ensure there are no pinched, kinked or otherwise obstructed hydraulic lines. Inspect the system for any leaks.

6. Check the tires and ensure they are inflated to the specified pressure as outlined in **Section 8: Specifications**.
7. Ensure that the blower turns freely.
8. Open and clean the secondary AMS door and tank with reference to **Section 7: Maintenance and Adjustments**.
9. Check for and remove any entangled material.
10. Inspect the muffler for any foreign material and ensure any materials have been removed with reference to **Section 7: Maintenance and Adjustments**. Failure to remove any foreign materials may result in a fire hazard.
11. Ensure the PTO driveline is secured to both the tractor and Agri-Vac shafts with the locking pin or lock collar in the locked position, and the guard is chained to the frame.
12. Close and secure all guards.

Equipment Matching

The Agri-Vac has been designed to be used with agricultural tractors or power units. To ensure efficient and safe operation, reference the specifications required for each Agri-Vac model as outlined in ***Table 6-1*** and as follows:

- Power requirements:
  - The minimum power required to operate an Agri-Vac is outlined in ***Table 6-1***.
- PTO shaft requirements:
  - The tractor PTO shaft must meet the specifications one of the following as required and outlined in ***Table 6-1***:
    - 1000 rpm - 21 spline - 1 3/8 in (3.49 cm) diameter for <180 hp (134 kW)
    - 1000 rpm - 21 spline - 1 3/4 in (4.45 cm) diameter for >180 hp (134 kW)
  - It is not recommended that shaft adapters be used on the tractor shaft to prevent operating at the wrong speed. Use extra care when using a tractor with a shiftable PTO speed. Operating at the incorrect speed can cause serious damage to the blower and possible personal injury. Operating at the wrong speed or with the incorrect PTO will void the warranty.
- Drawbar clearance dimensions:
  - The drawbar clearance dimensions are dependent on the PTO specifications. For 1000 rpm PTO shafts, the distance between the end of the PTO shaft and the center of the drawbar pin hole must be 16 in (40.6 cm). These dimensions will provide sufficient clearance for turning and allow for telescoping of the shaft. Consult the operator's manual of the tractor to adjust the positioning of the drawbar if required.

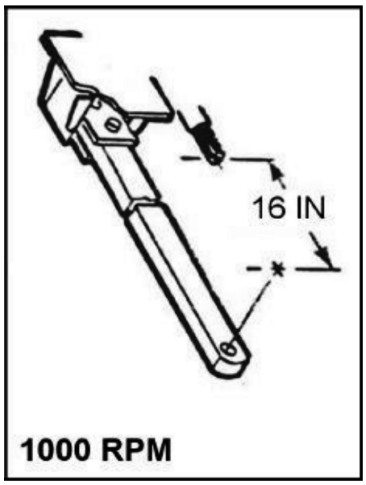


Figure 6-18: Drawbar clearance dimensions

- Hydraulic system requirements:
  - The power unit must have one remote hydraulic valve to operate the airlock motor and one to operate the boom lift circuit. The system must be capable of 15 gpm (56 lpm) at 1500 psi (10300 kPa)
  - The Agri-Vac can be configured to function with either a closed-center or open-center system.

Table 6-1: Required equipment specifications

Model	Minimum Power	PTO Shaft	Drawbar Clearance	Hydraulic Flow Rate	Hydraulic Pressure
5614	70 - 85 hp (52.2 - 63.4 kW)	1000 rpm	16 in (40.6 cm)	3.8 gpm (14.4 lpm)	1500 psi (10300 kPa)
6614	110 - 130 hp (82 - 97 kW)	1000 rpm	16 in (40.6 cm)	3.8 gpm (14.4 lpm)	1500 psi (10300 kPa)
7614	140 - 180 hp (104 - 134 kW)	1000 rpm	16 in (40.6 cm)	3.8 gpm (14.4 lpm)	1500 psi (10300 kPa)
7816	150 - 180 hp (112 - 134 kW)	1000 rpm	16 in (40.6 cm)	4.4 gpm (16.6 lpm)	1500 psi (10300 kPa)

Attaching and Unhooking

To connect the Agri-Vac to a tractor/power unit, proceed as follows:

1. Clear the area of bystanders, especially small children.

2. Clear the area of any foreign objects or debris, and ensure the area is level and dry.

3. Ensure there is sufficient clearance to back the tractor/power unit up to the hitch point of the Agri-Vac.

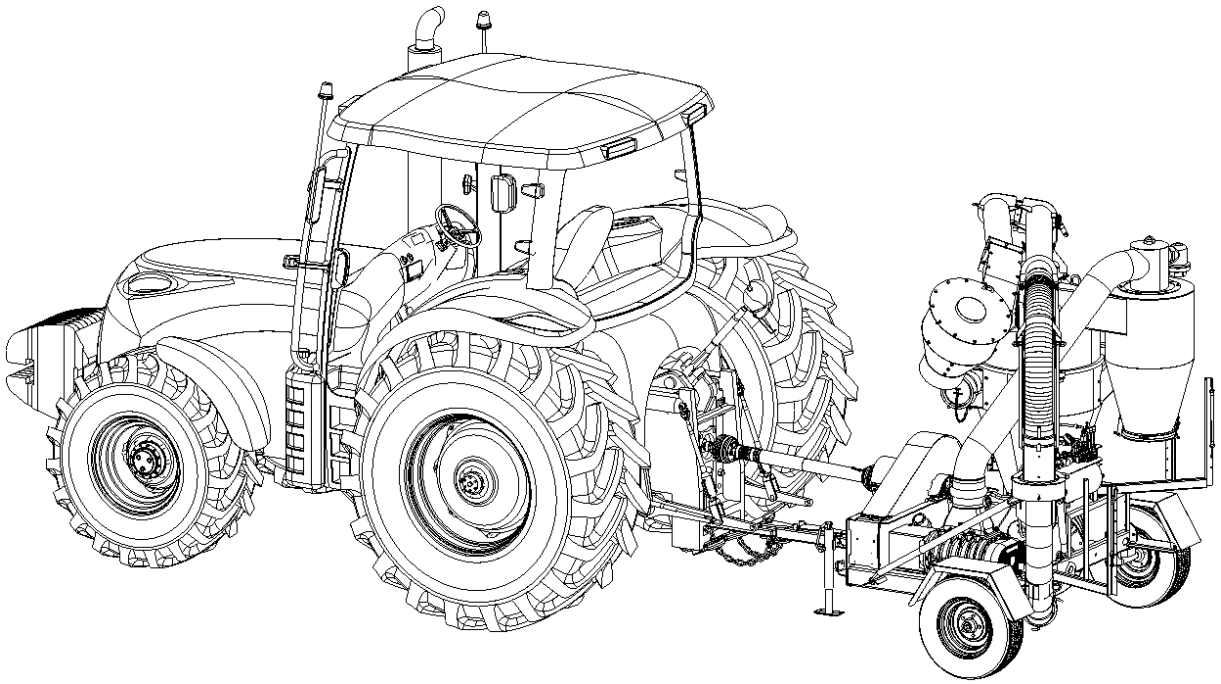


Figure 6-19: Tractor and Agri-Vac positioning

4. Start the tractor/power unit and slowly back it up to the hitch point of the Agri-Vac.

5. Stop the tractor/power unit, place all controls in neutral, set the park brake, and remove the ignition key before dismounting.

6. With reference to the tractor's operator's manual, adjust the length of the drawbar to the proper clearance as specified in ***Table 6-1***.

7. Use the jack to raise or lower the Agri-Vac hitch pole to align with the drawbar.

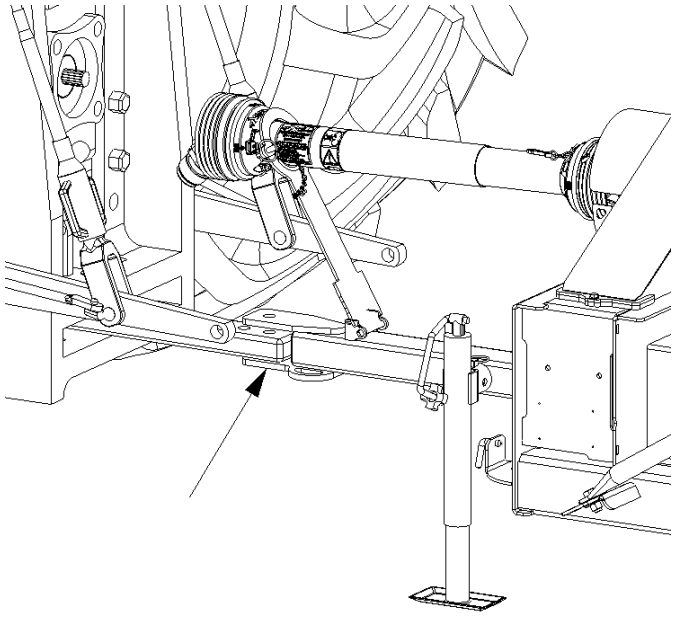


Figure 6-20: Hitch pole alignment

8. Install a drawbar pin with provisions for a mechanical retainer and install the retainer. Secure the safety chains from the Agri-Vac to the tractor/power unit.

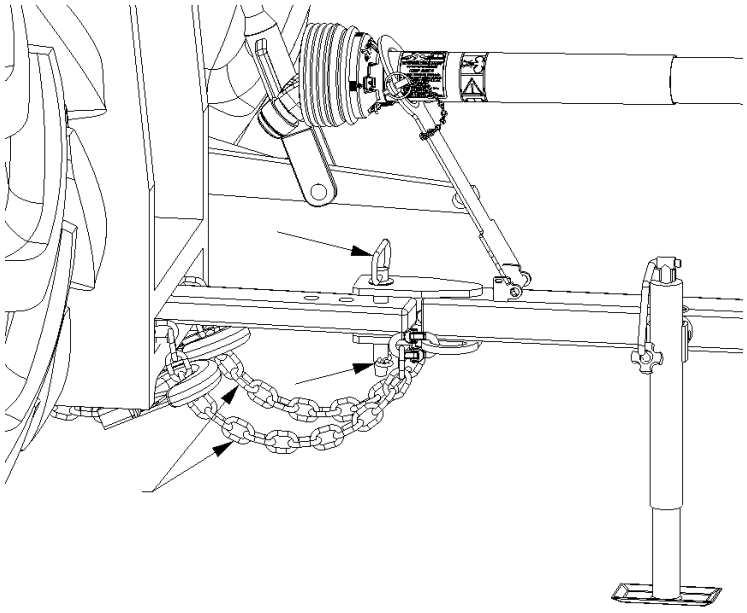


Figure 6-21: Required connections to Agri-Vac

9. Connect the PTO driveline to the tractor/power unit as follows:
   a. Ensure the tractor/power unit has been turned off, the ignition key has been removed, and that all moving components have come to a complete stop.
   b. Check to ensure the PTO driveline telescopes easily and the guard rotates freely.
   c. Prepare to attach the driveline to the tractor/power unit by retracting the locking pin or pulling back on the lock collar.
   d. Slide the yoke of the PTO driveline over the PTO shaft of the tractor/power unit and push on the yoke until the locking pin or lock collar clicks into position.

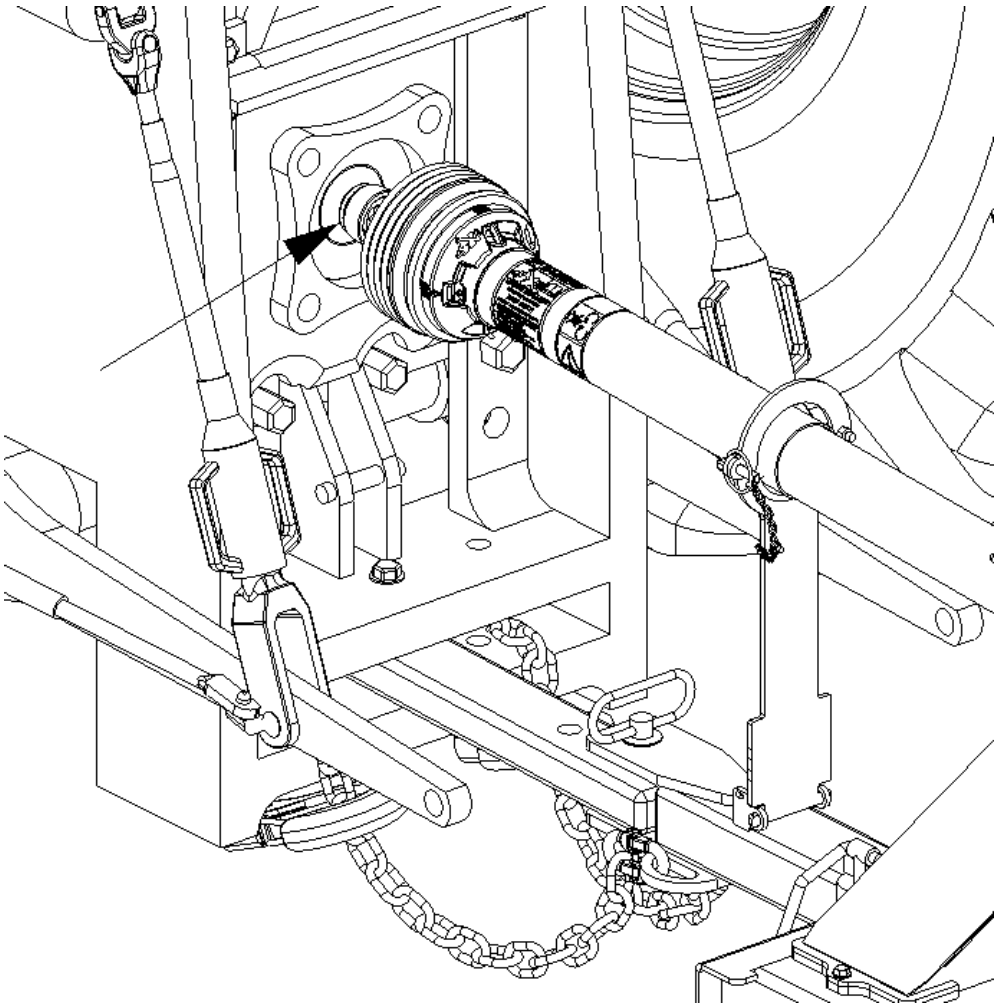


Figure 6-22: PTO driveline operational position

   e. Ensure the PTO driveline is properly locked into position on the tractor/power unit PTO shaft.

f. Connect the PTO driveline guard anchor chain to the frame of the tractor/power unit.

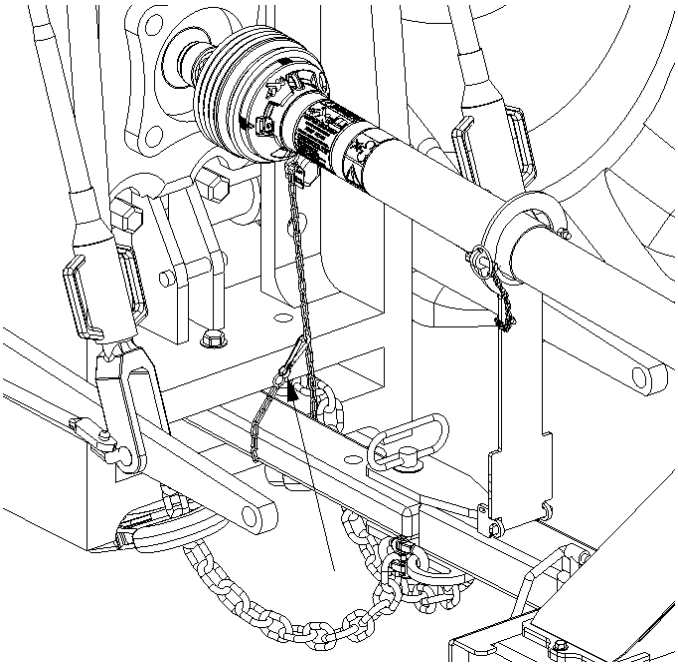


Figure 6-23: PTO driveline guard anchor to tractor

g. Ensure the second PTO driveline guard anchor chain is securely connected to the frame of the Agri-Vac

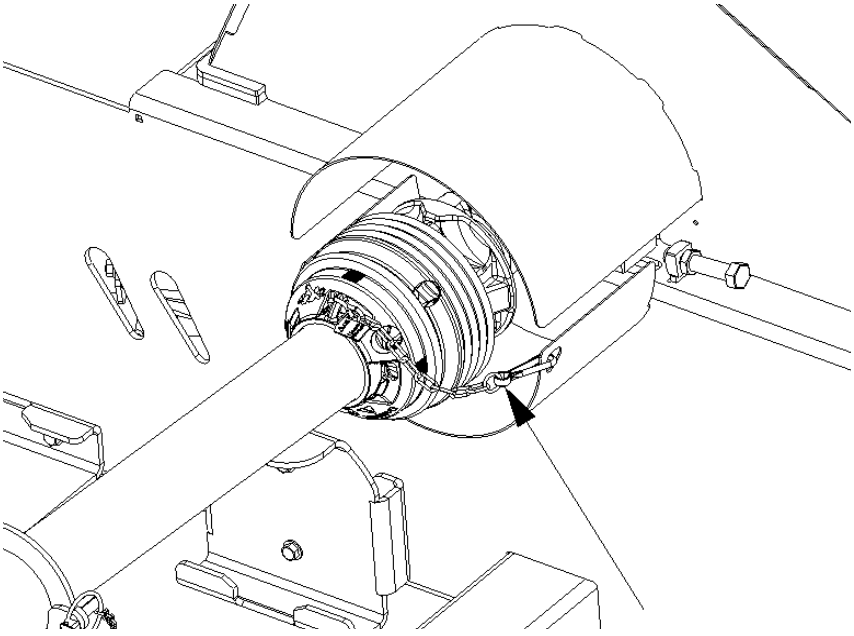


Figure 6-24: PTO driveline guard anchor to Agri-Vac

h. Remove the lynch pin from the PTO rest, open the upper lock ring, and lower the PTO rest against the Agri-Vac hitch pole. Close the upper lock ring and secure with the lynch pin.

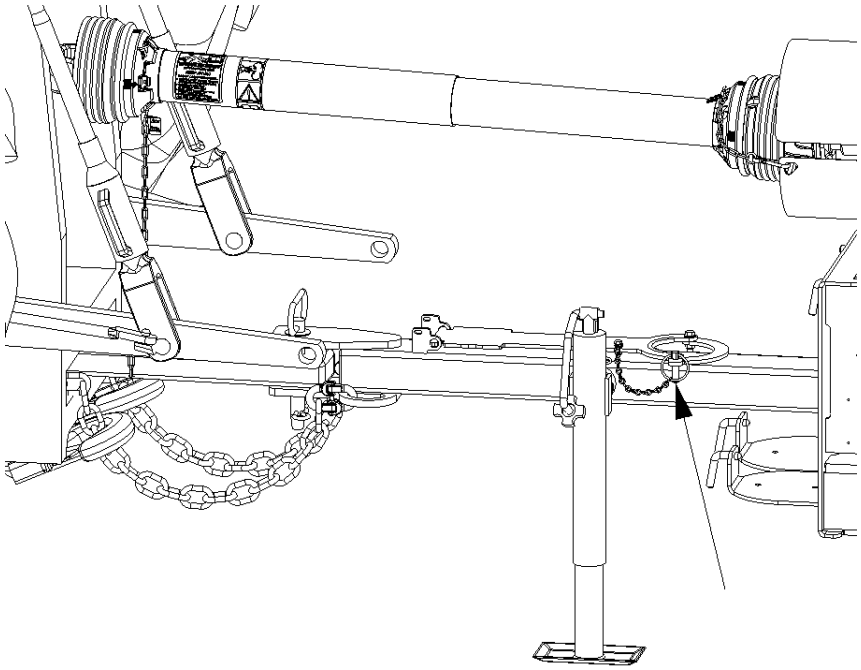


Figure 6-25: PTO rest operational position

10. Raise the foot of the jack, remove the lynch pin from the rotating collar, and rotate the jack 90° to the transport position. Secure in place with the lynch pin in the rotating collar.

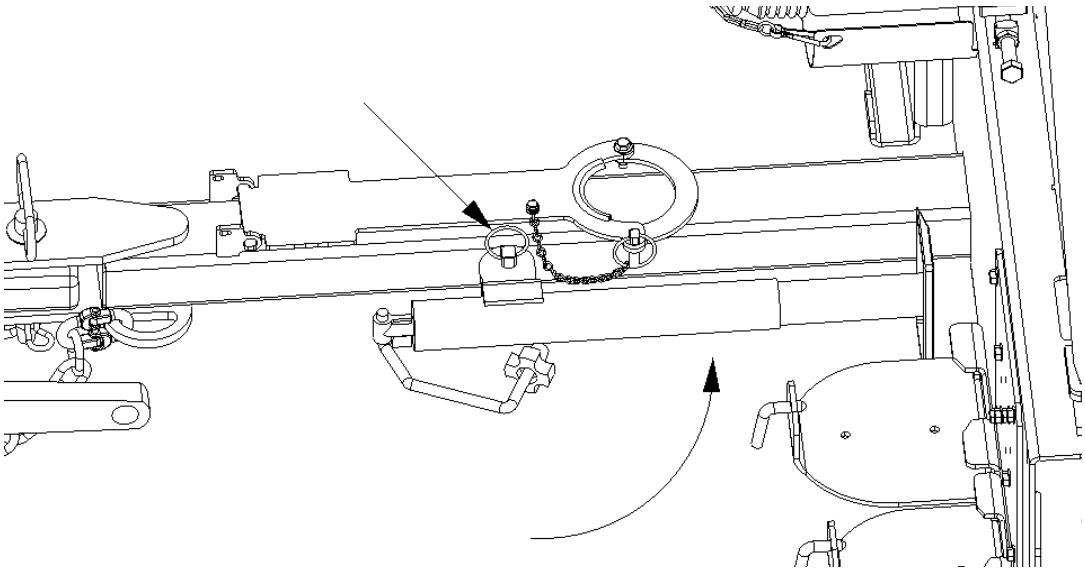


Figure 6-26: Positioning of jack

11. For Agri-Vacs with tractor-driven hydraulics, connect the hydraulic system as follows:
    a. Use a clean cloth or paper towel to clean the couplers of the Agri-Vac as well as on the tractor/power unit.
    b. Remove the plastic plugs from the couplers and insert the male ends.
    c. Connect the remaining coupler. Ensure the system is matched with the desired control lever of the tractor/power unit.
    d. Route the hoses along the hitch and secure in position to prevent entanglement with any moving parts.

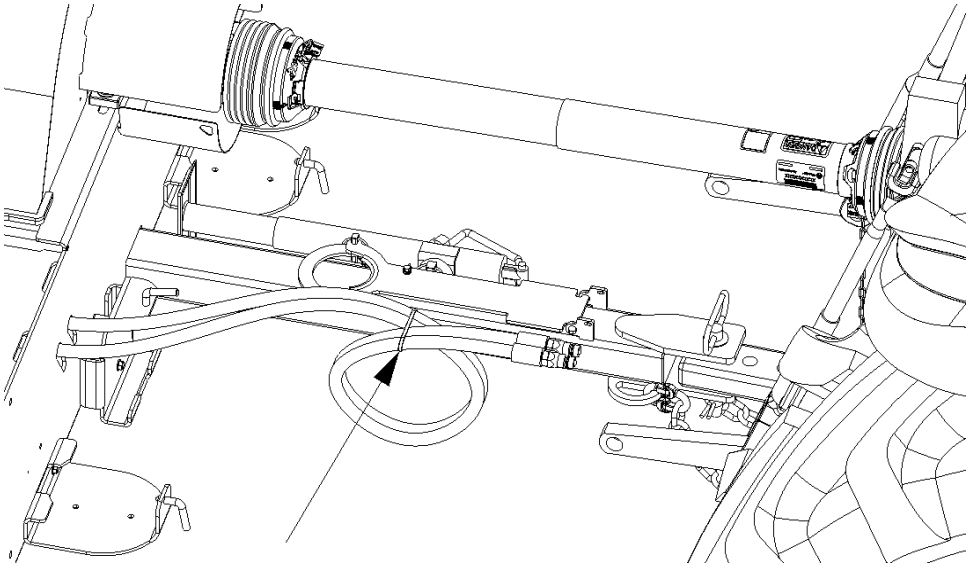


Figure 6-27: Hydraulic hose secured

To disconnect the Agri-Vac from a tractor/power unit, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Clear the area of any foreign objects or debris, and ensure the area is level and dry.
3. Ensure there is sufficient clearance to pull the tractor/power unit away from the hitch point of the Agri-Vac.
4. Ensure the tractor/power unit has been turned off, the ignition key has been removed, and that all moving components have come to a complete stop.
5. For Agri-Vacs with tractor-driven hydraulics (TDH), disconnect the hydraulic system as follows:
    a. Disconnect the couplers from the tractor/power unit.
    b. Use a clean cloth or paper towel to clean the couplers of the Agri-Vac as well as on the tractor/power unit.
    c. Insert the plastic plugs to keep the couplers clean.
    d. Route the hoses along the hitch and secure in position to prevent entanglement with any moving parts.

6. Remove the lynch pin from the rotating collar of the jack and rotate the jack 90°. Secure the jack in position with the lynch pin in the rotating collar and lower the foot of the jack so that it is securely placed on the ground.

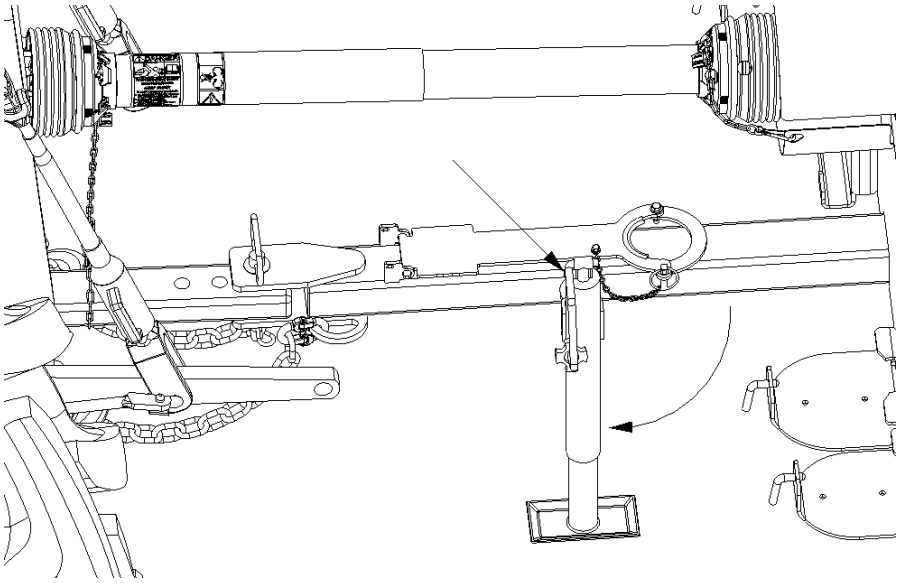


Figure 6-28: Jack secured in position

7. Disconnect the PTO driveline from the tractor/power unit as follows:
   a. Remove the lynch pin, open the upper lock ring of the PTO rest, and raise the rest so that the PTO driveline guard sits within the rest.

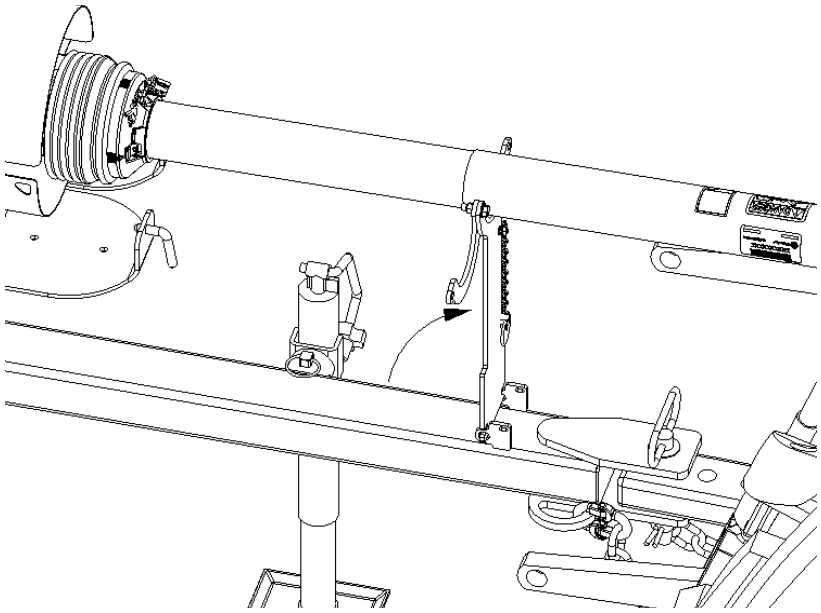


Figure 6-29: PTO driveline positioned in rest

b. Secure the rest in place by closing the upper lock ring and inserting the lynch pin.

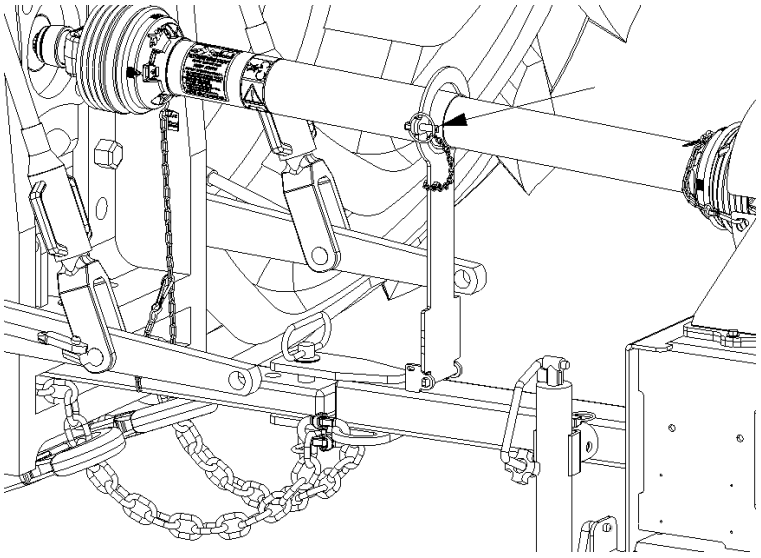


Figure 6-30: PTO rest secured in position

c. Disconnect the PTO driveline guard anchor chain from the frame of the tractor/power unit.

d. Retract the locking pin or lock collar of the yoke and slide the yoke off of the tractor/power unit PTO shaft.

e. Ensure the PTO driveline is resting securely within the PTO rest. The rest should touch the yoke guard.

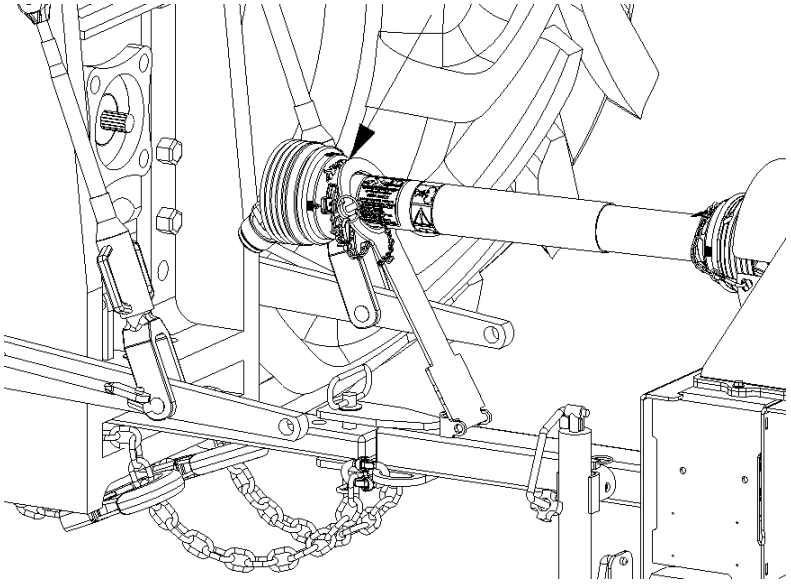


Figure 6-31: Positioning of disconnected PTO driveline

8. Remove the safety chains from the tractor/power unit. Remove the mechanical retainer and drawbar pin. Ensure the jack is adequately supporting the hitch pole of the Agri-Vac.

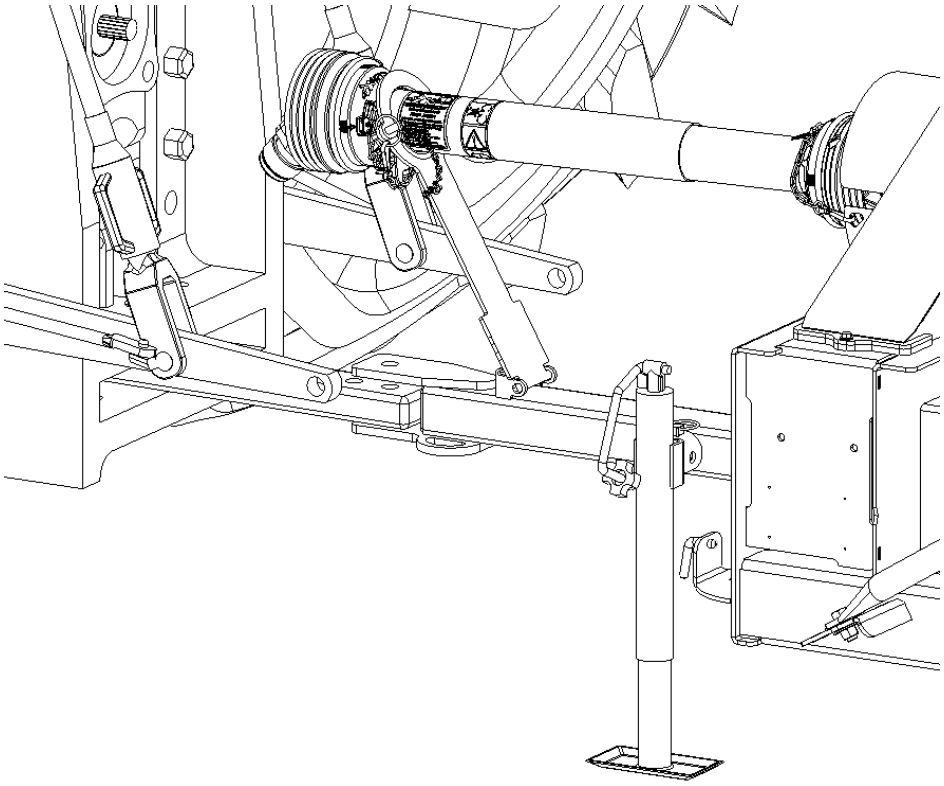


Figure 6-32: Agri-Vac disconnected from tractor drawbar

9. Start the tractor/power unit and slowly pull it away from the Agri-Vac.
10. Use the jack to raise/lower the Agri-Vac hitch pole so the Agri-Vac is sitting level.

Machine Preparation

To prepare the Agri-Vac for operation, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Ensure the Agri-Vac is properly attached to the tractor/power unit as detailed in the previous sub-section, *Attaching and Unhooking*.
3. Ensure the desired operational position has sufficient space to locate the Agri-Vac as well as sufficient clearance to allow trucks to drive under the discharge cyclone if required.

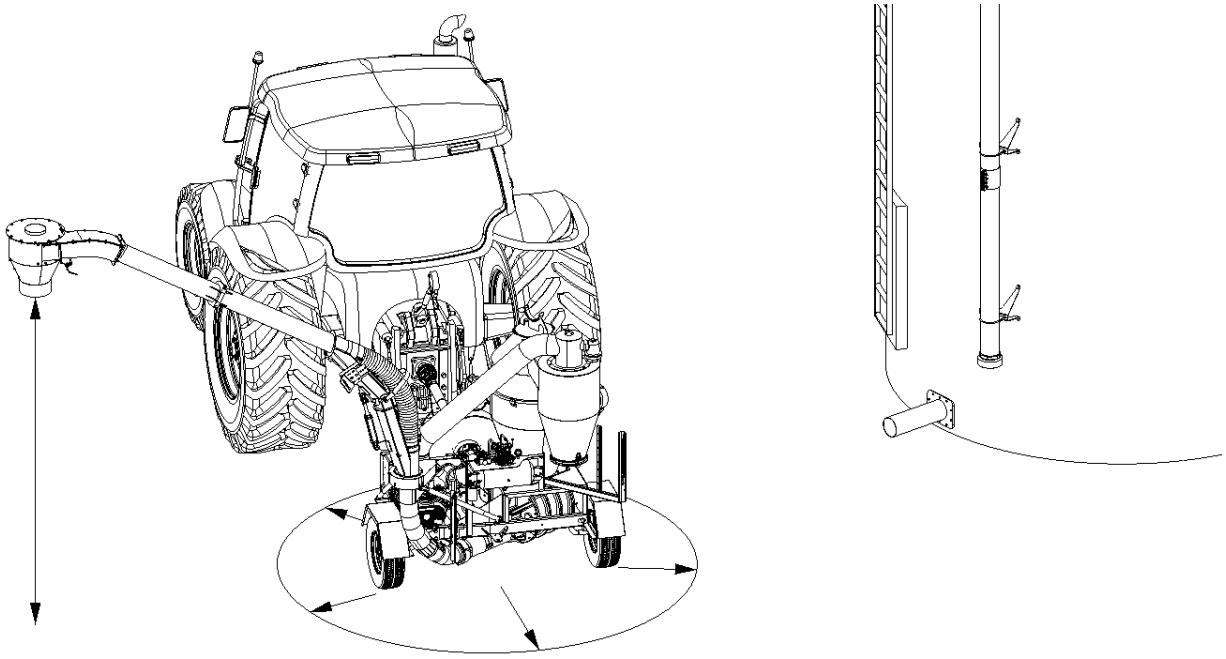


Figure 6-33: Operational position clearance

4. Position the Agri-Vac approximately 12 ft (4 m) from the storage structure access point. Ensure the Agri-Vac and tractor/power unit are aligned so the PTO driveline is as straight as possible during operation.

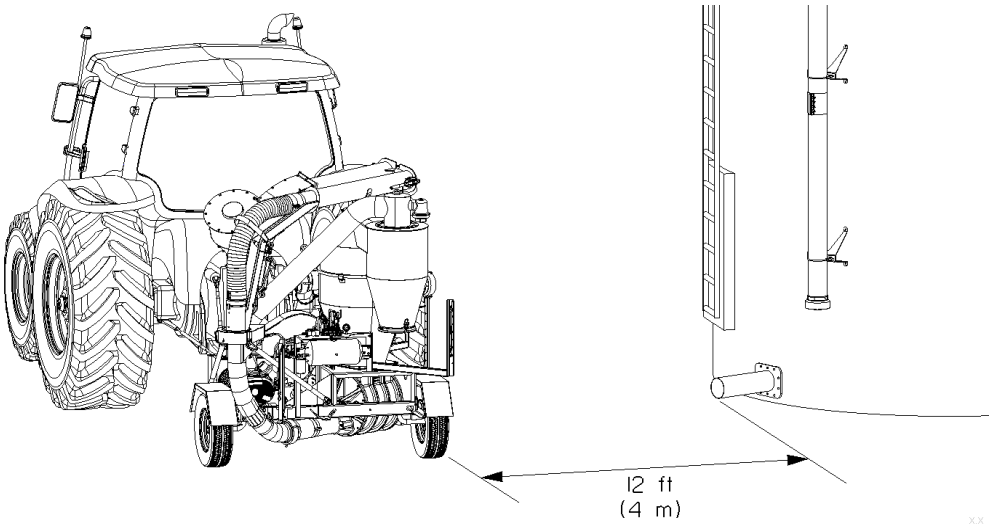


Figure 6-34: Positioning with storage structure

5. For tractor-driven hydraulic units, engage the hydraulic lever to operate the hydraulic circuit in the tractor.
6. Place all other controls in neutral and set the park brake on the tractor before dismounting.
7. Remove the plug from the primary AMS inlet by loosening the tail bolts. For dual inlet units, choose the inlet that is most closely aligned with the storage structure access point to minimize the required bends in the intake line.

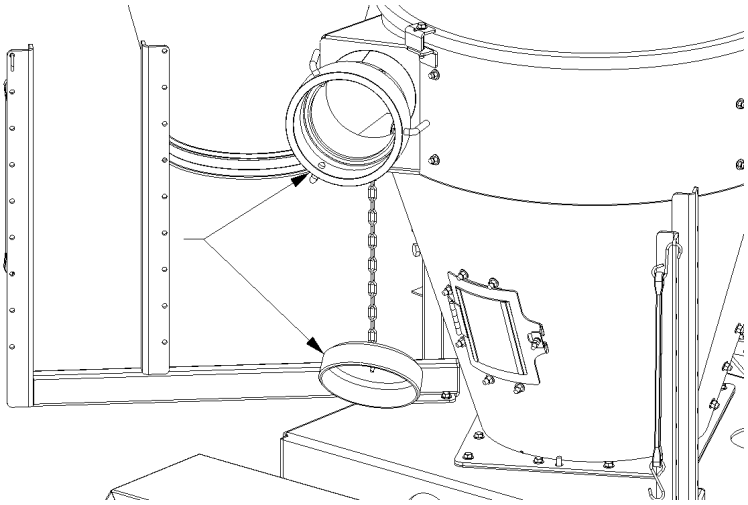


Figure 6-35: Primary AMS inlet plug removal

8. Remove the intake nozzle from the storage bracket on the Agri-Vac and install the nozzle on the female coupling end of the steel flex tube. Secure the nozzle in position by tightening the coupling tail bolts.

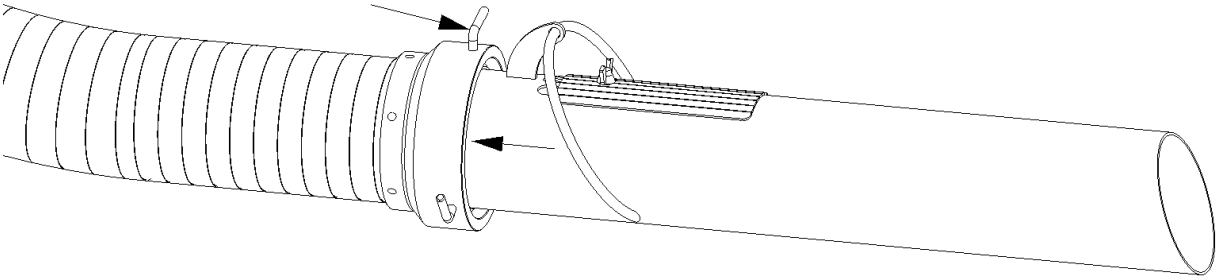


Figure 6-36: Intake nozzle attachment

9. Connect the male coupling end of the steel flex tube to the primary AMS inlet and secure it in place by tightening the tail bolts of the inlet coupling.

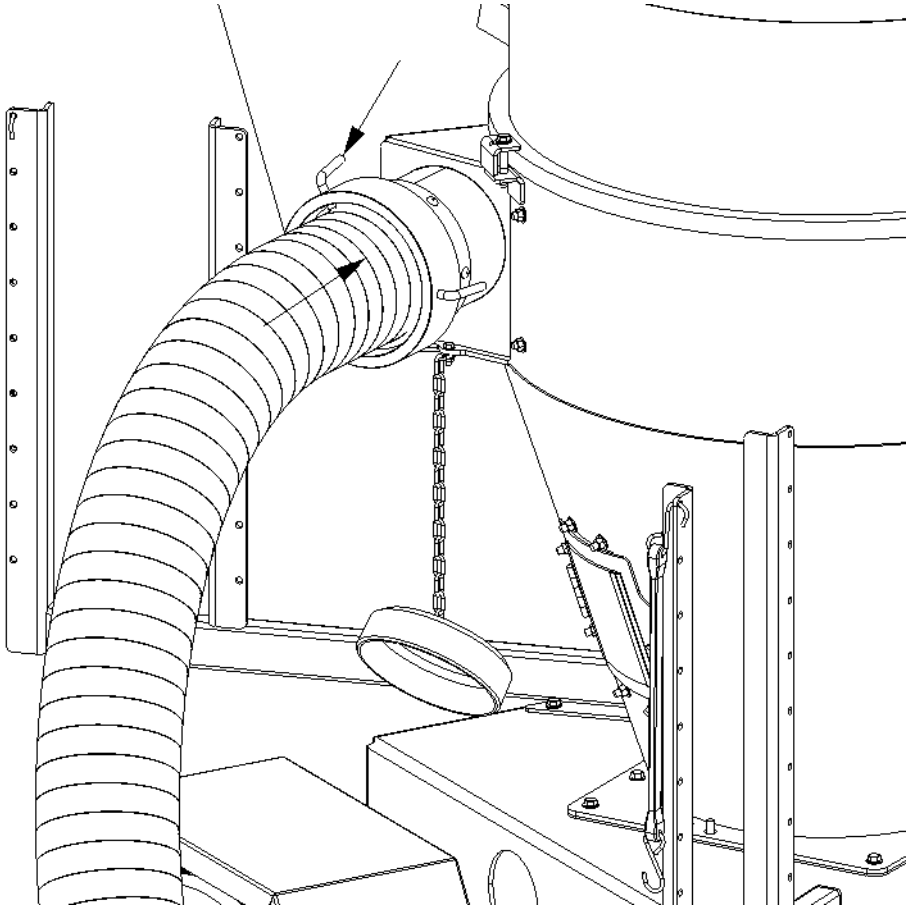


Figure 6-37: Steel flex tube attachment

10. Ensure that the intake line is as straight as possible. Small radius bends in the intake line will significantly decrease the capacity and efficiency of the Agri-Vac.
11. Ensure all hydraulic controls on the Agri-Vac are in the neutral position.
12. Be aware of any overhead obstructions or electrical wires and ensure there is sufficient clearance before raising the boom. Electrocution can occur without direct contact.
13. Release the split boom security latch and lift the boom extension out of the saddle.

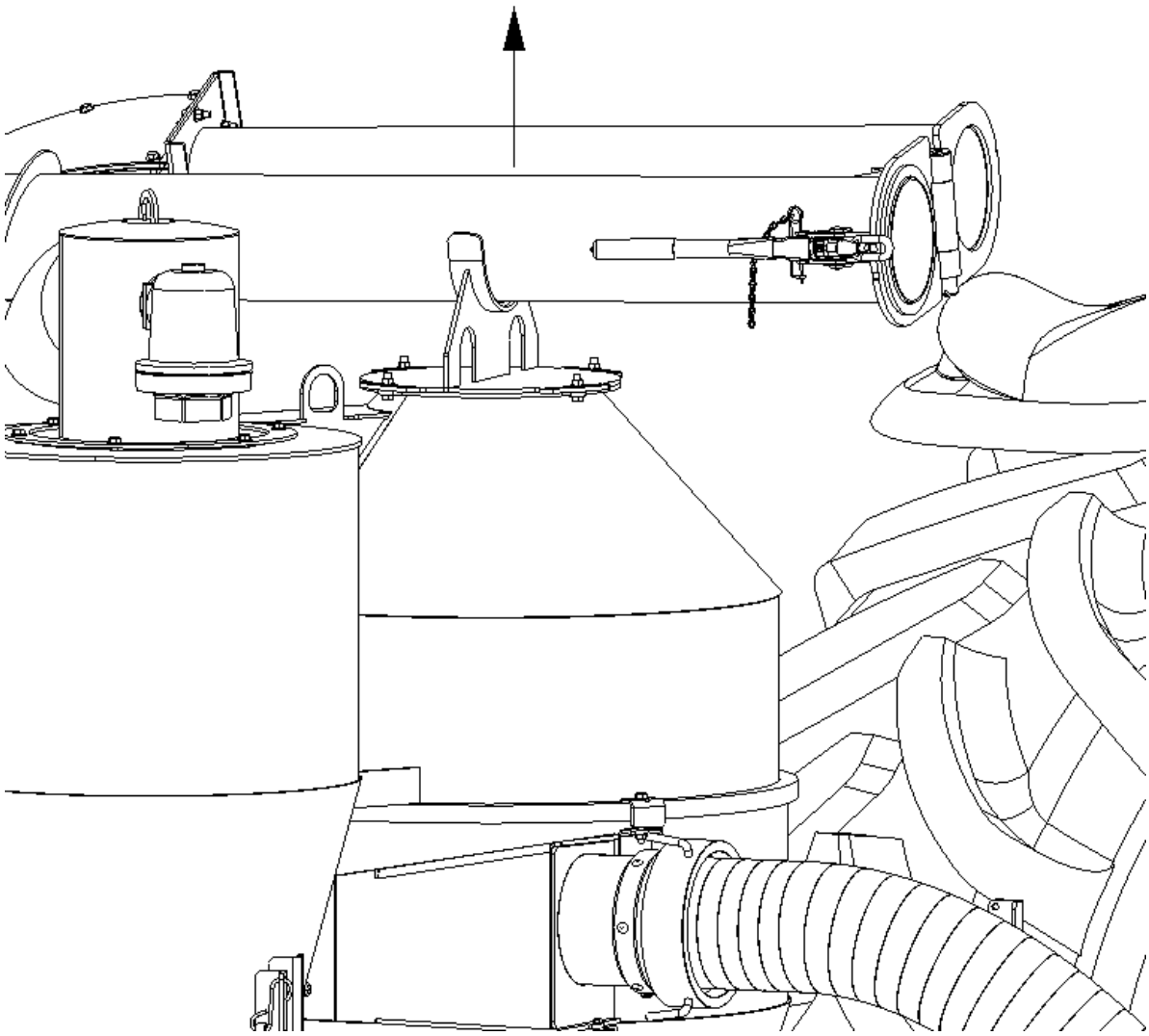


Figure 6-38: Removing boom from transport position

14. Using either the arm near the boom pivot point for manual boom rotation (MBR) units, or the hydraulic boom rotation control for hydraulic boom rotation (HBR) units, rotate the boom away from the main body of the Agri-Vac for easier access.

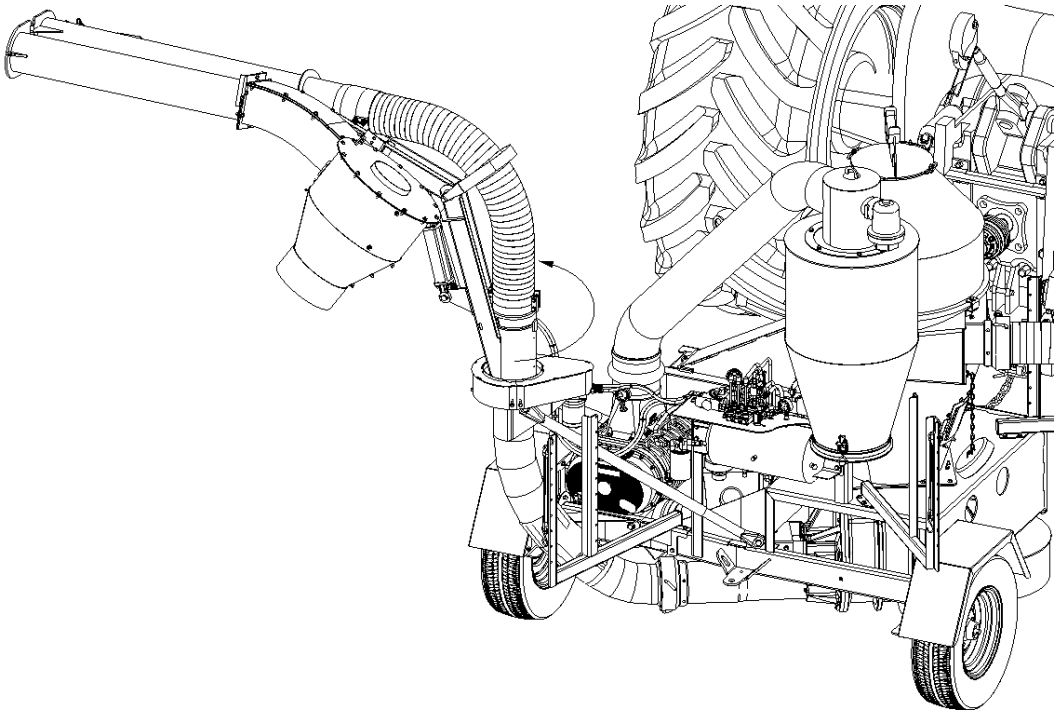


Figure 6-39: Boom rotation for easy access

15. Open the boom extension completely until the boom is straight.
16. Secure the boom extension in place by clamping the security latch eye over the hook. Ensure there is a tight seal to prevent air leakage and adjust the latch if necessary. Insert the safety pin in the latch to secure the boom in the operational position.

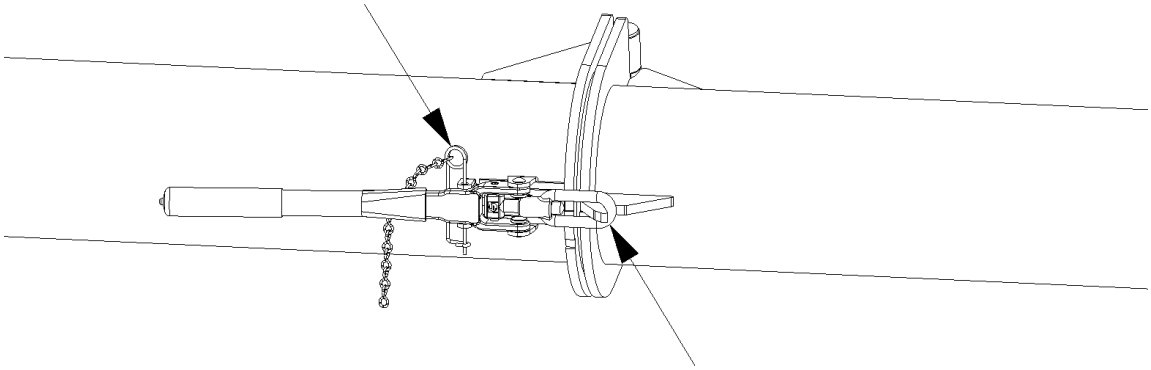


Figure 6-40: Securing boom extension in operational position

17. Ensure the boom lift hydraulic ball valve is in the open position.

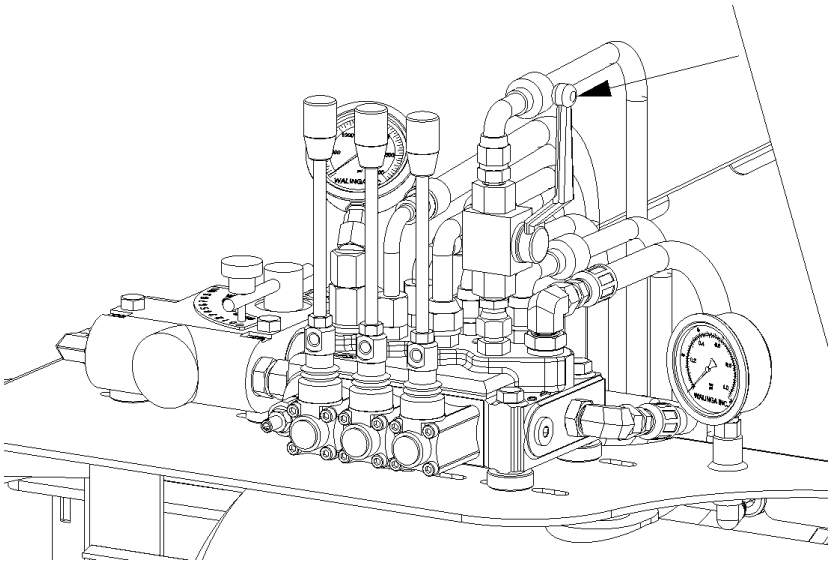


Figure 6-41: Boom lift ball valve open position

18. Using the boom lift hydraulic control, pull the control lever to lift the boom to the desired operational height, ensuring there is sufficient clearance below the discharge cyclone.

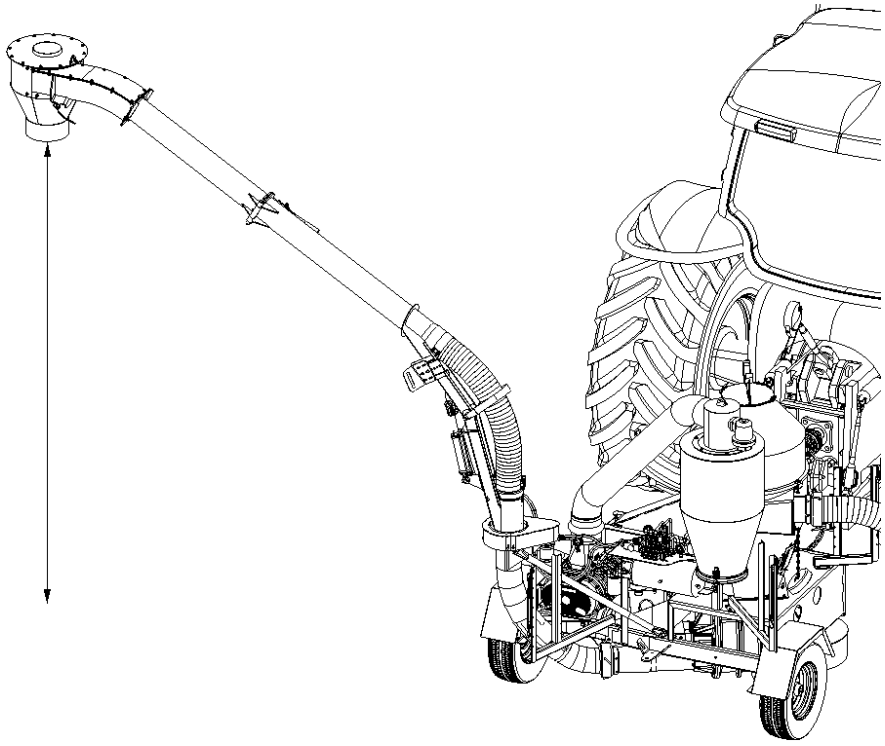


Figure 6-42: Boom positioning for sufficient clearance

19. Once at the desired height, adjust the boom lift ball valve to the closed position to prevent hydraulic bleed-back resulting in inadvertent lowering of a fully loaded boom.

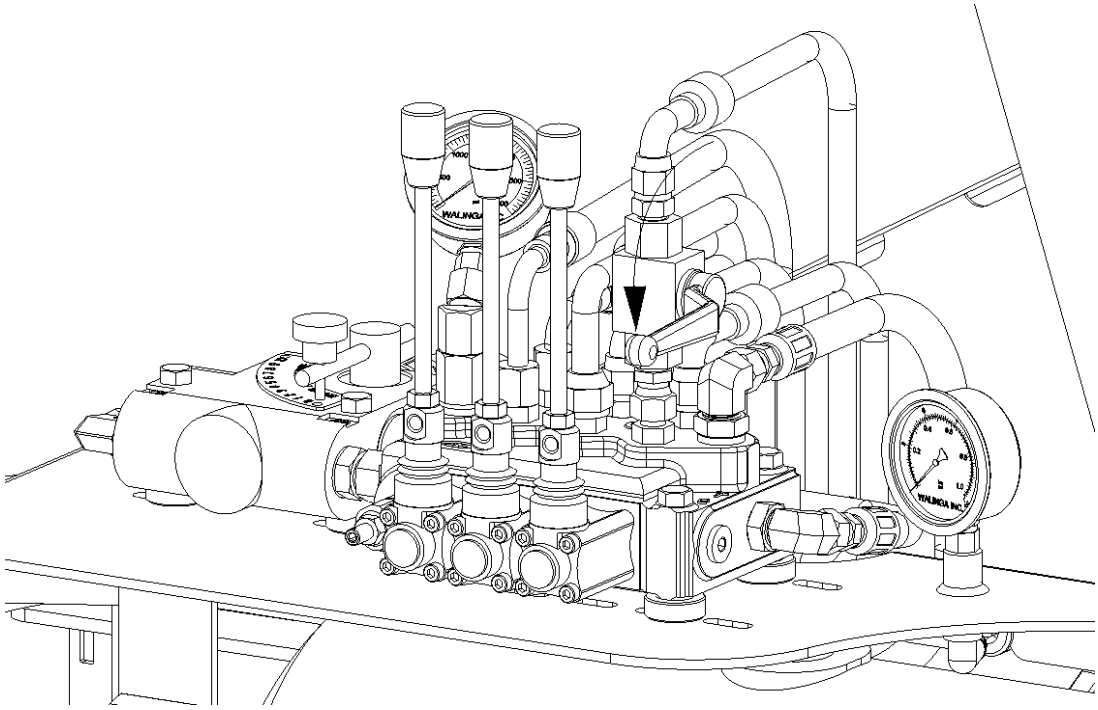


Figure 6-43: Boom lift ball valve closed position

20. Use the rotation arm or boom rotation hydraulic control to rotate the boom and discharge cyclone to the desired operational position.

Starting the Machine

To start the Agri-Vac, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Ensure the Agri-Vac is properly attached to the tractor/power unit as detailed in the sub-section *Attaching and Unhooking*.
3. Ensure all steps of the previous sub-section, *Machine Preparation*, have been completed.
4. Ensure all required maintenance tasks detailed in the maintenance schedule in **Section 7: Maintenance and Adjustments** have been completed.

5. Check to ensure there is sufficient clearance for any other equipment that may be driving under the discharge cyclone and beside the Agri-Vac.
6. Ensure the Agri-Vac is aligned with the tractor/power unit to ensure the PTO driveline is as straight as possible to keep the universal joint angles as small as possible.
7. Place chocks in front and behind the tractor tires to prevent it from moving.
8. Ensure the suction nozzle is not in the product before start-up. Start-up under heavy suction may overload the drive belts and blower, causing significant damage.
9. Start the tractor/power unit and run it at a low idle.
10. Set the preliminary airlock settings as follows:
    a. Engage the tractor hydraulics and pull on the airlock direction control lever to place it in the *START* detent position to start the airlock.

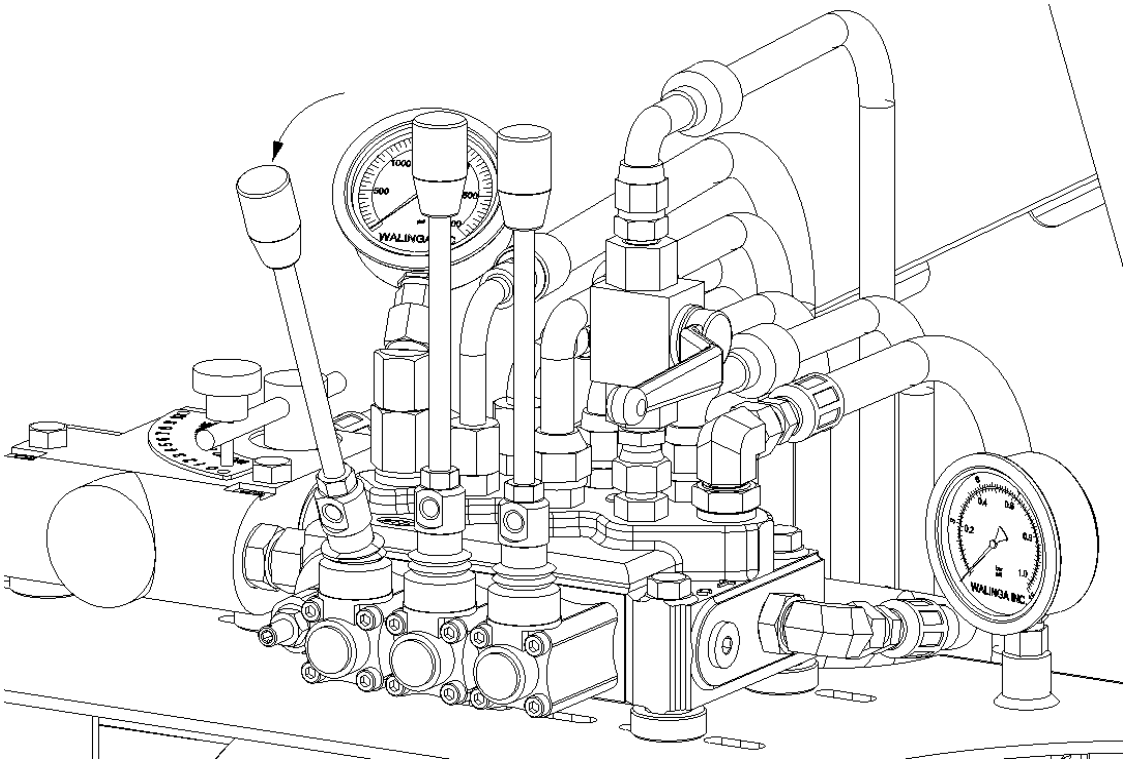


Figure 6-44: Airlock direction control lever in operational position

b. Check the arrow on the indicator wheel to ensure the airlock is turning in the correct direction.

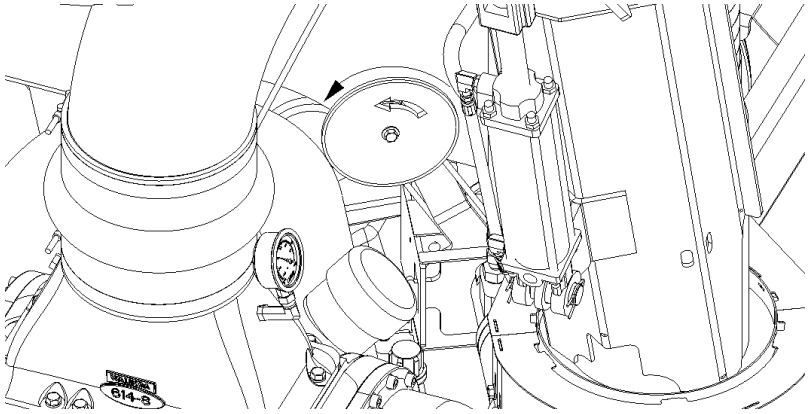


Figure 6-45: Airlock indicator wheel operational rotation

c. Increase the engine speed to 1500 rpm.

d. Adjust the flow divider to set the airlock speed slower than the recommended speed outlined in ***Table 6-2: Recommended airlock operational speeds*** found in the following sub-section *Operation of the Machine*. Increase the airlock speed by moving the flow divider control towards 10, decrease the airlock speed by moving the flow divider control towards 0. The speed of the airlock can be determined by counting the revolutions of the airlock indicator wheel.

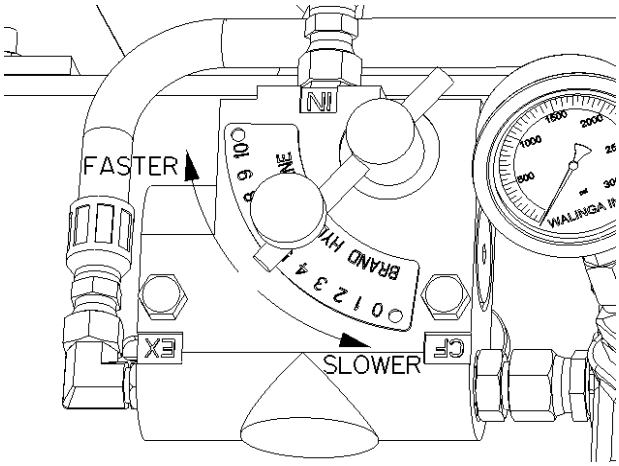


Figure 6-46: Flow divider airlock speed control

e. Return the engine to a low idle speed and stop the airlock by returning the airlock direction control lever to the center neutral position.

11. For tractor-driven hydraulic units, ensure the hydraulic system of the Agri-Vac and tractor are matched by adjusting the position of the flow divider ball valve. The ball valve should be in the open position for open-center systems and in the closed position for closed-center systems.

Operation of the Machine

To operate the Agri-Vac, proceed as follows:

1. With the tractor at a low idle, slowly engage the PTO.
2. Increase the engine speed to approximately 3/4 throttle.
3. Engage the airlock hydraulics by setting the airlock direction control lever to the *START* detent position. Check the indicator wheel to ensure the airlock is turning in the forward direction.
4. Operate the Agri-Vac at 3/4 speed for the first 10 minutes to warm the system before operating at full capacity.
   IMPORTANT: The hydraulic system must be warmed before operating at full capacity. The blower will not warm-up unless product is being conveyed.
   WARNING: Do **NOT** open the secondary AMS while the machine is running. Opening the secondary AMS can cause severe damage to the blower.
5. Align the intake line and nozzle with the storage structure access point and straighten the line as much as possible. Ensure any necessary bends have a large radius.

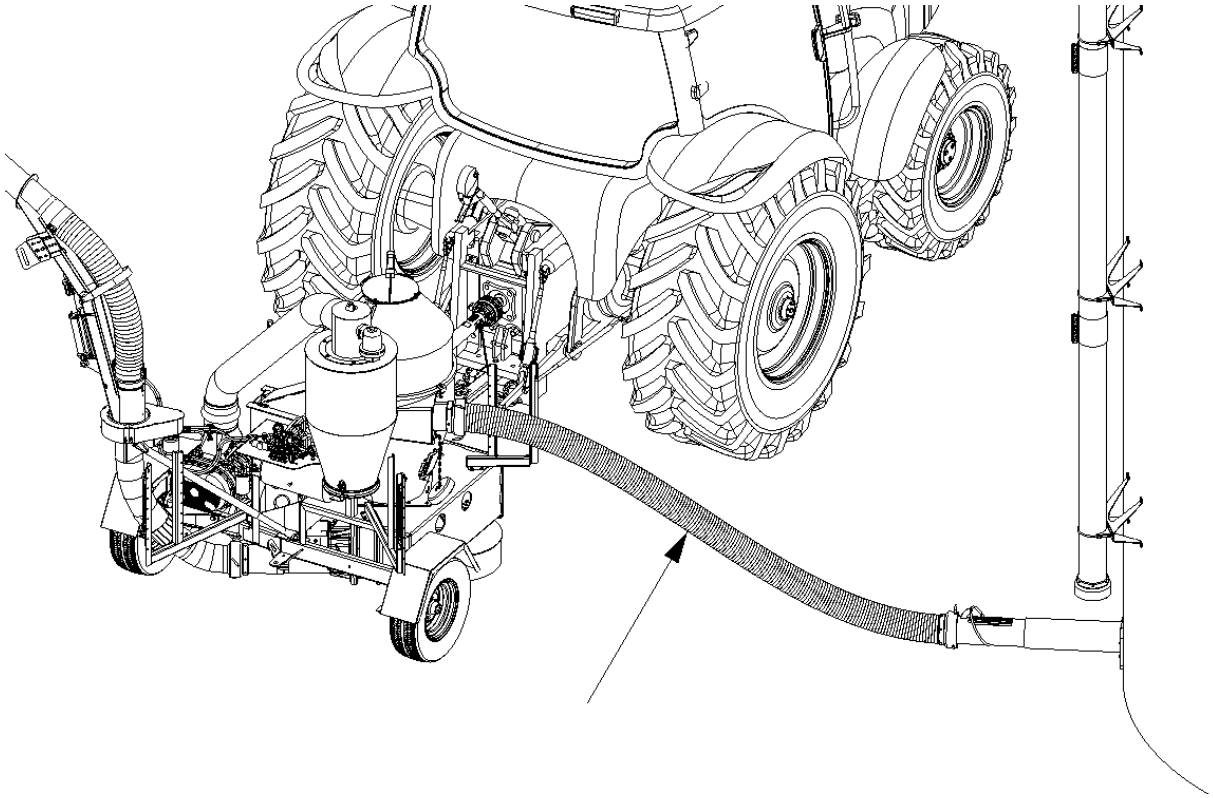


Figure 6-47: Intake line positioning

6. Open the air slide on the intake nozzle approximately 2 in (5 cm) and insert the end of the nozzle into the product. The nozzle inlet should be submerged below the surface of the product, but with the air slide above the surface. Operate at these settings until the Agri-Vac is warmed (approximately 10 minutes).

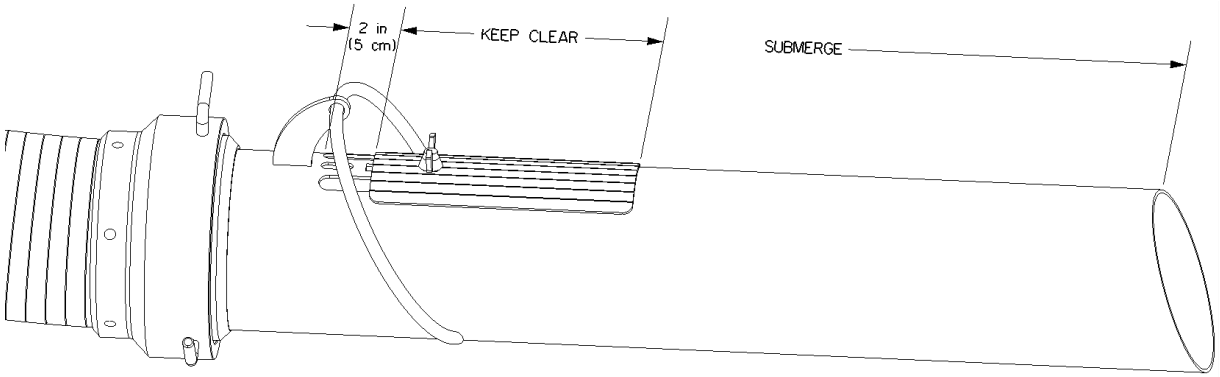


Figure 6-48: Initial intake nozzle positioning

7. After the warm-up period, bring the machine to full operating capacity as follows:
    a. Increase the engine speed to the rated PTO rpm.
    b. Close the air slide until the intake line starts to pulsate. Open the air slide slightly until the pulsing stops.
    c. Set the airlock speed for maximum capacity as follows:
        i. Airlock speeds depend on the product and the distance being conveyed, the longer the suction distance, the slower the airlock should turn.
        ii. For maximum capacity, the airlock pockets should be as full of the conveyed product as possible. To completely fill each pocket, the airlock should be run as slow as possible. The airlock can be run too fast, not allowing the product to fill each pocket. Do not exceed the recommended speeds.
        iii. The recommended speeds for each Agri-Vac model can be found in ***Table 6-2: Recommended airlock operational speeds***.
        NOTE: For tractor-driven hydraulic systems, it may be necessary to adjust the airlock speed using the flow control of the tractor instead of the control mounted on the machine to prevent overheating of the tractor hydraulic system. If adjusting the speed with the tractor flow control, the flow control valve on the Agri-Vac should be set to ***10***.

Table 6-2: Recommended airlock operational speeds

	5614	6614	7614	7816
Barley Wheat	55 - 70 rpm	55 - 70 rpm	25 - 40 rpm	25 - 40 rpm
Corn Oats Beans	50 - 65 rpm	50 - 65 rpm	20 - 35 rpm	20 - 35 rpm
Specialty Crops *Pulses* *Oilseeds*	30 - 45 rpm	30 - 45 rpm	15 - 25 rpm	15 - 25 rpm

iv. To determine the optimal speed for a given operational set-up, the airlock should be started slower than the recommended speed.

v. Watch the glass window of the primary AMS access door to assess the product movement through the Agri-Vac. The window can be covered by the product, but the product must not be stationary. As the product against the window becomes stationary, slowly increase the airlock speed until there is no stationary product.
NOTE: For maximum capacity, the airlock should always be run as slow as possible. Do not operate the airlock above the recommended speeds.

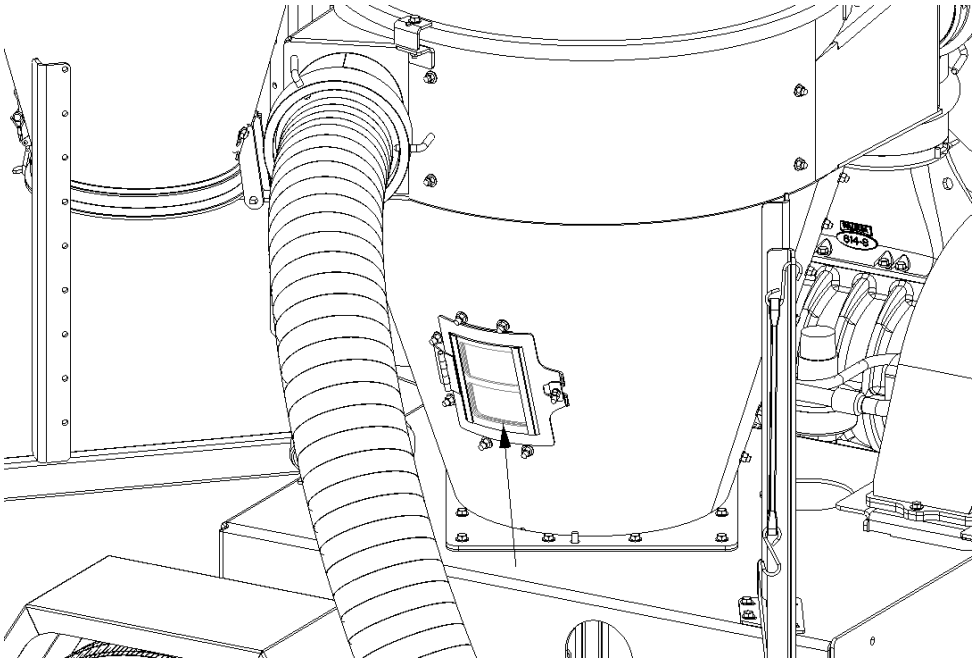


Figure 6-49: Access door observation window

d. Adjust the opening of the air slide as necessary. For maximum capacity, the air slide should be opened as little as possible. If the Agri-Vac begins to pulsate, open the air slide slightly until the pulsing stops to achieve the ideal balance of product and air flow.

e. Monitor the flow of product through the Agri-Vac by watching the access door window to ensure the window is covered by product but no product is stationary. Make adjustments as necessary to achieve the optimal capacity. Experiment with the following to achieve the optimal performance of your Agri-Vac with your specific operating conditions:

   i. Increase or decrease the amount of product entering the nozzle.

   ii. Increase or decrease the airflow by opening or closing the air slide.

   iii. Increase or decrease the airlock speed.

f. For specialty crops, such as sunflower seeds, lentils or others, it is necessary to slow the airlock speed to allow more time for the product to enter the airlock pockets. Use the above adjustment methods to achieve the optimal capacity. The PTO speed should also be reduced by 1/4 to 1/2 the rated rpm to give a gentler action through the Agri-Vac.

8. Run the Agri-Vac at the maximum capacity until there is approximately 12 in (30 cm) of grain in the storage structure. Exchange the straight intake nozzle for the clean-up nozzle and rubber intake line, refer to **Section 7: Maintenance and Adjustments** for instructions on exchanging nozzles. Resume operation and convey any remaining grain.

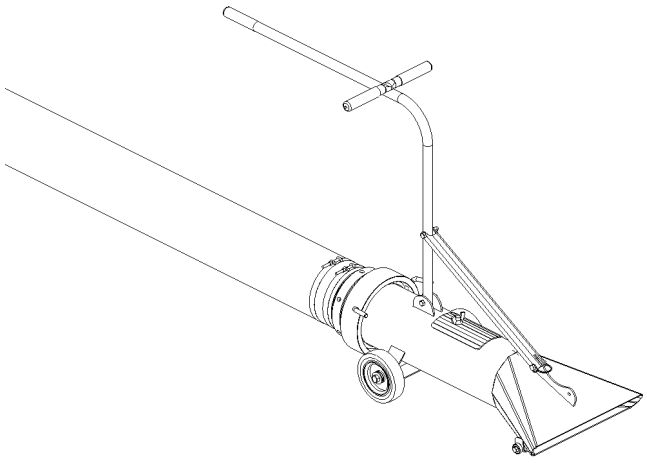


Figure 6-50: Clean-up nozzle and hose

a. Familiarize yourself with the safety hazards and requirements regarding storage structures as detailed in **Section 4: Safety**.

b. When entering bins, silos, or tanks, ensure the structure is properly vented.

c. Only enter a storage structure when the grain level is less than 12 in (30 cm) above solid footing.

d. Do not enter the storage structure if there is grain stuck on the walls. Avalanching grain can cause suffocation.

e. Do not enter silo bags. Always slice the sides of the silo bags. Open and roll back the sides of the silo bag before removing the grain.

f. Ensure there is a second capable person monitoring any time someone has entered a storage structure in case of emergencies.

The configuration of the Agri-Vac can be altered to allow for unloading directly into a bin instead of through the boom and discharge cyclone, as well as for use in blow-only operations. To change the configuration of your Agri-Vac, refer to **Section 7: Maintenance and Adjustments** for detailed instructions.

Stopping the Machine

To stop the Agri-Vac during normal operation, proceed as follows:

1. Remove the intake nozzle from the product.
2. Allow the unit to continue running until there is no longer product being discharged from the cyclone.
3. Stop the airlock by moving the control lever from the *START* detent position to the center neutral position.

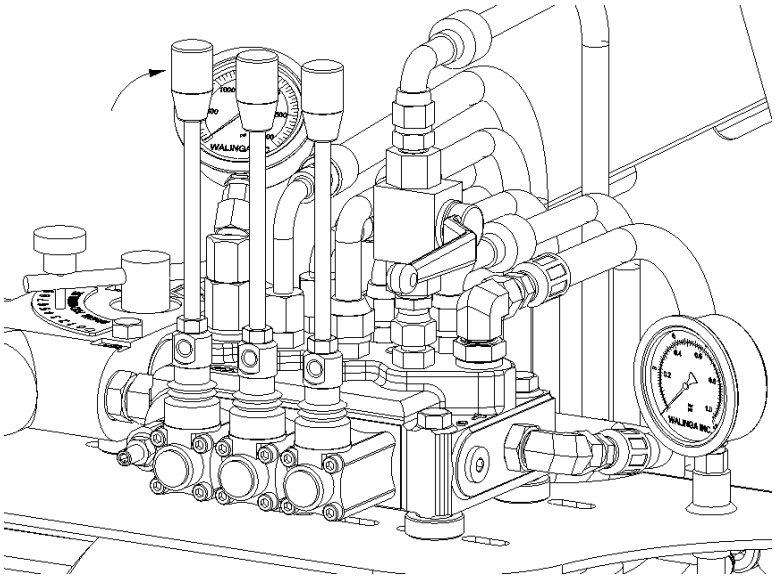


Figure 6-51: Airlock control lever stopping position

4. Slow the engine speed to a low idle and allow it to run for approximately 5 minutes.
5. Disengage the hydraulic circuit and slowly disengage the PTO clutch.
6. Stop the engine.
7. Empty and clean the secondary AMS tank with reference to **Section 7: Maintenance and Adjustments**. In dirty or dusty conditions, it may be necessary to empty and clean the secondary AMS more frequently to prevent significant damage to the blower.
8. With reference to **Section 7: Maintenance and Adjustments**, review the maintenance schedule and perform any required maintenance on the Agri-Vac.
9. Proceed to prepare the Agri-Vac for storage or transportation with reference to **Section 5: Machine Life-Cycle Procedures**.

In emergency situations, for example, if the safety of a person is threatened, it may be necessary to immediately shut-down the Agri-Vac. To avoid potential damage to the blower and other Agri-Vac components, the following should only be used in an emergency situation. Refer to the operator's manual of your specific tractor/power unit for any special emergency shut-down procedures.

To shut-down the Agri-Vac in an emergency:

1. Pull the nozzle out of the grain.
2. Stop the airlock by moving the control lever from the *START* detent position to the center neutral position.
3. Decrease the tractor engine speed and disengage the PTO clutch.

OPERATING TIPS AND HINTS

To achieve the best performance from your Agri-Vac keep the following in mind:

- Keep the hoses as full as possible for maximum capacity.
- Keep the PTO driveline as straight as possible to minimize the universal joint angles.
- Pull the intake nozzle out of the grain and empty the machine before changing trucks or containers that are being loaded to prevent product spillage.
- Maximum capacity is achieved when using large diameter steel intake lines. Only use rubber or polyurethane lines for final clean-up.
- Position the Agri-Vac and route the lines to minimize the number of bends and corners. If a corner is necessary, use a large radius elbow, or position the flex hose to create a large radius bend.
- Operate only at the rated speeds and never use PTO adapter shafts.

- Keep the lines as short as possible to minimize friction losses.
- If long distance moving is required, try pushing the product instead of pulling it and use solid metal tubing whenever and wherever possible.
- If the airlock becomes jammed, use the *REVERSE* position of the airlock direction control lever to operate the airlock in the reverse direction for a short period of time to clear the obstruction. Alternate between the forward and reverse directions several times until the obstruction clears. Do not reach into the airlock with your hands or any object to clear an obstruction. If the obstruction can not be cleared through the reverse direction, the obstruction must be manually removed as follows:
    - Shut down the tractor/power unit and disconnect the hydraulic system.
    - Ensure all moving components have come to a complete stop.
    - Open the access door or remove the discharge elbow to gain access to the obstruction. If necessary, remove the primary AMS for better access.
    - Manually remove the obstruction.
    - Check the airlock for any damage and repair or replace any components as necessary with reference to **Section 7: Maintenance and Adjustments**.
- When standing on top of a pile of grain, do not push the intake nozzle into the pile at your feet. The suction of the Agri-Vac is sufficient enough to pull the nozzle and operator into the pile. If the pile is deep enough, the operator can become submerged in the grain and be suffocated.

TROUBLESHOOTING

Reference ***Table 6-3*** through ***Table 6-7*** for assistance with some of the most common issues, causes and solutions that you may face during the operation of your Agri-Vac. If you encounter a problem that is difficult to solve, even after having referenced the following tables, please contact your Walinga dealer or representative. Before you call, please have your Operator's Manual and your Agri-Vac's serial number ready and available.

For detailed procedures and diagrams for the proposed solutions, reference **Section 6: Operation** and **Section 7: Maintenance and Adjustments**.

Table 6-3: Troubleshooting for mobile transfer unit

ISSUE	CAUSE	SOLUTION
Slow pick up of material	Power source	Check the tractor or motor RPM.
	Air leaks	Tighten all vacuum connections. Ensure all seals are in good condition.
		Tighten primary AMS to base. Check seal on secondary AMS bottom door. Close and secure.
		Ensure the access door is closed and sealed.
		Check the vacuum relief valve. Clear obstruction. Replace if defective.
		Check the pressure relief valve. Clean or replace as required.
		Check for leaking vacuum hoses or fittings.
	Defective blower	Check the clearance between the lobes and the casing. Excessive clearance will decrease the air flow. Consult your dealer.
	Defective airlock	Check that the tip clearance matches the specifications. Adjust or replace tips as required.
	Improper sealing of air slide	Reset air slide.
	Hose and pipe bends	Sharp bends in the intake hoses or pipes can significantly reduce capacity. Keep all intake lines as straight as possible.
	Intake line blockage	With the airlock still rotating, pull the nozzle from the material supply. Decrease the speed slowly and then increase slowly. Repeat the speed adjustments several times. If the blockage does not clear, decrease the speed to idle. Allow the system to idle for 1 minute then disengage the blower and shut down the system. Manually clear the lines. Suction lines may blow clear when connected to the outlet side of the Agri-Vac.

Slow discharge of material	Power source	Check the tractor or motor RPM.
	Air leaks	Tighten all pressure connections. Ensure seals are in good condition.
		Check the pressure relief valve. Clean or replace as required.
	Defective blower	Check the clearance between the lobes and the casing. Excessive clearance will decrease the air flow. Consult your dealer.
	Defective airlock	Check that the tip clearance matches the specifications. Adjust or replace tips as required.
	Airlock speed too fast or slow	Reset flow control so the airlock runs at the recommended speed for the conveyed material.
		Check for leaking hoses or fittings.
	Hose and pipe bends	Sharp bends in the discharge hoses or pipes can significantly reduce capacity. Keep all discharge lines as straight as possible.
	Discharge line blockage	With the airlock still rotating, pull the nozzle from the material supply. Decrease the speed slowly and then increase slowly. Repeat the speed adjustments several times. If the blockage does not clear, decrease the speed to idle. Allow the system to idle for 1 minute then disengage the blower and shut down the system. Manually clear the lines.Discharge lines may be cleared by connecting to a suction inlet.
Pulsation	Insufficient air flow	Open the air slide on the nozzle to provide more air.
		Increase the blower speed.
		Decrease the size of the intake piping.
	Too many bends	Straighten the intake and discharge lines.

Material damage	Liners worn out	Replace wear liners in the discharge cyclone or the primary AMS as required.
	Poor connections	Tighten and seal all connections.
	Lines wearing	Eliminate elbows. Keep lines as straight as possible and provide a large radius for any necessary bends.
	Excessive speed	Decrease the air flow by slowing the blower. Increase the material quantity by closing the air slide.
		Check the speed of the airlock.
Blower bogging down	Dirt from secondary AMS going through blower	Clean more frequently in dirty conditions. Clean the secondary AMS.
Hydraulics overheating	Low oil level	Check the oil level in the tractor and Agri-Vac. Add oil as required.
	Poor oil quality	Replace with oil of required specifications as identified in **Section 7: Maintenance and Adjustments**.
	Defective hoses or tubes	Check the hoses, lines and couplers. Repair or replace as required.
	Blocked filter	Check the filter for blockages and repair or replace as required.
	Improper circuit	Check for proper system setting (open-center vs closed-center)
	Incorrect airlock speed	Check the speed control valve. If oil flow continues at the 0 setting, repair or replace the valve.
	Too much flow from tractor	If the flow from the tractor is set at 30 GPM (114 LPM), reduce to 15 GPM (57 LPM).
	Airlock clearances too tight	Check and adjust airlock tip clearances.

Table 6-4: Troubleshooting for PTO shaft

ISSUE	CAUSE	SOLUTION
Shear pin failure	Blower doesn't turn freely	Determine and correct the cause of the hard turning. The blower must turn freely.
		NOTE: some oil seeds can create build-up inside the blower as well as the muffler. Wash and rinse with clean water.
		Replace the shear pin with genuine Walinga parts. For the required pin size, contact the Walinga Engineering Department.
	PTO engaged too quickly	Engage the PTO slowly. Refer to your tractor's operator's manual.

Table 6-5: Troubleshooting for airlock

ISSUE	CAUSE	SOLUTION
Noisy airlock	Tips hitting casing	A light grinding noise is normal for some time after adjustment of the airlock tip clearances. The noise will disappear after the tips seat fully on the casing. If the noise is excessive or does not decrease, re-adjust the tips where applicable.
	Incorrect direction of rotation	The airlock operates continuously in one direction only. Check that the shaft rotates in a counter-clockwise direction when viewed from the driven end of the unit. Continuous operation in reverse will cause excessive wear and may damage the rotor tips, tip wiper, casing, and bearings.
	Bearing failure	Remove the cover plate(s) and replace the bearing(s). Re-pack with grease. Check the clearances between the rotor blades and end plates after replacing the bearing(s).

Airlock stalls	Obstruction in airlock preventing blade rotation	Briefly reverse the rotational direction of the airlock and then return to the correction rotational direction. Repeat this several times to clear the obstruction from the blade area.
		Disconnect the hydraulics lines. Remove the obstruction manually from the airlock by opening the access door or removing the discharge elbow. If necessary, remove the primary AMS for better access.
	Insufficient oil flow	Check the couplings and lines.
		Check for defective tractor hydraulics and repair the tractor as necessary.
	Prolonged operation in reverse direction	The airlock operates in a counter-clockwise direction when viewed from the driven end. Operation in the incorrect direction for extended periods damages the rotor blades and tips and may cause jamming. Check and repair as required.
	Insufficient rotor or tip clearance with casing or end plates	Check the tips and rotor clearances and adjust to the correct specifications as required.
	Faulty hydraulic motor, flow divider or relief valve	Service the motor, flow divider and pressure relief valve and repair, adjust or replace as required.
	Airlock hydraulic drive out of alignment	Check the hydraulic motor position and realign if necessary.
Air loss through airlock	Excessive clearance between blade tips and casing	Adjust the tips to decrease the clearance to the required specifications. Excessive clearance causes operating problems including bridging and erratic flow. Prolonged operation with excessive clearances will cause uneven casing wear, resulting in lower performance even after tip adjustment.
Airlock blade tip or flexible wiper breakage	Prolonged operation in reverse direction	The airlock must operate in a counter-clockwise direction when viewed from the driven end. Change the rotational direction and repair or replace the tips or wiper as required.
	Wiper fouling blade tips	Re-adjust the clearance of the wiper blade on the blade tips.

Table 6-6: Troubleshooting for blower

ISSUE	CAUSE	SOLUTION
Low air volume	Slow speed	Check the blower speed with a tachometer. Increase the speed.
		Check for slipping belts. Adjust the belt tension as required.
	Piping blocked	Check the inlet and outlet piping. Remove any obstructions.
		Check the relief valves. Clean, repair or replace as required.
	Excessive pressure rise	Check the inlet vacuum and discharge pressure and compare with recommended conditions. Determine the cause before continuing.
	Worn components	Check the clearance and replace the defective components. Consult your Walinga dealer or representative.
Overheating	Inadequate lubrication	Check the oil level in the reservoirs. Add oil as required.
	Excessive lubrication	Check the oil level in the reservoirs. Drain excess oil as required.
	Excessive pressure rise	Adjust operating conditions to reduce the pressure rise to below 10 psi (70 kPa).
	Coupling misalignment	Check and realign the coupling.
	Insufficient air flow	Open the air slide on the intake nozzle.
	Incorrect line size	Use larger diameter intake or discharge lines
Engine overloading	Speed too high	Check and decrease the speed to the recommended RPM.
	Pressure too high	Adjust the operating conditions to set the pressure rise to below 10 psi (70 kPa). Add more air by opening the air slide.
	Impellers rubbing	Consult your Walinga dealer or representative.

Table 6-7: Troubleshooting for V-belt drive

ISSUE	CAUSE	SOLUTION
Loss in drive speed	Belts slipping	Tighten belts as required.
	Localized belt wear	Check the cross-sectional dimension. If it is too narrow, the pulley is spinning. If it is too wide, the belt is failing internally. Replace with a matched set and tighten to required specifications.
	Unequal stretch on belts	Defective belts. Replace with a matched set.
	Belts overloaded	Belts failed or worn out. Replace belts with a matched set.
	Belt separation	Belts too tight. Replace belts and tighten to require specifications.
	Envelope seams opening	Check for oil or rubber solvent. Eliminate any contamination and replace belts.
	Abnormal envelope wear	Check for worn sheave, misalignment or slip. Replace any defective parts, adjust properly, and replace the belt.
	Belt softening or swelling	Eliminate oil or rubber solvent and replace the belt.
	Belt hardening or cracking	Eliminate heat or chemical contamination and replace the belt.

PAGE INTENTIONALLY LEFT BLANK

WALINGA® INC.

Maintenance and Adjustments

PTO AGRI-VAC MODELS

MAINTENANCE SCHEDULE

HOUR READING AT TIME OF SERVICE:														
SERVICED BY:														
Every 8 HOURS or DAILY or 500 TONNES (18 750 BUSHELS)														
Lubricate PTO Shaft (Locations A and B)	***[7-4]***													
Check Drive Belt Tension and Alignment	***[7-5]***													
Check Blower Reservoir Oil Level	***[7-9]***													
Clean Blower Breathers	***[7-10]***													
Clean Secondary AMS	***[7-11]***													
Inspect Muffler	***[7-14]***													
Every 20 HOURS or WEEKLY or 1000 TONNES (37 500 BUSHELS)														
Lubricate PTO Shaft (Location C)	***[7-4]***													
Check Discharge Cyclone Wear Liner	***[7-18]***													
Lubricate Blower Drive Shaft	***[7-19]***													
Lubricate Airlock Motor Coupling	***[7-20]***													
Lubricate Boom Swivel	***[7-22]***													
Check Airlock Wiper Blade	***[7-23]***													
Every 40 HOURS or MONTHLY or 2500 TONNES (93 750 BUSHELS)														
Lubricate PTO Shaft (Location D)	***[7-4]***													
Lubricate Rod End of Boom Lift Cylinder	***[7-24]***													
Lubricate Boom Hinge	***[7-25]***													
Every 100 HOURS or ANNUALLY or 5000 TONNES (187 500 BUSHELS)														
Change Blower Reservoir Oil	***[7-9]***													
Check Vacuum and Pressure Relief Valves	***[7-26]***													
Check Airline Seals	***[7-27]***													
Reset Airlock Blades (If Required)	***[7-32]***													
Every 200 HOURS or BI-ANNUALLY or 10000 TONNES (375 000 BUSHELS)														
Lubricate Splined Input Shaft and Bearings	***[7-36]***													
Lubricate Blower Outboard Bearing	***[7-37]***													
Every 1600 TONNES (60 000 BUSHELS)														
Reset Airlock	***[7-32]***													

MAINTENANCE SAFETY

Unsafe workshop and servicing practices increase the risk of injury around machinery. Review the following safety guidelines for important information regarding safety involved with maintenance operations.

- Read, understand and follow all operating, maintenance and safety information in the operator's manual.
- Clear the area of bystanders, especially small children, when carrying out any maintenance or repairs or making any adjustments.
- Place all controls in neutral, stop the tractor or electric power source, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or maintaining.
- Support the machine with blocks or safety stands when changing tires or working beneath the machine.
- Follow good shop practices:
    a. Keep the service area clean and dry.
    b. Ensure electrical outlets and tools are properly grounded.
    c. Use adequate lighting for the job at hand.
- Use only tools, jacks and hoists of sufficient capacity for the job.
- Keep hands, feet, hair, and clothing away from all moving and/or rotating parts.
- Before applying pressure to a hydraulic system, ensure all lines, fittings and couplers are tight and in good condition.
- Relieve pressure from the hydraulic circuit before servicing or disconnecting from the tractor.
- Ensure all guards are in place and properly secured when maintenance work is complete.

MAINTENANCE PROCEDURES

Greasing

1. Use a hand-held grease gun for all greasing. Air powered greasing systems can damage the seals on bearings and lead to early bearing failure.
2. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace or repair broken fittings immediately.
4. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.

Lubrication of PTO Shaft

To maintain smooth transmission of power from the tractor to the Agri-Vac, the PTO shaft must remain properly lubricated.

To lubricate the PTO shaft, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Wipe the grease fittings with a clean cloth before greasing to avoid injecting dirt and grit.
4. Check the fittings for any damage. Repair or replace any broken fittings immediately.
5. Lubricate the PTO shaft at the specified locations and intervals as specified in ***Figure 7-1*** and ***Table 7-2***.

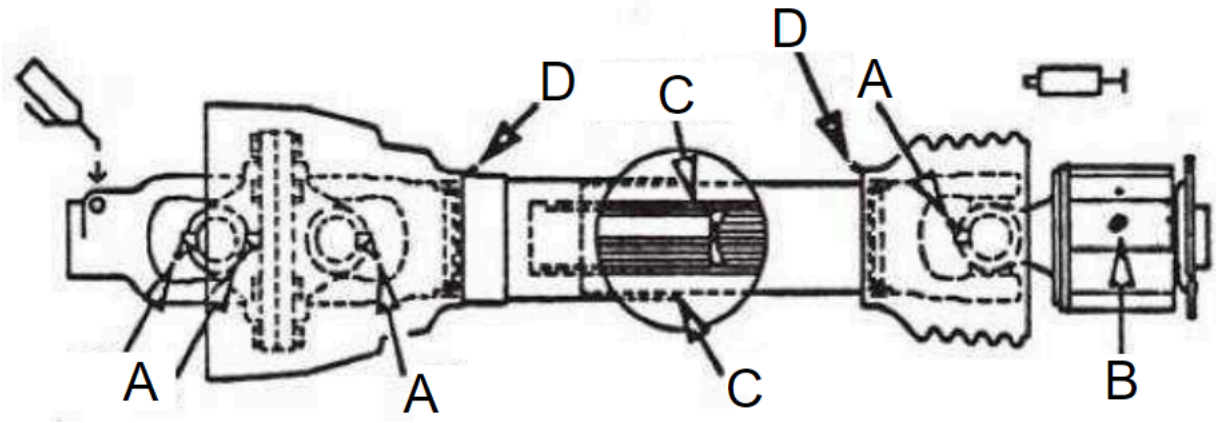


Figure 7-1: PTO shaft lubrication locations

Table 7-2: PTO shaft lubrication frequency

Location	Description	Frequency
A	Universal joint	Every 8 hrs
B	Yoke bore	Every 8 hrs
C	Telescopic member	Every 20 hrs
D	Guard bearing	Every 40 hrs

6. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.
7. Ensure all guards are installed before resuming work.

Drive Belt Tension and Alignment

Rotational power is transmitted to the blower through the belt drive. To obtain efficient transmission of power and optimal belt life, the belts must be properly tensioned and the pulleys must be aligned. Belts that are too tight will stretch and wear quickly or overload the bearings on the input shaft or the blower. Belts that are too loose will not transmit the required power and will slip, overheat and wear out quickly. Pulleys that are not properly aligned will result in rapid belt wear.

To check and adjust the belt tension and pulley alignment, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Unhook the PTO driveline from the tractor shaft or power source. This will allow for rotation of the pulleys if required.
4. Remove the bolts securing the belt guard and remove the belt guard. Place the belt guard to the side in an area where it will not obstruct access to the pulleys or belts.
5. Use a belt tensioning tool to determine the belt deflection in a static condition. Reference ***Figure 7-2*** and ***Table 7-3*** for requirements.

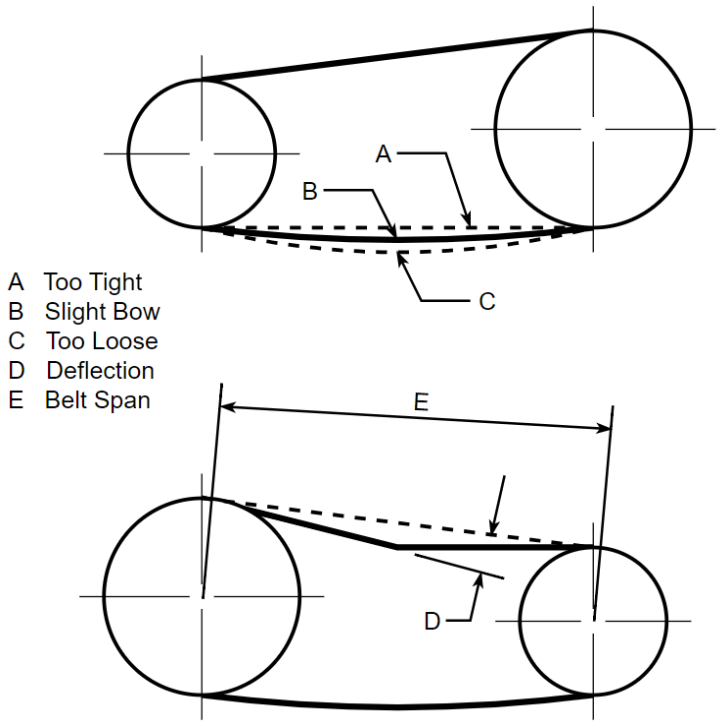


Figure 7-2: Drive belt deflection

Table 7-3: Drive belt requirements

Model	PTO Speed	Belt Tension	Belt Deflection
5614	1000 rpm	6.31 lbs (2.86 kg)	0.38 in (9.65 mm)
6614	1000 rpm	9.85 lbs (4.47 kg)	0.37 in (9.40 mm)
7614	1000 rpm	9.88 lbs (4.48 kg)	0.37 in (9.40 mm)
7816	1000 rpm	9.86 lbs (4.47 kg)	0.33 in (8.38 mm)

6. To adjust the belt tension, proceed as follows:
    a. Loosen the jam nuts on the adjusting bolts. Loosen the bearing bolts slightly.

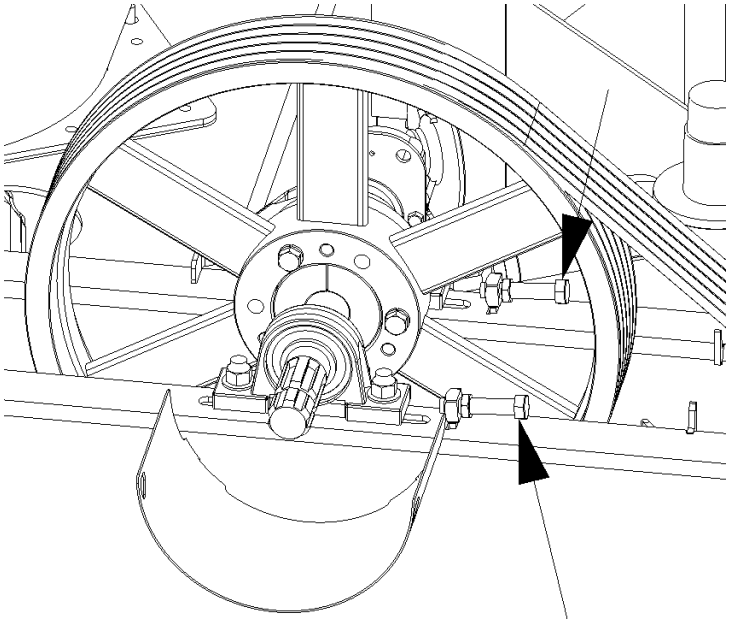


Figure 7-3: Tension adjusting bolts

    b. Turn the adjusting bolt to set the tension. Turn both bolts the same amount to maintain the pulley alignment.
    c. Check the tension again. Over tightening will cause belt stretching and overload the bearing. Belts that are too loose will slip, tear and wear rapidly. Check the pulley alignment, reference **Step 7**.
    d. Tighten the jam nuts. Tighten the bearing bolts.
    e. Install and secure the belt guard and belt guard bolts.
7. To check and adjust the pulley alignment, proceed as follows:

a. Lay a straight edge across the faces of the two pulleys.

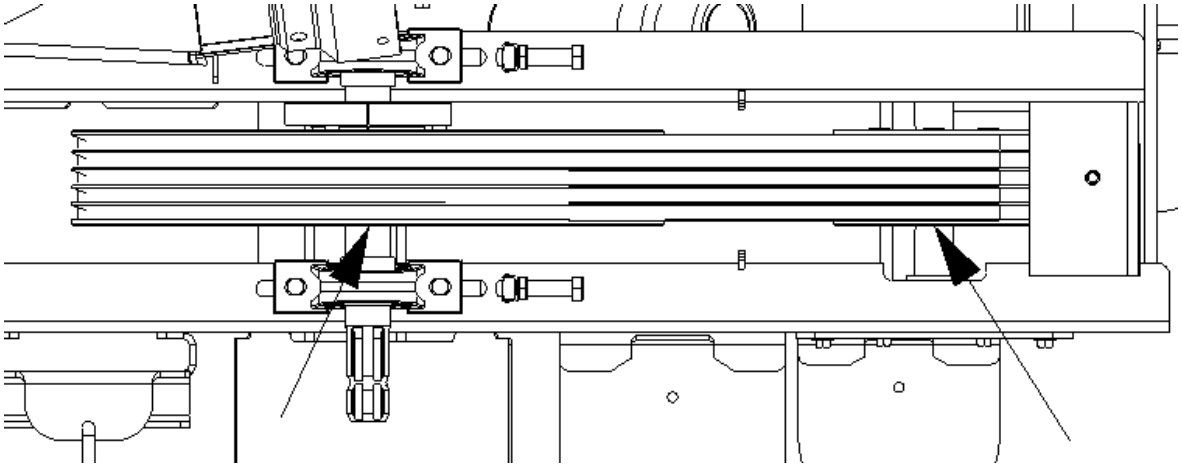


Figure 7-4: Pulley alignment

b. If the gap between the pulley and the straight edge exceeds 1/16 in (1.5 mm), the pulleys must be realigned.

c. Review ***Figure 7-5*** for the different types of alignment issues.

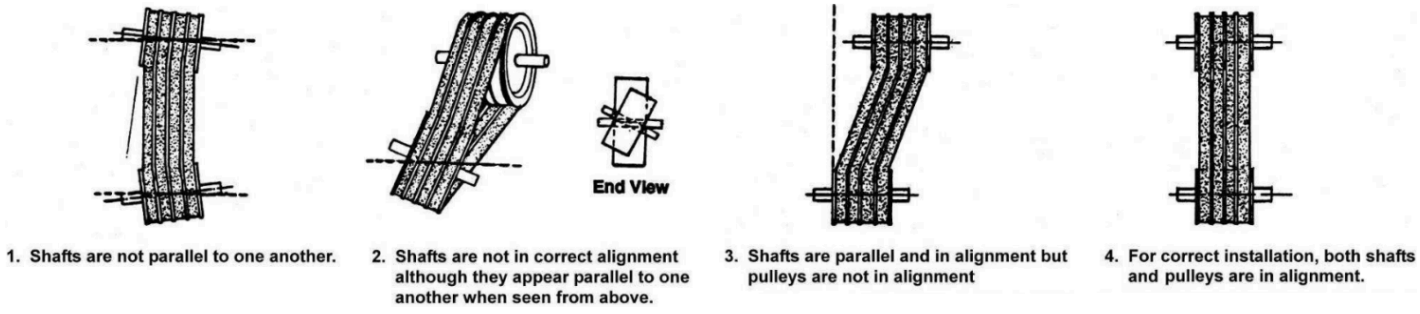


Figure 7-5: Pulley and shaft misalignment

d. Use the adjusting bolts on the input shaft to align the input pulley. Tighten the jam nuts when the alignment has been completed.

e. Use the bearing housing assembly anchor bolts to align the blower pulley as seen in ***Figure 7-6***. Tighten anchor bolts to their specified torque.

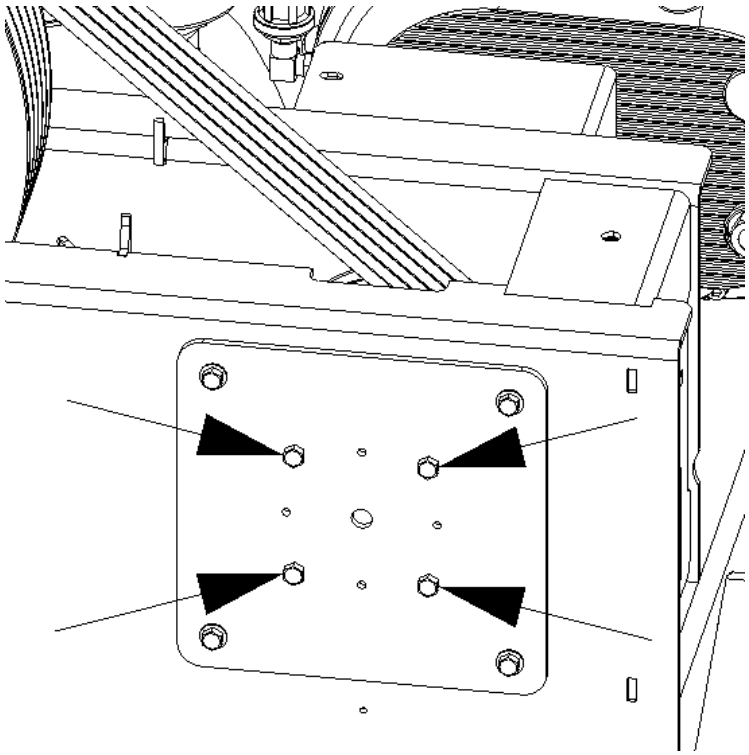


Figure 7-6: Bearing anchor bolts

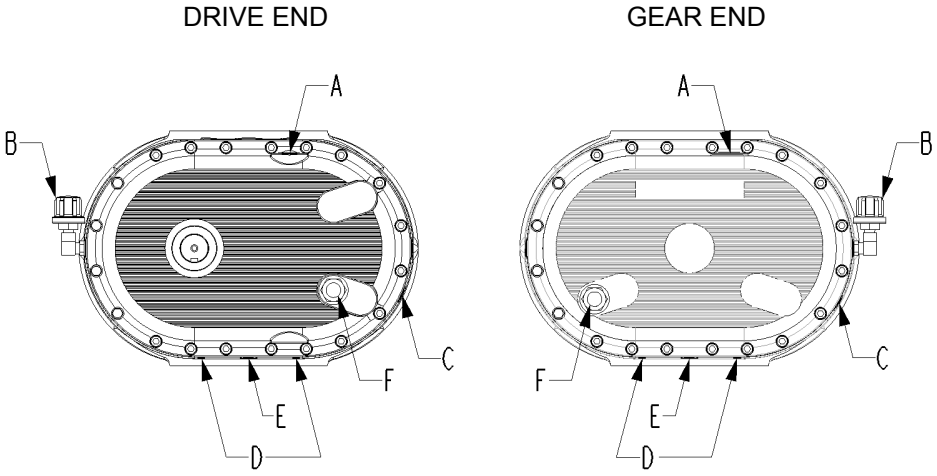
f. Set the belt tension with reference to **Step 6**.

g. Install and secure the belt guard and belt guard bolts.

8. Ensure all guards are installed and secure before resuming work.

Blower Reservoir Oil

The gears that drive and time the blower lobes run in an oil bath for lubrication. Maintaining the correct oil level in the reservoirs, and changing the oil every 100 hours will ensure proper lubrication. It is necessary to maintain the recommended oil level in the reservoir. Low oil levels will cause heating due to insufficient lubrication. Too much oil in the reservoirs will cause heating as a result of oil churning and can also cause seal and breather leaks. Condensation will form and collect inside the reservoir during normal machine operation. Changing the oil removes this water and prevents water-related damage to the gears and bearings.



A Fill Hole
B Breather
C Oil Level Plug
D Vent Holes
E Drain Holes
F Oil Level Sight Glass

Figure 7-7: Blower key features

To maintain the blower proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place the controls in neutral, stop the engine and remove the ignition key or disconnect the PTO driveline/power source before starting maintenance.
3. To check the oil level, proceed as follows:
    a. Ensure the oil is cold and the machine is level.
    b. Remove the level plug (***Figure 7-7 C***) in each reservoir or check the sight glass (***Figure 7-7 F***). Oil should just fill the threads of the level plug hole, or register a quarter of the sight glass.
    c. Add oil if low or allow the reservoir to drain if overfilled.
    d. Install and tighten level plug (***Figure 7-7 C***).

4. To change the oil, proceed as follows:
    a. Place a collection pan or pail under each drain plug (***Figure 7-7 E***).
    b. Remove each drain plug (***Figure 7-7 E***).
    c. Flush each case and allow several minutes to drain.
    d. Dispose of the oil in an approved manner. Do not contaminate the worksite with used oil.
    e. Install and tighten drain plugs (***Figure 7-7 E***).
    f. Remove fill (***Figure 7-7 A***) and level (***Figure 7-7 C***) plugs.
    g. Add Walinga Super Duty blower oil (part number 98-13813-6) to each reservoir until the oil is just starting to come out of level plug hole (***Figure 7-7 C***). Refer to ***Table 7-6*** in the *Maintenance Materials* section for the total blower oil capacity.
    h. Install and tighten level (***Figure 7-7 C***) and fill (***Figure 7-7 A***) plugs.

Cleaning of Blower Breathers

The breathers prevent the air from being contaminated by the blower lubricant. To maintain the function of the breathers, they must remain clean.

To clean the breathers, proceed as follows:

1. Remove the breathers (***Figure 7-7 B***), and blow the breathers out with an air hose.
2. If dirt has accumulated in the breather, soak the breather in solvent and then blow it out. It may be necessary to use a probe to loosen dirt.
3. Install and tighten the breather.
4. Clean the vents (***Figure 7-7 D***) in the end plates.

Cleaning of Secondary AMS

The secondary AMS prevents dust, dirt, and contaminants from entering the blower. To maintain proper function, and to prevent significant damage to the blower, the secondary AMS must be regularly emptied and cleaned. The secondary AMS may need to be more frequently emptied if the Agri-Vac is operated in dirty or dusty conditions.

To clean the secondary AMS, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Ensure the blower is not running. Opening the secondary AMS door while the blower is running can cause the accumulated dirt, dust and debris to be drawn into the blower, potentially causing significant damage.
4. Position a receptacle below the secondary AMS to catch the dirt, dust, and debris.

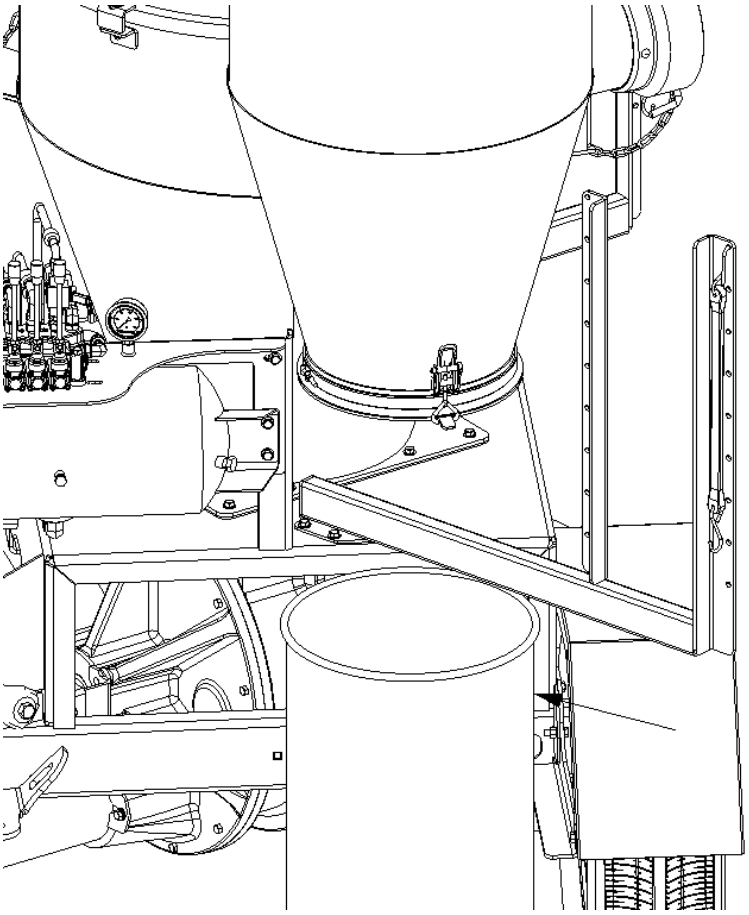


Figure 7-8: Receptacle positioning

5. Remove the locking device and undo the latch securing the secondary AMS door.

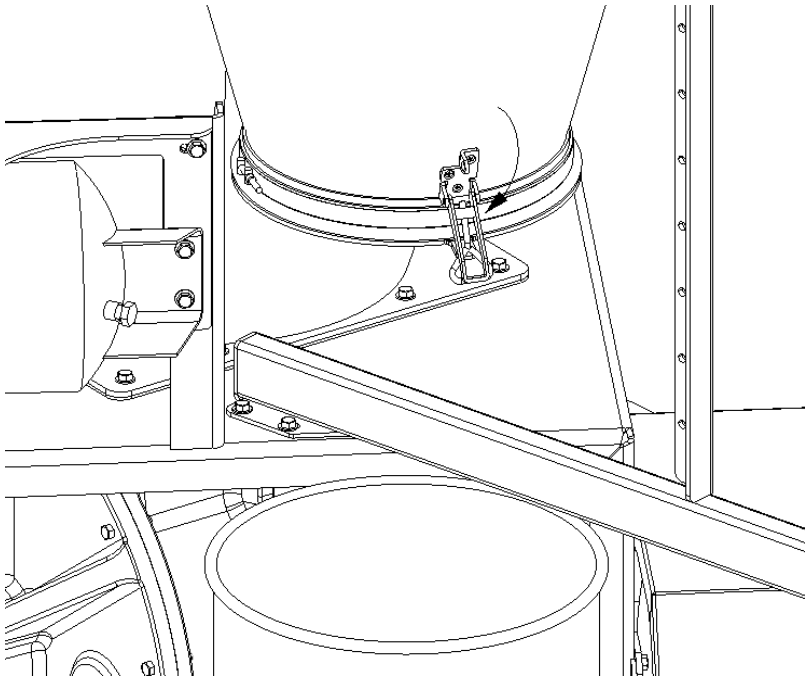


Figure 7-9: Release of latch

6. Open the secondary AMS door and allow the accumulated dirt, dust, and debris to empty into the receptacle.

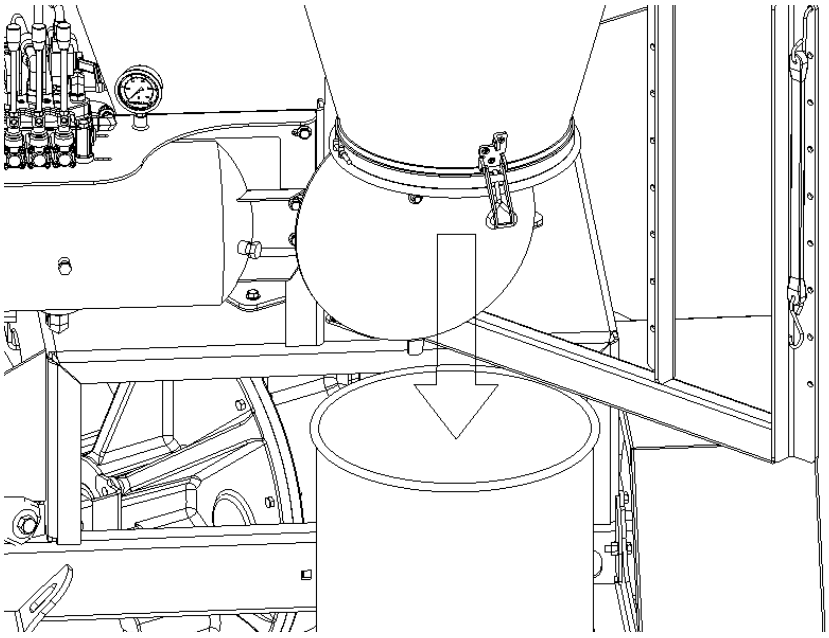


Figure 7-10: Emptying secondary AMS

7. Inspect the interior of the secondary AMS door. Ensure there is no contaminant build-up on the surfaces, paying careful attention to the surface where the seal meets the door. If necessary, scrape any contaminants off of the surfaces.

8. Inspect the inside of the secondary AMS and remove any remaining contaminants. If there is significant accumulation on the interior surfaces, the secondary AMS can be rinsed out using an approved solvent for the application of your machine. Ensure any non-food-grade solvents have been cleaned from the machine if applicable.

9. When the secondary AMS has fully dried, close the secondary AMS door, secure the latch over the door tab, and secure the latch in place with the locking device.

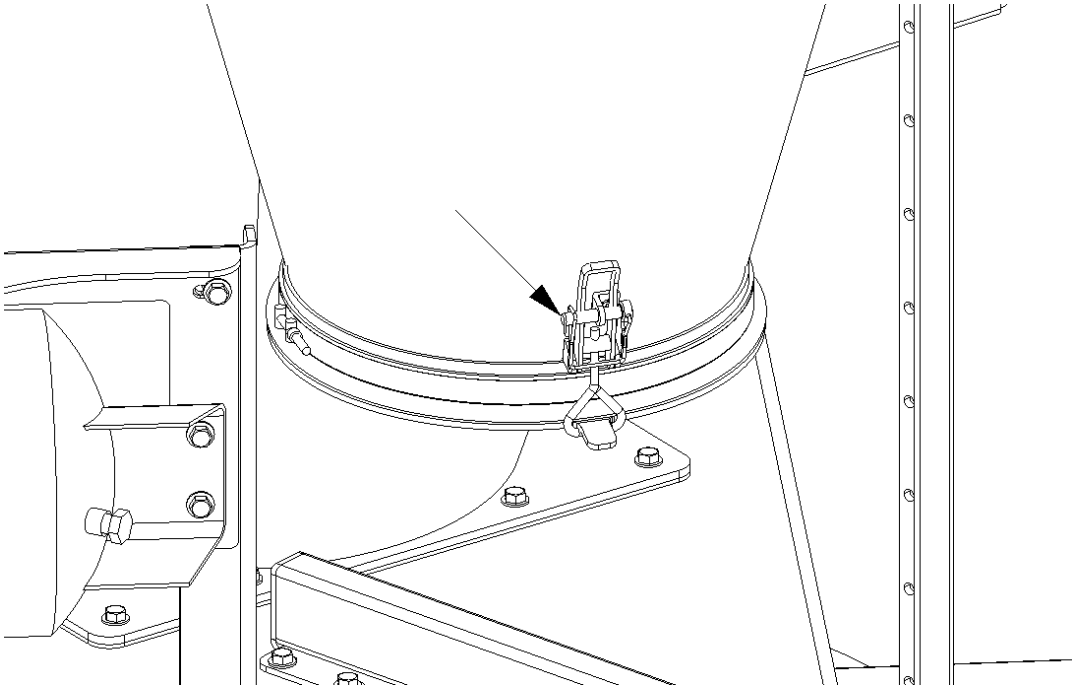


Figure 7-11: Securing latch

Inspection of Muffler

The muffler serves to decrease the noise level of the Agri-Vac. It has been designed to be self-cleaning, however, it is possible during operation, transport, or storage for dirt, dust, or debris to accumulate in the muffler. Due to the high temperatures the muffler can reach during operation, any foreign material can result in a fire hazard. To maintain safe operating conditions, the muffler must be regularly inspected and cleaned.

To inspect and clean the muffler, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Ensure the muffler is at a safe temperature to handle.
4. Remove the cap from the wash-out port.

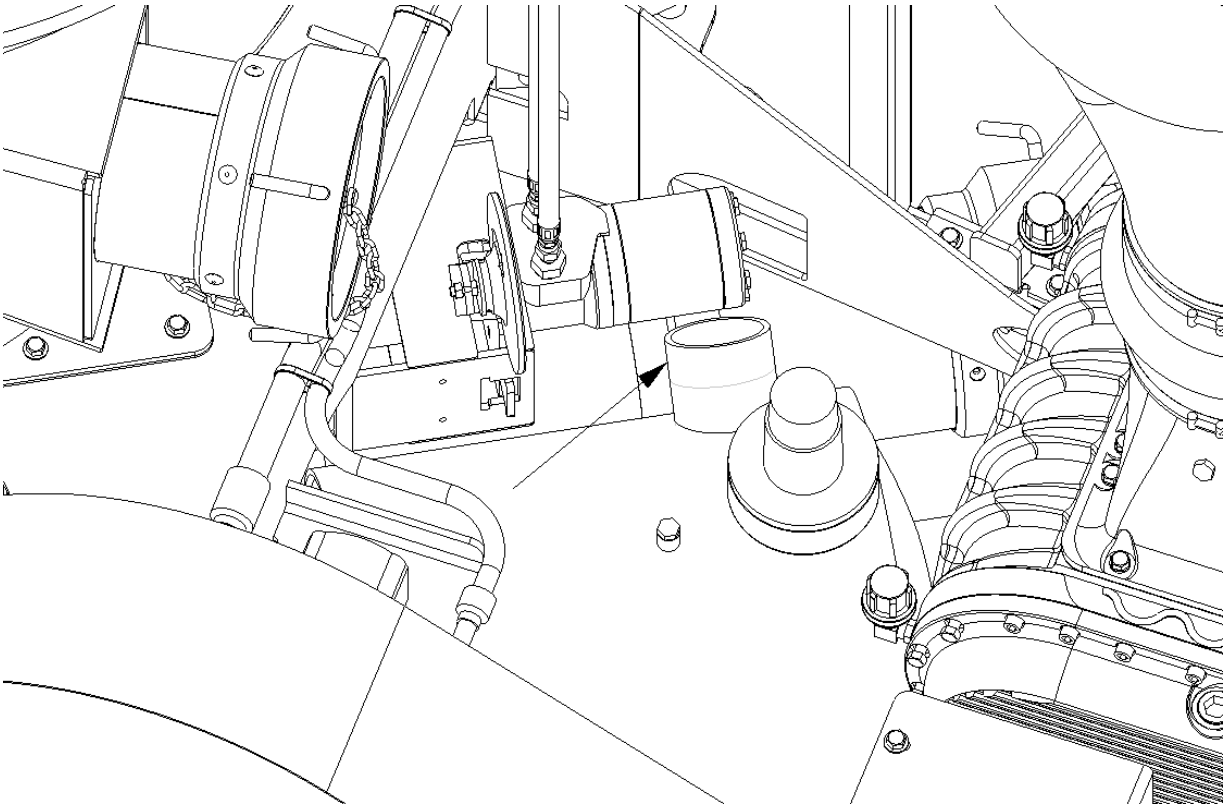


Figure 7-12: Wash-out port access

5. Visually inspect the interior of the muffler for any foreign materials.

6. If there are accumulated materials, clean the muffler as follows:
    a. Loosen the t-bolt clamps securing the muffler and airlock inlet elbow connecting hose.

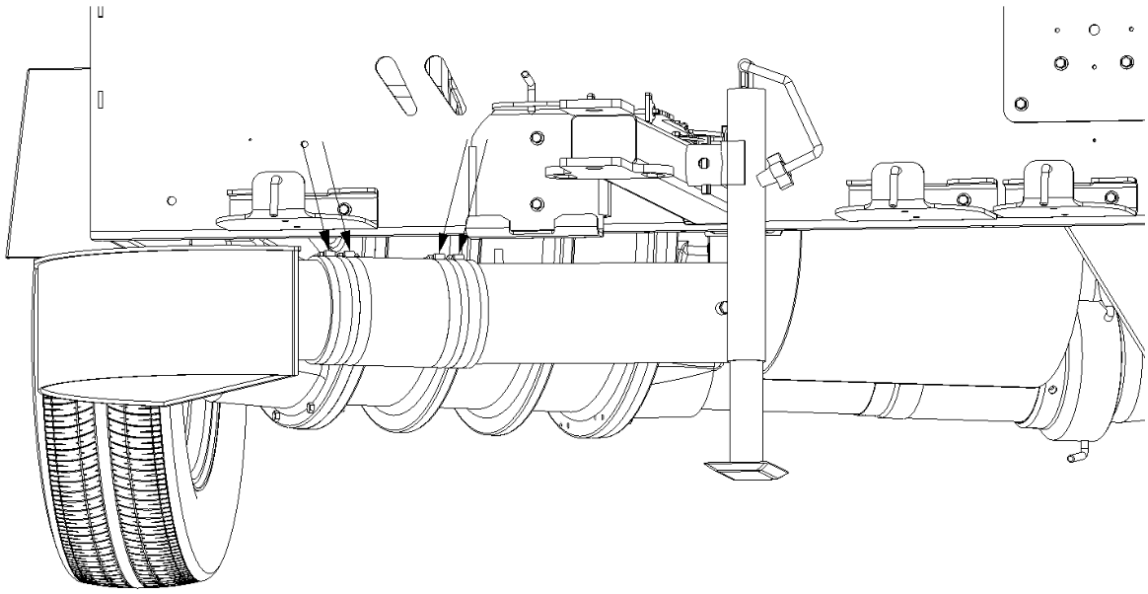


Figure 7-13: Removal of t-bolt clamps

    b. Remove the connecting hose.

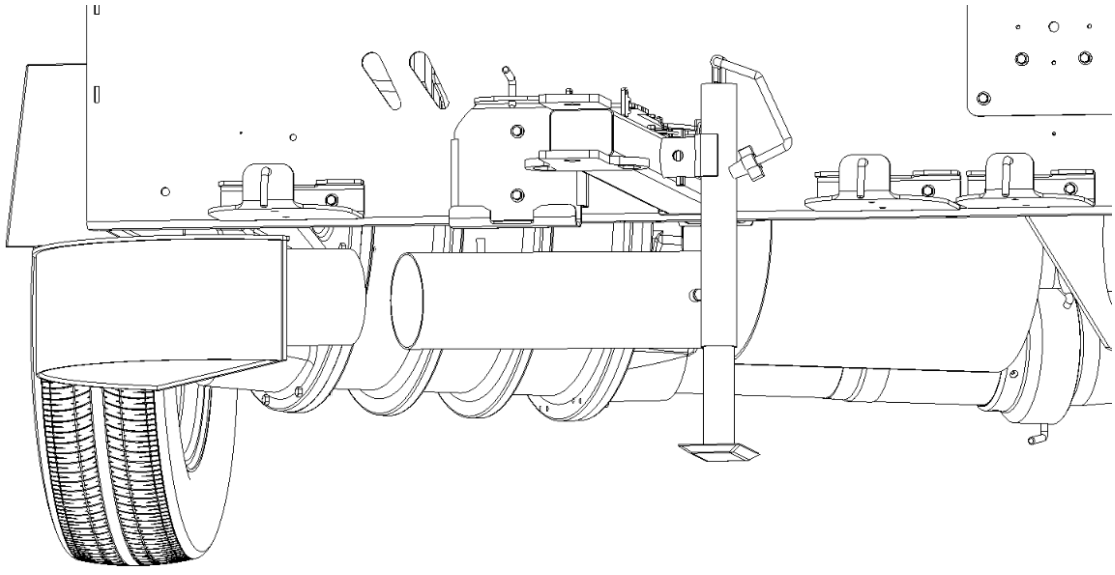


Figure 7-14: Removal of connecting hose

    c. Use the wash-out port as an access point to flush the muffler with clean water.

d. Allow the water and dirt, dust, and debris to drain from the muffler through the outlet pipe.

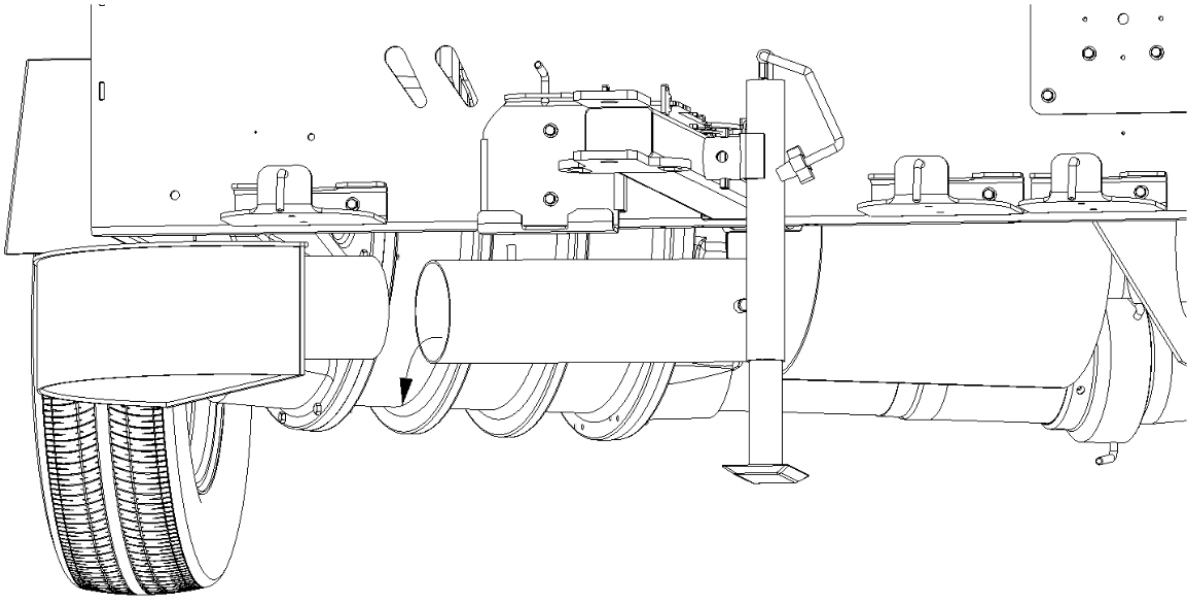


Figure 7-15: Drainage of water and accumulated material

e. Ensure no loosened material has accumulated against the check valve. Clear if necessary.

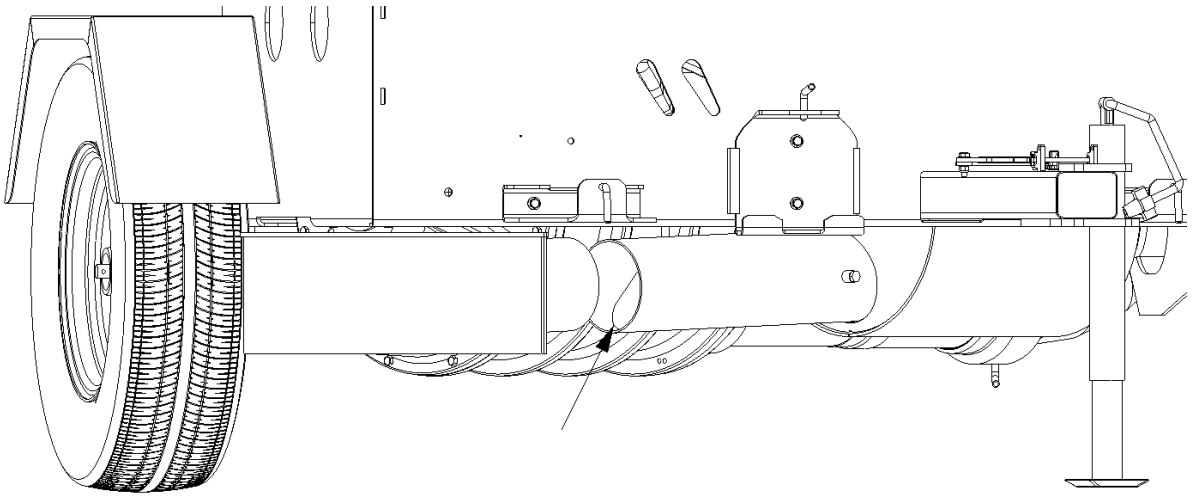


Figure 7-16: Muffler outlet pipe check valve

f. Once the muffler has been thoroughly cleaned, allow the assembly to dry. The blower can be run to assist the drying process.

g. Replace the connecting hose and secure it in place by tightening the t-bolt clamps.

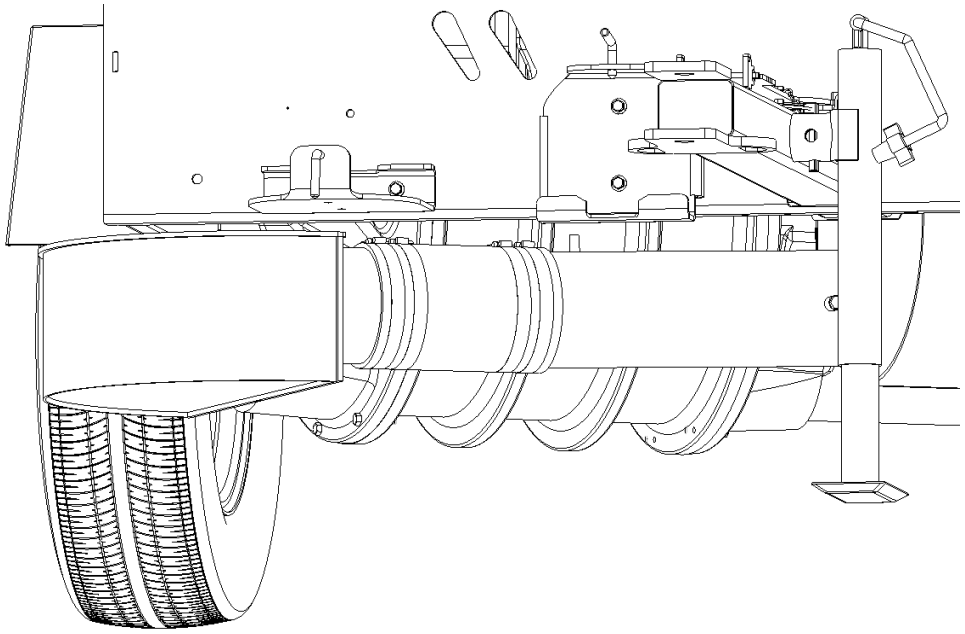


Figure 7-17: Secured connecting hose

7. Replace the wash-out port cap and tighten to secure in place.

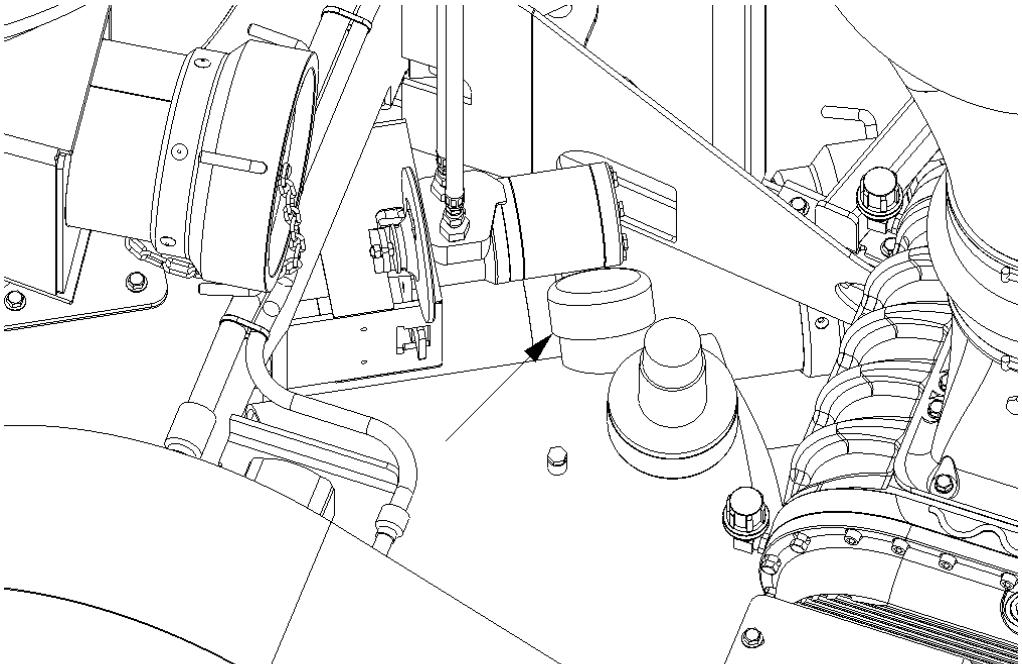


Figure 7-18: Secured wash-out port cap

Discharge Cyclone Wear Liner

The Rhino Hyde lining of the discharge cyclone provides increased abrasion and wear resistance as well as noise reduction. Visually inspect the condition of the wear liner in the discharge cyclone. Check for any pitting, nicks, damage, wrinkling, bulging, or excessive wear and replace the liner as required.

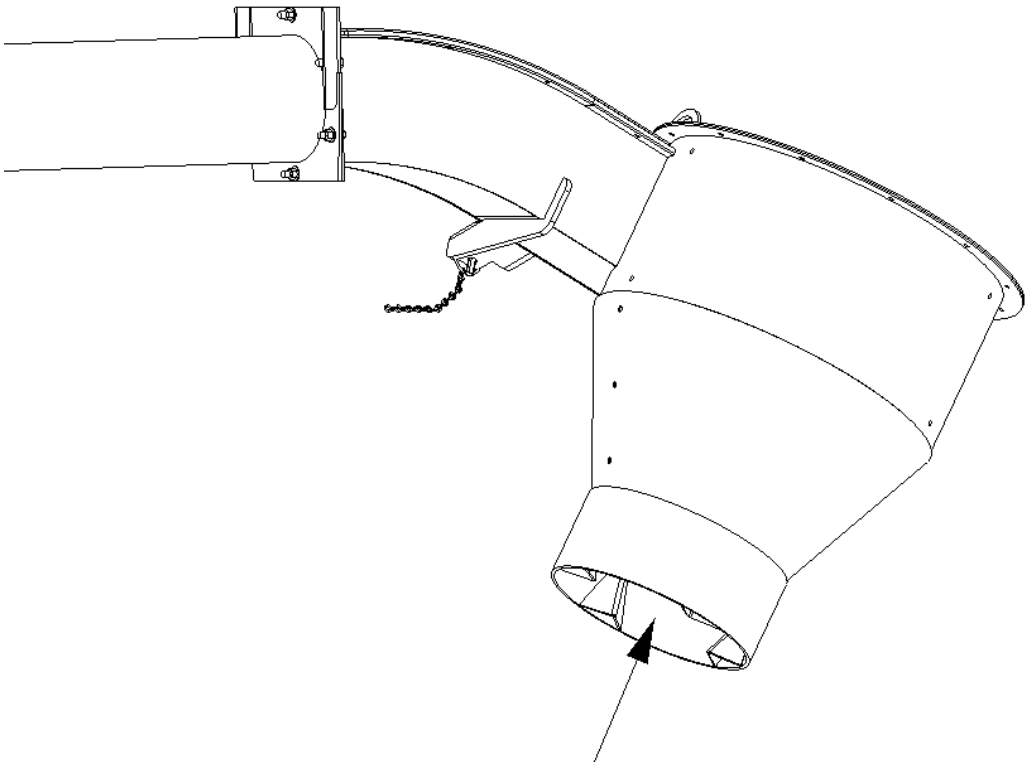


Figure 7-19: Discharge cyclone wear liner

Lubrication of Blower Drive Shaft

To maintain smooth transmission of power from the drive belt to the blower, the blower drive shaft must remain properly lubricated.

To lubricate the blower drive shaft, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Unhook the PTO driveline from the tractor shaft or power source.
4. Remove the bolts securing the blower drive shaft guard and remove the guard. Place the guard to the side in an area where it will not obstruct access to the blower drive shaft.
5. Wipe the grease fittings with a clean cloth before greasing to avoid injecting dirt and grit.
6. Check the fittings for any damage. Repair or replace any broken fittings immediately.
7. Lubricate the blower drive shaft in the three locations shown in ***Figure 7-20***.

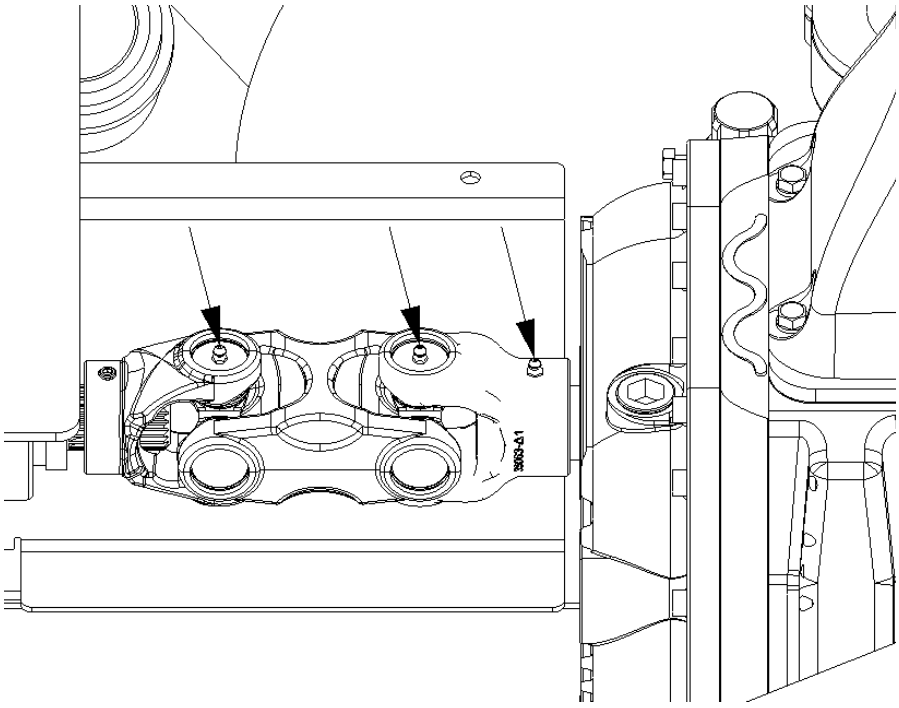


Figure 7-20: Blower drive shaft lubrication locations

8. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.
9. Install and secure the blower drive shaft guard and bolts. Ensure all guards are installed and secure before resuming work.

Lubrication of Airlock Motor Coupling

To maintain smooth transmission of power from the airlock hydraulic motor to the airlock, the motor coupling must remain properly lubricated.

To lubricate the motor coupling, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key, disconnect the hydraulic lines, and wait for all moving parts to stop.
3. Remove the bolts securing the airlock motor guard. Place the guard to the side in an area where it will not obstruct access to the airlock motor coupling.

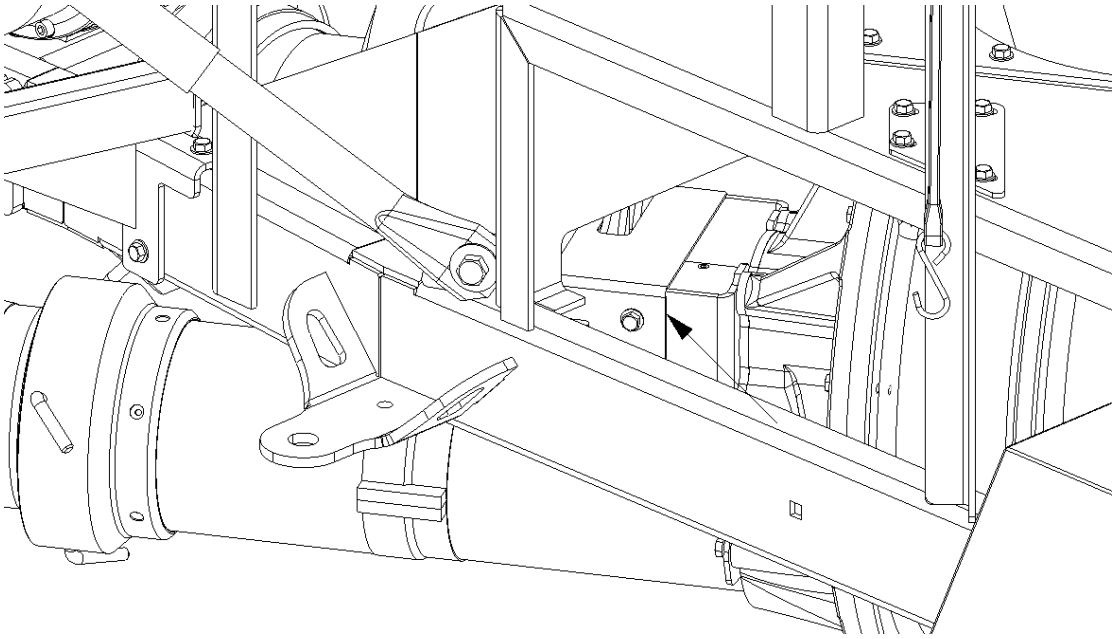


Figure 7-21: Airlock motor guard

4. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
5. Check the fitting for any damage. Repair or replace any broken fittings immediately.

6. Lubricate the airlock motor coupling in the location shown in ***Figure 7-22***.

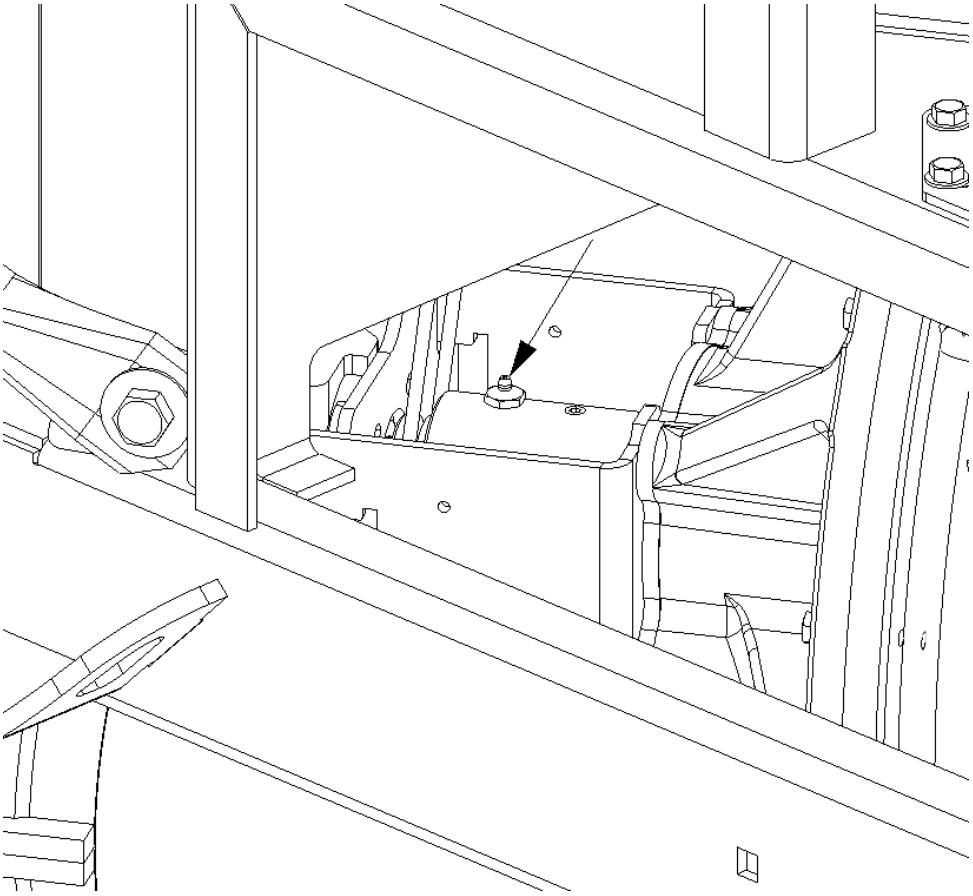


Figure 7-22: Airlock motor coupling lubrication location

7. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.
8. Install and secure the airlock motor guard and bolts. Ensure all guards are installed and secure before resuming work.

Lubrication of Boom Swivel

To ensure smooth rotation of the boom, the boom swivel must be properly lubricated.

To lubricate the boom swivel, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
4. Check the fittings for any damage. Repair or replace any broken fittings immediately.
5. Lubricate the boom swivel in the two locations shown in ***Figure 7-23***.

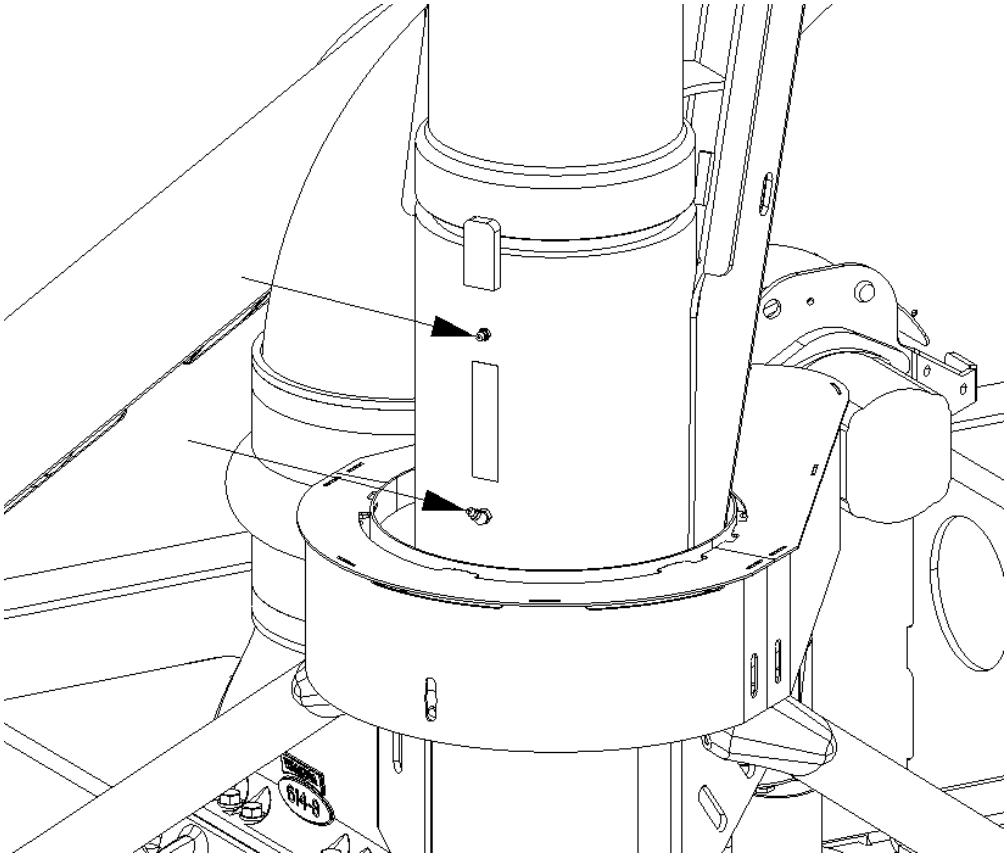


Figure 7-23: Boom swivel lubrication locations

6. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.

Airlock Wiper Blade

Efficient operation of the airlock requires a close fit between the tips of the rotor and the case to maintain a seal between the vacuum and pressure sides of the Agri-Vac. The airlock wiper blade is located at the top of the airlock. It functions to level material as it moves out of the intake area and into the casing. This ensures even flow, reduced wear rates, avoidance of 'out-of-round' wear within the casing, prevention of overfilling of each pocket, and reduces damage to both the blade tips and conveyed material.

To check the condition of the wiper blade, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Relieve the hydraulic pressure from the airlock motor.
4. Disconnect the hydraulic lines from the tractor to prevent the airlock from operating.
5. Open the access door on the primary AMS.

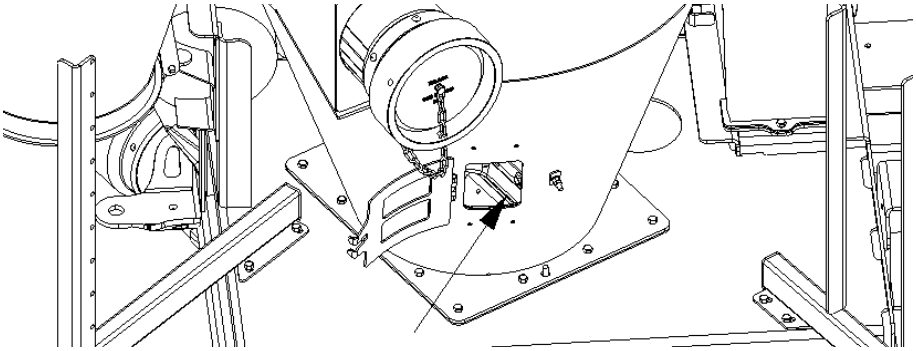


Figure 7-24: Location of wiper blade through access door

6. Reach into the top of the airlock and feel the condition of the wiper blade. The wiper blade should contact each tip approximately 1/16 in (1.5 mm).

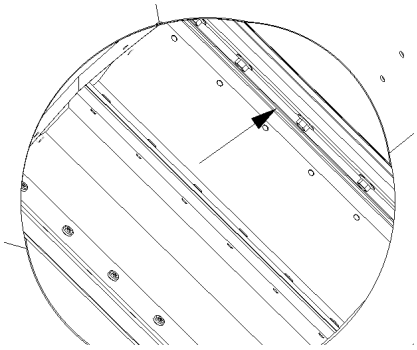


Figure 7-25: Wiper blade contact

7. Check for any nicks, damage or wear. Replace the blade if it is damaged in any way.

Lubrication of Rod End of Boom Lift Cylinder

The boom lift cylinder functions to raise and lower the boom to position the discharge cyclone. For smooth and efficient operation, the cylinder must remain properly lubricated.

To lubricate the rod end of the boom lift cylinder, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Lubricate the exposed rod end of the cylinder with anti-seize or an equivalent lubricant at the location shown in ***Figure 7-26***.

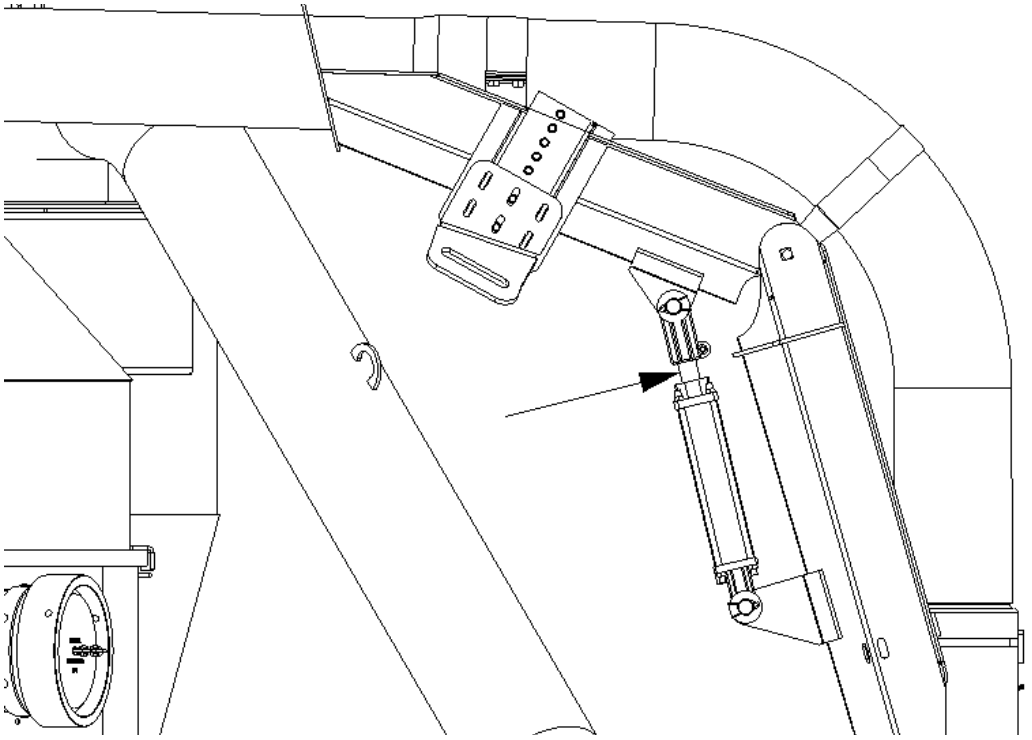


Figure 7-26: Boom lift cylinder exposed rod end

Lubrication of Boom Hinge

To ensure smooth movement of the discharge cyclone end of the split boom from the transport to operational position, the boom hinge must remain properly lubricated.

To lubricate the boom hinge, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key, and wait for all moving parts to stop.
3. Position the boom extension to gain better access to the grease fitting.
4. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
5. Check the fitting for any damage. Repair or replace any broken fittings immediately.
6. Lubricate the boom hinge in the location shown in ***Figure 7-27***.

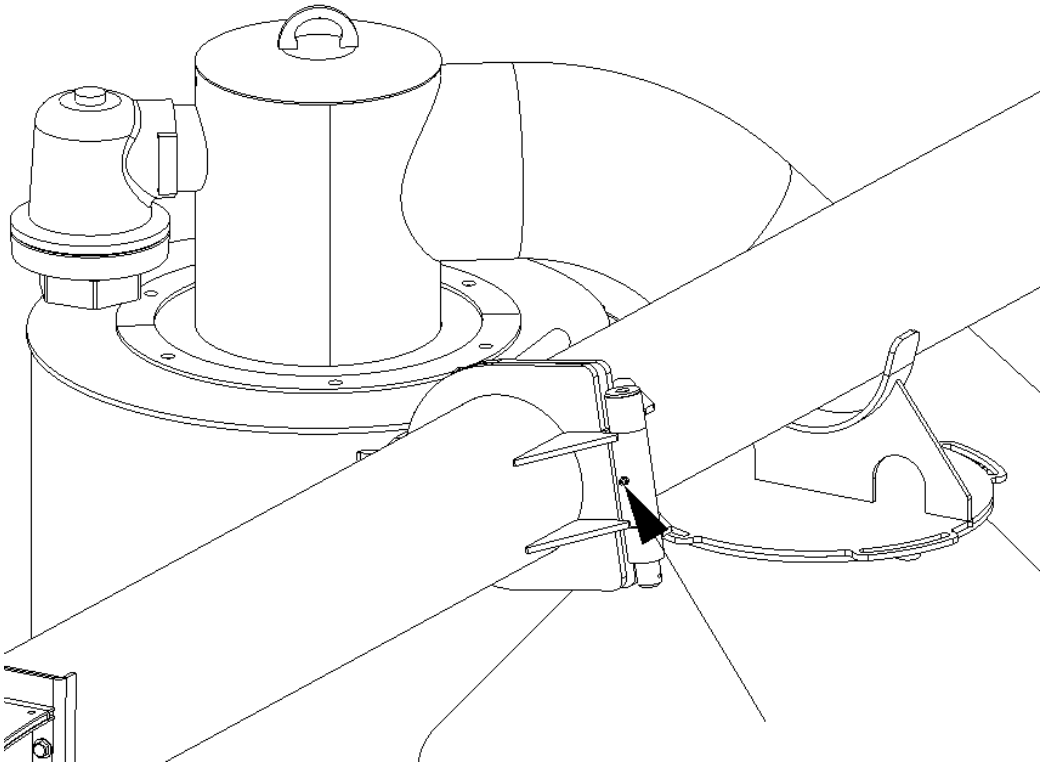


Figure 7-27: Split boom hinge grease fitting

7. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway.Replace the fitting if necessary.
8. Return the boom extension to the transport position and fasten the security latch.

Vacuum and Pressure Relief Valves

As the blower operates, it creates a vacuum on the intake side of the system to draw product in, and creates a pressurized flow on the discharge side to move the product from the airlock to the discharge cyclone. A vacuum relief valve is installed on the intake side of the system and a pressure relief valve is installed on the discharge side. If flow on the intake side becomes restricted, the vacuum will build until it exceeds the setting of the vacuum relief valve of 16 in Hg (54 kPa). The valve will open to supply a flow of air into the intake side and prevent the blower from overheating. If pressure on the discharge side becomes restricted, the pressure relief valve will open to relieve the pressure as it reaches the setting of the valve of 15 psi (103 kPa). Both valves must operate at pressures close to these specified levels for optimum performance. After prolonged use, the springs in the valves that dictate the opening pressures can weaken, causing the valve to open prematurely, negatively impacting the machine performance. Dirt and debris can also contaminate or become lodged in the valve seats, affecting their performance.

To assess the function of the air system relief valves, proceed as follows:

1. During operation, listen for the opening of the valves. A popping or whistle can be heard when the valves open.
2. Monitor the gauges on the vacuum and pressure sides of the system to determine when the valves are opening.
3. Check the operation of the vacuum relief valve by restricting the flow on the intake side of the system until the valve can be heard opening. Read the vacuum gauge and ensure it is 16 in Hg (54 kPa) at the time of opening. If the vacuum relief valve does not function properly, clean, repair or replace the valve.
4. Check the operation of the pressure relief valve by restricting the flow on the discharge side of the system until the valve can be heard opening. Read the pressure gauge and ensure it is 15 psi (103 kPa) at opening. If the pressure gauge does not function properly, clean, repair or replace the valve. Note the pressure relief valve may not open if the pressure lines have air leaks, ensure the system is well sealed and check all fittings.

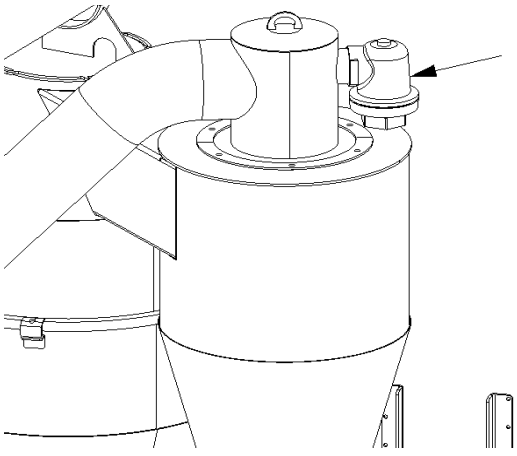


Figure 7-28: Vacuum relief valve

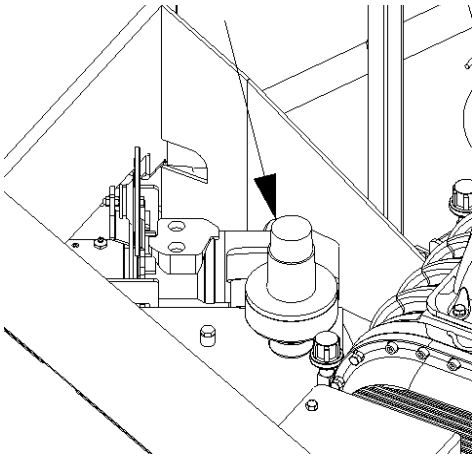


Figure 7-29: Pressure relief valve

Airline Seals

To maintain a sufficient vacuum and pressurized state on each side of the system, the air system must be well sealed. Each joint of the system has a seal, and these must remain in good condition for optimum performance.

To check the condition of the air line seals, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source. Remove the ignition key and wait for all moving parts to stop.
3. Check the condition of the discharge cyclone boom seal as follows:
    a. With the boom in the transport position, ensure the split boom security latch is engaged and the boom is resting securely in the saddle.
    b. Visually inspect the seal, looking out for any nicks, tears, abraded areas, or any excessive wear.

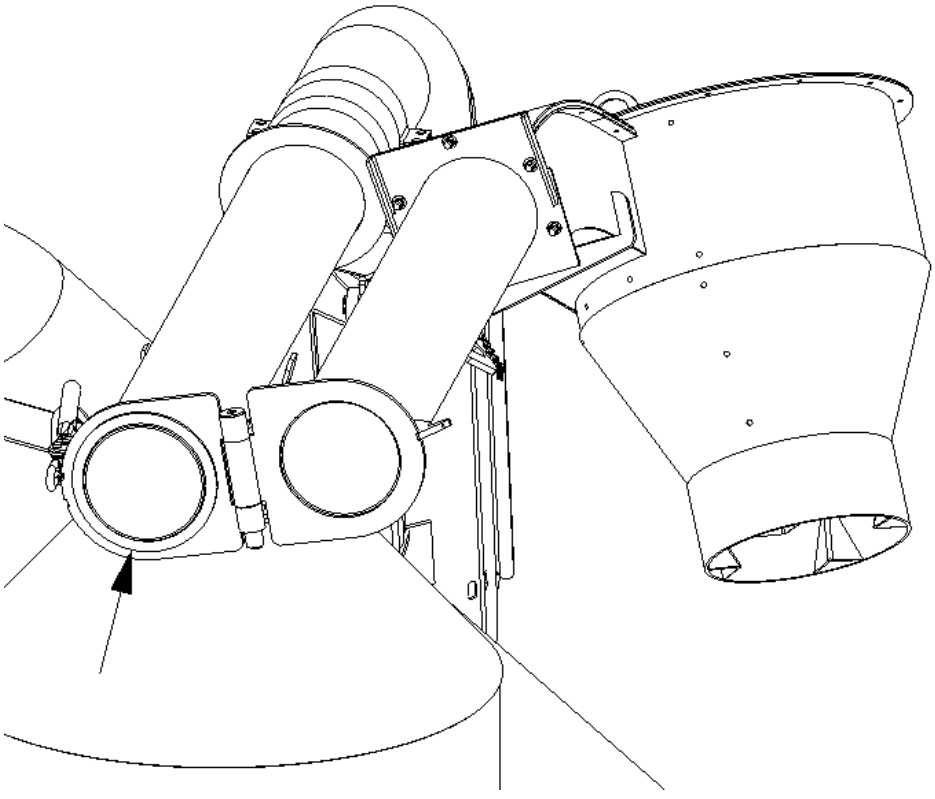


Figure 7-30: Discharge cyclone boom seal

    c. Clean or replace any worn seals as required.

4. Check the condition of the primary AMS inlet seal(s) as follows:
    a. Remove the plug(s) from the primary AMS inlet(s).
    b. Visually inspect the seal(s), looking out for any nicks, tears, abraded areas, or any excessive wear.

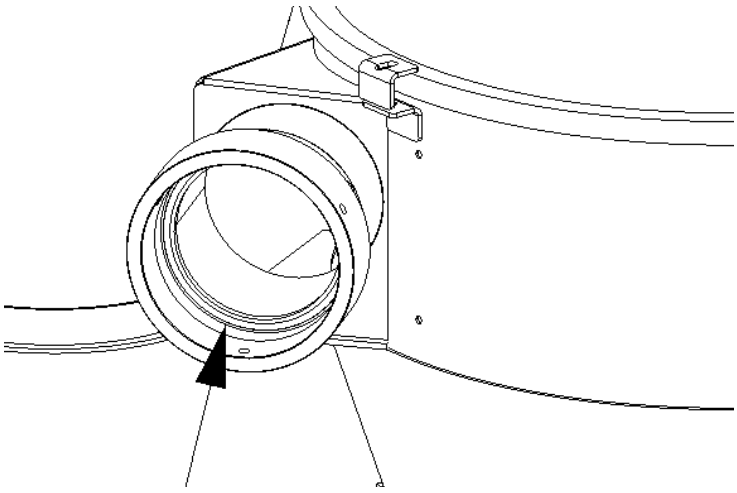


Figure 7-31: Primary AMS inlet seal

    c. Clean or replace any worn seals as required.
5. Check the condition of the primary AMS access door seals as follows:
    a. Open the primary AMS access door.
    b. Visually inspect the seals, looking for any nicks, tears, abraded areas, or any excessive wear.

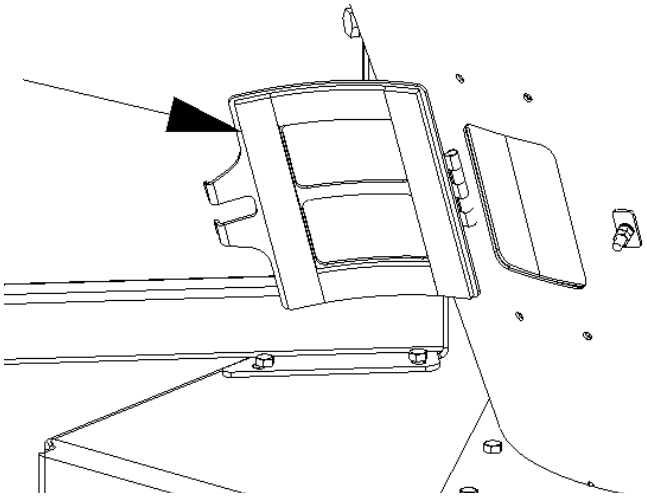


Figure 7-32: Primary AMS access door seal

    c. Clean or replace any worn seals as required.

6. Check the condition of the secondary AMS door seal as follows:
    a. Open and lower the secondary AMS door.
    b. Visually inspect the seal, looking for any nicks, tears, abraded areas, or any excessive wear.

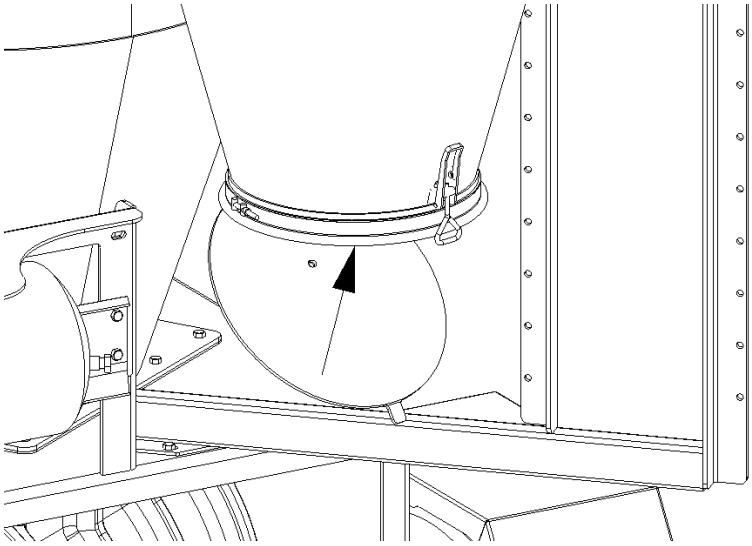


Figure 7-33: Secondary AMS door seal

    c. Clean or replace any worn seals as required.
7. Check the condition of the airlock outlet coupler as follows:
    a. Loosen the tail bolts of the DF coupler and the wingnut of the coupler on the lower boom elbow.

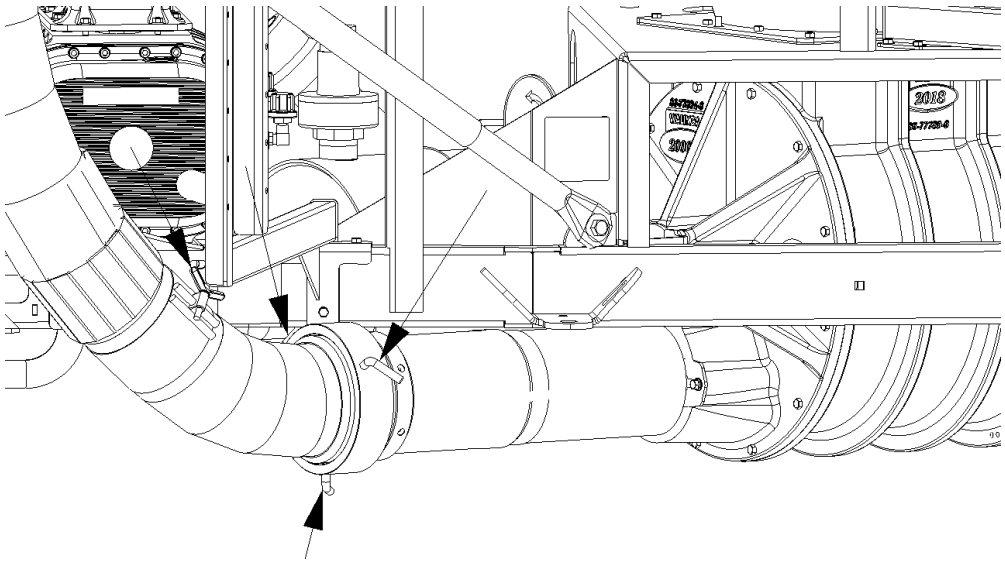


Figure 7-34: Airlock DF coupler and lower boom elbow coupler

b. Remove the lower boom elbow.

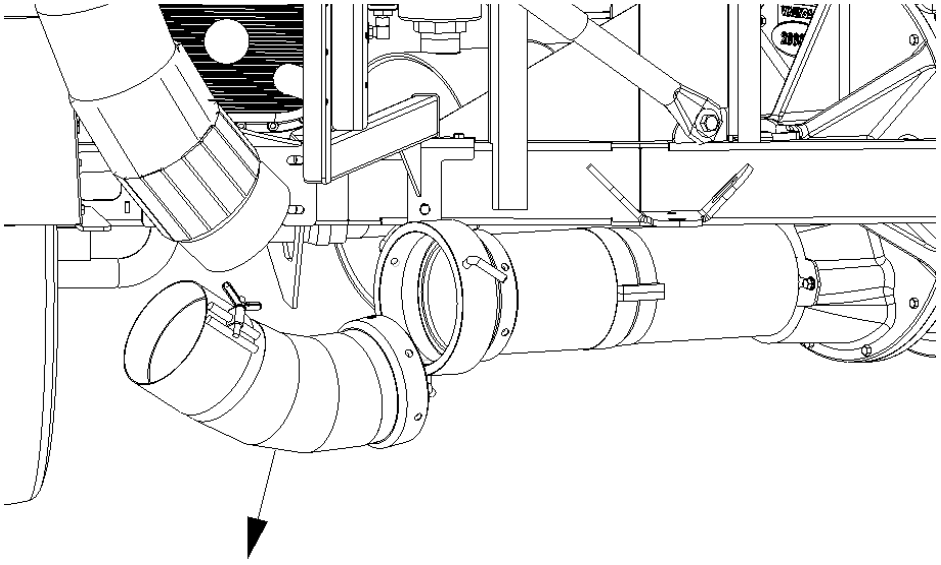


Figure 7-35: Lower boom elbow removed

c. Visually inspect the seal, looking for any nicks, tears, abraded areas, or any excessive wear.

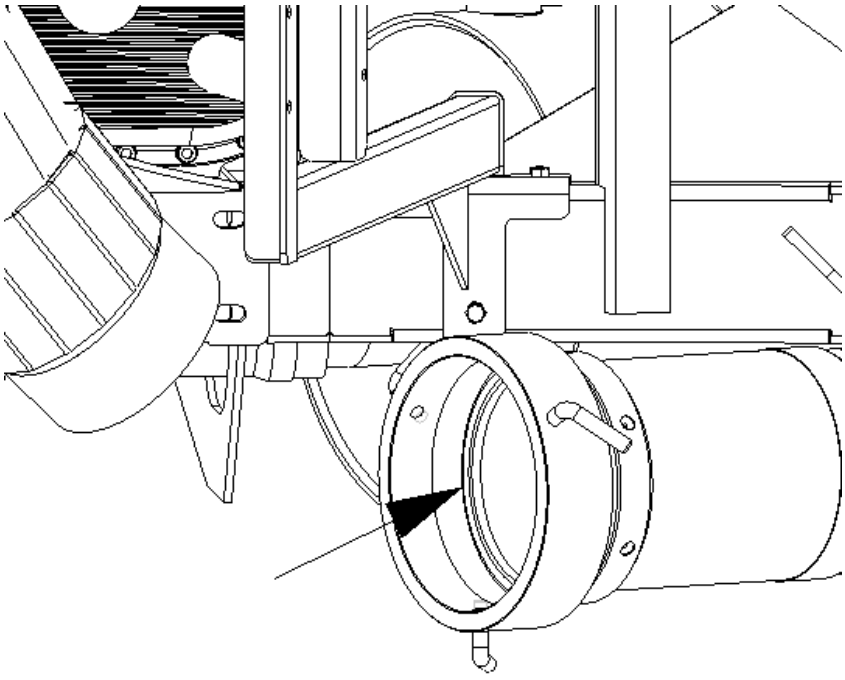


Figure 7-36: Airlock outlet coupler seal

d. Clean or replace any worn seals as required.

8. Check the condition of all female air line couplings as follows:
    a. Loosen the tail bolts to disconnect the male and female couplings.
    b. Visually inspect the seals, looking for any nicks, tears, abraded areas, or any excessive wear.

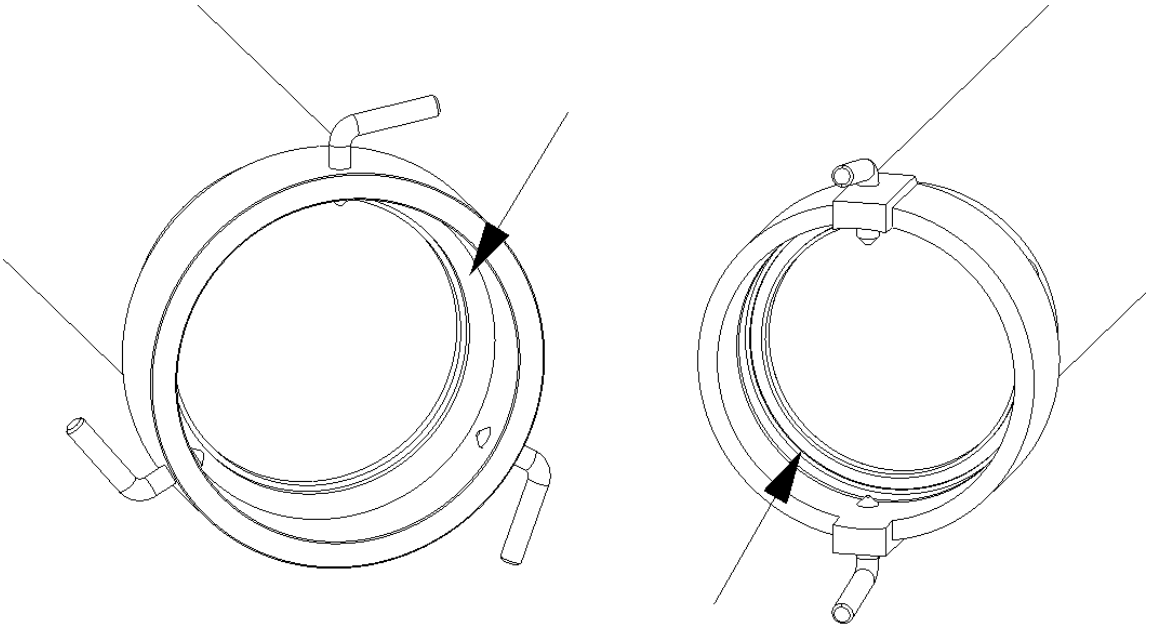


Figure 7-37: Flex hose female coupling seal

    c. Clean or replace any worn seals as required.

Resetting Airlock Blades

To maintain the seal between the vacuum and pressure sides of the system and efficient operation, the airlock requires a close fit between the tips of the rotors and the casing. Excessive clearance allows 'blow-back' of air through the airlock leading to uneven flow and reduced performance. Routine maintenance of tip clearances is especially important when conveying materials with high abrasion characteristics and may need to be performed more often if it is noted that the tips consistently exceed the maximum clearance at the recommended maintenance interval.

To maintain or replace the tips of the airlock blades, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Relieve the hydraulic pressure from the airlock motor.
4. Disconnect the hydraulic lines from the tractor to prevent the airlock from operating.
5. Check the tip clearance as follows:
    a. Open the access door on the primary AMS.
    b. Inspect the condition of each blade, looking for any that are bent, chipped, cracked, or otherwise broken. Replace any damaged blades following **Step 6**. **Note:** if only one edge of the tip is minimally damaged, it may be possible to use the other edge. Stainless steel tips may be reground to a 'true' edge; this may be repeated until there is no longer sufficient adjustment in the screw slots. Badly damaged tips **must** be replaced.
    c. Use a feeler gauge to check the clearance between the tip and casing along the blade's entire length for each tip. Measure the clearance with reference to the casing edge opposite of the wiper blade, as shown in ***Figure 7-38*** (the casing edge on the side of the wiper blade experiences greater levels of normal operational wear, meaning measurements taken in reference to this edge may result in clearances lower than the minimum allowable clearance, resulting in scraping or damage between the tip and casing). Reference ***Table 7-4*** for tip clearance requirements.
    NOTE: The wear may not be even across the entire length of the tip or casing, and therefore the clearance must be checked along the entire length. Failure to do so may result in uneven clearances and poor performance.
    d. If the clearance between the tip and the casing exceeds the maximum clearance, it must be adjusted or replaced. Refer to **Step 5** to adjust the tip.
    e. Use a feeler gauge to check the clearance between the rotor and the end plate, as shown in ***Figure 7-39***. Reference ***Table 7-4*** for clearance requirements.
    f. If the clearance between the rotor and end plate exceeds the maximum clearance, the airlock assembly must be replaced.

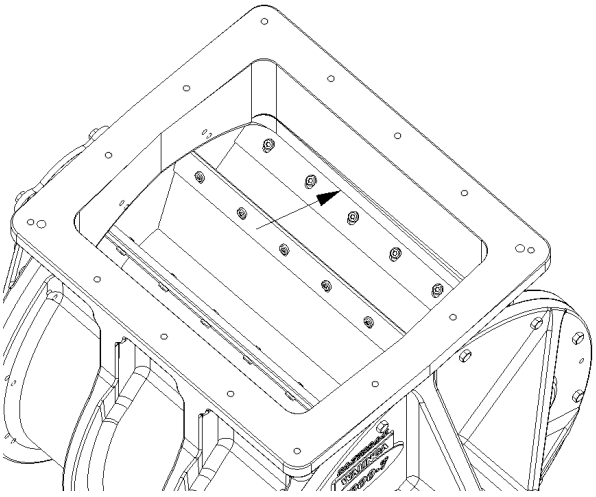


Figure 7-38: Tip and casing clearance

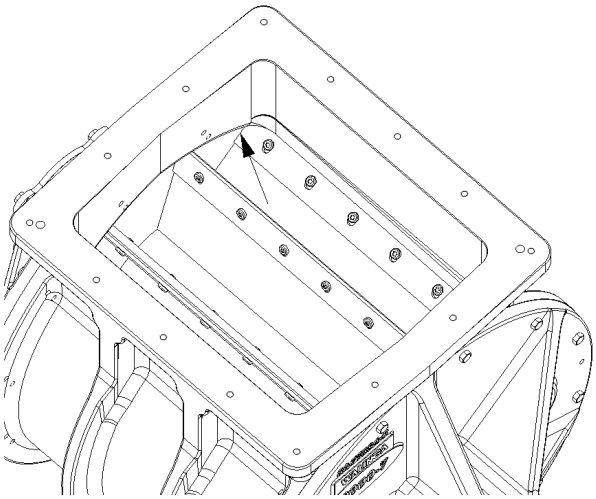


Figure 7-39: Rotor and end plate clearance

Table 7-4: Airlock clearance requirements

Airlock Model	Tip - Casing Clearance		Rotor - End Plate Clearance	
	Minimum	Maximum	Minimum	Maximum
1210 DT/BT	0.004 in (0.10 mm)	0.010 in (0.25 mm)	0.005 in (0.13 mm)	0.010 in (0.25 mm)
1314 DT/BT	0.005 in (0.13 mm)	0.010 in (0.25 mm)	0.005 in (0.13 mm)	0.011 in (0.28 mm)
1618 DT	0.004 in (0.10 mm)	0.011 in (0.28 mm)	0.007 in (0.18 mm)	0.014 in (0.36 mm)
1618 BT	0.006 in (0.15 mm)	0.012 in (0.30 mm)	0.007 in (0.18 mm)	0.014 in (0.36 mm)
2018 BT	0.008 in (0.20 mm)	0.015 in (0.38 mm)	0.007 in (0.18 mm)	0.016 in (0.41 mm)
2224 DT	0.008 in (0.20 mm)	0.016 in (0.41 mm)	0.010 in (0.25 mm)	0.020 in (0.50 mm)
2224 BT	0.009 in (0.23 mm)	0.011 in (0.28 mm)	0.007 in (0.18 mm)	0.010 in (0.25 mm)

6. To adjust the tip clearance, proceed as follows:

    a. Ensure the PTO has been shut off and the hydraulic hoses have been disconnected. Remove the quick connect plugs from the hydraulic lines.

    b. Place an identifying number on the leading side of the first blade to ensure no tips are missed during the process.

    c. Loosen the retaining screws holding the tip on the blade using a 1/4" allen key, but do not fully remove the screws.

    d. Rotate the blade until it is approximately 1 in (25 mm) inside the casing opposite to the wiper blade. **Note:** the blades are slightly angled on the shaft, so one end will be further inside the casing than the other.

    e. Place the appropriate feeler gauge based on ***Table 7-4*** between the tip and casing 4 in (10 cm) from one end of the blade tip, place a second feeler gauge of the same size 4 in (10 cm) from the other end of the blade.

    f. Gently lever the tip upwards until it contacts the feeler gauges.

    g. Tighten the tip screws starting with the center screw and moving outwards, alternating sides from the center until all screws have been tightened.

    h. Insert the appropriate feeler gauge with reference to ***Table 7-4*** between the tip and the end plates, as seen in ***Figure 7-39***, to ensure the proper clearances are maintained.

    i. Rotate the airlock counter-clockwise, as viewed from the driven end, for one full revolution. Listen for any binding noise between the tip and casing, a light grinding noise is normal and will disappear as the tips seat fully during the first few hours of normal operation.

    j. Repeat **Step 5b** through **Step 5h** for each blade until all tips have been adjusted. Check the identifying numbers marked in **Step 5b** to ensure each tip has been adjusted.

    k. Check the overlap of the wiper blade. Each tip should contact the wiper blade approximately 1/16 in (1.5 mm). If the wiper blade is excessively worn or damaged, refer to the section *Airlock Wiper Blade* for replacement instructions.

7. To replace a tip that has been damaged, or has insufficient adjustment left in the screw slots, proceed as follows:

    a. Ensure the PTO has been shut off and the hydraulic hoses have been disconnected. Remove the quick connect plugs from the hydraulic lines.

    b. Remove the bolts securing the base of the primary AMS and lift it off of the airlock for better access.

    c. Remove the wiper blade from the airlock.

    d. Loosen and remove the tip retaining screws using the 1/4" allen key and remove the tip from the casing, the bottom port of Blow-Thru (BT) units are a convenient removal point.

    e. Check the condition of the replacement tips. Ensure that none are bent and that all four edges are 'true' and undamaged.

    f. Insert the new or reversed tip and measure the clearance between the tip and the end plates. File to grind the ends of the tip to meet the minimum clearance requirements outlined in **Table 7-4**. Ensure the tip is not longer than the blade.

    g. Secure the tips loosely to the rotor blade with the appropriate hardware and tip retaining screws.

    h. Follow **Step 5b** through **Step 5i** to set the correct tip and casing clearance.

    i. Repeat **Step 6c** through **Step 6g** for each blade. Ensure each blade has a tip installed.

    j. Refer to the section *Airlock Wiper Blade* for replacement instructions for the wiper blade. After installation, each tip should contact the wiper blade approximately 1/16 in (1.5 mm).

    k. Install and secure the primary AMS with all previously removed hardware.

    l. Connect the hydraulic lines and close the access door on the primary AMS.

    m. Run the airlock at operating speed, listening for any signs of binding or excessive grinding, a light grinding noise is normal and will disappear as the tips seat fully during the first few hours of normal operation.

    n. Clean thoroughly before conveying any product.

Lubrication of Splined Input Shaft and Bearings

For efficient transmission of rotational power from the PTO to the belt drive, the spline input shaft and bearings must be properly lubricated.

To lubricate these two locations, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Unhook the PTO driveline from the tractor shaft or power source. This will allow for rotation of the splined shaft if required.
4. Remove the bolts securing the belt guard and remove the belt guard. Place the belt guard to the side in an area where it will not obstruct access to the bearings.
5. Wipe the grease fittings with a clean cloth before greasing to avoid injecting dirt and grit.
6. Check the fittings for any damage. Repair or replace any broken fittings immediately.
7. Lubricate the splined input shaft and bearings in the two locations shown in ***Figure 7-40***.

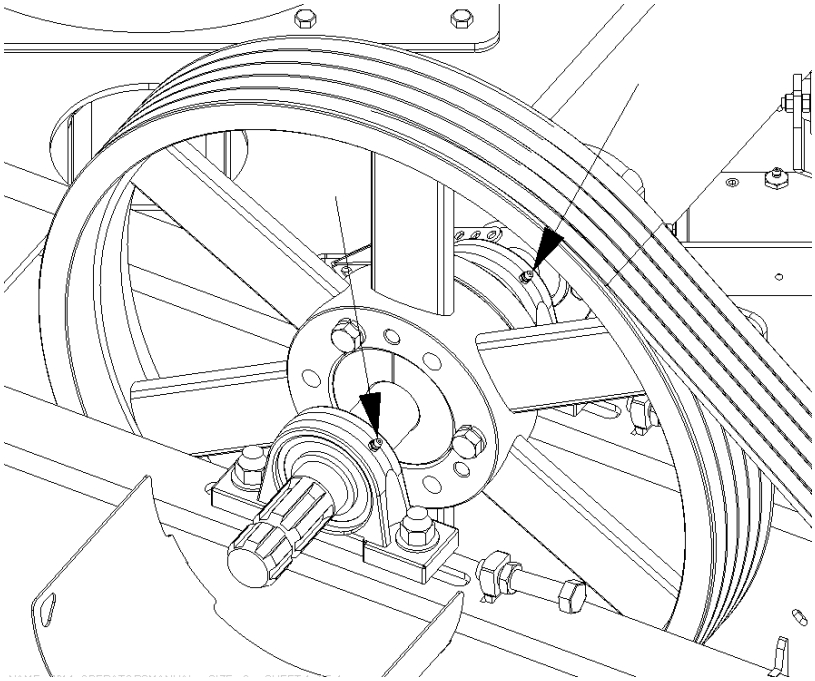


Figure 7-40: Splined input shaft and bearing lubrication locations

8. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.
9. Install and secure the belt guard and bolts. Ensure all guards are installed and secure before resuming work.

Lubrication of Blower Outboard Bearing

For smooth transmission of power from the belt drive to the blower, the outboard bearings must be properly lubricated.

To lubricate the blower outboard bearings, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Unhook the PTO driveline from the tractor shaft or power source.
4. Remove the bolts securing the belt guard and remove the belt guard. Place the belt guard to the side in an area where it will not obstruct access to bearings.
5. Remove the bolts securing the blower drive shaft guard and remove the guard. Place the guard to the side in an area where it will not obstruct access to the bearings.
6. Wipe the grease fittings with a clean cloth before greasing to avoid injecting dirt and grit.
7. Check the fittings for any damage. Repair or replace any broken fittings immediately.
8. Lubricate the lower outboard bearings in the two locations shown in ***Figure 7-41***.

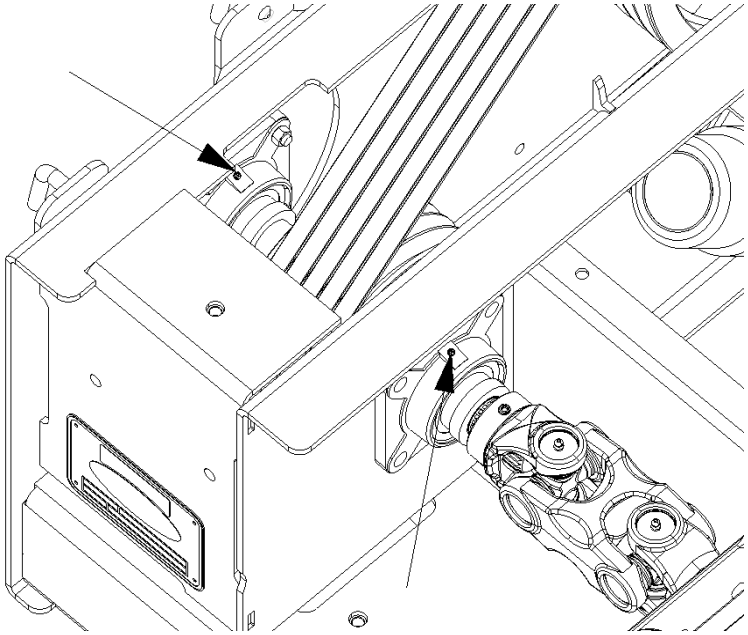


Figure 7-41: Blower outboard bearing lubrication locations

9. If the fitting will not take grease, remove and clean thoroughly. Clean the lubricant passageway. Replace the fitting if necessary.
10. Install and secure the belt guard and blower drive shaft guard and all bolts. Ensure all guards are installed and secure before resuming work.

Replacement of Shear Pin

Each PTO driveline is equipped with a shear pin on the machine end of the driveline. It serves to protect the Agri-Vac from overloading. In the event of a shear pin failure, it must be replaced.

To replace the shear pin, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Remove any remaining pin parts from the yoke assembly. It may be necessary to use a hammer and punch to remove the old parts. Be careful to not enlarge the hole during this process.
4. Identify the correct shear pin size for your Agri-Vac with reference to ***Table 7-5***. If you are unable to determine the correct size for your Agri-Vac, contact Walinga's Engineering Department.
5. Shear pins can be replaced with a standard shear bolt with UNC thread of the required size.

Table 7-5: Shear pin requirements

Model		PTO Shaft		Shear Bolt	
Size	**Application**	**Part Number**	**Description**	**Size**	**Rating**
5614	Standard	45-61423-6	1.375", 21 Spline x 1.375", 6 Spline 35E	5/16-18 x 2.00 Grade 5	15 400 lbf-in (1740 Nm)
	European	45-16256-6	1.375", 6 Spline x 1.375", 6 Spline 35E	1/4-20 x 1.00 Grade 8	13 200 lbf-in (1491 Nm)
6614	Standard	45-61428-6	1.375", 21 Spline x 1.750", 6 Spline 55E	7/16-14 x 2.00 Grade 5	30 100 lbf-in (3400 Nm)
7614	Standard	45-61428-6	1.375", 21 Spline x 1.750", 6 Spline 55E	7/16-14 x 2.00 Grade 5	30 100 lbf-in (3400 Nm)
	>200 HP	45-19818-6	1.750", 20 Spline x 1.750", 6 Spline 55E	7/16-14 x 2.00 Grade 5	30 100 lbf-in (3400 Nm)
7816	Standard	45-19818-6	1.75", 20 Spline x 1.75", 6 Spline 55E	7/16-14 x 2.00 Grade 5	30 100 lbf-in (3400 Nm)

MAINTENANCE MATERIALS

Grease

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) characteristics. An SAE multi-purpose lithium-based grease is also acceptable.

Blower Oil

Use Walinga super duty blower oil, part number 98-13813-6. Refer to ***Table 7-6*** for blower oil capacities.

Table 7-6: Blower oil capacity

	5614	6614	7614	7816
Front (Drive)	1.36 L	1.36 L	1.36 L	3.92 L
Rear (Idle)	2.14 L	2.14 L	2.14 L	3.98 L
Total	3.5 L	3.5 L	3.5 L	7.9 L

Hydraulic Oil

Use a heavy duty, all season hydraulic fluid, part number 98-17740-6 (HYDREX XV).

Lubricant Storage

An Agri-Vac can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store lubricants in an area protected from dust, moisture and other contaminants.

ADJUSTMENTS

Blow Only Operation

A standard Agri-Vac unit operates as a 'suck/blow' unit, drawing air and grain into the primary AMS under vacuum and discharging the material under pressure. However, some units may be used in blow-only operation by having material drop directly into an intake hopper positioned above the airlock. To adjust a unit to blow-only operation, the top section of the primary AMS must be removed on units with a removable top section, or have a purpose-built intake hopper installed, as well as fitting an airlock intake guard and attaching a muffler to the blower intake.

Warning: Standard Agri-Vac units are not supplied with blow-only kits. Standard machines must not be used in blow-only operation unless additional operational and safety hardware is installed. It is the responsibility of the owner/operator to ensure that all moving parts and air inlets are adequately guarded if standard machines are used in blow-only operation. The blades of the rotating airlock are dangerous and **MUST** be properly guarded at all times during operation. Do **NOT** operate the machine without all guards in place.

To adjust a unit for blow-only operation, proceed as follows:

1. For units with a removable top section on the primary AMS, remove the bolts securing the split tank clamps and remove the top section of the primary AMS. Leave the lower section of the tank to function as an intake hopper.

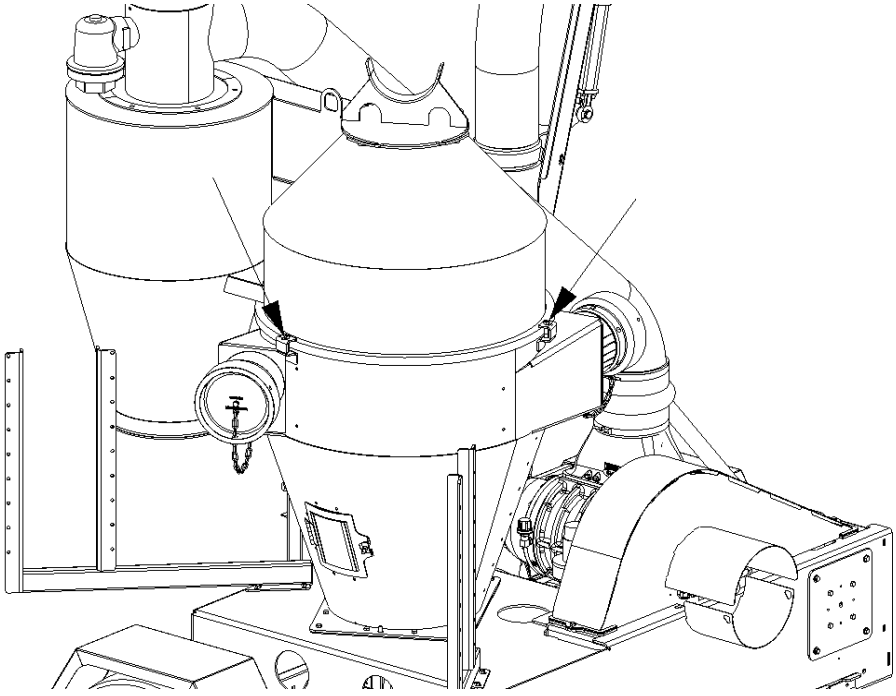


Figure 7-42: Primary AMS clamp bolts

2. For units with a one-piece primary AMS, remove the primary AMS and fit an intake hopper above the airlock.

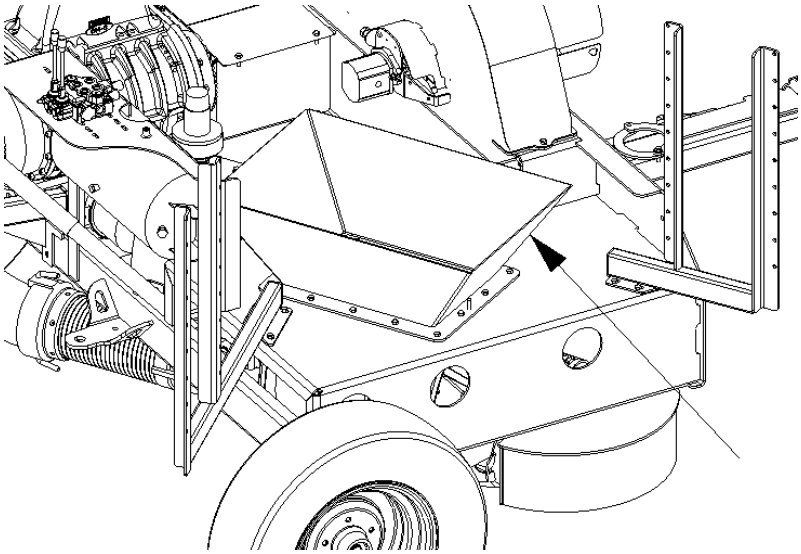


Figure 7-43: Airlock intake hopper

3. Fit a mesh or slotted guard over the product entry area of the airlock. The guard must be capable of supporting a minimum load of 270 lbs (123 kg) without permanent deformation with opening sizes in compliance with local or international guarding standards.

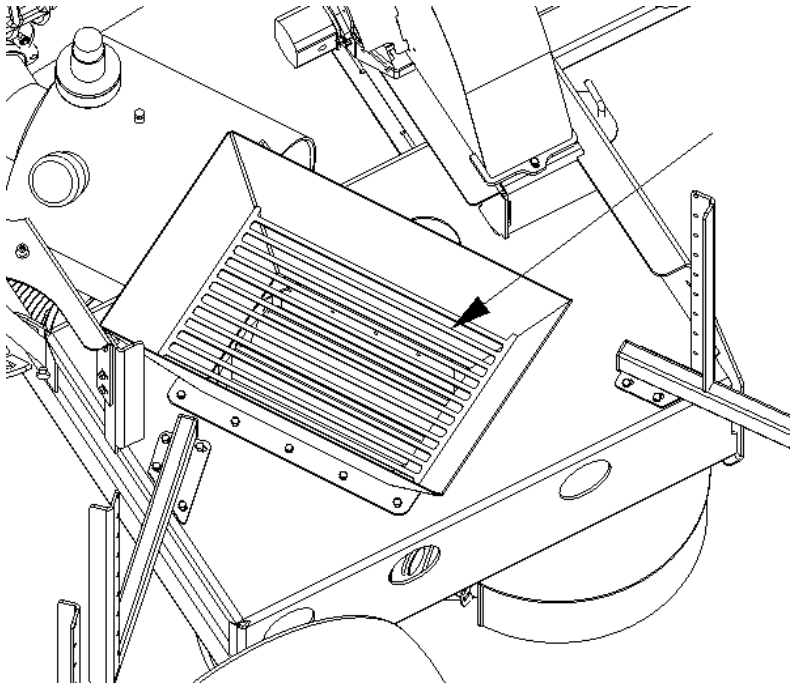


Figure 7-44: Airlock intake hopper guard

4. Remove the casted blower intake assembly and attach an inlet screen or muffler. This must be done to reduce blower noise and shield the rotating lobes of the blower.

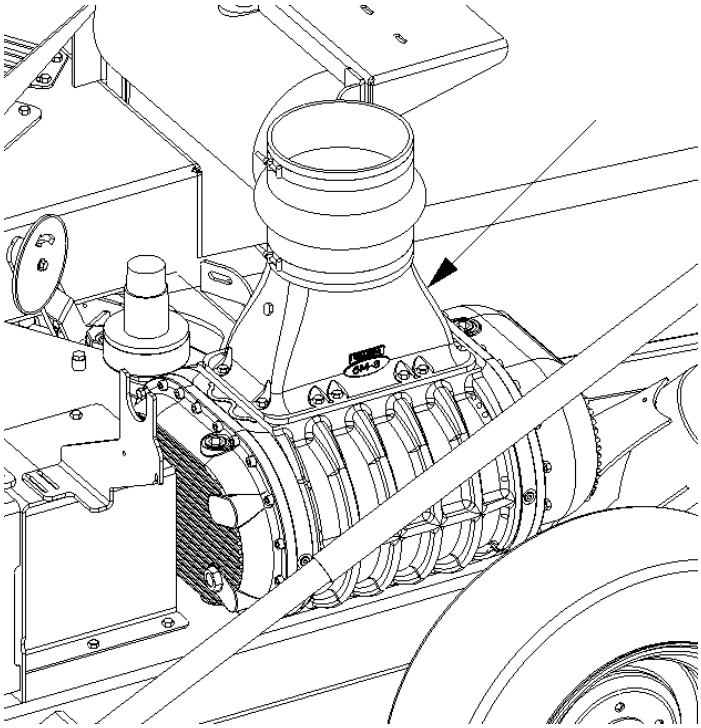


Figure 7-45: Casted blower intake assembly

5. During operation, ensure there is a continuous flow of product into the intake hopper.
6. Gradually adjust the airlock speed to find the ideal balance between air and product for maximum capacity. Ensure the discharge air pressure does not exceed 10 psi (70 kPa). For set-ups with discharge lines greater than 100 ft (30 m), the pressure will need to be reduced further to prevent blower overloading.
7. Some pressurized air will 'blow-back' through the airlock. This may cause bridging in the primary AMS/intake hopper above the airlock. If the bridging disrupts the flow of product, either reduce the depth of product in the primary AMS/intake hopper or install a vent pipe to release the air trapped in the rotor pockets.

Changing Intake Nozzles

The Agri-Vac can be equipped with several different intake nozzles to best suit the required function. During normal operation, the standard straight nozzle should be used in combination with the steel flex hose intake line. However, for easier clean up, the straight nozzle can be exchanged for a clean-up nozzle in addition to a rubber intake hose for decreased weight and increased ease of movement. The straight nozzle should only be replaced with the clean-up nozzle when there is less than 12 in (30 cm) of grain left in the bin.

To change the intake nozzle, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Loosen the tailbolts of the DF coupler connected to the straight nozzle at the end of the steel flex hose intake line.

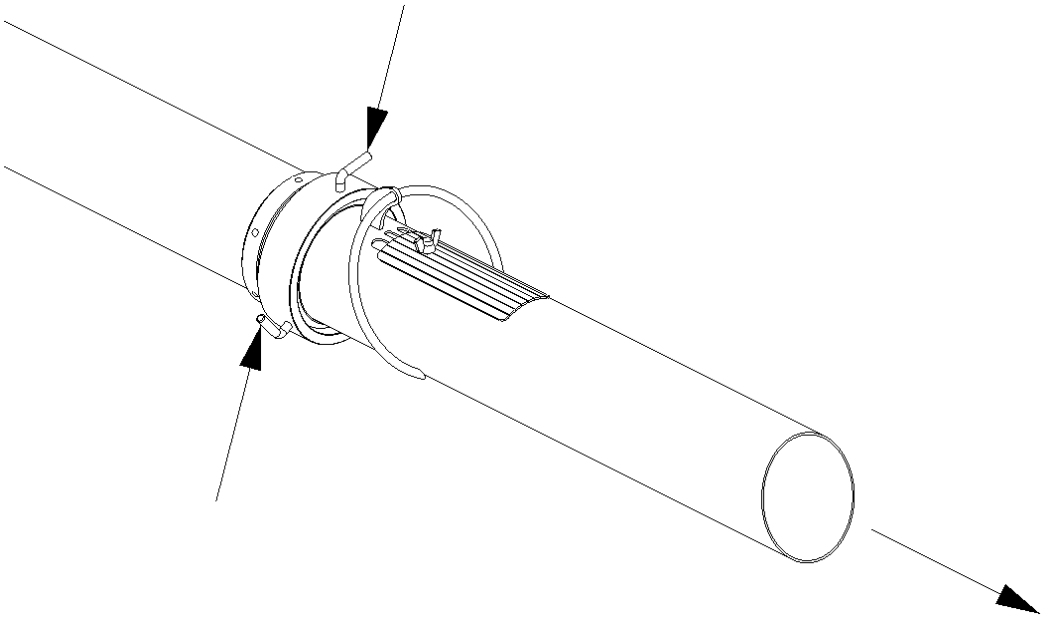


Figure 7-46: Steel flex hose with straight nozzle

4. Remove the straight nozzle.

5. Connect the DM coupler of the rubber intake hose to the DF coupler of the steel flex hose intake line and tighten the tail bolts to secure.

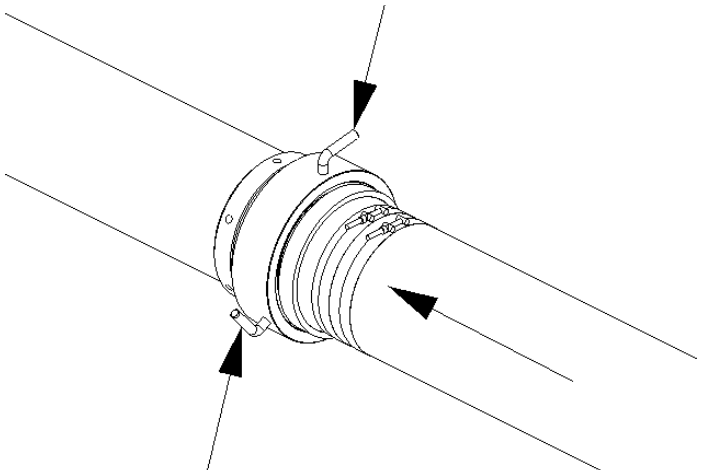


Figure 7-47: Rubber intake hose connection

6. Insert the DM coupler end of the clean-up sweep nozzle into the DF coupler at the end of the rubber intake hose and tighten the tail bolts to secure.

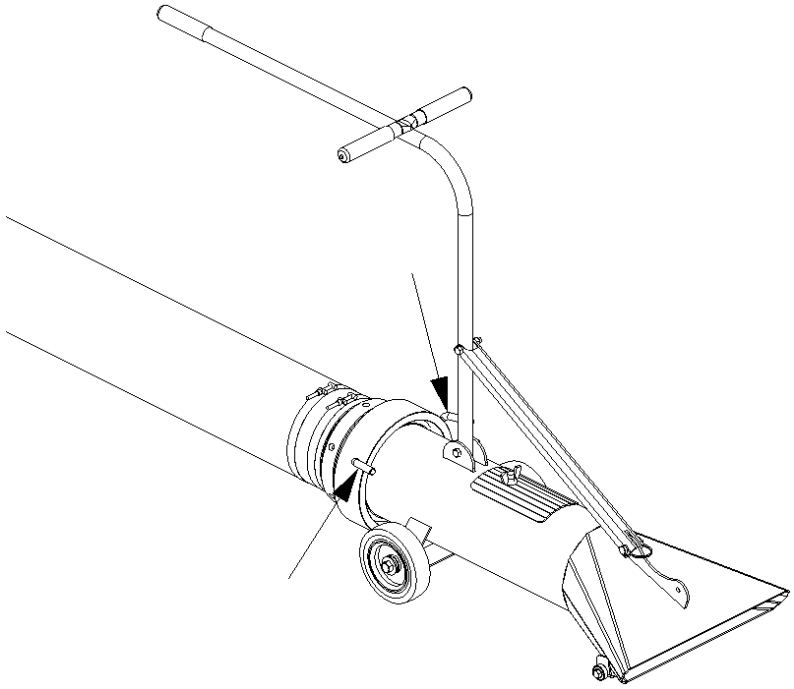


Figure 7-48: Clean-up nozzle connection

7. Follow the standard operating procedures to convey the remaining grain using the clean-up nozzle.

Bin Loading

In addition to using the discharge boom for unloading, the Agri-Vac is also capable of loading directly into bins equipped with a discharge cyclone.

To load a bin, proceed as follows:

1. Clear the area of bystanders, especially small children.
2. Place all controls in neutral, stop the engine/power source, remove the ignition key and wait for all moving parts to stop.
3. Loosen the tailbolts of the DF coupler located at the outlet of the airlock and loosen the wingnut of the coupler.

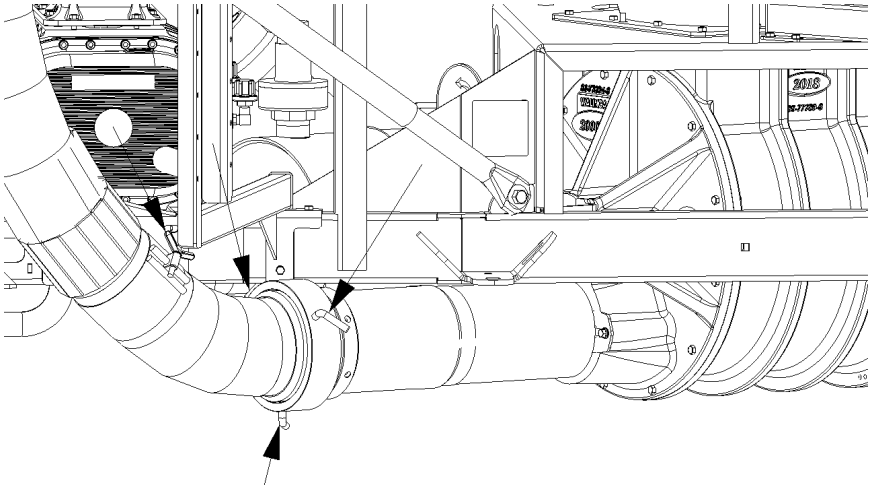


Figure 7-49: Airlock DF coupler and wingnut coupler

4. Remove the lower boom elbow.

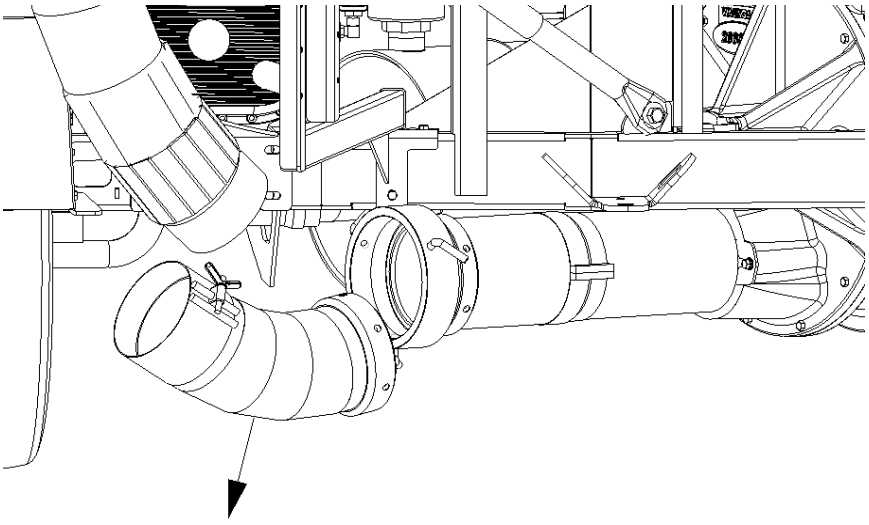


Figure 7-50: Lower boom elbow removed

5. Attach the discharge hose to the airlock DF coupler and the DF coupler at the base of the bin piping system. Ensure the hose remains as straight as possible for maximum capacity, adjust the position of the Agri-Vac if needed to straighten the hose.

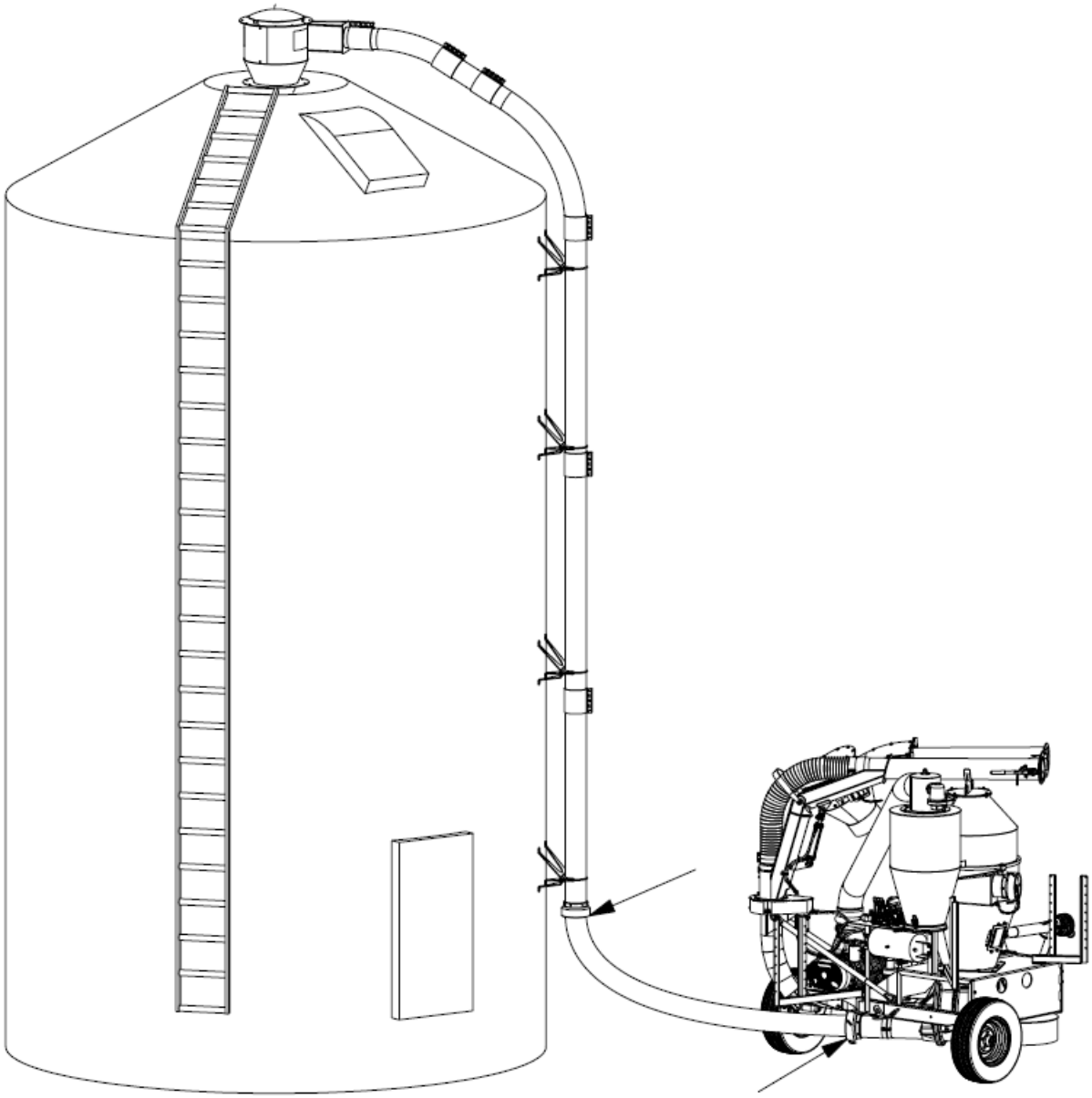


Figure 7-51: Agri-Vac bin loading connection

6. Secure the discharge hose and tighten the tail bolts on the DF coupler at the outlet of the airlock and on the DF coupler at the base of the bin piping system.
7. Follow the standard operating procedures. Monitor the machine to ensure the airlock and blower do not become overloaded.

8. Upon completion of the bin loading, the lower boom elbow must be reinstalled to use the discharge boom again. During bin loading, the flex hose connected directly to the airlock outlet coupler can result in a slight stretching of the joints, resulting in potential difficulty in reinstalling the lower boom elbow. To correct the position of the airlock outlet coupler, it may be necessary to place a planar surface against the coupling and tap the coupling back to its original position to allow the lower boom elbow to be properly installed.

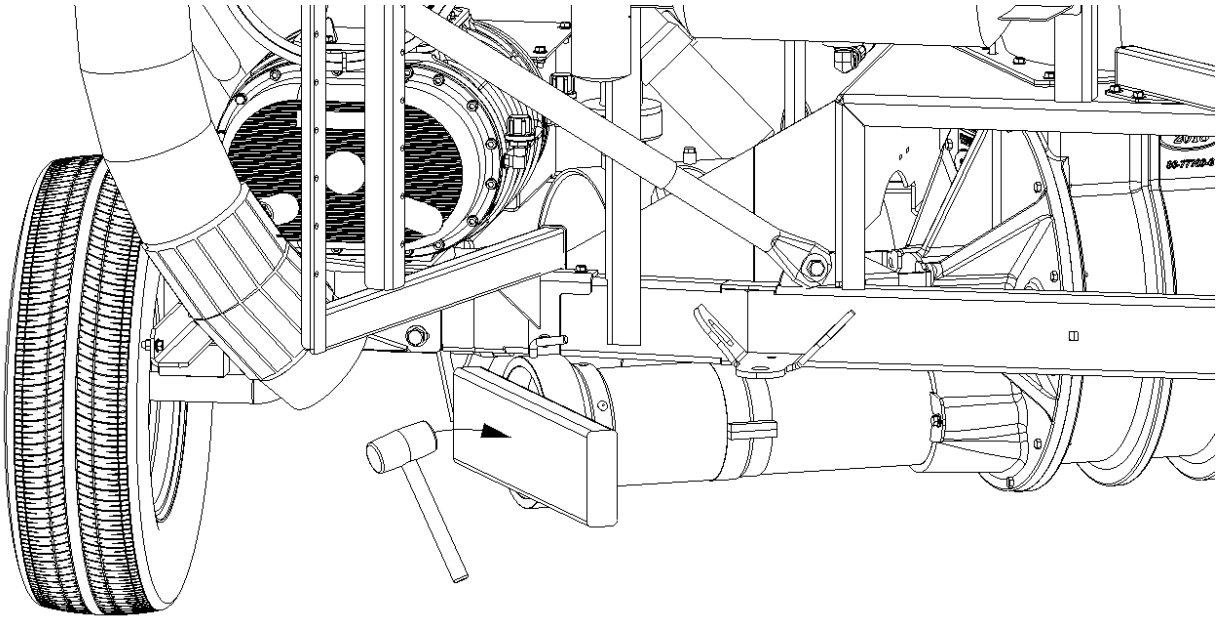


Figure 7-52: Airlock outlet coupling readjustment

PAGE INTENTIONALLY LEFT BLANK

WALINGA® INC.

Specifications

AGRI-VAC 7614 MODEL

TECHNICAL DATA

		7614
Height (Transport Position)		96" (2.44 m)
Minimum Discharge Height		13' - 8" (4.16 m)
Length (Transport Position)		107" (2.72 m)
Width		92" (2.34 m)
Weight		3102 lbs (1410 kg)
Line Size		6" & 7" (15 cm & 18 cm)
Capacity*	Corn & Barley	5500 Bu/h (148 tonnes/h)
	Wheat	5000 Bu/h (134 tonnes/h)
	Beans	4800 Bu/h (129 tonnes/h)
Maximum Towing Speed	Weight ratio of fully equipped Agri-Vac to towing machine	
	< 1 to 1	20 mph (32 km/h)
	< 2 to 1	10 mph (16 km/h)
	> 2 to 1	Do not tow
Horsepower		140-180 hp (104-134 kW)
PTO Speed		1000 rpm
PTO Shaft	Standard	1.375" (3.5 cm), 21 Spline x 1.750" (4.4 cm), 6 Spline 55E
	>180 hp	1.750" (4.4 cm), 20 Spline x 1.750" (4.4 cm), 6 Spline 55E
Drawbar Pin to Shaft		16" (40 cm)
Maximum Vacuum Pressure		16" Hg (54 kPa)
Maximum Air Pressure		15 psi (103 kPa)
Hydraulic System		Self-contained
Hydraulic Flow Rate		3.8 gpm (14.4 lpm)

Hydraulic Pressure		1500 psi (10 300 kPa)
Hydraulic Oil Capacity		24 L
Hydraulic Oil Type		HYDREX XV
Blower		#614 Walinga Super Chrome, positive displacement blower
Blower Oil Capacity	Front (Drive)	1 L
	Rear (Idle)	2 L
Blower Oil Type		Walinga Super Duty Blower Oil (98-13813-6)
Airlock		#2018 cast iron shell, precision machined housing, 10 vane rotor stainless steel tips, hydraulically driven, reversible rotation
Maximum Airlock Speed		25-40 rpm
Airlock Tip Clearance		0.006" (0.15 mm)
Drive		Tongue mounted drive shaft with V-type groove sheaves and belts
Belt Tension		9.88 lbs (4.48 kg)
Belt Deflection		0.37" (9.40 mm)
Primary AMS		32" dia. (81 cm) one piece, dual inlets
Secondary AMS		24" dia. (61 cm)
Tires		Two standard farm implement
Tire Size		15" (38 cm), 5 stud
Tire Pressure		50 psi (344 kPa)

*Capacities based on using 12ft (3.65m) suction line and truck loading kit. Capacity will vary with product condition.

BOLT TORQUES

The torque values for imperial and metric bolts and cap screws are given below in ***Table 8-1*** and ***Table 8-2*** respectively. Unless otherwise noted, tighten all bolts to the torques specified in the tables below. Check the tightness of bolts periodically. Replace any damaged or lost hardware with the same strength bolt.

Torque values indicated in the following tables are valid for non-greased or non-oiled threads and heads. Unless otherwise specified, do not grease or oil bolts or cap screws. When using locking elements, increase the listed torque values by 5%. Reference ***Figure 8-1*** and ***Figure 8-2*** for proper identification of grades.

Table 8-1: Imperial torque specifications

Bolt Diameter "A" [in]	Bolt Torque					
	SAE 2		SAE 5		SAE 8	
	[Nm]	[lb-ft]	[Nm]	[lb-ft]	[Nm]	[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

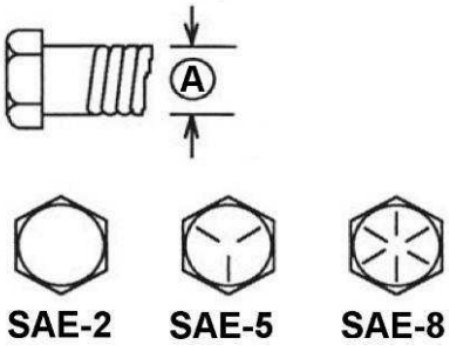


Figure 8-1: Imperial bolts

Table 8-2: Metric torque specifications

Bolt Diameter "A"	Bolt Torque			
	8.8		10.9	
	[Nm]	[lb-ft]	[Nm]	[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

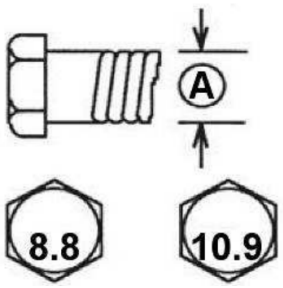


Figure 8-2: Metric bolts

STANDARDS AND REGULATIONS

Walinga follows the general safety standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA) with consideration of standards outlined by the National Fire Prevention Agency (NFPA), International Organization for Standardization (ISO), Occupational Health and Safety Standards (OH&S), and American National Standards Institute (ANSI). Be aware that there may be additional local or federal laws and regulations that require compliance based on operational location that are the responsibility of the owner and/or operator. For your convenience, the standards referenced in this manual and pertinent to Agri-Vacs are listed below.

ANSI/ASAE S279.17 July 2013	Lighting and Marking of Agricultural Equipment on Highways
ANSI S276.7.7.2.3	Slow Moving Vehicle Identification Emblem
NFPA 652	Standard on the Fundamentals of Combustible Dust
ISO 4254-1	Agricultural Machinery - Safety - Part 1: General Requirements
OSHA 1910.272	Grain Handling Facilities

WALINGA® INC.

Warranty

PNEUMATIC CONVEYING SYSTEMS

Walinga Inc. is committed to providing a quality product that will meet or exceed expectations for many years to come. The warranty terms and warranty claim process have 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 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 AND EXCLUSIONS OF 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 a 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 any difficulties with a unit within its warranty period be encountered, please contact a local Walinga dealer or sales representative, the local Walinga Service Department or Walinga's Warranty Department to submit a warranty claim application. To speak with a Walinga Warranty Coordinator, contact:

Canada and International	1-888-WALINGA (ext 273) +1-519-824-8520 (ext 273) warranty.canada@walinga.com
USA	1-800-466-1197 (ext 8) warranty.usa@walinga.com
Australia	07-4634-7344 mail@customvac.com.au

REQUIRED WARRANTY CLAIM INFORMATION

The following information must be provided to Walinga for proper consideration and processing of a warranty application:

- Customer name and contact information, including email if available
- The equipment serial number and/or Vehicle Identification Number (VIN), 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 thirty (30) days of being received by the buyer. It will be within the sole and unfettered discretion of Walinga as to whether it will honor its warranty on non-registered equipment.
- The buyer is responsible for promptly notifying Walinga of any defect to the equipment and making the equipment available to Walinga or its authorized facility for evaluation or 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 labor time must be approved by Walinga prior to undertaking any work. Labour hours will be reimbursed at the facility's posted hourly labor 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 thirty (30) days to ensure timely processing of the 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 to be sold "as is, where is" without the Walinga Warranty. Where such equipment is refurbished, the Walinga Warranty shall apply.

WARRANTY CLAIM REJECTION

Without limitation, Walinga reserves the right to reject a warranty claim 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.
- 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.

NOT COVERED UNDER WARRANTY

Without limitation, the Walinga 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 of any equipment or component parts thereof.

The selling dealer/salesperson 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 the Walinga equipment was purchased. 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.

WALINGA® INC.

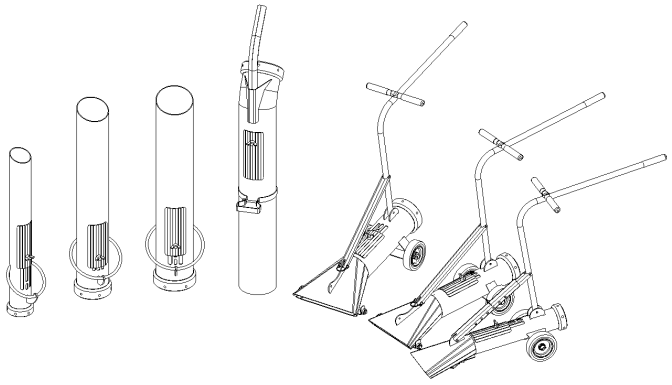
Accessories and Attachments

PTO AGRI-VAC MODELS

A wide variety of accessories are available for your Agri-Vac model to improve your operational experience. Below are some of the available accessories and a general description of their function. Please contact your Walinga dealer or representative for accessories compatible with your specific Agri-Vac, availability and ordering, or if you have any questions.

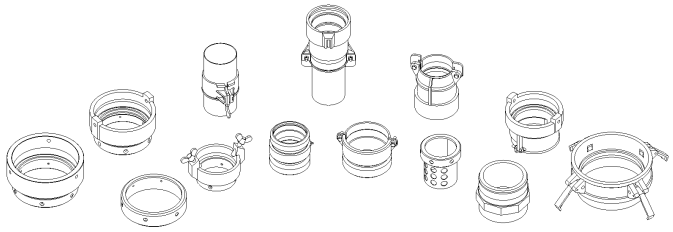
NOZZLES

To improve the ease of material intake, nozzles of varying diameter are available as well as angled nozzles and sweep nozzles for clean-up applications.



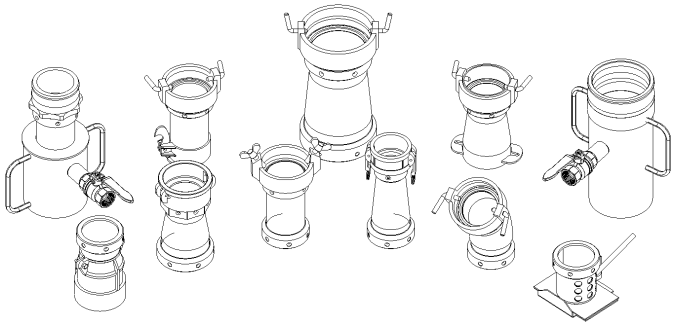
COUPLERS

To accommodate the different coupling styles of various industries and applications, a range of couplers are available in different styles and sizes.



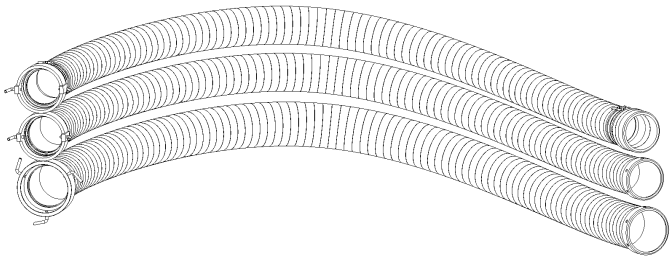
ADAPTERS AND REDUCERS

To accommodate the different coupling styles that are used in varying industries as well as the couplings of different hoses, lines and nozzles, various adapters and reducers are available for easy connection in varying styles and sizes.



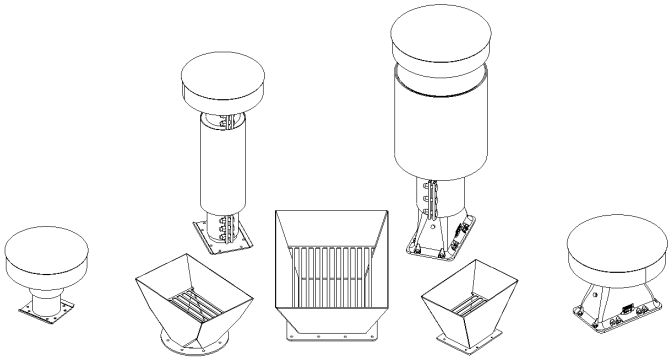
HOSES AND LINES

To improve intake and discharge capacities, as well as ease of movement during clean-up applications, steel flex hoses and rubber intake lines of various lengths and diameters are available.



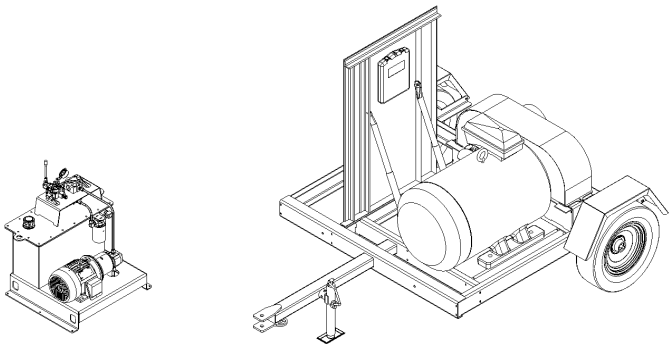
BLOW-ONLY OPERATION ACCESSORIES

For blow-only applications, intake hoppers matched to each airlock model are available as well as blower inlet assemblies for each blower model with and without mufflers.



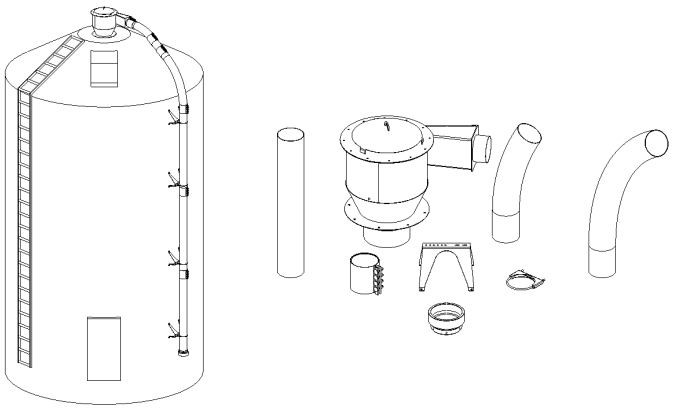
POWER PACK

A power pack is available and can be used to run the Agri-Vac in place of a standard agricultural tractor. The power pack can be equipped with an electric motor and belt drive to power the PTO of the Agri-Vac or a self-contained hydraulic system to power a tractor-driven hydraulic system Agri-Vac.



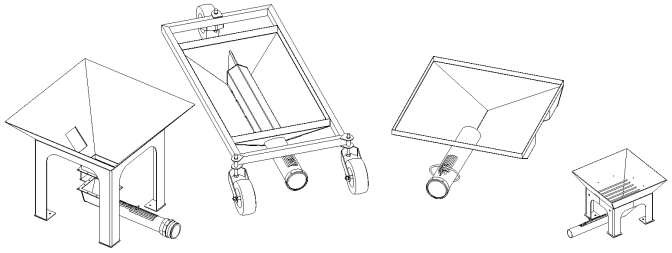
BIN LOADING SYSTEMS

Walinga offers all of the required components to allow for the Agri-Vac to discharge directly into a grain storage bin, with systems of varying sizes for unique applications. Components include weather proof discharge cyclones, large radius 30° and 60° elbows, compression clamps, bin stand-off brackets, saddle clamps, aluminum piping and couplers.



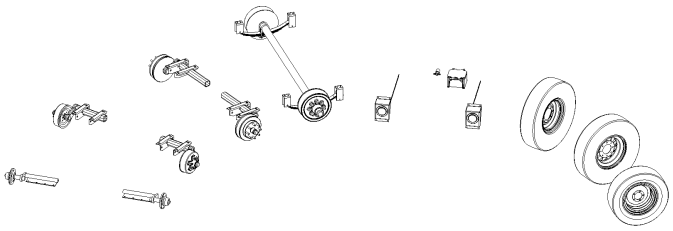
HOPPER INTAKE

For applications where an alternate intake method is required, there are several different styles of hoppers available.



HIGHWAY PACKAGE

The standard Agri-Vac is a slow moving implement. However, with the installation of a highway package including a properly rated suspension system, tires, and lighting system, the Agri-Vac can be transported at higher speeds.



WALINGA® INC.

Parts List

AGRI-VAC 7614 MODEL

MODEL REFERENCES

Table 11-1: Model feature naming codes

Feature	Short-Form	Meaning
Dual Inlets	DI	Unit is equipped with dual inlets on the primary AMS
Deluxe	DLX	Unit is equipped with dual inlets on the primary AMS, a secondary AMS, and SCH
Electric	E	Unit is equipped with an electric motor
Full Rhino Liner	FRL	Unit has Rhino liner in cyclone bodies, cyclone cone, and boom
Hydraulic Boom Rotation	HBR	Unit is equipped with with a hydraulic motor to rotate the boom
Heavy Duty	HD	Unit is equipped with the 2018 airlock
Pre-Cleaner	PC	Unit is equipped with a secondary AMS
Self-Contained Hydraulics	SCH	Unit is equipped with a hydraulic pump and reservoir
Standard	STD	Unit is the base model

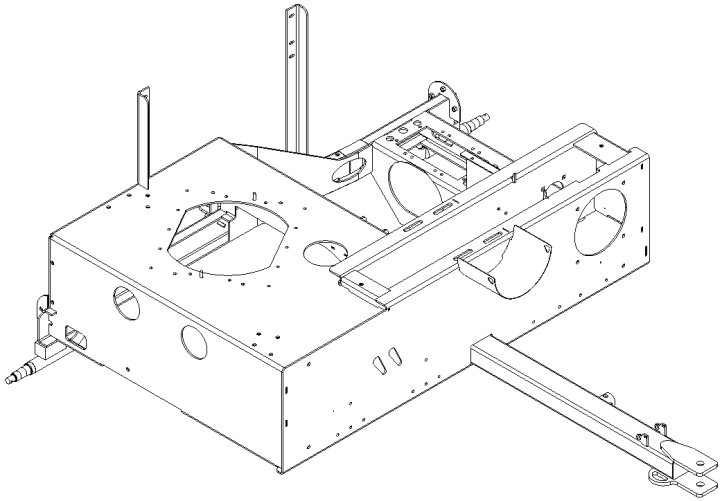
Table 11-2: Top-level model assemblies

Reference Code	Assembly Number	Features							
		STD	DLX	HD	HBR	SCH	DI	PC	FRL
A	11-122461-5	X		X	X	X			
B	11-104926-5			X	X		X	X	
C	11-142896-5		X	X	X	X	X	X	X

NOTE: Please be aware that the part numbers listed are for the unpainted version of the parts. Please specify if you require the parts/assemblies to be painted.

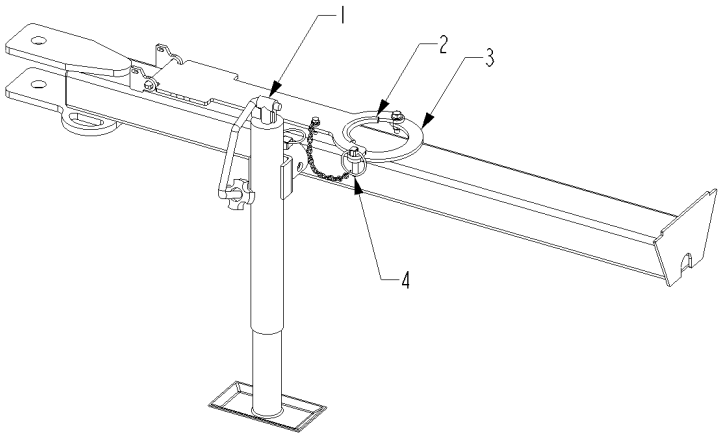
FRAME COMPONENTS

BASE



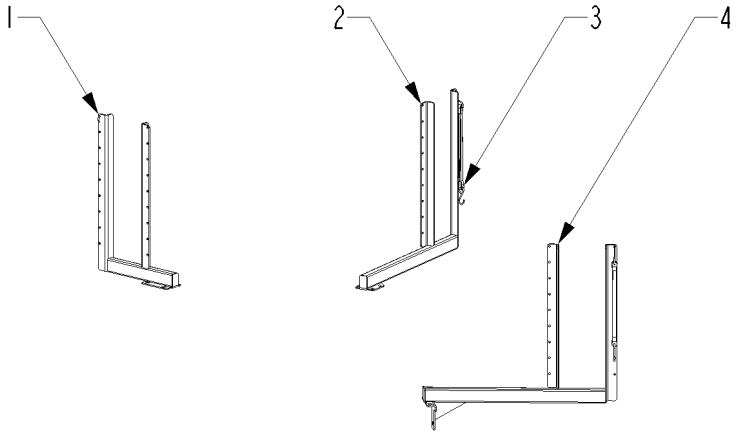
Model	Description	Part Number
A	FRAME, 7614, STD	11-122465-5
B	FRAME, 7614, HD	11-96508-5
C	FRAME, 7614, HD, 2022	11-142482-5

HITCH POLE



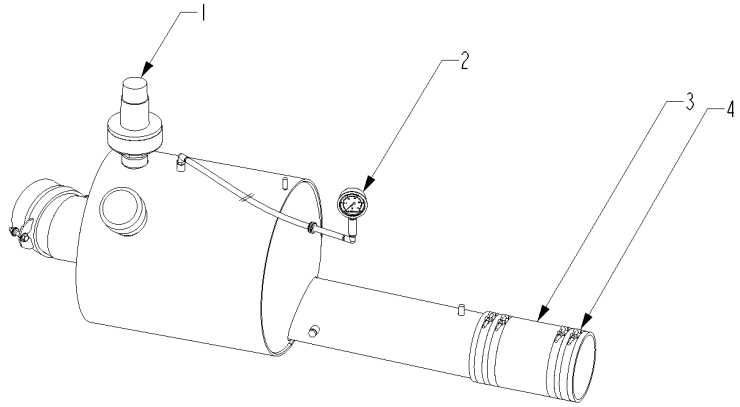
Model		Description	Part Number
A, B, C	1	JACK, PLTD, IW5000-13TWPM	11-03632-6
	2	LYNCH PIN WITH CHAIN	28-05671-5
	3	PTO REST LOCK RING, 7614	11-94268-4
	4	PTO REST RUBBER SUPPORT	11-43640-4

HOSE CARRIERS



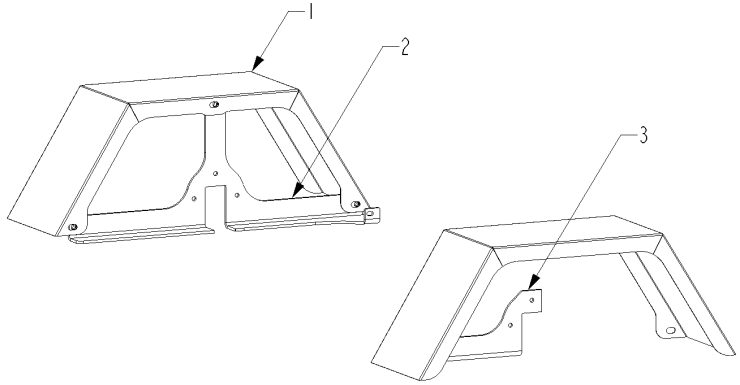
Model		Description	Part Number
A, B	1	HOSE CARRIER, 7614, FRONT	11-96510-5
	2	HOSE CARRIER, 7614, CORNER	38-73887-5
	3	STRAP, 15", SNAPPI HOOKER	80-87238-6
	4	HOSE CARRIER, 7614, REAR	11-96509-5
C	1	HOSE CARRIER, 7614, FRONT, 2022	11-142954-5
	2	HOSE CARRIER, 7614, CORNER, 2022	11-142953-5
	3	STRAP, 15", SNAPPI HOOKER	80-87238-6
	4	HOSE CARRIER, 7614, REAR, 2022	11-142952-5

MUFFLER



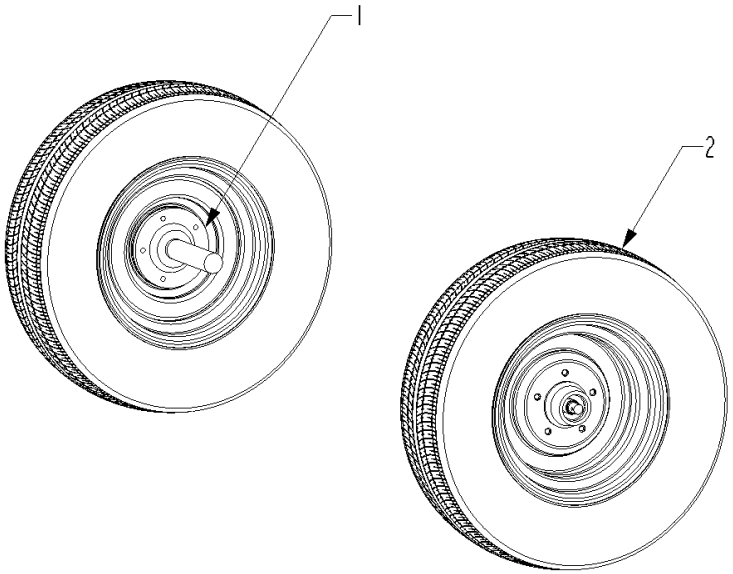
Model		Description	Part Number
A, B, C	1	PRESSURE RELIEF VALVE, 15 PSI	39-00724-6
	2	PRESSURE GAUGE, MUFFLER	11-116244-5
	3	CONNECTOR HOSE, 6"	73-82074-6
	4	T-BOLT CLAMP, 6-1/2"	28-08918-6

FENDERS



Model		Description	Part Number
A		N/A	N/A
B	1	FENDER, BOLT-ON	11-116540-4
	2	FENDER BRKT, DS	11-70130-5
	3	FENDER BRKT, CS, 7614	11-88804-5
C	1	FENDER, BOLT-ON, 2022	11-141884-4

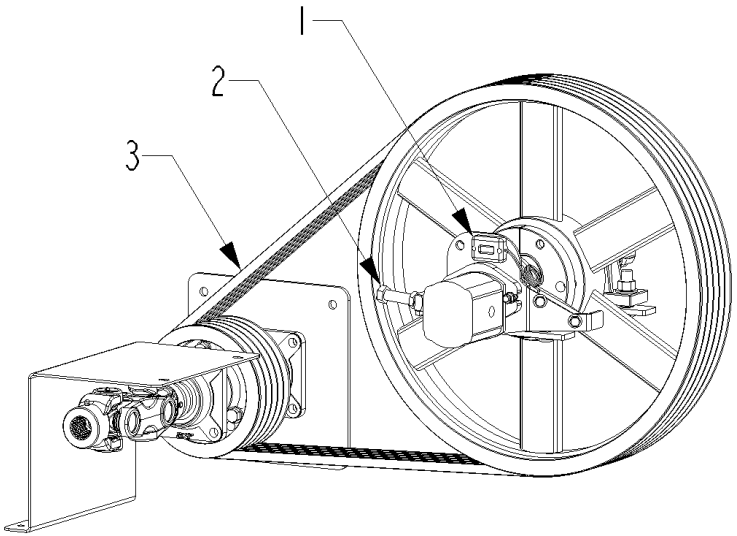
TIRES



Model		Description	Part Number
A, B	1	HUB, 3000 LBS, 5 BOLT	11-20087-5
	2	TIRE/RIM, ST225/75D15 5 ON 5.5	11-115571-6
C	1	HUB/SPINDLE INST, 2600 LBS	11-141883-5
	2	TIRE/RIM, ST225/75R15 6 ON 5.5	11-130919-6

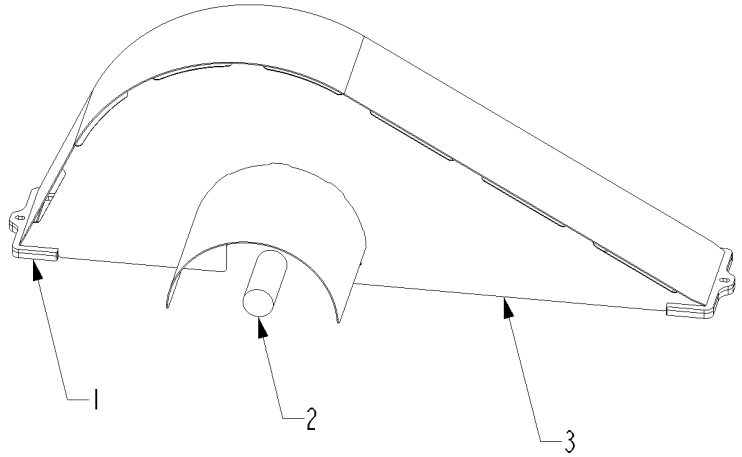
DRIVE COMPONENTS

DRIVE INSTALLATION



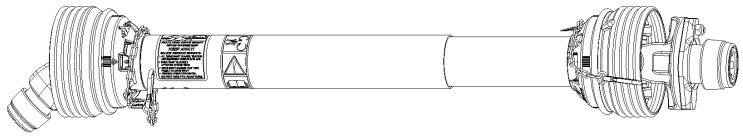
Model		Description	Part Number
A, C		DRIVE INST, 7614, SCH	11-104862-5
	1	TACHOMETER/HOUR METER	11-82616-6
	2	ADJUSTING BOLT INST, 5/8" X 3"	11-09248-5
	3	V-BELT, 5VX1000	11-14047-6
B		DRIVE INST, 7614, TDH	11-104839-5
	1	TACHOMETER/HOUR METER	11-82616-6
	2	ADJUSTING BOLT INST, 5/8" X 3"	11-09248-5
	3	V-BELT, 5VX1000	11-14047-6

BELT GUARD



Model		Description	Part Number
A, B, C	1	BELT COVER VIBRATION MOUNT	11-94964-4
	2	VINYL SHAFT CAP, 1-3/4" X 5"	11-135811-6
	3	BELT COVER, BOLT	11-105633-5

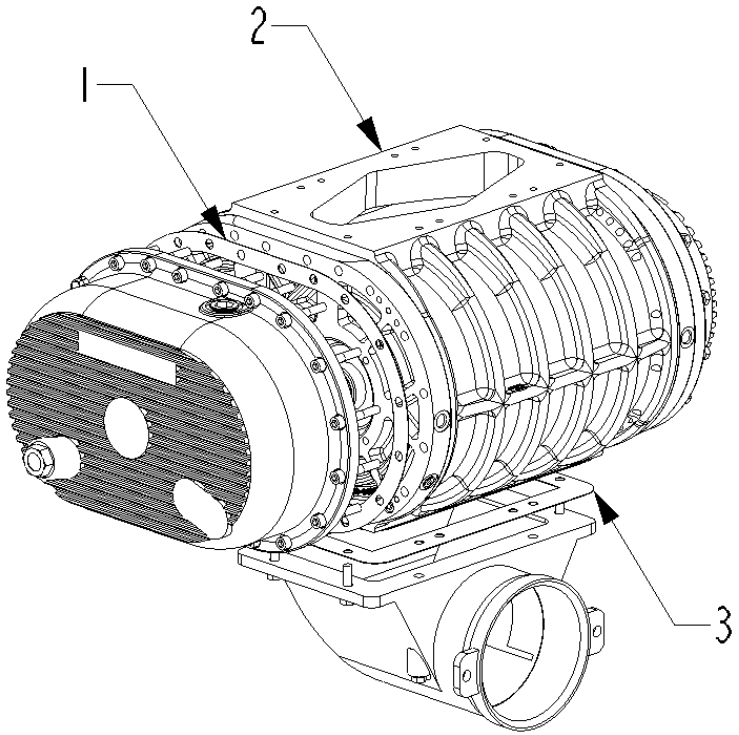
PTO SHAFT



Model	Description	Part Number
A, B, C	PTO SHAFT, 55E, 1 3/8-21 x 1 3/14-6	45-61428-6

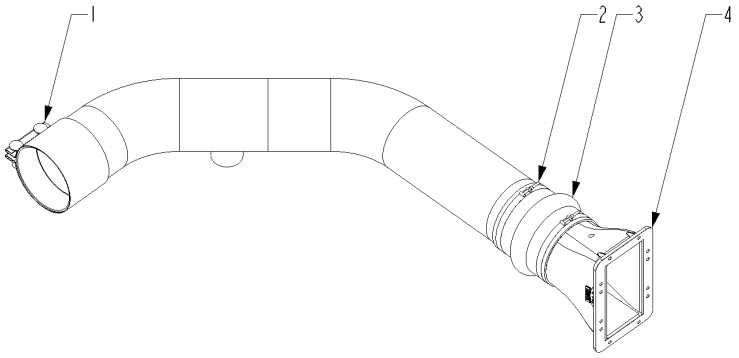
BLOWER COMPONENTS

BLOWER

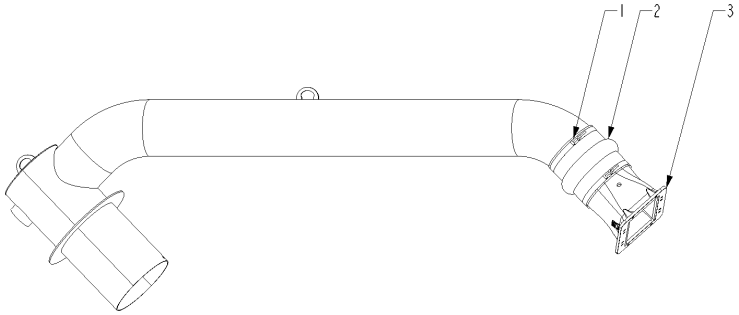


Model		Description	Part Number
A, B, C	1	OIL COVER GASKET, 614	96-18679-6
	2	614 BLOWER, EXTRA CHR-2-1/4	11-69722-5
	3	BLOWER MOUNT GASKET, 614	96-09117-6

INLET

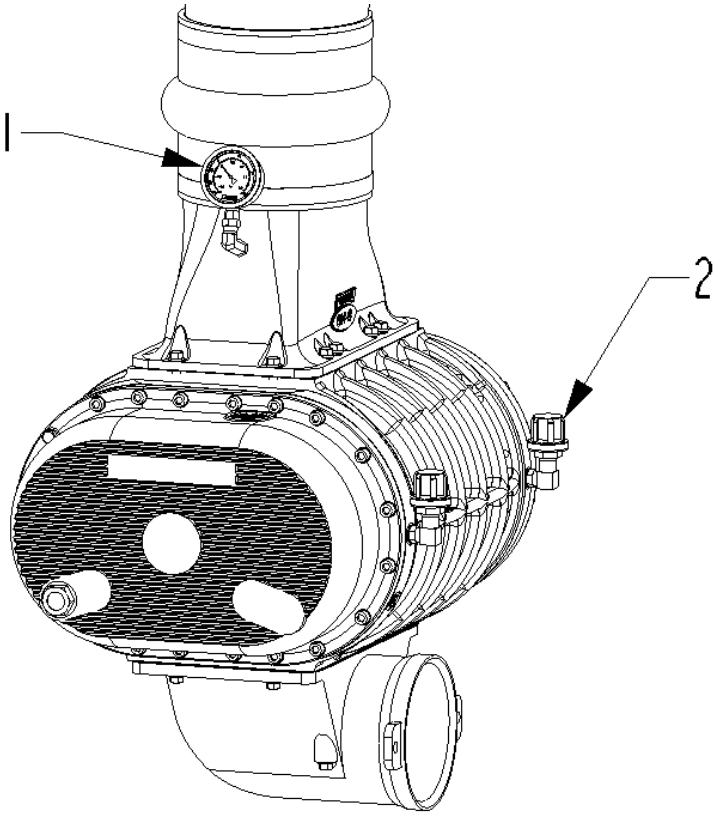


Model		Description	Part Number
A	1	COMPRESSION COUPLING, 8"	38-82473-6
	2	T-BOLT CLAMP, 8-1/2"	28-16829-6
	3	HUMP HOSE, 8"	11-82219-6
	4	BLOWER MOUNT GASKET, 614	96-09117-6



B, C	1	T-BOLT CLAMP, 8-1/2"	28-16829-6
	2	HUMP HOSE, 8"	11-82219-6
	3	BLOWER MOUNT GASKET, 614	96-09117-6

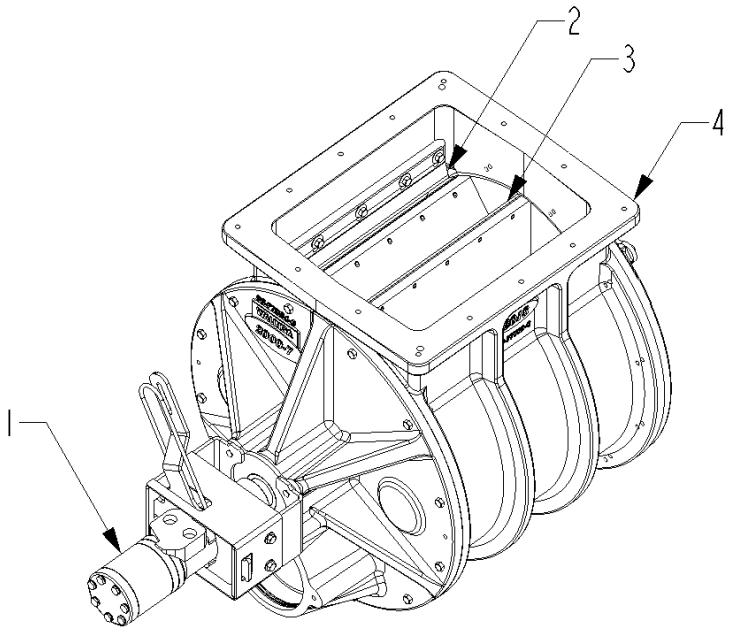
MISCELLANEOUS



Model		Description	Part Number
A, B, C	1	VACUUM GAUGE INST, BLOWER	11-116243-5
	2	BLOWER VENT, SAE	40-42958-5
		SUPER DUTY BLOWER OIL	98-13813-5

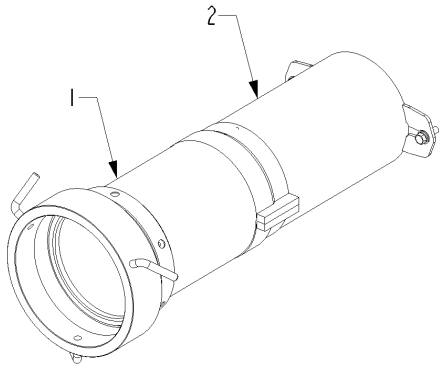
AIRLOCK COMPONENTS

AIRLOCK



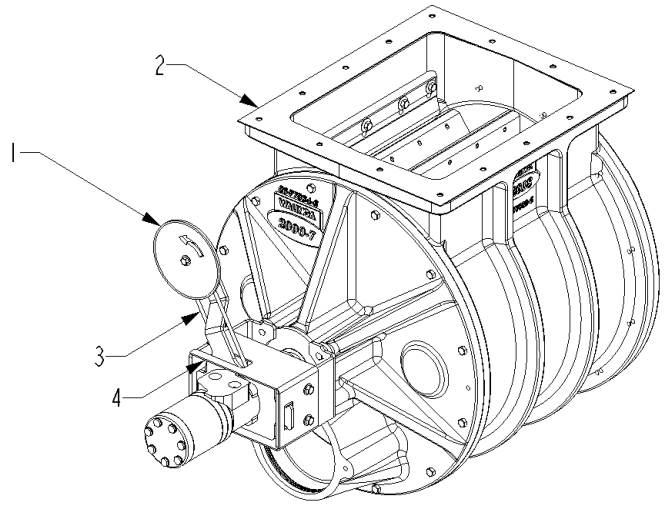
Model		Description	Part Number
A	1	HYDRAULIC MOTOR, WDP, WR	62-75736-6
	2	WIPER BLADE, 2018	30-77781-4
	3	ROTOR TIP, HARDOX, 1618/2018	30-62788-4
	4	AIRLOCK, 2018-7A, HXS	30-134749-5
B, C	1	HYDRAULIC MOTOR, WDP, WR	62-75736-6
	2	WIPER BLADE, 2018	30-77781-4
	3	ROTOR TIP, HARDOX, 1618/2018	30-62788-4
	4	AIRLOCK, 2018-7A, HXS, HC	30-77779-5

OUTLET



Model		Description	Part Number
A	1	ACCELERATION HOSE, 7"	11-66272-5
	2	AIRLOCK OUTLET, 7614	11-72773-5
B, C	1	ACCELERATION HOSE, 7"	11-66272-5
	2	AIRLOCK OUTLET, 7614	11-126651-5

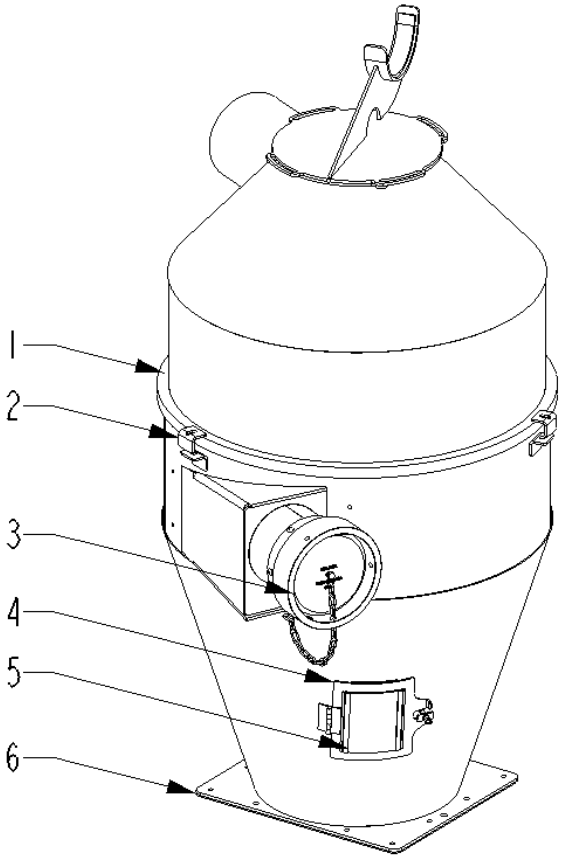
MISCELLANEOUS



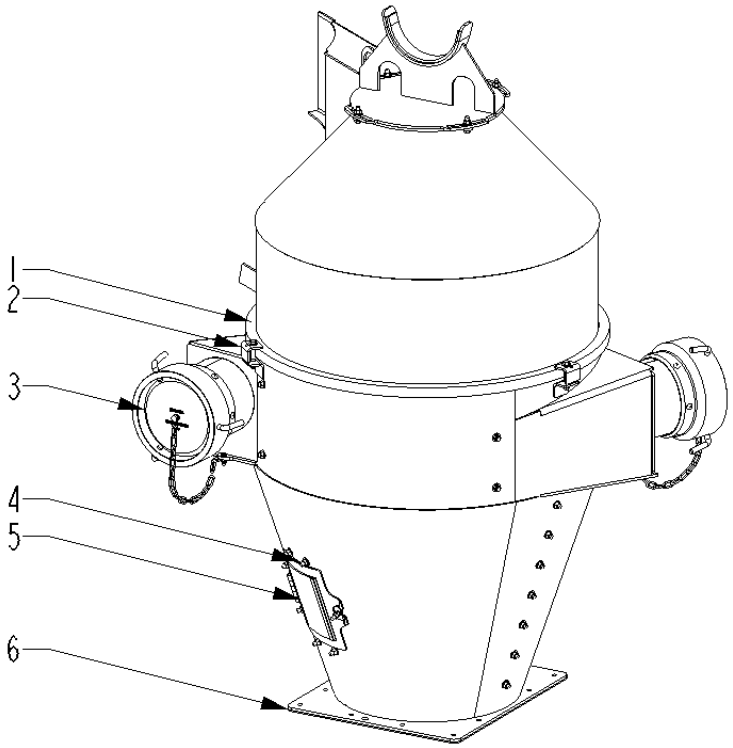
Model		Description	Part Number
A, B, C	1	DIRECTION INDICATOR WHEEL	11-09777-5
	2	AIRLOCK MOUNT GASKET, 2018	80-91187-6
	3	INDICATOR BELT, 6 MM X 25"	96-13967-6
	4	DRIVE GUARD, SCH, 7614	11-100855-4

AMS COMPONENTS

PRIMARY AMS

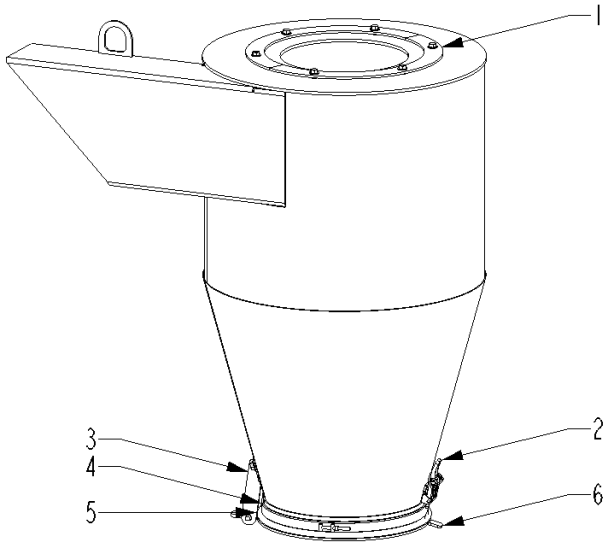


Model		Description	Part Number
A	1	GUM RUBBER, DURO 40	80-18702-6
	2	SPLIT TANK CLAMP	11-39844-4
	3	DP7 PLUG WITH CHAIN	38-28480-5
	4	ACCESS DOOR SPONGE SEAL	80-03510-6
	5	ACCESS DOOR WINDOW, 1/8"	11-03729-6
	6	GASKET, 2018 AIRLOCK	11-86954-4



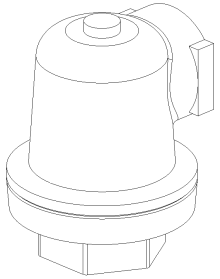
B	1	GUM RUBBER, DURO 40	80-18702-6
	2	SPLIT TANK CLAMP	11-39844-4
	3	DP7 PLUG WITH CHAIN	38-28480-5
	4	ACCESS DOOR SPONGE SEAL	80-03510-6
	5	ACCESS DOOR WINDOW, 1/8"	11-03729-6
	6	GASKET, 2018 AIRLOCK	11-86954-4
C	1	GUM RUBBER, DURO 40	80-18702-6
	2	SPLIT TANK CLAMP, TOP SPLIT TANK CLAMP, BOTTOM	11-74179-4 11-45172-4
	3	DP7 PLUG WITH CHAIN	38-28480-5
	4	ACCESS DOOR SPONGE SEAL	80-03510-6
	5	ACCESS DOOR WINDOW, 1/8"	11-03729-6
	6	RCVR GASKET, 2018 AIRLOCK	11-86954-4

SECONDARY AMS



Model		Description	Part Number
A		N/A	N/A
B, C	1	PC TOP BOLT PLATE, 6614/7614	11-98339-4
	2	DRAW LATCH, ADJUSTABLE	28-80927-6
	3	PC HINGE AND BAR	11-20252-5
	4	T-BOLT CLAMP, 13-7/8"	28-80466-6
	5	PC DOOR SEAL, P-EXTRUSION	11-36769-4
	6	PC DOOR, LATCHED	11-104329-4

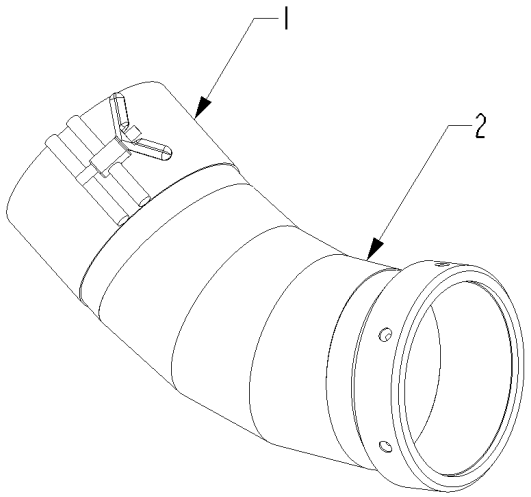
VACUUM RELIEF VALVE



Model	Description	Part Number
A, B, C	VACUUM RELIEF VALVE, 3", 16 Hg	39-73882-6

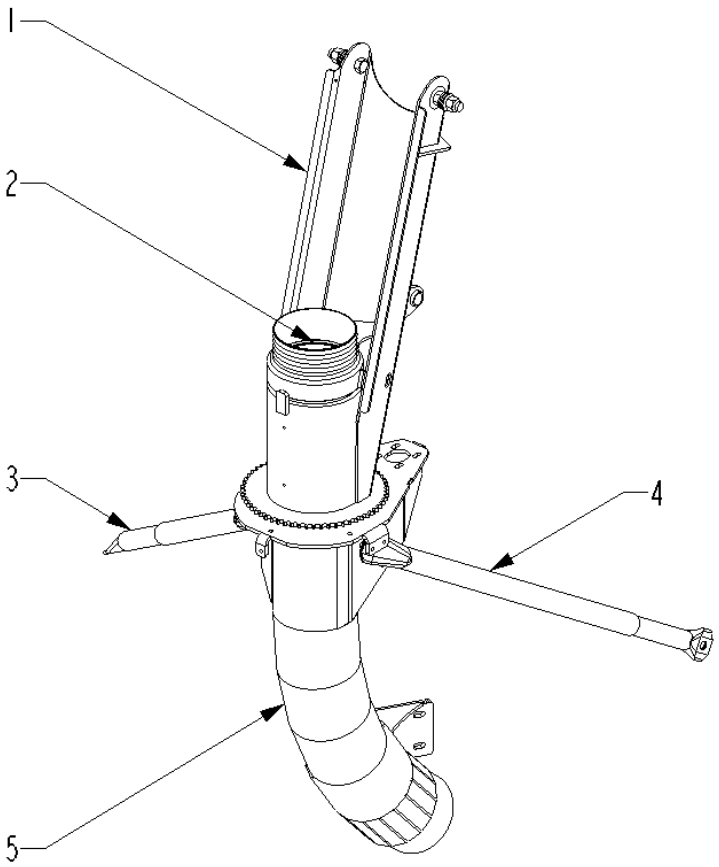
BOOM COMPONENTS

ELBOW



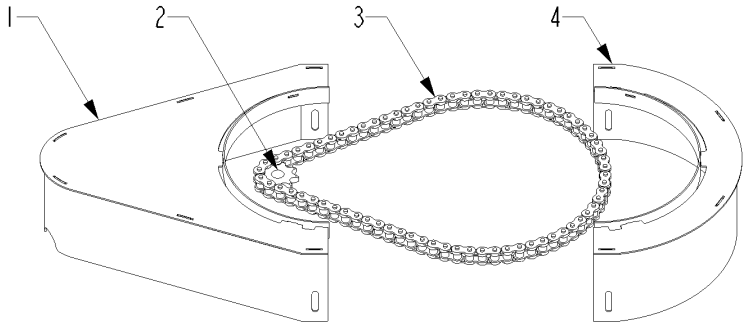
Model		Description	Part Number
A, B, C	1	QUICK COUPLER, 7"	38-17305-6
	2	LOWER BOOM ELBOW, 7"	11-36513-5

LOWER BOOM



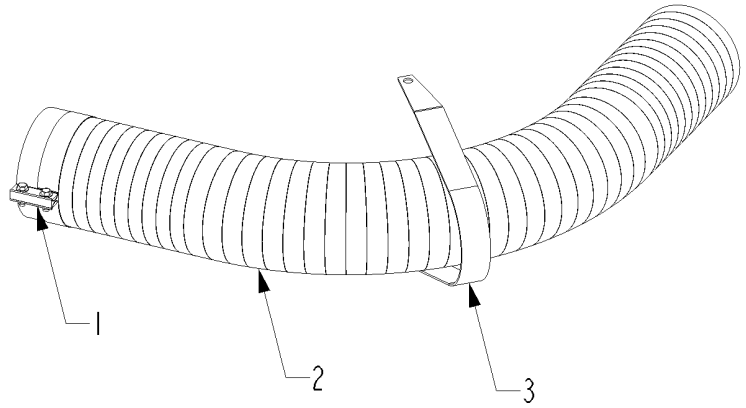
Model		Description	Part Number
A, B	1	BOOM SWIVEL BOTTOM, 7"	11-66273-5
	2	GASKET, 10-6-7J	96-37629-6
	3	BOOM BRACE, 54"	11-91594-4
	4	BOOM BRACE, 46-3/8"	11-91595-4
	5	LOWER BOOM, 7614, HBR	11-96503-5
C	1	BOOM SWIVEL BOTTOM, 7"	11-66273-5
	2	GASKET, 10-6-7J	96-37629-6
	3	BOOM BRACE, 51-1/8", SOLID	11-141930-5
	4	BOOM BRACE, 46-3/8", SOLID	11-141622-5
	5	LOWER BOOM, 7614, STD, HBR	11-126083-5

ROTATION COMPONENTS



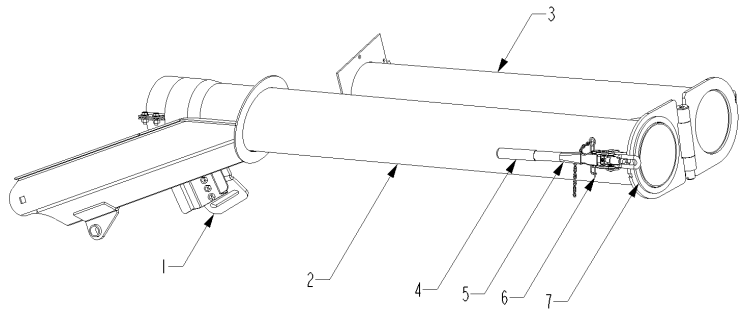
Model		Description	Part Number
A, B, C	1	SPROCKET COVER, FRONT, CE	11-39606-5
	2	SPROCKET, SPLINED, H50B9	11-36329-5
	3	CHAIN, 50WP1, 44-3/8"	97-18349-6
	4	SPROCKET COVER, REAR, CE	11-39610-5

FLEX HOSE



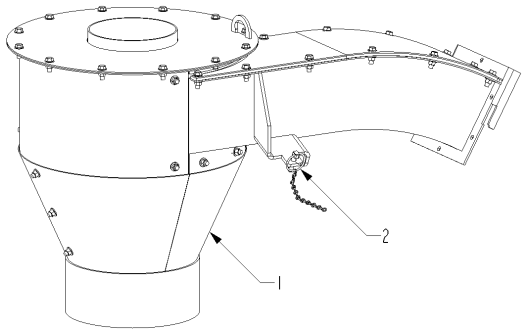
Model		Description	Part Number
A, B, C	1	LAP JOINT CLAMP, 3-1/2"	28-14596-6
	2	FLEX HOSE, SF400, 7", 45 LG	36-16581-6
	3	FLEX HOSE SUPPORT, 6614/7614	11-96519-4

BOOM



Model		Description	Part Number
A, B, C	1	BOOM EXTENSION LATCH BRKT	11-71126-4
	2	BOOM ASSEMBLY, 7614	11-96505-5
	3	SPLIT BOOM END, 7"	11-75302-5
	4	HAND GRIP, 1" X 4-3/8"	11-14632-6
	5	BOOM LATCH	11-37464-5
	6	SAFETY PIN, 142-156	94-19544-6
	7	SEAL, 8.370 X 7.125 X 0.250	96-17109-6

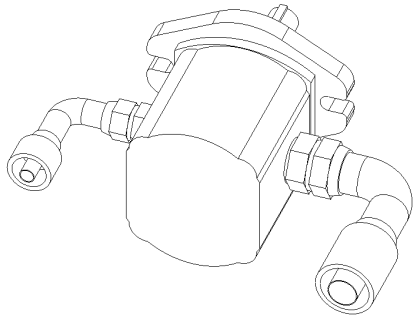
DISCHARGE CYCLONE



Model		Description	Part Number
A, B	1	CYCLONE, 7"	11-97537-5
	2	LYNCH PIN WITH CHAIN	28-05671-5
C	1	CYCLONE, 7", FRL, LEFT INLET	11-75298-5
	2	LYNCH PIN WITH CHAIN	28-05671-5

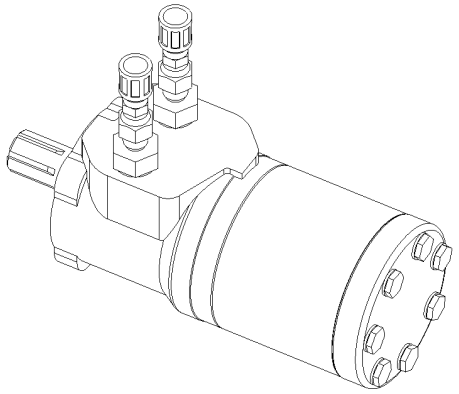
HYDRAULIC COMPONENTS

PUMP



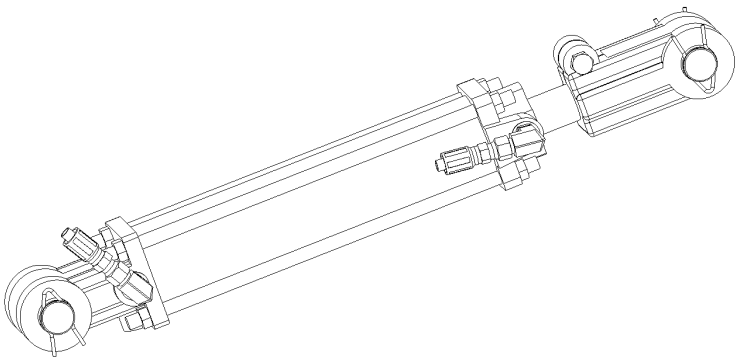
Model	Description	Part Number
A, C	PLP 20-14-SO-49SI-LOD/OC-N	54-80552-6
B	N/A	N/A

AIRLOCK MOTOR



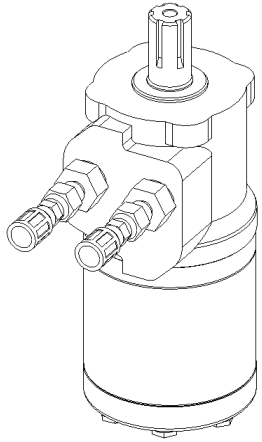
Model	Description	Part Number
A, B, C	MOTOR, WR, 255400F3102AAAAA	62-75736-6
	SEAL KIT, 255400F3102AAAAA	62-136049-6

BOOM LIFT CYLINDER



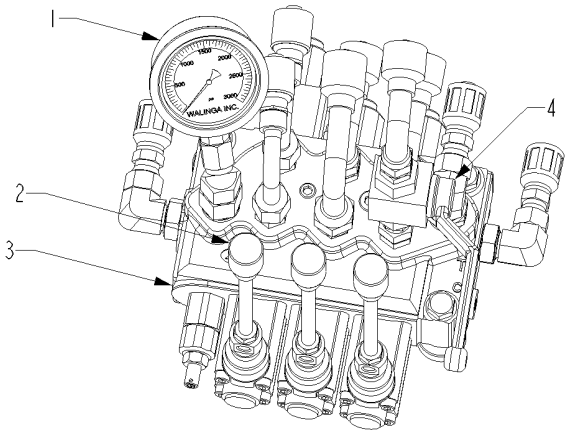
Model	Description	Part Number
A, B, C	CYL, 2 X 8, HYS20SPE08-929	11-17572-6
	SEAL KIT, 2 X 8 CYL	11-18476-6

BOOM ROTATION MOTOR

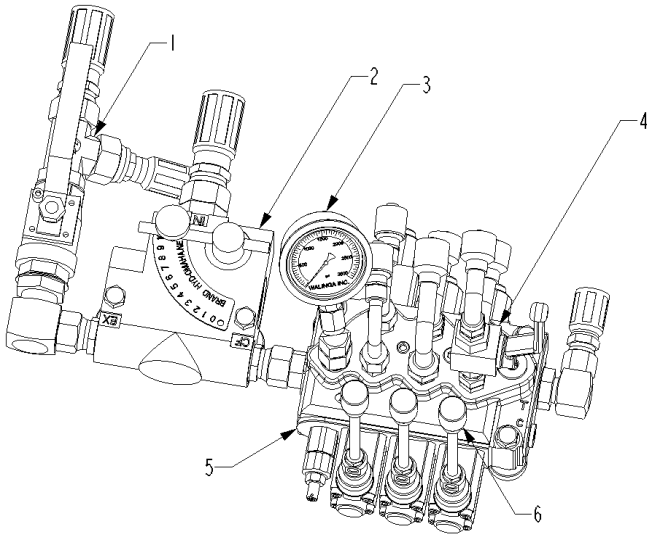


Model	Description	Part Number
A, B, C	MOTOR, WR, 255400F3102AAAAA	62-75736-6
	SEAL KIT, 255400F3102AAAAA	62-136049-6

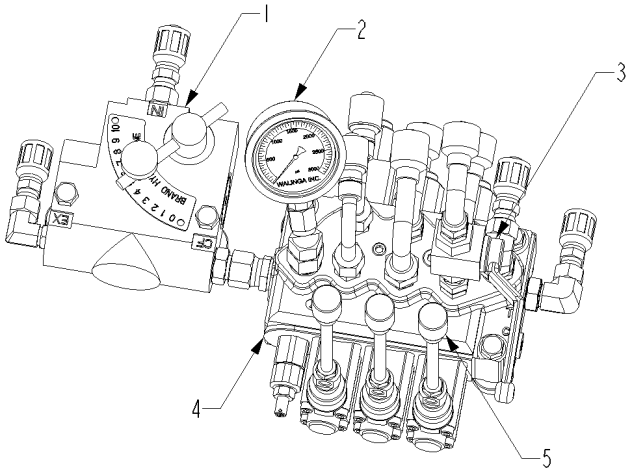
CONTROL ARRAY



Model		Description	Part Number
A	1	HYD PRESSURE GAUGE INST	11-116245-5
	2	LEVER, AL01/M8X200	59-60336-6
	3	SERIES VALVE, 3 BANK, SD5	59-94291-6
	4	BOOM BALL VALVE, 1/4", SAE 6	59-19548-6

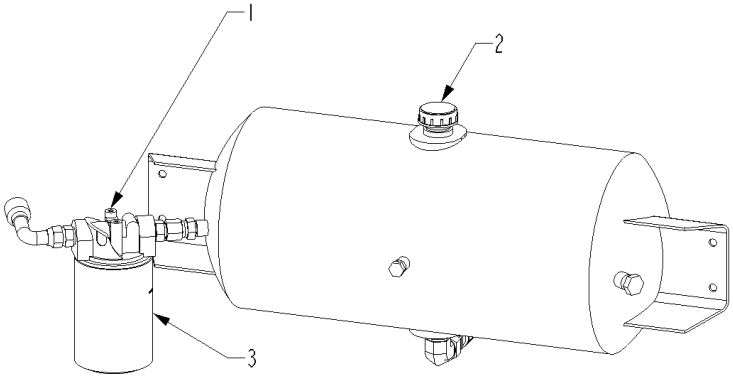


B	1	BALL VALVE, 3/4", CRH2SAE12	59-68179-6
	2	FLOW CTRL VALVE, 0-16 GPM	59-82348-6
	3	HYD PRESSURE GAUGE INST	11-116245-5
	4	BOOM BALL VALVE, 1/4", SAE 6	59-19548-6
	5	SERIES VALVE, 3 BANK, SD5	59-94291-6
	6	LEVER, AL01/M8X200	59-60336-6



C	1	FLOW CTRL VALVE, 0-8 GPM	59-891791-6
	2	HYD PRESSURE GAUGE INST	11-116245-5
	3	BOOM BALL VALVE, 1/4", SAE 6	59-19548-6
	4	SERIES VALVE, 3 BANK, SD5	59-94291-6
	5	LEVER, AL01/M8X200	59-60336-6

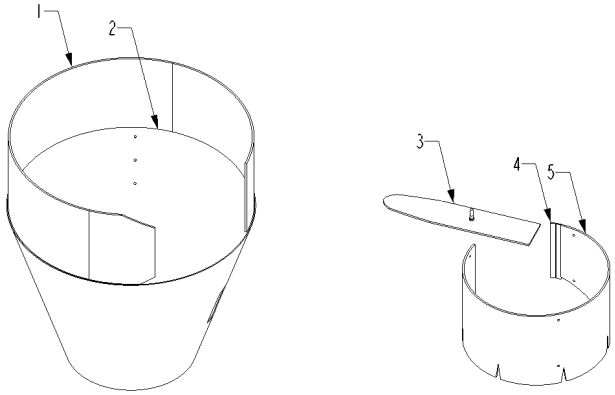
HYDRAULIC RESERVOIR



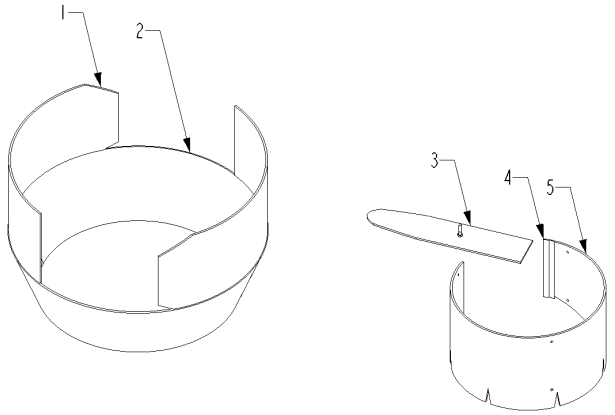
Model		Description	Part Number
A, C	1	FILTER HEAD, SAF06-25-0	61-74993-6
	2	BREATHER CAP, 3/4", #NY-12	39-82486-6
	3	FILTER CANISTER, SAF06-25-0	61-74992-6
		HYDRAULIC OIL, HYDREX XV	98-17740-6
B		N/A	N/A

RHINO HYDE LINER COMPONENTS

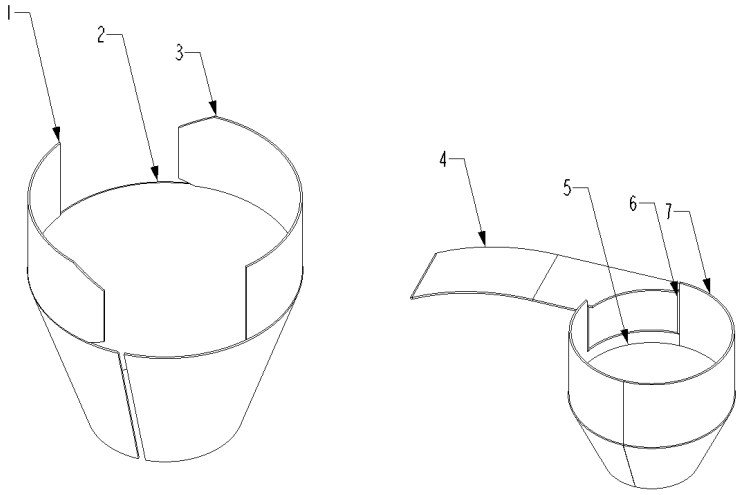
LINERS



Model		Description	Part Number
A	1	RCVR, BODY, 7614, SI	11-123994-4
	2	RCVR, FRUSTUM, 7614	11-97540-4
	3	CYCLONE, 7", ELBOW	11-41623-4
	4	CYCLONE, 7", RETAINER	11-41616-4
	5	CYCLONE, 7", BODY	11-75474-4



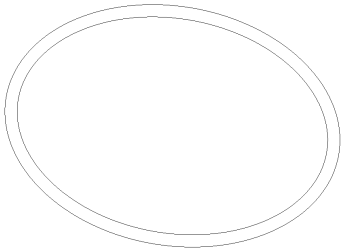
B	1	RCVR, BODY, 7614, DI	11-75338-4
	2	RCVR, FRUSTUM, 7614 HD	11-91809-4
	3	CYCLONE, 7", ELBOW	11-41623-5
	4	CYCLONE, 7", RETAINER	38-41616-4
	5	CYCLONE, 7", BODY	11-75474-4



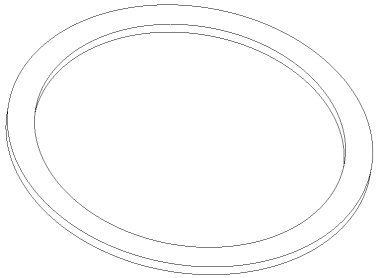
C	1	RCVR, BODY, 7614, DI, 2023, SHORT	11-142887-4
	2	RCVR, FRUSTUM, 7614, 2023	11-142889-4
	3	RCVR, BODY. 7614, DI, 2023, LONG	11-142888-4
	4	CYCLONE, 7", TOP	11-75321-4
	5	CYCLONE, 7", FRUSTUM	11-39927-4
	6	CYCLONE, 7", STOP STRIP	11-104535-4
	7	CYCLONE, 7", BODY	11-75320-4

MISCELLANEOUS COMPONENTS

Description	Part Number
CLEAR SILICONE, 366 NU FLEX, 10.2 fl oz	92-14772-6
SEALANT, 3M 540 URETHANE, 10.5 oz	92-13573-6
AEROSOL GREEN PAINT TY25624, 12 oz	07-08640-6
SPINDLE & COUPLING GREASE, 5/8 oz	98-17473-6
TORQUE-MASTER ANTI-SEIZE, 16 oz	98-13491-6

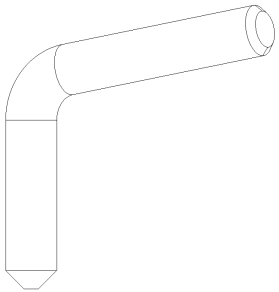


O-RING, 2-220 N70	96-04822-6
O-RING, 2-222 N70	96-04824-6
O-RING, 2-345 N70	96-01013-6
O-RING, 2-351 N70	96-77793-6
O-RING, 2-429 N70	96-03852-6
O-RING, 2-436 N70	96-03735-6
O-RING, 2-437 N70	96-08521-6
O-RING, 2-441 N70	96-96799-6

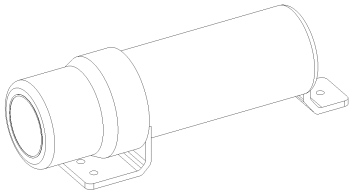


FLAT GASKET, DF4	96-13344-6
FLAT GASKET, DF5	96-13281-6
FLAT GASKET, DF6	96-13067-6
FLAT GASKET, DF7	96-17109-6

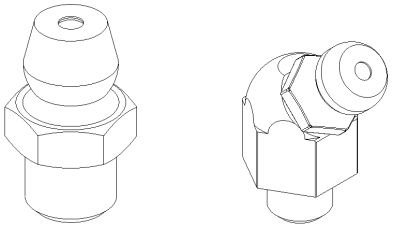
QUICK COUPLER GUM, 5"	38-15553-6
QUICK COUPLER GUM, 6"	38-15552-6
QUICK COUPLER GUM, 7"	38-18199-6



TAIL BOLT, 1/2-13-1 1/4, SS	94-09185-5

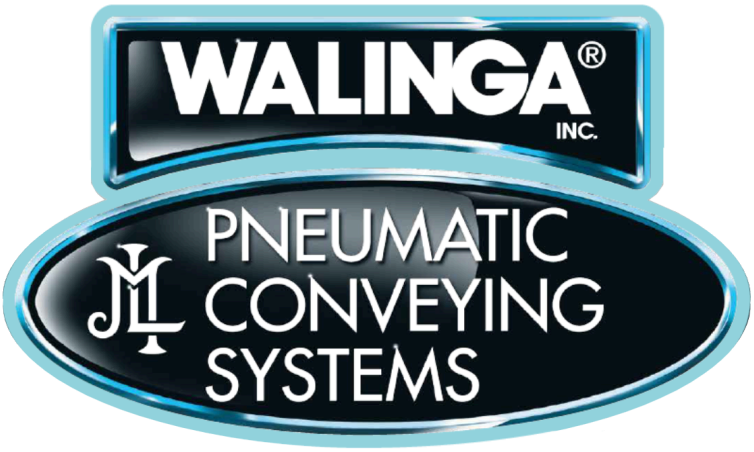


DOCUMENT HOLDER	11-67390-6



GREASE FITTING, 1/4-28, 0°	57-00625-6
GREASE FITTING, 1/4-28, 45°	57-06084-6
GREASE FITTING, 1/4-18, 0°	57-93913-6
GREASE FITTING, 3/8-24, UNF, 0°	57-99304-6

PAGE INTENTIONALLY LEFT BLANK



WALINGA®
INC.

CORPORATE HEAD OFFICE:

5656 Highway 6N
RR#5 Guelph, Ontario, N1H 6J2
PHONE (519) 824-8520
FAX (519) 824-5651
www.walinga.com

FACTORY DISTRIBUTION AND SERVICE CENTERS:

938 Glengarry Crescent
Fergus, ON, Canada, N1M 2W7
PHONE (519) 787-8227
FAX (519) 787-8210

70 3rd Avenue N.E. Box 1790
Carman, MB, Canada, R0G 0J0
PHONE (204) 745-2951
FAX (204) 745-6309

6116 46 St.
Bloomsbury, AB, Canada, T0G 0G0
PHONE (780) 572-6082

1190 Electric Avenue
Wayland, MI, USA, 49348
PHONE (800) 466-1197
FAX (616) 877-3474

579 4th St. NW
Sioux Center, IA, USA, 51250
PHONE (800) 845-5589
FAX (712) 722-1128

24 Molloy St.
Toowoomba, Qld, Australia, 4350
PHONE 07-4636-7344
EMAIL mail@customvac.com.au

PRINTED IN CANADA