PENCPAC PREDATOR™

MAINTENANCE MANUAL

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Labrie Enviroquip Group

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PENDPAC

PREDATOR™

MAINTENANCE MANUAL

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May 2013

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Introduction

About this Manual

This manual is designed to help qualified maintenance personnel repair, service and maintain the PREDATOR™.

What You Will Find in this Manual

This manual outlines maintenance procedures related to the leaf vacuum, body and packer components.

Topics not included in this Manual

Maintenance of the chassis

This is dealt in the chassis manufacturer's service manual.

Cameras and backing-accident prevention systems

For these options, refer to the appropriate manufacturer's service manual.

Operating the PREDATOR™

For procedures related to the operation of the PREDATOR™, please refer to the Operator's Manual.

Parts and assemblies

For parts and assemblies found on the PREDATOR™, along with their respective number for ordering purposes, please refer to the PREDATOR™ Parts Manual.

About the Schematics

For schematics of all the body parts, refer to the PREDATOR™ Parts Manual;

For frame schematics, refer to the schematics provided with your PREDATOR™ unit;

For electrical schematics, refer to the schematics provided with your PREDATOR™ unit;

For pneumatic and hydraulic schematics, refer to the schematics provided with your PREDATOR™ unit.

NOTE: A number of system schematics are included in this manual.

Introducing the PREDATOR™

The PREDATOR™ has been developped based on years of experience and a wise choice of components. Everything has been foreseen to achieve excellent reliability while keeping construction simple yet robust.

The PREDATOR™ is a year-round multipurpose trash and refuse vehicle that combines the strength of an Impac™ with a powerful collection system for leaves and small debris.

With the use of an Impac™ body as a base, you take advantage of an active compaction system. By packing the load you spend more time working and less time traveling, unloading and traveling back from waste/recycling site.

The PREDATOR™ is fitted with super-hardened abrasive resistant steel mulching blades that chop small branches, leaves and grass cuttings (wet or dry) into tiny bits allowing for greater load compaction.

The main cylinder compartment is sealed through the use of a full-gate seal. The exhaust vent has a “flutter shield” to help keep out the rain when the vehicle is not being used as a leaf collector.

The PREDATOR™ is equipped with a heavy duty vacuum to suck up leaves and small debris. The vacuum function has a 32” diameter impeller which is made of abrasive resistant T-1 steel. This impeller can handle the toughest debris.

The blower assembly is belt driven. Its power is transferred from the engine to the suction impeller by a 4-groove power band. This allows maximum suction with the added feature of shock absorption when undesirable material is vacuumed.

Warning

Your PREDATOR™ unit MUST BE COMPLETELY LUBRICATED before its first use.

Initial lubrication carried out by Labrie Enviroquip Group is sufficient for production and transport purposes ONLY.

A Word about Safety

With your safety in mind, we would like to remind you that ONLY QUALIFIED PERSONNEL should service the hydraulic, electrical, and pneumatic systems on your leaf-collector vehicle. In addition, they should also be fully knowledgeable of the operation of this unit. Please read the Operator Manual prior to attempting any maintenance work on your PREDATOR™ unit.

To Contact Labrie Plus

In the U.S.

Address:	1981 W. Snell Road Oshkosh, WI 54904
Toll Free:	1-800-231-2771
Telephone:	1-920-233-2770
General Fax:	1-920-232-2496
Sales Fax:	1-920-232-2498
Parts and warranty:	During business hours, 7:00 AM to 7:00 PM Central Standard Time
Technical Support Service:	Available 24 hours

In Canada

Address:	175 Route du Pont St-Nicolas, QC G7A 2T3
Toll Free:	1-877-831-8250
Telephone:	1-418-831-8250
Service Fax:	1-418-831-1673
Parts Fax:	1-418-831-7561
Parts and warranty:	During business hours, 8:00 AM to 5:00 PM Eastern Standard Time
Technical Support Service:	Available 24 hours
Website:	www.labriegroup.com
E-mail (Sales Dept.):	sales@labriegroup.com
E-mail (Customer Service):	service@labriegroup.com

IMPORTANT: For technical support and parts ordering, the serial number of your vehicle is required. Therefore, Labrie Enviroquip Group recommends to keep record of the information found on the VIN plate, which is located in the cab.

2

Safety

It is mandatory to read the entire *Operator Manual* before performing any maintenance task on this vehicle.

Conventions

Danger!

Indicates a hazardous situation which, if not avoided, ***will*** result in serious injury or death.

Warning!

Indicates a hazardous situation which, if not avoided, ***could*** result in serious injury or death.

Caution!

Indicates a hazardous situation which, if not avoided, could result in ***minor or moderate injury.***

Basic Safety Notions

The following safety notions are related to the use of the PREDATOR™. It is important to point out that the safe use of the vehicle remains the user's responsibility. He must heed all safety notions explained in this manual and on the decals affixed to the vehicle.

Danger!

Always be aware of the vehicle's surroundings to make sure that no pedestrians, passersby, bystanders, or other people or vehicles are in any way exposed to any danger caused by the use of the PREDATOR™.

Danger!

Never get in the packer area when the engine is running.
Only authorized personnel may do so following a lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 12).
Failure to follow the lockout/tagout procedure may result in serious injury or death.

Responsibilities

Safety is everybody's responsibility. Both employer and employee must play their part to ensure the safety of the operator, the vehicle and its immediate surroundings.

Employer Responsibilities

It is the responsibility of the employer:

- To ensure that the PREDATOR™ is operated in accordance with all safety requirements and codes, including all applicable regulations, the Occupational Safety and Health Act (OSHA), and the American National Standards Institute (ANSI).
- To ensure that employees are qualified for operating the vehicle and its equipment, and that they all take safety measures before using them.
- To properly maintain all mobile equipment to meet all state/provincial and federal safety standards.
- To provide employees with safety instructions and training (including manufacturer's procedures) on operation, maintenance, service, and repair of equipment.
- To monitor employee's operation (periodic and regular inspection) of equipment, including adherence to safety practices.
- To keep the vehicle maintained and properly adjusted to meet the manufacturer's standards and recommendations. For help or for more information, please contact the manufacturer or any of its authorized representatives.
- To keep records of all vehicle breakdowns and malfunctions, as well as any inspection and maintenance.
- To ensure that all failures or malfunctions that may be affecting the safe use of the vehicle are repaired before the vehicle is put back into operation.
- To meet the appropriate lighting requirements for night shift work (if permitted).
- To regularly accompany the vehicle operator and take measures to ensure the smooth and safe operation of the vehicle.
- To make sure that the backup alarm works properly when the vehicle is in reverse.
- To take necessary measures in response to any damage or malfunction reported by employees.
- To ensure the proper use of a "lockout/tagout" procedure (see page 12) any time inspection, repair or maintenance is performed on the vehicle, regardless of whether it takes place on the road or in the garage.
- To make sure all access doors are maintained in place and equipped with functioning safety interlock switches while vehicle is in use.

Safety Precautions for the Employee

As an operator or maintenance employee, it is your responsibility to follow these guidelines:

- Ensure that you have been provided with safe operating and/or maintenance service training and procedures by your employer prior to operating the vehicle or performing maintenance service.
- Carefully read this manual.
- Obey proper operating procedures, safety guidelines and warning decals.
- Use the vehicle only as intended.
- Perform a daily vehicle inspection that includes all operating systems, all vehicle safety equipment and safety decals. Ensure that the inspection is documented and bring any defects to the attention of your supervisor.
- Ensure all access doors are latched with functioning safety interlock switches.
- Make sure all safety interlock systems are functioning properly.
- Prior to operating the vehicle, ensure that all mirrors, windows and lights are clean and properly adjusted. Ensure that all cameras and monitors, if installed, are properly adjusted and function correctly.
- Do not operate machine in an unsafe manner.
- Use extreme caution when operating machine in dangerous areas such as: slopes, overhangs, high walls, ridges or ditches.
- During all phases of blowing process, ensure area is clear of persons.
- Instruct persons not to cross under open tailgate.
- Keep hands, floors, and controls free from water, grease, and mud to assure non-slip control.
- Do not leave machine unattended. All keys from the equipment control panel should be removed
- Do not park vehicle with tailgate in the UP position.
- On your daily route, or during your service duties, stay safe; obey all safety decals and safe operating procedures. Watch for other people, obstructions and overhead hazards.
- Before moving or operating machine, including tailgate, make sure area is clear.
- Always utilize the vehicle's safety features, such as tailgate props.
- Before opening tailgate, make sure no one is behind the truck.
- Do not walk or stand under an open tailgate.
- Tailgate area must be clear before dumping.
- Shut down vehicle when cleaning, servicing, adjusting and lubricating vehicle (see *Lockout/Tagout Procedure* on page 12).
- Be alert for falling or flying objects.
- Remember to wear all safety equipment prescribed by your employer (safety glasses, gloves, footwear, etc.).
- Enforce all safety measures to meet the requirements set by the employer.
- While machine is running, do not enter any pinch area. Do not enter refuse body.
- Your unit is equipped with proximity/limit switches to ensure your safety. Periodic inspection and testing of these switches are essential to prevent injury or death. **NEVER DISABLE OR BYPASS THESE SWITCHES**.

- Listen for strange or above normal sounds when machine is being moved or operated. Shut down machine when safe to do and report problems to your supervisor.
- Make sure that no one is near the vehicle before activating any of the controls, and be prepared to stop at any indication of possible danger.
- Sound horn before moving vehicle.
- Do not operate vehicle if gauges and indicator lights are not working properly.

IMPORTANT: Under no circumstances should you operate damaged or malfunctioning equipment. Report all malfunctions to your supervisor immediately.

IMPORTANT: Be extremely cautious in areas where small children may be present.

- When two or more people are testing a hydraulic system, be sure that each person is informed of the procedure to be followed. Avoid contact with rotating couplings between hydraulic motors, pumps, power-take-offs, etc.
- Hydraulic oil under pressure can be dangerous. Care should be taken when bleeding or opening a high pressure line (release pressure slowly), as a thin stream of oil can inflict injury. Unauthorized pressure settings of relief valves can burst lines, valves, pumps or cylinders.
- If repairing tailgate, packer panel, cylinders, boom, etc., provide proper supports or safety chains to prevent these heavy component parts from slipping or falling. This could cause damage to the unit and/or severe injury to the person making the repairs.

PREDATOR™ Road Rules

Rule the road with safety. Stay safe and help keep those around you safe. Prior to performing your daily route, know and obey the route rules and regulations provided by your employer and follow these important guidelines. As an operator you should never do the following:

1. Drive with the tailgate raised.
2. Drive without the tailgate lock hooks in place or with the tailgate ajar.
3. Exit the cab without engaging the chassis parking brake.
4. Back up the truck while unloading refuse.
5. Raise the tailgate while on uneven ground.
6. Drive with the blower hose not securely fixed to the body.
7. Enter the main body unless the engine is shut off, the key is removed and there is an out-of-service tag on the steering wheel. Refer to “Lockout/Tagout Procedure” on page 12.

Safety Controls

Safety should be your number one priority. Before operating or servicing the PREDATOR™, the operator/mechanic must be completely familiar with the location, operation and function of all controls and indicators related to the operation of the unit.

General Precautions

Warning!

Prior to its first use, your PREDATOR™ *must be completely lubricated*.
Initial lubrication carried out by Labrie Enviroquip Group is sufficient for production and transport purposes *only!*

Danger!

Do not ride, sit or stand on unit. Riding on unit could result in bodily harm or fatal injury. Use extreme caution when unit is in use or in motion.

Danger!

Operator and maintenance personnel must adhere to the following precautions *at all times*. Failure to do so may result in vehicle and/or property damage, personal injury, or even death.

- Only qualified personnel should service this vehicle, especially for the hydraulic, electrical and pneumatic systems. They should also be fully versed in operating the vehicle.
- Training is mandatory before operating and/or servicing the PREDATOR™.
- Read and make sure that you fully understand this manual and all safety decals before performing maintenance on the vehicle. Maintenance personnel must also read and understand the vehicle Operator's Manual. In case of doubt, ask a supervisor for clarifications.
- Before every work day, inspect the body, the packing and blowing systems, and any system that might compromise public and/or operator safety.
- Check the accelerator pedal, the steering wheel, mirrors, brakes, lights, horns, tires, back-up alarms, turn signals, etc. for any malfunction or adjustment that needs to be corrected before vehicle is operated.
- Never operate the PREDATOR™ with damaged or missing safety decals. Replace them immediately.
- When driving the vehicle, keep both hands on the steering wheel at all times.
- Before leaving the driving position, stop the vehicle completely and put on the parking brake.
- When the vehicle is parked, the parking brake *must* be applied.
- Always wear proper safety equipment when operating or servicing the unit.
- Before activating the tailgate, operators/mechanics shall make sure that people and obstructions are far away from the vehicle.
- Do not operate this vehicle if there are any signs of damage or incomplete repairs.
- Avoid operating the unit if excessive vibration is detected.
- Report any doubts that you might have and any safety service requirements regarding this vehicle to a supervisor.
- Do not operate the unit while under the influence of alcohol or medication.
- Do not run engine in an enclosed area.

- Do not place hands or feet near moving or rotating parts.
- For any maintenance, cleaning or inspection work, the vehicle *must* be on solid, level ground.
- If any safety devices such as proximity/limit switches are not in proper working order, the unit must be taken out of service until the device is properly repaired.
- Always check for damage or leakage. In case of damage/leakage, the unit must be taken out of service for immediate repair.
- Do not smoke near the vehicle.
- Do not get into the body or try to repair anything behind the packer when it is moving or when the hydraulic pump is still running. Personnel authorized to get into the body *must* first lock out and tag out the vehicle, as required by the employer. For more information, see *Lockout/Tagout Procedure* on page 12.
- Do not operate engine if there is accumulation of grass, leaves or other debris on the engine.
- Do not leave unit unattended while in operation.
- Do not park unit on a slope.
- Be sure the leaf pile to be vacuumed does not contain metal, glass, plastic or large pieces of wood.
- Follow PTO and engine manufacturer's operating and maintenance instructions.
- Often check fuel lines and fittings for cracks and leaks. Replace if necessary.
- Perform complete inspection of the unit before leaving the service garage.
- Verify the impeller, liners and blower housing for cracks and holes daily.
- Be attentive to the surrounding area while vacuuming leaves. Watch for pedestrians, animals and foreign material.

Caution!

Never open either access door while blower unit is running.
To operate blower motor:

- close all access doors and latches;
- Predator™ system must be on; and
- truck engine must be running.

Caution!

Access doors must be closed and latched for blower unit to activate. Bodily injury or death will result if proximity switches are de-activated.

Caution!

Ensure blades stopped rotating prior to opening either access door. For the blades to stop rotating, disengage the clutch and wait for the blades to come to a complete stop.

IMPORTANT: If either access door is opened while the blower motor is running, the system is wired to immediately kill the blower motor. Do not alter or disable this feature or bodily injury or death can result.

NOTE: Report any problems to your supervisor and DO NOT OPERATE this unit if not functioning properly. Contact Labrie Enviroquip Group if new switches or safety decals are needed.

Welding

Danger!

Remove paint before welding or heating. Do not weld near lines that are pressurized or contain flammable fluids.

Caution!

Disconnect all batteries and electronic modules prior to welding on packer body.

If welding hydraulic equipment, care should be exercised so that accumulated dirt and oil do not become ignited. Cleaning the area before welding would be a good practice. Keep fire extinguisher close to working area. Good housekeeping is a must.

Gasoline fuel tanks should be removed and located outside of the welding area. Diesel fuel tanks should be covered with a wet tarp to prevent fumes from causing an explosion or fire. If the battery of the truck is located near the repair area where sparks can fall on the battery, it is possible to blow up the battery from the acid fumes.

If it becomes necessary to weld or braze a hydraulic reservoir, hydraulic oil when sufficiently heated and in the presence of air is a powerful explosive. Any method of brazing, welding, or open flame soldering without proper preparation is hazardous.

Safety equipment should be worn when working under conditions that require its use.

Fire

The employer must inform and train all personnel on the measures that must be taken in case of a vehicle and/or body catching fire.

Anytime a loaded vehicle is *brought inside a garage,* fire extinguishers shall be close at hand.

Danger! Do not perform any repair or maintenance on a vehicle that has not been unloaded.

The employer must also inform employees of an appropriate place to unload the body near the maintenance facility (preferably away from traffic, surface drains, and ditches).

Lockout/Tagout Procedure

The lockout/tagout procedure should be followed whenever you are inspecting, cleaning or repairing your PREDATOR™.

Figure 2-1 Lockout/tagout tags

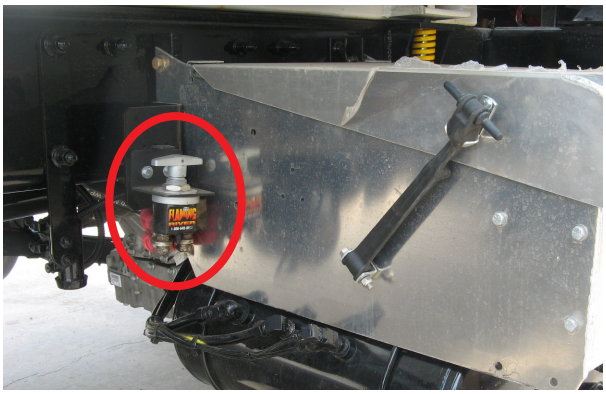
IMPORTANT: Failure to follow the lockout/tagout procedure may result in serious injury or death. Prior to performing work under the tailgate, it is necessary to set the tailgate prop. See *Setting the Tailgate Prop* on page 14.

The following is the lockout/tagout procedure:

1. Set the chassis parking brake.
2. Turn off all hydraulic pumps by pressing the Emergency stop button (see Figure 3-3).
3. Activate one of the hydraulic controls to relieve any residual pressure in the system.
4. Turn off engine, remove keys from the ignition and store the keys in a safe, controlled area. It is recommended that you keep the keys on your person.
5. Place an Out-of-Service tag (see Figure 2-1) on the steering wheel using a non-reusable fastener and place an Out-of-Service sign in the front window.

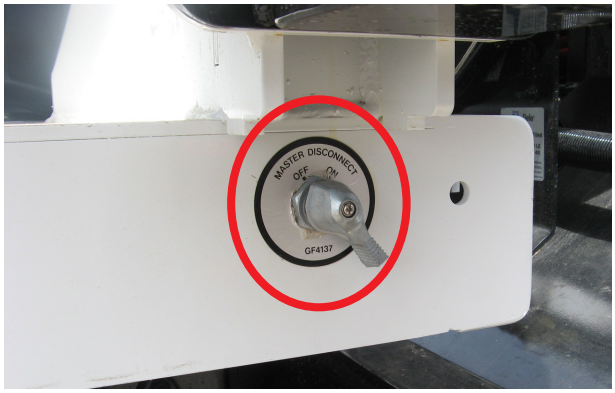
6. Turn off the truck disconnect switch.

Figure 2-2 Truck disconnect switch



7. Turn off the master disconnect switch on the blower assembly.

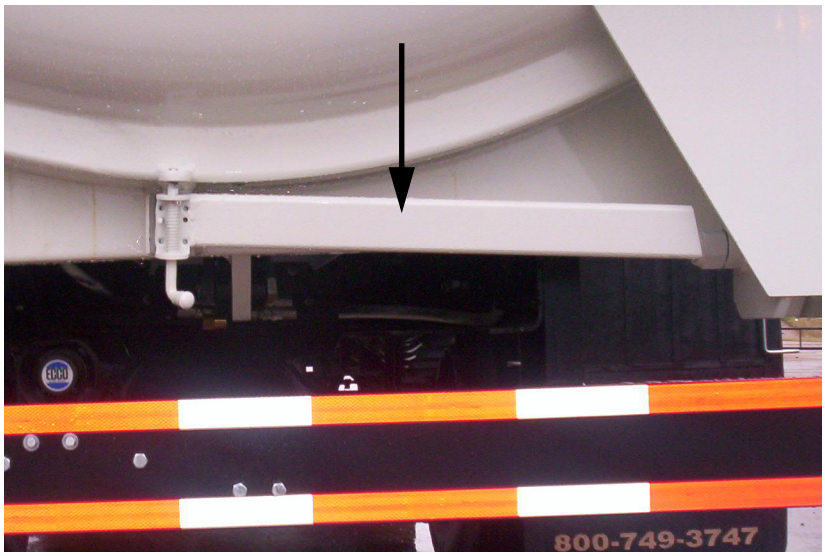
Figure 2-3 Master disconnect switch



8. Chock the wheels.

Setting the Tailgate Prop

Figure 2-4 Tailgate prop



NOTE: Never walk or work under the tailgate without first positioning the tailgate prop!

To set the tailgate prop:

1. Ensure that there is adequate clearance behind the vehicle to open the tailgate.
2. Open the tailgate by approximately 3 feet (.91 M).
   Hooks will automatically disengage to let tailgate move outward.
3. Unlatch prop from its stored position and swing into the open position. Reset the latch.
4. Close the tailgate as much as possible. Prop should fit securely into the tailgate prop socket.
5. Complete the lockout/tagout procedure before working under propped tailgate. Refer to “Lockout/Tagout Procedure” on page 12.

Tailgate Lock Hooks

The tailgate lock hooks, one on each side, are automatically engaged when the tailgate is closed. This is to prevent unintentional opening of the tailgate, which could cause serious damage to the tailgate.

Shut Down Procedure

If your PREDATOR™ is parked for an extended period of time, follow the chassis manufacturer's shutdown procedure and ensure that their maintenance requirements are met.

Also, apply the following procedure:

1. Park your PREDATOR™ on hard and level ground.
2. Apply the parking brake.
3. Make sure that all moving parts (tailgate, packer panel, etc.) are in their "home" position.
4. Turn off both hydraulic pumps.
5. Turn off the electrical system.
6. Turn off the engine.
7. Turn off the truck disconnect switch (see Figure 2-2).
8. Turn off the master disconnect switch on the blower assembly (see Figure 2-3).

Prior to Start Up

Before starting the PREDATOR™, ensure that no system will engage and begin to operate as your are starting the engine. All electrical controls should be turned off and both hydraulic pumps disengaged.

The main valve on the hydraulic suction line should be open (see Figure 2-5).

Figure 2-5 Main valve on suction line

3

Maintenance

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Lockout/Tagout Procedure* on page 12).

Always maintain cleanliness of the truck for safety and better performance.

As such:

- Clean all vehicle lights, warning lights and safety decals so that you and anyone in the vehicle's surroundings (pedestrians/other drivers)are safe at all times.
- Clean battery and connections.
- If required, clean engine radiator properly.
- Clean hopper and radiator screens.
- Remove all accumulated leaves behind the packer panel. Use pressurized water if needed.
- Clean out the air filter housing once a week.
- Pre-cleaner should be cleaned daily.
- The instrumnent panel and circuit board should be cleaned daily using compressed air.
- Remove debris and oil from boom solenoid and pump each day.
- Clean hydraulic pump motor and connections.
- Make sure the cab steps are clean and free of any slippery material.

Danger!

Use a stepladder to reach higher parts of the vehicle. As the roof is not designed to be walked on, be extremely cautious if you have to work there.

Caution!

Keep the cab floor dry and clean to prevent slippage and accidents.

Caution!

For maintenance procedures not covered in this manual, please consult Labrie*Plus* (see contact information on page 3).

Warning!

Maintenance or repair that is not properly done may result in equipment damage and/or personal injuries.

Hydraulic System

As with all hydraulic systems, it may be necessary to periodically check and adjust the pressure relief settings. It may be that a major hydraulic component has been changed, that the vehicle is not performing in terms of payload, or that the vehicle has recently been put into service and the system requires adjustment following a run-in period.

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Lockout/Tagout Procedure* on page 12) .

Danger!

Human skin can be easily penetrated by high pressure oil (2,000 psi and above). Failure to take appropriate safety precautions may result in serious injury or death.

Danger!

Because of extreme overhead dangers, equipment must be properly supported when servicing sections on the hydraulic system.

NOTE: The ball valve on the hydraulic tank must be completely open before engaging the pump or starting the engine.

Labrie Enviroquip Group requires that the hydraulic fluid and return oil filter be changed and that the strainer be cleaned before changing the hydraulic pump.

Manufacturer's warranty on hydraulic pumps provided or sold by Labrie Enviroquip Group could be declared void if the hydraulic fluid and return oil filter are not changed, and if the strainer is not cleaned prior to replacing the hydraulic pump.

Therefore, it is mandatory to change the return oil filter and clean the strainer after the *first* 50 hours of use and then once a year. The hydraulic fluid must be changed once a year. Hydraulic fluid contamination will severely damage hydraulic components.

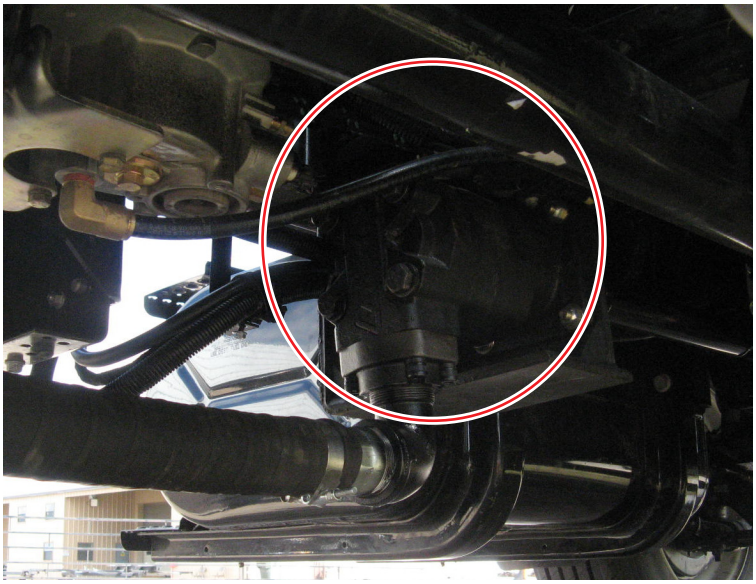
It is recommended to have the hydraulic fluid tested and analyzed by a lab to prevent hydraulic system or pump breakdown. This will also optimize the frequency of hydraulic fluid changes.

NOTE: Evidence of maintenance and/or fluid samples could be requested when filing warranty claims concerning the hydraulic system or the pump.

Inspecting the Pump

The hydraulic pump is powered by the vehicle transmission system through a hot-shift PTO. The pump should be visually inspected every working day.

Figure 3-1 Pump



When inspecting the pump:

1. Start the engine and engage the hydraulic pump.

   The pump should turn freely without excessive noise or vibrations.
2. Check for oil leaks under the pump and at connection points.

Priming a New Pump

To prevent cavitation or air in the hydraulic system after installing a new pump or even when flushing the hydraulic system, make sure to prime the pump before starting the engine.

Apply the following procedure for any new installed pump:

1. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to “Lockout/Tagout Procedure” on page 12).

Danger!

Apply the lockout / tagout procedure at all times when maintenance or inspection is carried out on the unit.

2. With the ball valve closed, fill the suction line before installing it on the pump.
3. Fill the pump housing with new oil.
4. Reinstall the pressure hose on the pump housing.
5. Open the ball valve on the suction line.
6. Crank the engine repeatedly — about five times — without letting it start in order to fill the suction hose and the pump with hudraulic oil and to push the air back into the tank.
7. Start the engine. You can slowly raise the engine RPM only after 5 minutes. When you raise the RPM, always make sure that the pump does not make excessive noise.
8. Before putting the vehicle back in service, recalibrate the system pressures.

Pump Cavitation

Cavitation is defined as the formation of air pockets in a moving fluid. Air in the hydraulic oil causes excessive wear and noise. Make sure to prime the pump properly after its replacement or after flushing the hydraulic system (refer to “Priming a New Pump” on page 19). When the pump is properly primed, cavitation disappears after a short period of time because air is returning to the hydraulic tank.

If the pump is still generating unusual noise after performing the priming procedure, you will have to bleed the hydraulic system.

To do so:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Connect a 0–3,000 psi gauge to the main valve to ensure that no pressure has built up in the system (see Figure 3-2).
3. Apply the parking brake and start the engine.
4. Engage the hydraulic pump.
5. Place a rag around the plug located on the output section of the main control valve and slowly loosen the plug (see Figure 3-3).

   A mixture of oil and air will come out. Keep bleeding the oil until the pump noise stops.

Figure 3-2 Gauge installed on main valve

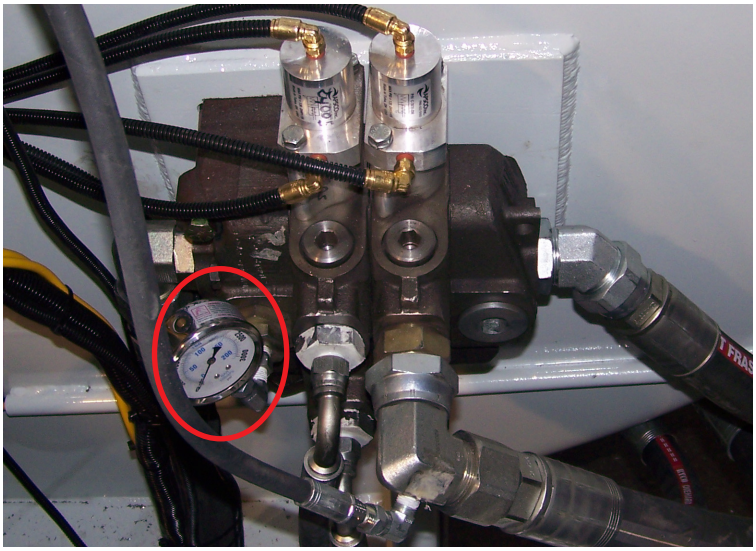
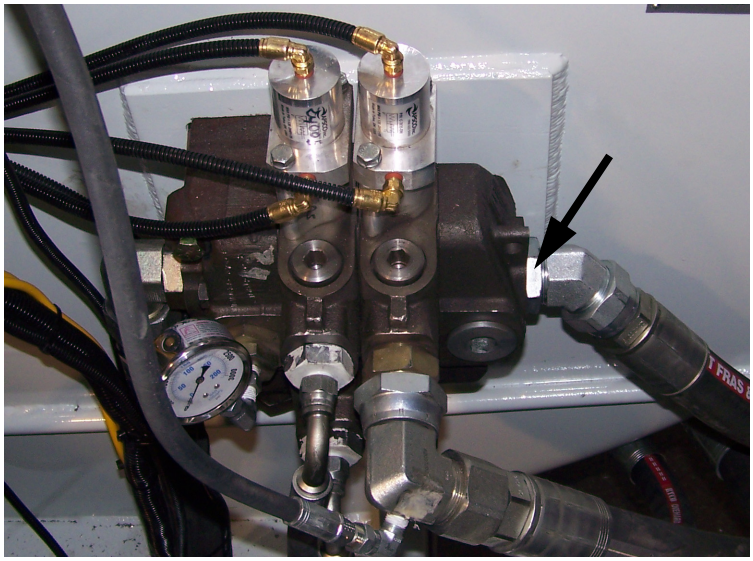


Figure 3-3 Plug to loosen



IMPORTANT: Do not activate any hydraulic function during system bleeding.

6. When the noise stops, tighten the pipe/hose fitting.
7. Cycle the packer to ensure that there are no leaks and the pump is running smoothly.
8. Disconnect the gauge.

Inspecting the Hydraulic Tank

Verify that the oil in the tank is clean (not colored) and always at the appropriate level.

Caution! Maximum temperature for hydraulic oil is 77 °C (180 °F).

To inspect the hydraulic tank:

1. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
2. Clean the strainer and replace the filter element inside the tank after the first 50 hours of service (see *Cleaning the Strainer* on page 24 and *Replacing Filter Elements* on page 24).

Figure 3-4 Filter housing element

3. Make sure that the hydraulic oil is clean (not colored) and at least at 3/4 on the oil level gauge (with all cylinders retracted) [see Figure 3-5].

   The complete system requires between 50 and 60 gallons of oil.

Figure 3-5 Oil temp/level gauge

Emptying the Hydraulic Tank

To empty the hydraulic tank:

1. Prepare the vehicle:
   - **1 a.** Apply the parking brake
   - **1 b.** Start the engine
   - **1 c.** Engage the hydraulic pump
   - **1 d.** Retract all cylinders (packer, tailagate locking mechanism)
   - **1 e.** Disengage the hydaulic pump
   - **1 f.** Stop the engine
2. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
3. Clean around the filler cap and remove it.

Caution! Some hydraulic tanks are pressurized (from 3 to 5 psi). Open the filler cap slowly.

4. Place a clean container (minimum capacity: 60 gallons) under the drain plug.
5. Remove the drain plug under the tank and let the tank drain completely.
6. Reinstall the drain plug.

Cleaning the Strainer

To clean the strainer:

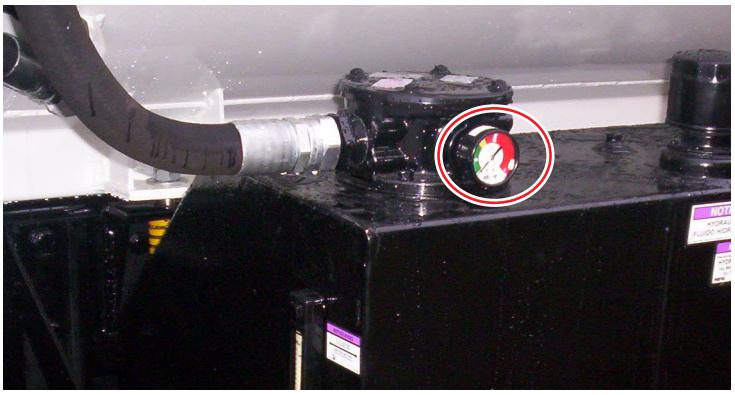
1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 23).
2. Remove the hose clamp from the suction hose.
3. Slide the hose over the pipe until it clears the nipple (slide towards the frame of the vehicle).
4. Remove the strainer from the tank port.
5. Clean the strainer using solvent, and check for damage; replace if necessary.
6. Replace the seal (if necessary).
7. Re-install the strainer.

Replacing Filter Elements

IMPORTANT: To protect new components of the hydraulic system, the return filter element must be changed after the *first* 50 hours of operation of the vehicle. Change the element twice a year afterwards.

The filter restriction indicator will indicate, when the engine is running, if the filter needs to be changed (see Figure 3-6). Replace the filter before the indicator reaches the red zone. This will keep the oil clean, extend component life expectancy and reduce failures.

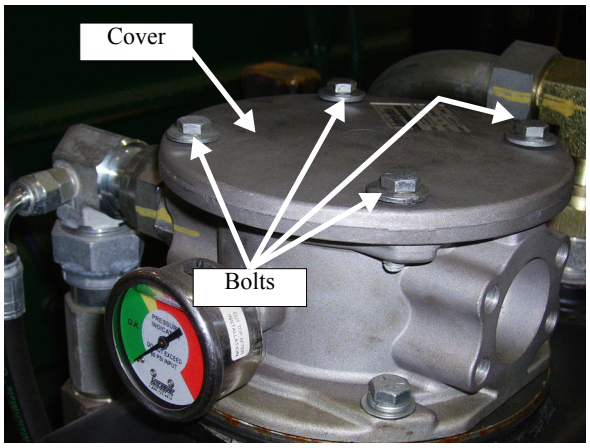
Figure 3-6 Filter restriction indicator (steel tank)



To replace the hydraulic filter:

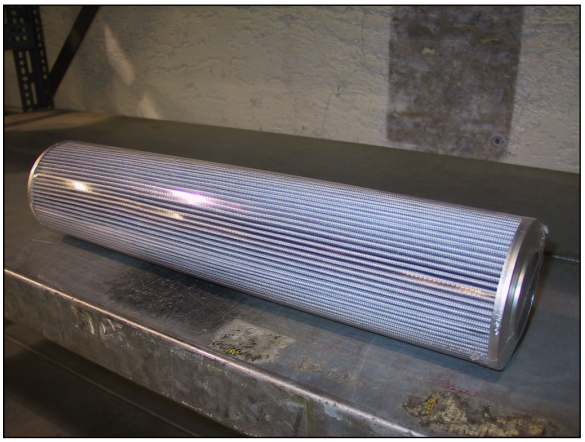
1. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
2. Prepare a pan or a bucket to collect the oil that will come out of the filter housing (two gallons of oil).
3. Remove the filter head cover bolts (four).

Figure 3-7 Filter head cover and retaining bolts (rectangular tank)



4. Replace the filter element with a new one.

Figure 3-8 Filter element



5. Reinstall the filter head cover.

Replacing Hydraulic Oil

Caution!

Highly contaminated hydraulic fluid must be changed promptly to avoid damaging the hydraulic system.

To do so:

1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 23).
2. Clean the strainer (if necessary) (see *Cleaning the Strainer* on page 24).
3. With a clean dry cloth attached to a stick, remove all metal particles and debris accumulated at the bottom of the hydraulic tank:

3 a. Remove the screws retaining the access panel.

3 b. Insert your hand inside and clean the interior with a dry clean cloth.

4. Change the return filter element (see *Replacing Filter Elements* on page 24).
5. Using a filtering screen, refill the tank with high-quality oil until it reaches the 3/4 mark on the oil gauge.

   The entire system will require between 50 and 60 gallons of hydraulic oil.

Caution! It is not recommended to mix different brands and/or grades of oil in the hydraulic tank.

6. If the suction line has been replaced, fill the line until oil reaches the pump (see *Pump Cavitation* on page 20).
7. Reinstall the filler cap and fully open the ball valve.

Caution! Failure to open the ball valve may seriously damage the pump and the hydraulic system.

8. Start the engine.

Pressure Settings

Figure 3-9 Main valve

Caution!

Excessive pressures will cause damage to components and can cause injury to persons. Read instructions carefully!

NOTE: All pressure settings in this system require that:

1. The system is activated (main switch pulled up) and PTO, if employed in the system, is engaged.

2. When making pressure reading, the engine speed should be 1200 - 1400 RPM unless otherwise specified.

3. All pressures can be read on the pressure gauges located on the valve body or control box outside.

Main Relief Valve Setting

To set the main relief valve:

1. Loosen jam nut on relief valve (see Figure 3-9).
2. Hold the tailgate lever to the open position and verify that the tailgate is fully open.
3. With the lever continously held in the open position, increase engine RPM to between 1200 - 1400 RPM.

NOTE: Recommended pressure is 2500 ± 50 PSI. Adjust relief valve as required.

4. After setting pressure, tighten adjustment jam nut and repeat steps 2 and 3 to verify pressures. Re-adjust as required.

Compact and Timer Pressure Switch Adjustments

NOTE: For the following procedure, it is recommended that it is done by two persons. Adjustments need to be completed correctly as machine failure, personal injury, or death could result if improperly done.

To adjust the compact and timer pressure switches:

1. Open the cover on the body mounted control box located on the outside of the truck near the PREDATOR™ control valve body. Exercice care not to drop anything into it or short any electrical connections.
2. Start engine, engage PTO, and increase engine RPM to 1200 - 1400 RPM.
3. Open the tailgate and fully extend the packer.
4. Block the tailgate limit switch so that the indicator in the cab shows that it is closed.
5. Have the operator depress the Compact button.
6. Decrease engine RPM to idle, disengage PTO, and shut off engine.
7. Repeat Step 2 and set the compact pressure on the pressure limit switch to 2150 ± 50.
8. Adjust the timer pressure switch so it engages at 2100 ± 50.
9. With the packer at full compact, adjust the pressure limit switch to approximately 2100 ± 50. Then adjust the pressure switch so that the timer engages.

NOTE: The packer panel must begin to return after 3 seconds.

Inspecting Hydraulic Cylinders

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Lockout/Tagout Procedure* on page 12) .

You must inspect the hydraulic cylinders at least once a month.

When you do so:

1. Make sure that the ball valve on the suction line is completely open before starting the engine.

Warning! Failure to open the ball valve may damage the hydraulic system.

2. Make sure that connections between all hoses and pipes are tight, and that no oil is leaking.

   Leaking or otherwise faulty cylinders must be repaired or replaced immediately.
3. Make sure that all cylinder caps are firmly set and that there are no leaks.
4. Using a straight edge, make sure that cylinder rods are straight.
5. Lubricate and inspect all cylinder mounting points (pins, retaining bolts, etc.).

Detecting Cylinder Internal Leaks

An internal leak is caused by a damaged seal inside the hydraulic cylinder (see 1 on Figure 3-10). Because the cylinder is leaking oil inside (bypassing), a certain amount of pressure is lost, reducing the efficiency of the cylinder and its capacity to push and/or pull.

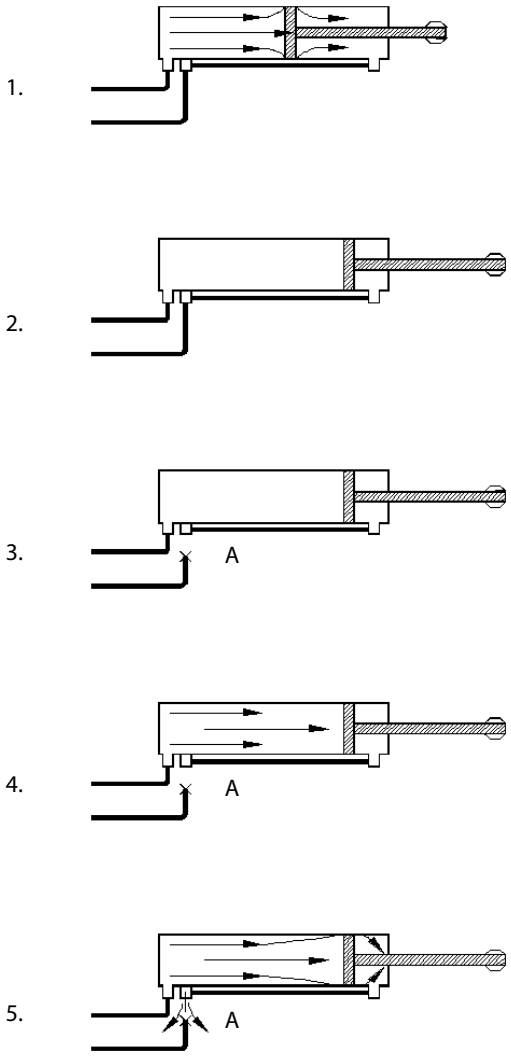
If the packer cylinders are bypassing, the seal inside the cylinder may need to be replaced.

To detect internal leaks in packer cylinders:

1. Apply all safety measures, and set the parking brake.
2. Pull on the red emergency STOP button.
3. Start the engine and engage the hydraulic pump.
4. Fully extend the packer cylinder and disengage the hydraulic pump.
5. Disconnect and plug hose “A”.
6. Engage the hydraulic pump.
7. Push the packer button and see if oil is leaking from port “A”, then push the emergency STOP button.

   If oil leaks out of port “A” when pressure is applied, there might be an internal leak; replace or repair the cylinder.

Figure 3-10 Detecting cylinder internal leaks



Servicing Truck Chassis

For servicing the truck chassis, refer to the service schedule recommended by the truck chassis manufacturer.

Servicing Auxiliary Engines

Please refer to the service schedule recommended by the engine manufacturer. You will also find some of the more critical items relisted in the Central Tank system schedule.

Servicing PREDATOR™ System

Service periods referred to in this manual should be related to hours of service.

Daily service should be done after eight (8) hours or one shift of operation.

Weekly service should be done after forty (40) hours or five (5) shifts of operation.

MAINTENANCE	INTERVAL				
	Daily	Weekly	Every 2 Weeks	Monthly	Yearly
Drive Shaft:					
Check all drive shafts, universal joints, and attaching bolts (including PTO).	X				
Visually inspect drive shafts and report defects immediately.	X				
Boom and Boom Frame:					
Lube boom.	X				
Lube frame.	X				
Lube optional attachments.	X				
Check tightness of camfollowers and nuts.	X				
Check tightness of all boom hanger bolts.	X				
Check all pivots and hydraulic pressure.	X				
Limit/proximity switches:					
Proper adjustment of the limit/ proximity switches is imperative.		X			
Check and clean area around switches.	X				
Lubrication:					
Lubricate the packer and its accessories.	X				
Lube tailgate hinge.		X			
Lube tailgate lock shaft.		X			
Clean and lube the limit wheel on the top of the body.		X			
Lubricate main shaft bearings.	X				

MAINTENANCE	INTERVAL				
	Daily	Weekly	Every 2 Weeks	Monthly	Yearly
Lubricate PTO bearings.	X				
Battery:					
Ensure battery cables are not coming in contact with an area that could rub through the insulation.				X	
Clean and check battery and connections.		X			
Blowing system:					
Remove blower housing face and inspect liners inside blower housing for wear.		X			
Inspect impeller for damage.	X				
Inspect exterior of blower housing for damage.	X				
Operator control:					
Check for proper operation.	X				
Air tanks:					
Drain.	X				
Air system:					
Check for leaks.		X			
Safety systems:					
Check for proper operation (tailgate, alarm and special devices).		X			
Engine:					
Check engine oil level.	X				
Check coolant level.	X				
Check engine as described in the engine owner's manual.	X				
Ejection mechanism:					
Check cylinder for leaks. Repair or replace if required.		X			

MAINTENANCE	INTERVAL				
	Daily	Weekly	Every 2 Weeks	Monthly	Yearly
Check pressure. Adjust if necessary.				X	
Wiring System:					
Check for damaged harnesses and/or bad connections.					X
Compactor:					
Lube skid track.	X				
Hydraulic System:					
Check oil level in tank, and refill if necessary.	X				
Check all hoses for leaks.	X				
Check if the shut-off valve is open on main tank.	X				
Check on ground for overnight leaks.	X				
Check cylinders, pumps, control valve and system for leaks. Repair or replace if required.		X			
Clean strainer and refill.					X
Check pressure.				X	
Change hydraulic system filter after the first forty (40) hours of operation[a].		X			
Hopper area:					
Clean dirt under or behind the compactor.	X				
Electrical Wire:					
Check for bare spots or broken wires.	X				
Check connections.	X				
Body:					
Check for corrosion.				X	

MAINTENANCE	INTERVAL				
	Daily	Weekly	Every 2 Weeks	Monthly	Yearly
Visual inspection:					
Packer wear pads, hydraulic cylinders and cylinder pins, hoses, pipes and connections, wear of floor and hopper sides.	X				
Others:					
Check all nuts and bolts for thightness.	X				
Inspect radiator for leaks and trash build-up. Clean radiator screen.	X				
Check air intake filter.	X				
Check fuel filter sediment bowl.	X				
Inspect intake and exhaust hoses.		X			
Inspect all ducts for damage.		X			
Inspect fuel lines for leaks or wear.			X		
Check/clean pre-filter.	X				

a. Change on a 13-week (or 520-hour) schedule thereafter.

Lubrication

LUBRICATE, LUBRICATE, LUBRICATE!

Insufficient lubrication is a major cause of component failure on all refuse vehicles. The PREDATOR™, like most equipment, has many points that require grease.

Lubricating the PREDATOR™ as part of the regular maintenance is a very important task to ensure its efficiency and durability. Keeping the PREDATOR™ lubricated is essential for optimal operation.

Caution! Remove the negative battery terminal before performing any lubrication procedures.

Warning! The Safety section of this manual and the Operating section of the PREDATOR™ Operator's Manual must be thoroughly read and understood before performing any lubrication procedures.

IMPORTANT: Bearings must always be lubricated at the end of each day of work. Also, thorough lubrication is required before extended shutdown or storage.

Approved Lubricants:

Hydraulic system - Type "AW" or I.S.O. grade 32.

S.U.S. @ 100° F__155; @ 210° F__44

Pour point -25° F

Boom, compactor, and other body parts - Use the same lubricant recommended by your chassis manufacturer.

Engine Oil

Refer to the engine manufacturer's maintenance manual for recommended type of engine oil.

Transmission Oil

Refer to the transmission manufacturer's maintenance manual for recommended type of transmission oil.

Type of Grease to be Used

Any lithium-base commercial multipurpose grease may be used.

Caution!

Do not mix different types of grease. In doubt, purge the old grease before using a different type of grease.

Lubrication Points (Leaf Vacuum):

Components to be greased (1)	Intervals (1)	Types of grease to be used (1)
Drive bearings (if equipped)	Every 10 hours	Multi-purpose, heavy-load, high-temperature, moisture resistant #2 grease
Boom swivel	Grease boom bearings once a week	Multi-purpose moisture resistant #2 grease
PTO shaft fitting	Crossover shaft and linkage should be greased after every 200 hours of operation	High temperature lithium based #2 grease
Hinges & friction points	Once a week	On hinges, use SAE30 weight oil; On friction points, use a premium grade, high temperature lithium based EP#2 grease
Door latch hooks	Both hooks are to be greased one a week	High temperature lithium based EP#2 grease
Latch shaft pillow block bearings	Once a week	High temperature lithium based EP#2 grease
Boom cylinders (pivot joints)	Once a week	High temperature lithium based EP#2 grease
Impeller shaft bearings[a]	Every 8 to 10 hours of operation	

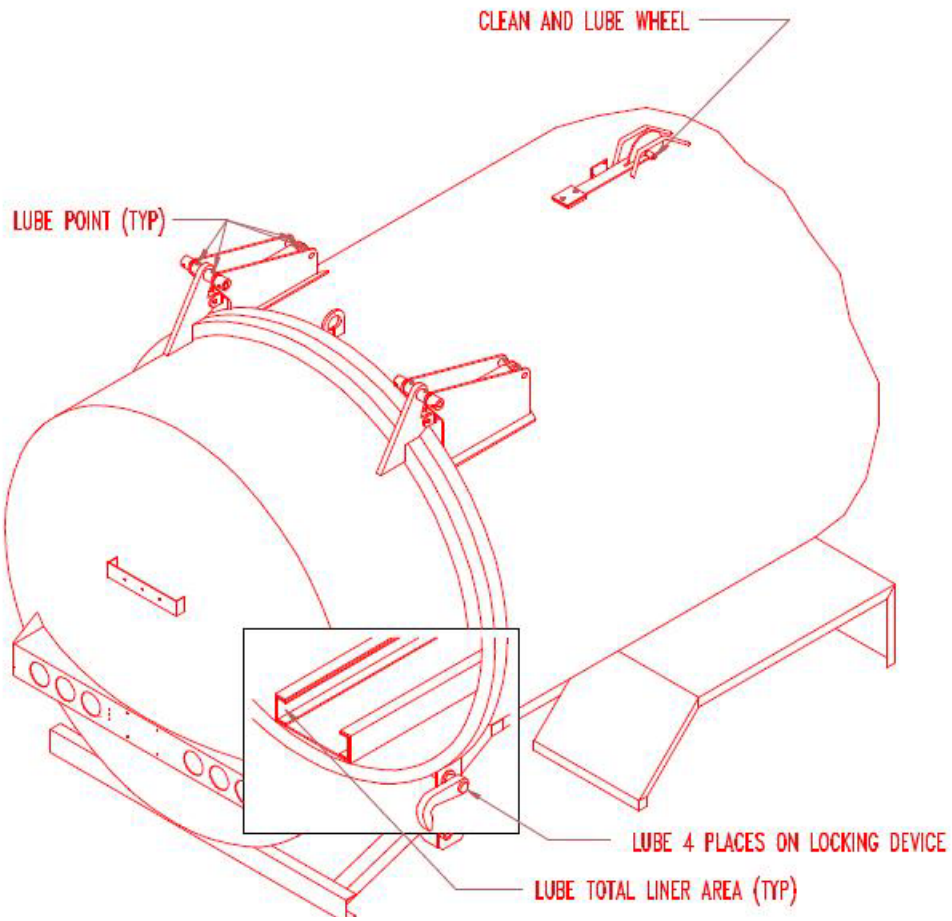
a. **The bearings should not be overlubricated.**

(1) Source: ODB's Owner's Manual

NOTE: For specific lubrication procedures, brands of grease, and recommendations, please consult the leaf vacuum manufacturer's Owner's Manual (ODB).

Lubrication Points on Dump Body

Figure 3-11 Body group



NOTE: Liner area is only lubricated for break-in point. No lubrication should be done afterward.

Packer Lubrication Points

Caution!

Because of their intensive use, the packer and its accessories must be lubricated every working day.

Caution!

Before you proceed with lubrication, make sure all safety measures have been properly taken.

Tailgate

Greasing Tailgate Hinges and Locking Mechanism

It is important to lubricate the tailgate hinges, and locking mechanism with multi-purpose grease as per the lubrication schedule.

Caution! Excessive wear might compromise the proper working condition of the tailgate.

Also, inspect the welds around hinges. The proper working condition of the following components is also to be checked:

- Tailgate hydraulic cylinders
- Cylinder pins and circlips
- Tailgate hinges and pins
- Wear on the locking mechanism
- Wear on the tailgate lock pins
- Tailgate rubber seal

Danger! Do not operate this equipment if there are any signs of damage or incomplete repairs.

Access Door Hinges

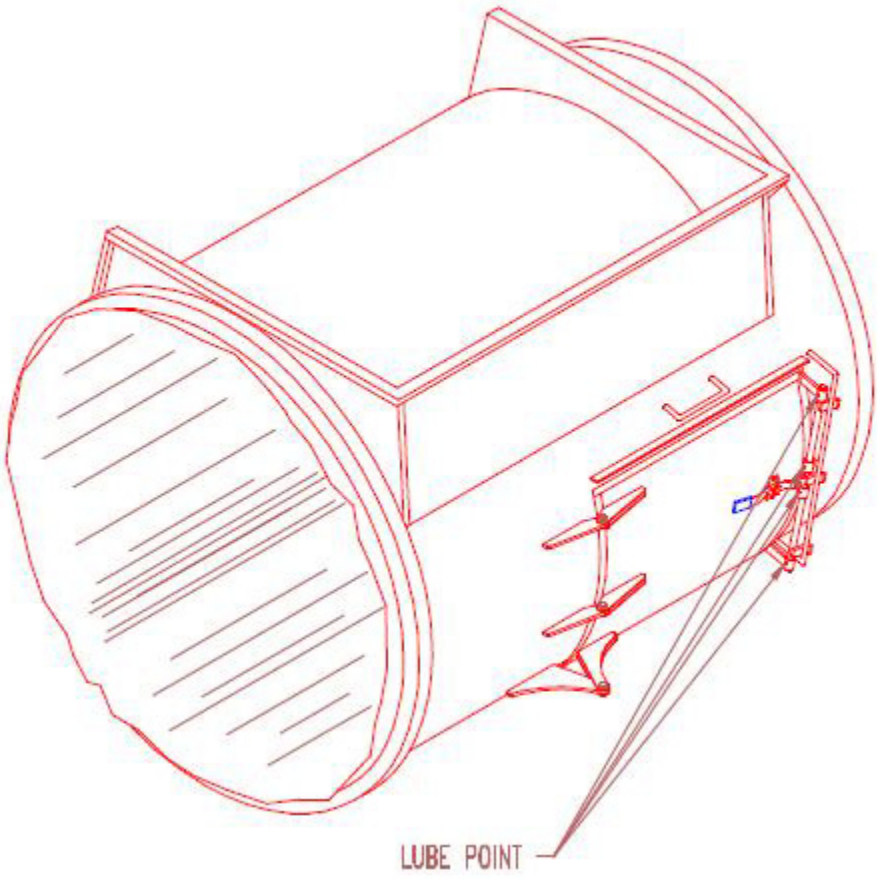
To protect and reduce wear on access door hinges, lubricate them regularly with multi-purpose grease.

To lubricate the access door hinges:

1. Turn off the engine and disengage the hydraulic pump.
2. Proceed with the lockout procedure. See *Lockout/Tagout Procedure* on page 12.
3. Fully open all access doors.
4. Locate the grease fitting on top of each door hinge.
5. Apply lubricant with a grease gun.

   There are 3 hinges on each access door for a total of 6.

Figure 3-12 Access Door



Preventive Maintenance

Caution!

Remove the negative battery terminal before performing any maintenance procedures.

Warning!

The Safety section of this manual and the Operating section of the PREDATOR™ Operator's Manual must be thoroughly read and understood before performing any maintenance procedures.

Just like lubrication, preventive maintenance is valuable in that it helps reduce the probability of failure or the degradation of this equipment. It also helps the unit last longer and function properly.

Preventive maintenance should be part of a scheduled maintenance program, and maintenance personnel should follow such program. This is a valuable tool as it can cut down on the amount of downtime due to mechanical failures.

On page 18 you will find a table that can be used as a guidance for establishing a scheduled maintenance program. If you still need help in establishing such a program, contact Labrie*Plus*. See *To Contact Labrie Plus* on page 3.

The following table provides a list of the various preventive maintenance tasks that can be handled by a qualified mechanic.

NOTE: For tasks not listed in the following table, please call Labrie*Plus*.

TASKS (1)	INTERVALS (1)	REMARKS (1)
Changing engine oil and filter	Must be changed according to the engine owner's manual.	
Checking engine oil	Oil level to be checked every day.	Engine must be stopped for a period of time before checking oil level.
Checking engine coolant	Coolant level to be checked every day before starting vehicle.	Coolant level should not be less than one inch below top of the radiator. **CAUTION**: Never check the coolant when engine is hot. Always wear eye and hand protection when doing this task.
Checking and cleaning engine radiator	This task should be performed everyday.	Use compressed air. **DANGER**: Never attempt to clean or inspect the radiator when engine is running or when it is hot. Always wear eye and hand protection when doing this task.
Cleaning pre-cleaner	This task should be performed at least daily.	This is done to remove debris that has accumulated in the pre-cleaner.
Checking air filter	Daily.	Should be replaced when dirty. Do not attempt to clean it.
Cleaning air filter housing	Once a week.	To remove accumulation of dust debris.
Filling fuel tank	At the beginning of the work shift.	Make sure to leave a gap at the top of the tank for expansion of the fuel.
Checking fuel lines	Daily.	To make sure there are no cracks or holes, and to verify tightness.

TASKS (1)	INTERVALS (1)	REMARKS (1)
Checking battery terminals	Daily.	Remove any corrosion w/ a wire brush. Cover terminals w/ light grease or petroleum jelly. **CAUTION**: Eye and hand protection MUST be worn when working w/ the battery.
Checking battery cable, cable connections and battery tie downs	Daily.	Check the cable for wear and tear. Make sure connections and tie downs are well fixed. **CAUTION**: Eye and hand protection MUST be worn when working w/ the battery.
Cleaning battery box	On a regular basis.	To insure reliable operation of the hydraulic pump and to improve battery life.
Cleaning hydraulic power pack	On a regular basis.	To insure reliable operation of the hydraulic pump and to improve battery life.
PTO adjustment	Consult the PTO manfacturer's manual for maintenance intervals.	Not all PTO's need to be adjusted. Refer to the PTO manufacturer's manual to determine if the PTO of your unit needs to be adjusted.
Checking main drive belt (if equipped)	Daily.	Replace it immediately if there are signs of cracking. Proper tension of the belt must also be checked. Belt deflection should be about ½" when applying an 8-lb pull. **CAUTION**: Negative battery cable MUST be removed prior to opening belt guard.
Belt adjustments (belt drive units only)	Perform periodic checking of the belt.	Replace if cracks or signs of wear are found. If belt is loose, proceed with adjustment (see leaf vaccum manufacturer's owner's manual for adjustment procedure).
Checking fasteners	Monthly.	**HOWEVER**, for the first 30 days, checking fasteners should be done EVERY WEEK.

TASKS (1)	INTERVALS (1)	REMARKS (1)
Cleaning instrument panel/circuit board	Daily.	Should be cleaned w/ compressed air. Also, wipe clean circuit board connectors and apply non-conductive grease on them weekly. This helps keep connections solid.
Checking fluid level going into boom hydraulic pump	Daily.	If fluid needs to be added, use automatic transmission fluid, which is recommended.
Removing debris and oil from solenoid and pump	Daily.	Debris build-up can cause failure to pump. Also, check wiring contacts regularly.
Checking all hydraulic fittings	Daily.	Make sure there are no leaks. If fittings are loose, tighten them up.
Checking exhaust duct gasket	Every 200 hours.	Check this gasket for wear. It is used to create a seal between the dump body and blower housing.
Cleaning blower housing	Daily.	This task is recommended. Use the clean-out door to carry out this task. **CAUTION**: Disconnect a battery cable prior to opening the inspection door. Once this task is completed, inspect the impeller and blower housing liners for excessive wear or cracks.
Removing blower housing face	At every week's end.	Once the blower housing face is removed, fully inspect the impeller and blower housing liners to make sure there is no damage. **CAUTION**: Severe damage to the equipment or severe injury may occur if the impeller, liner or blower housing is damaged.
Checking clutch linkage	After the first 15 hours of operation and every 40 hours therafter.	If need be, properly adjust clutch. **CAUTION**: Before proceeding with this adjustment, the engine and driven unit MUST be completely stopped.

(1) Source: ODB's Owner's Manual

IMPORTANT: A vehicle that is correctly maintained will last much longer than a vehicle that is not correctly maintained.

Auto PTO Linkage Adjustment

If the auto PTO linkage needs adjustment, refer to the leaf collector manufacturer's Owner's Manual for the appropriate adjusting procedure. Also refer to said manual for the adjusting procedure related to the **CLUTCH-ASSISTED CYLINDER** if installed on your unit.

Impeller - Removing/Installing Impeller

Refer to the leaf collector manufacturer's Owner's Manual for procedures to remove and/or install impeller.

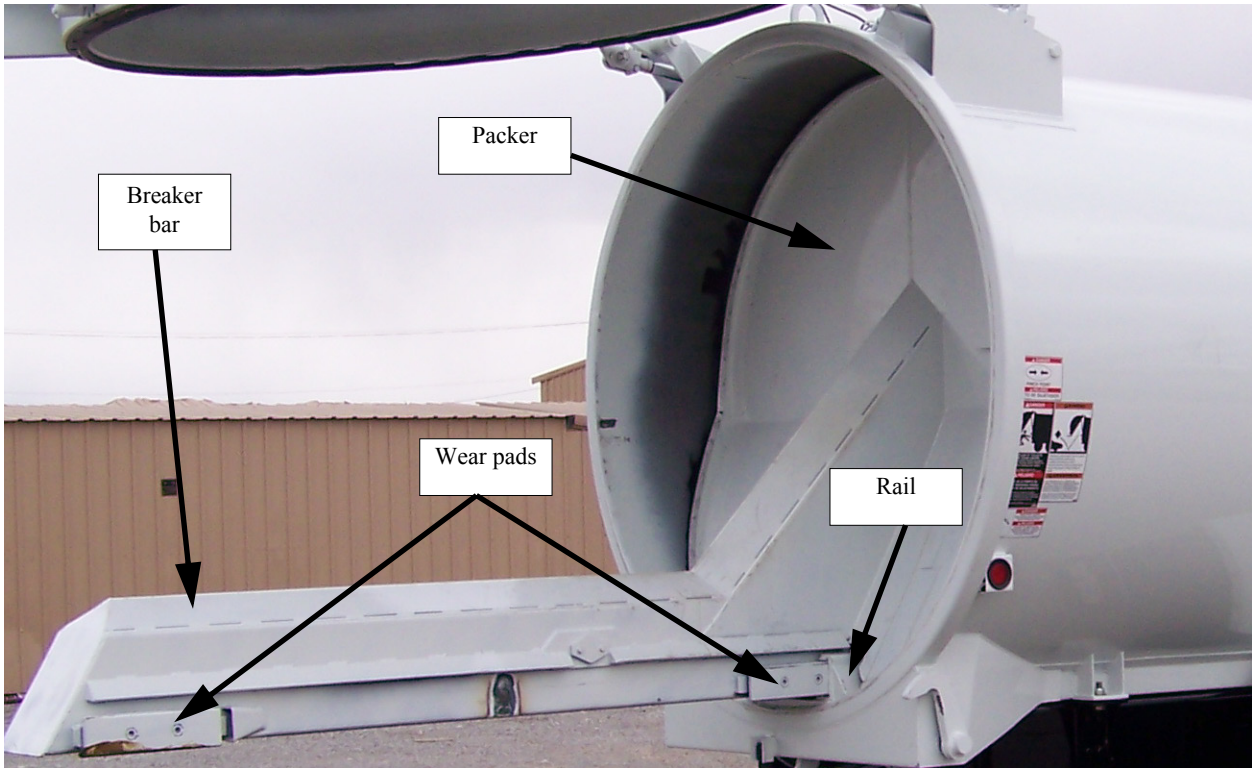
Packer

Danger!

Always wear gloves, safety boots, shirt, full-length pants and safety glasses when cleaning the hopper and dump body.

The PREDATOR™ packing system relies on a heavy-duty guiding system and high-strength steel wear plates. Because the packing system is put to such intensive use (1,000 to 2,000 cycles per day), Labrie Enviroquip Group recommends that *operators* perform a daily visual inspection of the packer and its components.

Figure 3-13 Packer



Maintenance personnel *must* perform weekly inspection and maintenance. Greasing all moving parts on a daily basis is very important and proper adjustment of limit and proximity switches is mandatory. For more information on lubrication, see *Lubrication* on page 34.

Caution!

Do not grease the rails: Abrasive material sticks to the grease and can cause premature wear of the rails.

Any problems found on the packing system must be corrected immediately. In case of problem, contact your distributor.

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Lockout/Tagout Procedure* on page 12) .

To prepare the packer for inspection:

1. Start the engine and engage the hydraulic pump.
2. Open the tailgate and fully extend the packer (see Figure 3-13).
3. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).

Danger!

Apply the lockout/tagout procedure to prevent any engine start-up.

Caution!

Before opening the tailgate, make sure no one is behind the truck.

Inspecting the Packer

Do the following when inspecting the packer:

1. Inspect all wear pads (white nylon strip) on the breaker bar (see Figure 3-13). Wear pads need to be replaced when the packer shows vertical or horizontal movement. So take the time to check the packer for vertical and horizontal movements, and replace wear pads when required.
2. Check out for leaks on hydraulic hoses and tubes.

   Tighten leaking connections and/or replace defective hoses. Also, change o-rings if damaged.
3. Verify cylinder rods:

   3 a. Make sure that cylinder rod ends are clear of debris.

3 b. Make sure that cylinder rods have no scratches that may cause the cylinder to leak oil. Should you find oil leaks, the cylinder must be replaced immediately.

IMPORTANT: During the warranty period, *do not* attempt to change cylinder seals and packing.

4. Verify packer panel adjustment for knocking noises.

   Knocking noises indicate that the limit switch requires adjustment. Proper adjustment is necessary to prevent cylinder from bottoming out under pressure.
5. Make sure that the hydraulic cylinder is not leaking internally (resulting in insufficient packing power). For more information, see *Detecting Cylinder Internal Leaks* on page 29.

Packer Cylinder

Packer cylinder that becomes defective through time needs to be replaced. To do so, you have to remove the packer, replace the faulty cylinder, and then properly finish the installation. These steps are explained below.

Before Removing the Packer Panel

Before removing the packer panel, do the following:

1. Start the engine and engage the hydraulic pump.
2. Fully open the tailgate.

Caution! Before opening the tailgate, make sure no one is behind the truck.

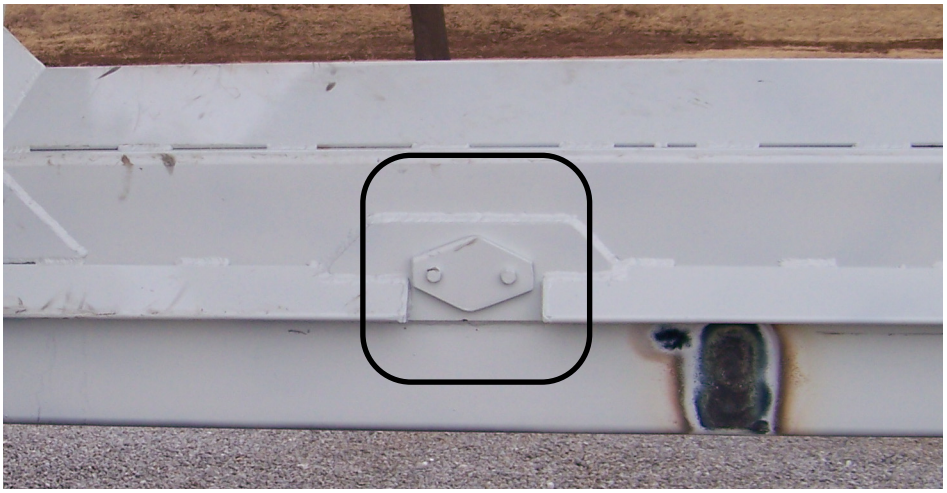
Removing the Packer Panel

Caution! Packer must be removed with a proper lifting device. This task must be performed by two people.

To remove the packer:

1. Turn off the hydraulic pump and the engine.
2. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
3. Remove both access cover plates on each side of the breaker bar.

Figure 3-14 Access cover plate



4. Remove the rear cylinder pins.
5. Remove the case-end pin of the cylinder.
6. Attach a suitable chain/cable to the packer panel and pull the panel towards the rear of the body.

Replacing the Packer Cylinder

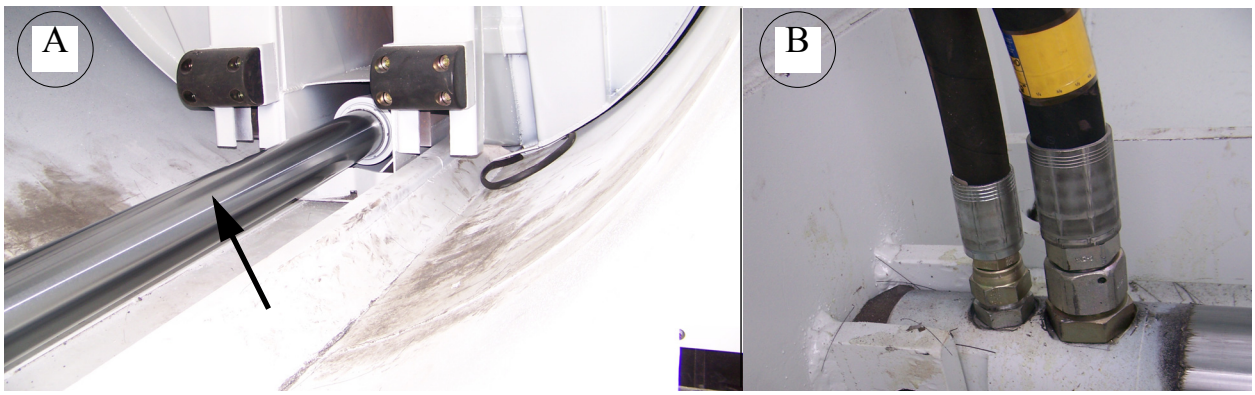
Caution!

Packer cylinder must be removed with a proper lifting device. This task must be performed by two people.

To replace the packer cylinder:

1. Fully retract the cylinder.
2. Proceed with the tagout/lockout procedure. Refer to “Lockout/Tagout Procedure” on page 12.
3. Enter the hopper.
4. Remove both hydraulic hoses from the cylinder (use absorbent material to catch oil spills).

Figure 3-15 Packer cylinder: (A) Rod; (B) Hose fittings



5. Remove the rod end pin that holds the cylinder to the front of the body.
6. Attach and secure the cylinder to an appropriate lifting device.

IMPORTANT: Protect the limit switch during removal of the cylinder.

7. Replace the faulty cylinder with a new one. If covered by warranty, contact Labrie*Plus* for replacement.

Caution!

Installation of the new cylinder must be performed by two people. Use an appropriate lifting device to perform this task.

Finishing Up Packer Cylinder Replacement

To finish up cylinder replacement:

1. Properly position the new cylinder.
2. Proceed with the tagout/lockout procedure. Refer to “Lockout/Tagout Procedure” on page 12.
3. Reinstall the packer panel.

Caution!

Packer must be reinstalled with a proper lifting device. This task must be performed by two people.

4. Install the case-end pin (inside breaker bar).
5. Grease the cylinder pins and check for proper operation.
6. Put back both access cover plates on breaker bar (see Figure 3-14).
7. Reinstall the rod end pin to secure the cylinder to the front of the body.
8. Hook up both hydraulic hoses to the cylinder.

Tailgate Seals and Hinges

Tailgate hinge pins must not show any sign of wear or metal fatigue. The retaining bolts must be kept tight. The tailgate rubber seal must not show *any* signs of damage. Replace if necessary.

Proximity and Limit Switches

Proximity and limit switches act as remote electrical on/off switches and must be adjusted properly.

Warning

Proximity and limit switches must function properly. Serious damage to the equipment, injuries or death may occur if you operate the unit with improperly adjusted switches.

Figure 3-16 and Figure 3-17 show where the proximity/limit switches are installed on the truck.

Figure 3-16 Switches on the curbside

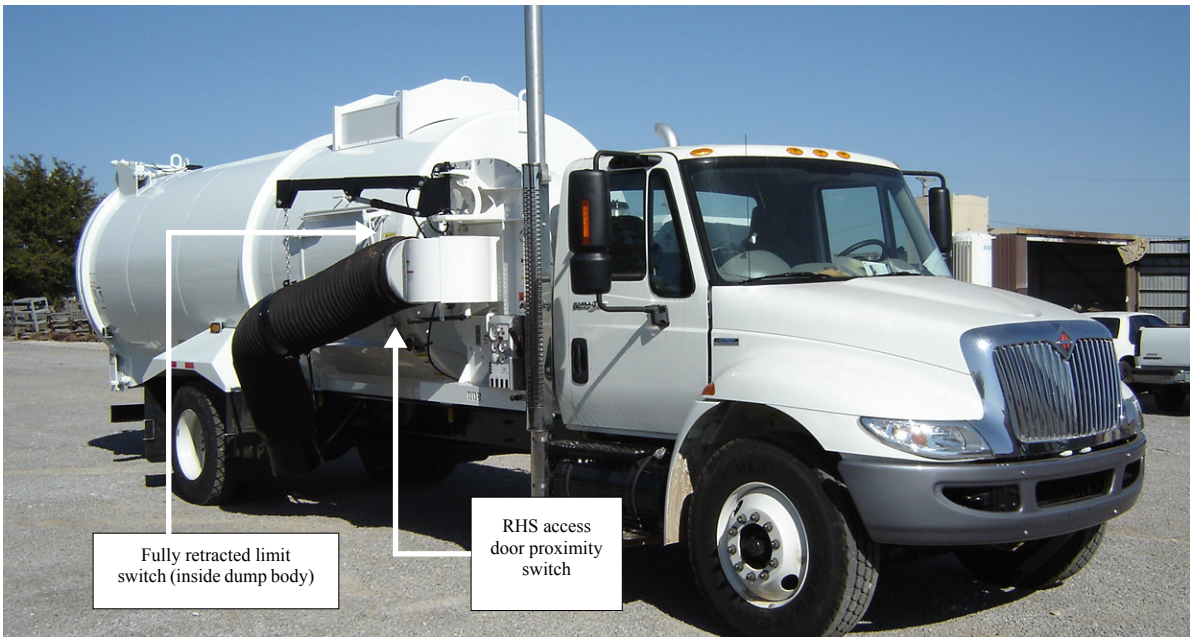
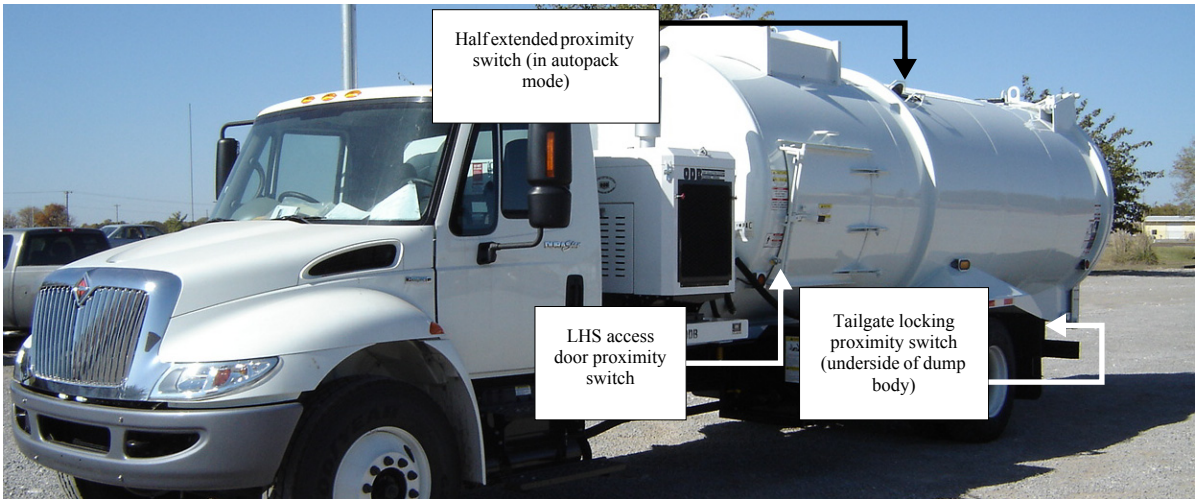
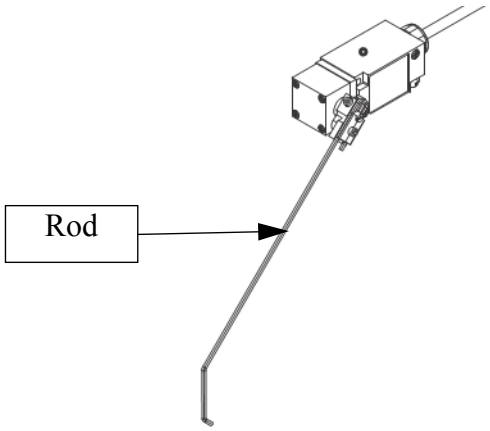


Figure 3-17 Switches on the streetside



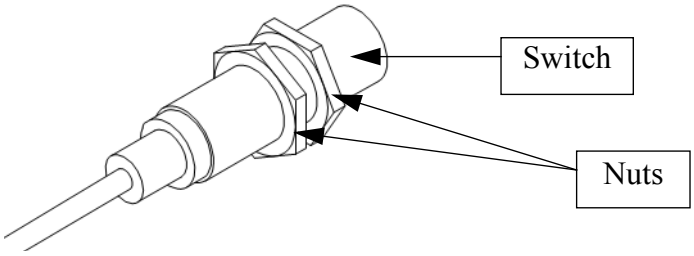
Limit Switch Adjustment



To adjust the limit switch:

1. Loosen limit switch nut.
2. Move the lever arm to the approximate position where the switch is to be triggered.
3. Tighten nut.
4. To fine tune the adjustment, loosen nut slightly.
5. With a flathead screwdriver, turn the adjusting screw located at the center of the nut until a click is heard.
6. Tighten the nut.
7. Test the operation.
8. If necessary, repeat steps 1 through 7.

Proximity Switch Adjustment



To adjust the proximity switch:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximetely 3/16 of an inch (4.8 mm) between the plate (target) and the switch.
3. Tighten up the nuts.
4. Test the operation.

The proximity switch light should turn on when the target is detected; if not, repeat the adjustment procedure.

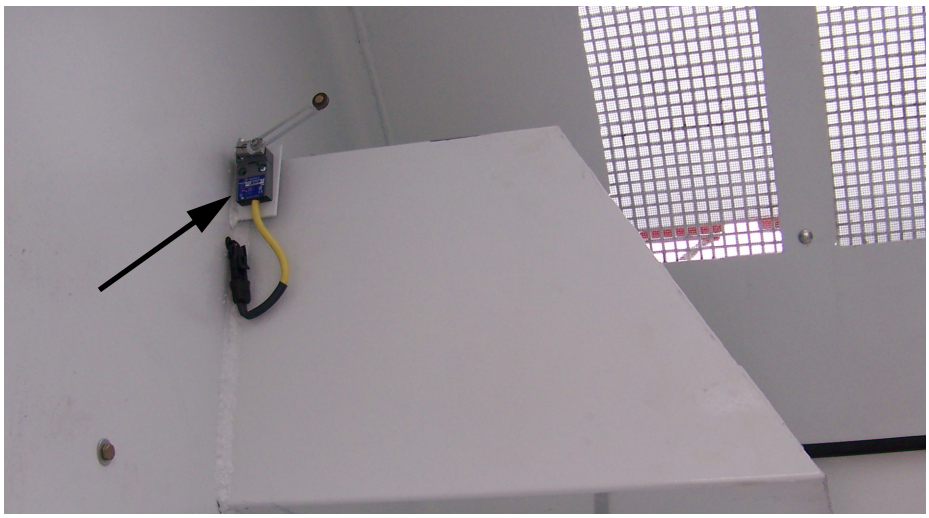
Adjusting Fully Retracted Limit Switch

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Lockout/Tagout Procedure* on page 12) .

The fully retracted limit switch (see Figure 3-18) was adjusted at the factory for optimal efficiency. If the area behind the packer is not properly cleaned *daily,* the packer may not retract far enough to trigger the limit switch, preventing blowing operation from occuring.

Figure 3-18 Fully retracted limit switch



Furthermore, over time, misalignment of the components may occur due to the frequent back and forth motion of the packer. An adjustment of the limit switch may be necessary to prevent malfunction.

The fully retracted limit switch sends a signal to the controller module that the packer panel has reached its fully retracted position. Once the signal from the limit switch is received, the module enables the blower to operate if activated.

If no signal is sent by the limit switch, it may be that the packer cannot reach its fully retracted position due to debris pile-up behind the packer or that the limit switch itself is misaligned.

To remedy this situation, do the following procedure:

1. Set the parking brake.
2. Turn on the engine and the hydraulic system.

3. Fully open the tailgate.

Caution! Make sure no one is behind the truck before opening the taigate.

4. Extend the packer sufficiently in order to have access to the area behind the packer.

Danger! Do not enter the hopper while the packer is moving.

5. Proceed with the tagout/lockout procedure. Refer to “Lockout/Tagout Procedure” on page 12.
6. Enter the hopper.
7. Remove any leaf/debris pile-up that is behind the packer.
8. Finish up cleaning by using compressed water.
9. Exit the hopper.
10. Test operation.

    If there is still no signal sent by the limit switch, do the following procedure.

To adjust the fully retracted limit switch:

1. Set the parking brake.
2. Turn on the engine and the hydraulic system.
3. Fully open the tailgate.

Caution! Make sure no one is behind the truck before opening the taigate.

4. Extend the packer sufficiently in order to have access to the area behind the packer.

Danger! Do not enter the hopper while the packer is moving.

5. Proceed with the tagout/lockout procedure. Refer to “Lockout/Tagout Procedure” on page 12.
6. Enter the hopper.
7. Adjust the limit switch lever so that it comes in contact with the target on the packer.

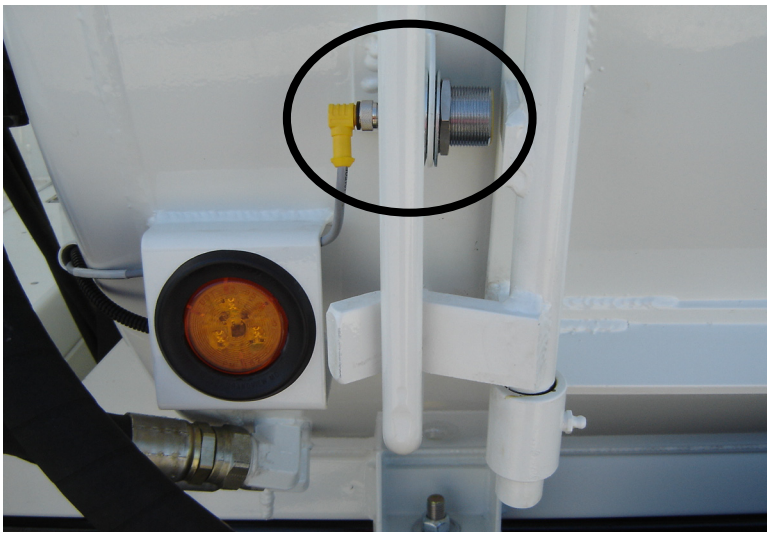
The length of the roller lever can also be adjusted for more precision.

8. Once the adjustment is done, exit the hopper.
9. Test operation.
10. If necessary, repeat procedure.

Adjusting Access Door Proximity Switches (2)

These proximity switches turn off all hydraulic power when one or both access doors are not closed.

Figure 3-19 Access door proximity switch (LHS)



The left-hand side (LHS) switch is located on the lower left access door frame (see Figure 3-19).

The right-hand side (RHS) switch is located on the lower right access door frame.

Testing procedure (1):

1. Open the LHS access door by approximately 2 inches (5 cm) and try to operate any hydraulic function (be sure the RHS access door is well closed). No hydraulic function should be working.

Warning

Injury or death may occur if you attempt to enter the body while the packer or the hose boom is in operation.

2. If not all hydraulic functions are disabled, the proximity switch is faulty and must be replaced.

Adjustment procedure:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of appromximately 3/16 of an inch (4.8 mm) between the plate and the switch.

3. Tighten the nuts.
4. Test operation to make sure the proximity switch light comes on when the target is detected and the proximity switch itself works properly.

Testing procedure (2):

1. Open the RHS access door by approximately 2 inches (5 cm) and try to operate any hydraulic function (be sure the LHS access door is well closed). No hydraulic function should be working.

Warning

Injury or death may occur if you attempt to enter the body while the packer or the hose boom is in operation.

2. If not all hydraulic functions are disabled, the proximity switch is faulty and must be replaced.

Adjustment procedure:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of appromximately 3/16 of an inch (4.8 mm) between the plate and the switch.
3. Tighten the nuts.
4. Test operation to make sure the proximity switch light comes on when the target is detected and the proximity switch itself works properly.

Adjusting Tailgate Locking Proximity Switch

The tailgate locking proximity switch (see Figure 3-20) allows you to enable the ejection cycle when the tailgate is fully open.

This proximity switch is located underneath the dump body near the bumper.

Figure 3-20 Tailgate locking proximity switch

Testing procedure:

1. Lock the tailgate locking mechanism.

   Tailgate lock hooks must be engaged.
2. Activate the "Eject" function.
3. Move panel off packer rest (about 3 inches).
4. Release switch.

   Packer should continue to cycle to packer return switch.

To adjust the tailgate locking proximity switch:

1. Start the engine and engage the hydraulic pump.
2. Lock the tailgate locking mechanism.

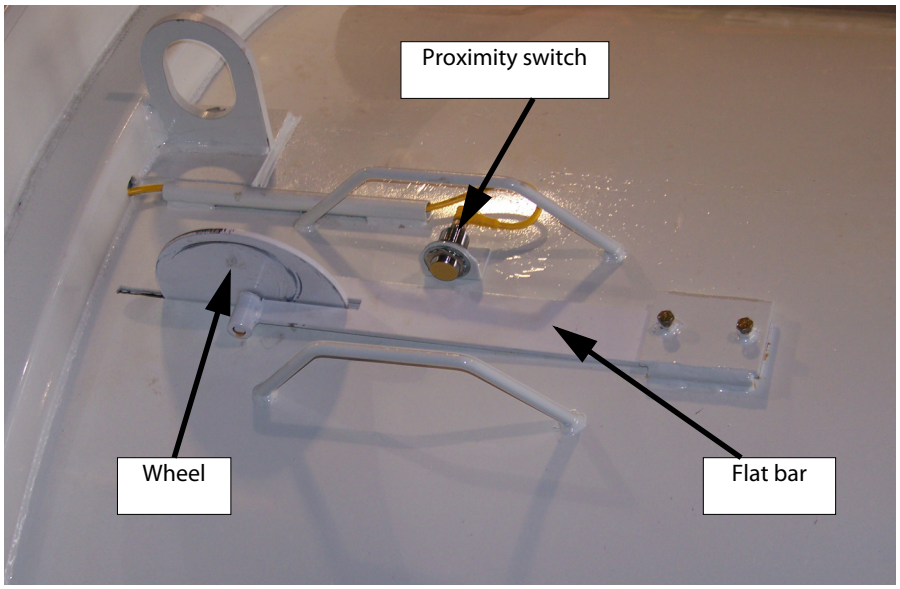
   Tailgate lock hooks must be engaged.
3. Proceed with the tagout/lockout procedure. Refer to "Lockout/Tagout Procedure" on page 12.
4. On the proximity switch, loosen the nuts located on each side of the proximity switch bracket.
5. Push or pull the proximity switch until there is a gap of 3/16 of an inch between the plate and the switch.
6. Tighten up both nuts.
7. Test operation to make sure the proximity switch light comes on when the target is detected and the packer panel does not move.
8. Repeat testing procedure, if necessary.

Adjusting Half Extended Proximity Switch (in autopack mode)

In autopack mode, when the packer travels to approximately midway down the body, it stops before returning back to its fully retracted position. What makes the packer stops is the half extended proximity switch located on top of the dump body (see Figure 3-21). This proximity switch is a normally open switch.

When the packer reaches about midway down the body, the top edge of the packer raises the wheel, causing the flat bar to rise in front of the proximity switch. The flat bar that the wheel is attached to is what triggers the proximity switch. When this switch is triggered, the packer stops and returns to its home position.

Figure 3-21 Half extended proximity switch



To verify that the half extended proximity switch needs adjusting, switch to autopack mode, start a pack cycle, and observe the half extended position of the packer.

In autopack mode, the packer should stop at the half extended position and then go back to its home position.

If the packer fails this test, adjust the switch as follows:

1. Set the parking brake.
2. Turn on the engine and the hydraulic system.
3. Switch to "Autopack" mode.

   Ensure that the tailgate is closed.
4. Start a pack cycle.

Danger! Do not enter the hopper while the packer is moving.

5. When the packer reaches its half extended position and raises the wheel to its upmost position, stop the pack cycle.

Caution! This task is best performed by two people.

6. Proceed with the tagout/lockout procedure. Refer to "Lockout/Tagout Procedure" on page 12.

7. Use a stepladder/ladder to reach the half extended proximity switch located on top of the dump body.

IMPORTANT: Use extreme caution when doing so. Ask a helper to firmly hold the base of the stepladder/ladder to ensure stabiliity and use safety harness to prevent falling.

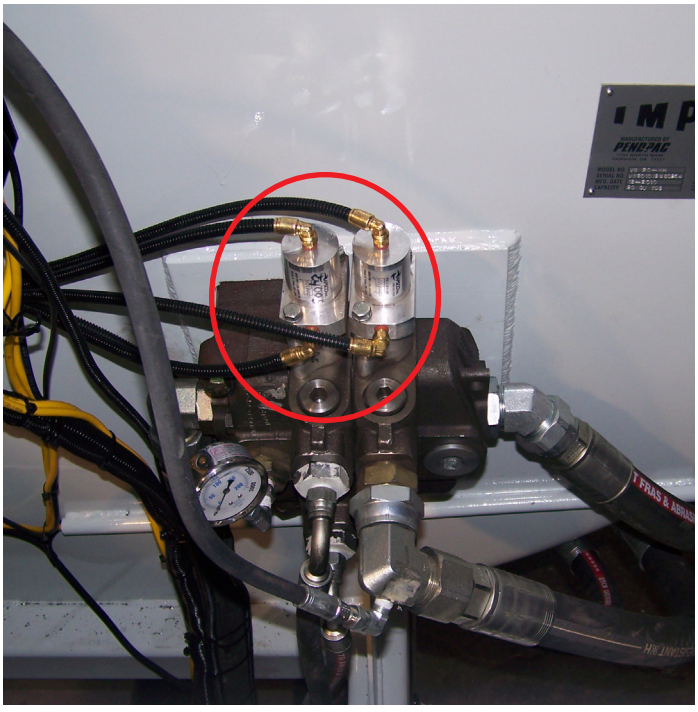
8. Proceed with adjustment of the half extended proximity switch.
   - **8 a.** On the proximity switch, loosen the nuts located on each side of the proximity switch bracket.
   - **8 b.** Push or pull the proximity switch until there is a gap of 3/16 of an inch between the plate (flat bar) and the switch.
   - **8 c.** Tighten up both nuts.
9. Test operation to make sure the packer operates properly in autopack mode. If required, repeat the adjusting procedure.

Pneumatic System

The air (pneumatic) system is crucial for efficient brake and body operation.

The main hydraulic valve, which controls body functions, is activated by air actuators.

Figure 3-22 Air actuators



Solenoid Valves

When the body switch on the control panel is activated, the corresponding solenoid valve in the air control box (see Figure 3-23) sends air to the corresponding air actuator on the main valve. This results in a movement of the hydraulic spool inside the valve.

Figure 3-23 Air control box

Every function signal goes through the electronic module, located on the truck body, before reaching the air control box.

Air System Maintenance

To ensure adequate control of the vehicle air systems (especially under cold weather conditions), you must maintain them regularly, and that includes draining the air tanks, the water trap, and the air filter at the end of every workday. The air filter element must be replaced every 1,000 hours.

To do so:

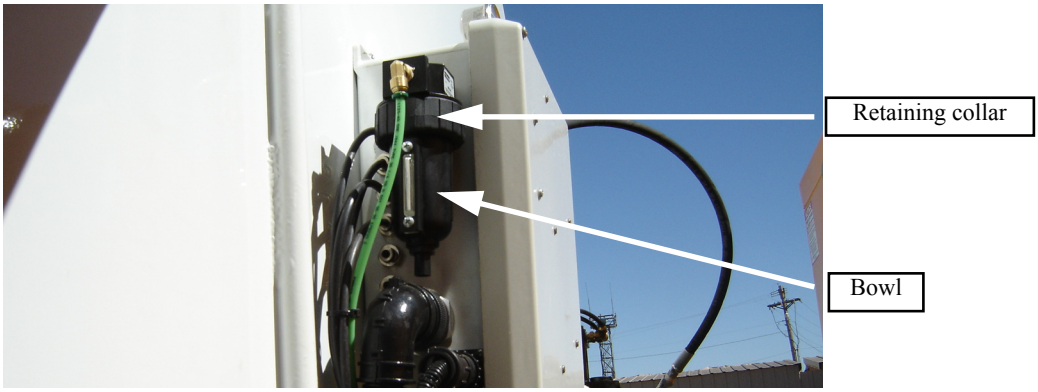
1. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
2. Shut off air supply and depressurize the unit before servicing.
3. Unscrew the retaining collar (see Figure 3-24).
4. Unscrew the bowl.

NOTE: Avoid scratching internal surfaces.

5. Replace the air filter element.
6. Reverse the procedure to reinstall the other components (bowl and retaining collar).
7. Apply system pressure.
8. Check for air leaks.

9. In case of air leaks, *do not* operate. Conduct servicing again.

Figure 3-24 Air filter

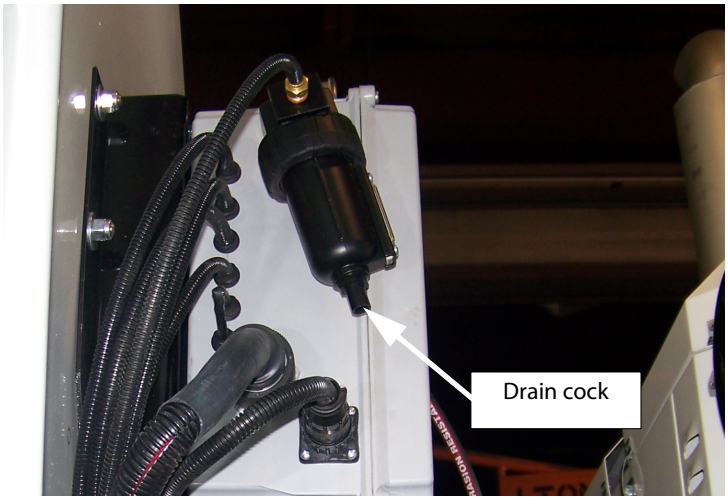


To bleed the water trap, do the following:

1. Lock out and tag out the vehicle (see *Lockout/Tagout Procedure* on page 12).
2. Using a rag, unscrew the drain cock.

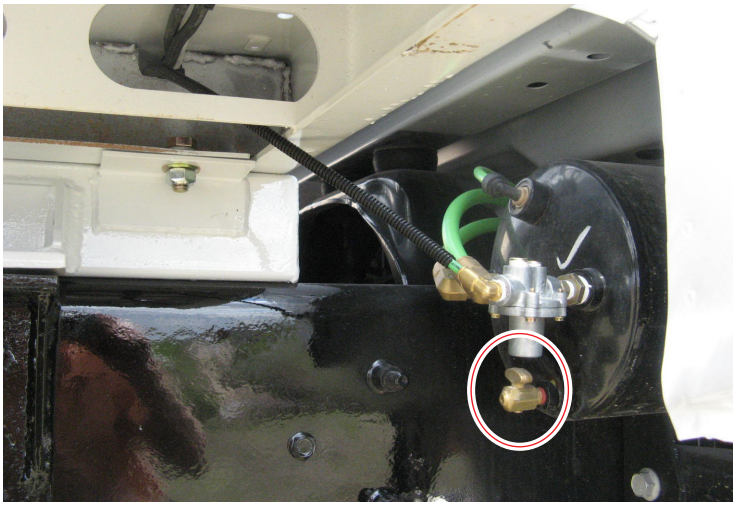
   This will bleed all the water from the water trap and the air filter bowl. This water trap helps keep residual moisture out of the body air system.

Figure 3-25 Bleeding the water trap



3. Drain all air tanks.

Figure 3-26 Drain valve



IMPORTANT: Pay particular attention to the dryer cartridge. On this type of equipment, the compressor works all the time (frequent use of the brake system). As a result, lots of moisture is injected into the air system. For more information, see *Air Dryer* on page 59.

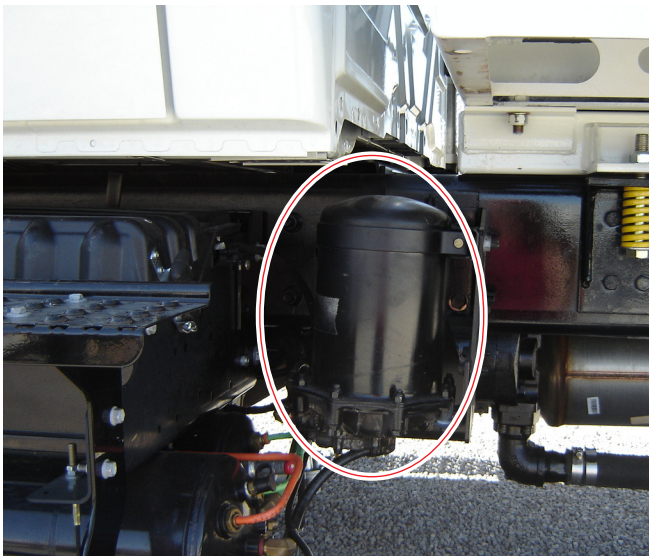
Air Dryer

Some units are equipped with an air dryer (see Figure 3-27) and/or alcohol evaporator.

These devices are used to reduce water in the air system, preventing corrosion or freezing of the air components in cold weather.

Maintenance on the air dryer and/or alcohol evaporator is covered in the chassis manufacturer's maintenance manual.

Figure 3-27 Air dryer



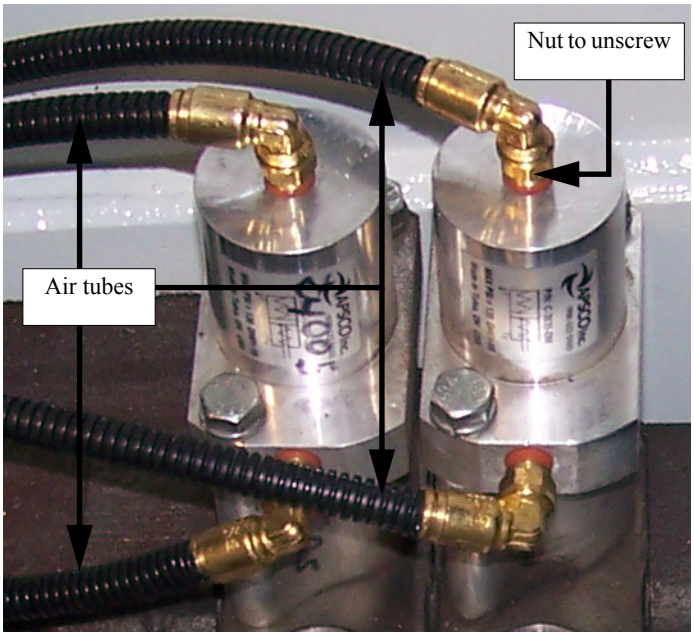
Packer Air System

If the packer does not complete a full cycle, the problem may be related to the air system.

To fix the problem:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Remove the optional cover (if applicable) over the valve to get access to the air tubes.
3. Remove the air tube from the actuator by unscrewing the nut and lifting up the tube.

Figure 3-28 Removing air tube from actuator



4. Inject compressed air on one side of the actuator to ensure that the spool moves freely inside the valve (the same process will have to be done for the other side of the actuator).
   - If the spool is not moving freely, lubricate or replace the air actuator.
   - If the spool is moving freely, try injecting air in the tube and see if air is exiting from the quick exhaust valves on the packer valve section actuator.
   - If not, check that air lines are not blocked or bent, and if necessary, replace the quick exhaust valves.

Figure 3-29 Injecting compressed air

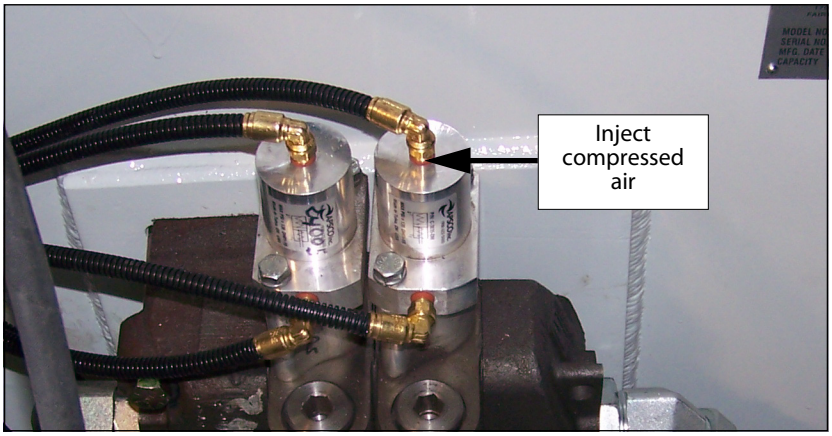
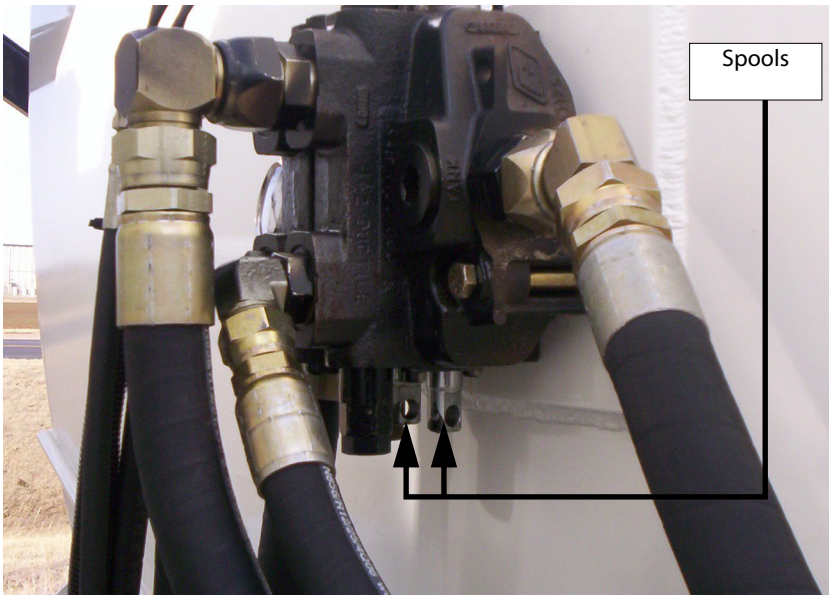


Figure 3-30 Spool



IMPORTANT: If air is leaking by the opposite port of the pressurized side of the actuator when both hoses are removed, this could indicate that the o-ring on the air actuator piston is leaking. If needed disassemble, clean, and lubricate with grease, or replace the o-ring.

Troubleshooting

Table 1 Troubleshooting guide

Problems	Solutions
Compactor not operating or not operating properly	Check air pressure (air pressure must be 75 PSI minimum).
	Check access door and limit switch on door.
	If applies, check optional clean-out door and limit switch on door.
	Check hydraulic fluid for proper level.
	Check reservoir valve for open position.
	Check pump operation.
	Check coupling or drive shaft.
	Test cylinders for internal leakage. To do so: 1. Run cylinder to maximum out position. 2. Remove hose from retract end (head end) of the cylinder. Place control to extend (out) position. If oil flows from the open port, replace seals.
	Test pressures. To do so: 1. Install test gauge. 2. Activate the circuit to be checked and hold until cylinder bottoms out. Maximum pressure is reached at this point. <u>Proper Pressure:</u> Main relief pressure: 2500 PSI ±50 PSI Pressure switch: 2100 PSI ±50 PSI
Low in, out power	Check pressure.
	Check air controls.
	Check cylinder seals.

Table 1 Troubleshooting guide (cont'd)

Problems	Solutions
Tailgate will not raise	Check control valve pressure.
	Check cylinder seals.
	Check top tailgate hinges for lubrication.
Tailgate latch not operating properly	Check control valve pressure.
	Check cylinder seals.
Normal compact, slow return, low or no power	Check electrical circuits.
Normal compact, slow return, low or no power	Check air solenoids.
Slow (without load) compactor operation	Check compactor valve pressure.
	Check compactor cylinder. To do so: 1. Run cylinder to maximum out position. 2. Remove small compactor hose from the front of the body. 3. Plug hose end. 4. Activate compactor. If oil flows from the open port, repair or replace cylinder.
Power source continues to load with compactor in full retract position	Check limit switch operation and adjust.
	Check for waste build up behind compactor blade.
Compactor does not retract automatically	Check micro switch on top of the body for operation and proper contact.
	Check switch body for cracks.
	Check control valve.
	Retract limit switch inside body.
Compact operation stops when compact button is released	Check front limit switch
	Check switch body for cracks

Table 1 Troubleshooting guide (cont'd)

Problems	Solutions
Boom moves slowly upward/downward	Check fluid level in tank.
	Check all electrical fittings for loose connections.
	Inspect pump motor.
	Check all hoses and fittings for leaks.
	Turn fluid control valve counter-clockwise to open.
Hose boom moving too fast or too slow	Adjust hydraulic fluid by using the brass fluid control valve near the pump.
Engine runs only when override button is depressed	Refer to leaf vaccum manufacturer's owner's manual for corrective procedure

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Our office in the U.S.

1981 W. Snell Road
Oshkosh, WI 54904

Toll Free: 1-800-231-2771
Telephone: 1-920-233-2770
General Fax: 1-920-232-2496
Sales Fax: 1-920-232-2498

Mailing Address
P.O. Box 2785
Oshkosh, WI 54903-2785

Parts and Warranty
During business hours:
7:00 AM to 7:00 PM Central Standard Time

Technical Support Service
Toll Free: 1-800-231-2771
(24 hours)

Our office in Canada

175 Route du Pont
St-Nicolas, QC G7A 2T3

Toll Free: 1-877-831-8250
Telephone: 1-418-831-8250
Service Fax: 1-418-831-1673
Parts Fax: 1-418-831-7561

Mailing Address
175 Route du Pont
St-Nicolas, QC G7A 2T3

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During business hours:
8:00 AM to 5:00 PM Eastern Standard Time

Technical Support Service
Toll Free: 1-877-831-8250
(24 hours)

E-mail (Sales Dept.): sales@labriegroup.com
E-mail (Customer Service): service@labriegroup.com

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