LABRIE

AUTOMIZER™ TIP-TO-DUMP

Maintenance Manual

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If you find what you believe to be an error in any of our publications please complete the requested information and return the form to us by email. If you are the first, you will receive a hat by return mail.

I believe I found an error:

In the _____ manual | Part No. _____ | Page(s) _____

It should say: _____

Name: _____ Address: _____

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THANKS FOR YOUR HELP!

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1 Introduction

About This Manual

This manual contains information regarding the correct maintenance of your AUTOMIZER™ garbage truck. Maintenance personnel should read and understand this information before doing repairs and maintenance on the vehicle. For information on how to safely and efficiently operate the AUTOMIZER™, please refer to the related *Operator's Manual* that is provided with your unit.

Topics Not Included

Maintenance of the chassis

This is dealt with 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 AUTOMIZER™

For procedures related to the operation of the AUTOMIZER™, please refer to the *AUTOMIZER™ Operator's Manual*. (A copy of this manual is provided with the truck.)

Parts and assemblies

For parts and assemblies that make up the AUTOMIZER™ body, and for their respective part number for ordering purposes, please refer to the *AUTOMIZER™ Parts Manual*. For the lifting arm that is mounted on your AUTOMIZER™ unit, refer to the *Parts Manual* that specifically relates to it.

Illustrations

Because Labrie Environmental Group is constantly updating its products, illustrations used in this manual may differ from those of the actual product and accessories, depending on the model or options that come with your vehicle.

Schematics

For schematics related to body parts, refer to the *AUTOMIZER™ Parts Manual*;

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

As for pneumatic and hydraulic schematics for your AUTOMIZER™ unit, copies are available from Labrie*Plus* Service Department.

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

Warranty Registration Form

Do not forget to complete the owner registration form and to send it to Labrie Environmental Group. Make sure to fill out the in-service date. This date will be used as the start date of the warranty period. If the in-service date is not indicated, the warranty period will start 30 days after the delivery date.

Introducing the AUTOMIZER™

The AUTOMIZER™ is a straight-frame, side-loading vehicle, manufactured to the highest standards, and designed to collect residential and commercial refuse as well as recycling materials.

NOTE: Our model of AUTOMIZER™ equipped with a Pendulum packer instead of the classic type of packer is specialized for the collection of residential and commercial trash and organics.

The AUTOMIZER™ is also designed to allow *a single person* to collect waste in roller carts without exiting the cab.

On the productivity side, the AUTOMIZER™ can make 180 pickups per hour on average thanks to its auto-packing functionality.

The AUTOMIZER™ also comes with the electronic multiplex system designed to make the collection process more efficient and the troubleshooting process more orderly and manageable.

Once the body of the AUTOMIZER™ is full, all its content is unloaded at a waste management landfill or other appropriate site (e.g. transfer station, incinerator, recycling station).

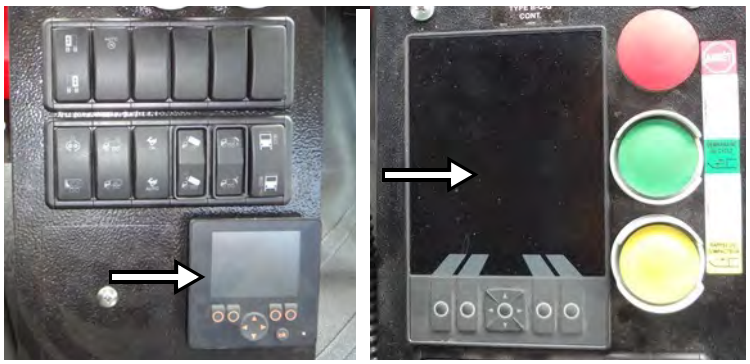
NOTE: Your AUTOMIZER™ unit is equipped with a Pendulum packer? The maintenance of the Pendulum packer is different from the classic type of packer. You will find all the information on how to adequately maintain the Pendulum packer and its accessories in the Annex at the end of this manual.

Multiplex System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplex system, which integrates a monitor, a control panel, a joystick, and a set of electronic controllers. This whole system has been designed to help you operate your unit in an efficient and easy way. Labrie's multiplex system is reliable and safe and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor (see Figure 1-1), Labrie's multiplex system informs you of any malfunctions that may occur during the operation of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Yellow-highlighted messages indicate that caution should be used while red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 1-1 Monitors



Key Features

The AUTOMIZER™, with its advanced design, delivers a lower total vehicle weight and allows for a higher packing capacity. This translates into greater flexibility and a lower Total Cost of Ownership (TCO) for our customers.

Key features of the AUTOMIZER™:

- Up to 900 lb/yd^3 compaction
- Single piece body walls for increased strength and seamless appearance
- Light weight and fast cycle times
- Tapered body for improved compaction and easy unloading
- Fully integrated Labrie CNG systems - roof, tailgate and back-of-cab mount - 50 to 100 DGE available
- Multiplex electrical system with on-board diagnostic tools for easy troubleshooting
- Increased fuel efficiency and decreased fuel consumption
- Low maintenance

Service and Maintenance on the AUTOMIZER™

Maintenance on the AUTOMIZER™ is of paramount importance to ensure long-lasting durability of all its moving parts as well as optimum performance in heavy work. Maintenance has to be done on almost every system involved in the operation of the AUTOMIZER™, such as the hydraulic, electrical and mechanical systems. Some parts are subjected to more wear and tear than others. Therefore, these parts need regular maintenance and routine check-up to prevent signs of deterioration as soon as possible.

NOTE: Any time you have a problem with a Labrie unit, you should contact your Labrie authorized dealer first. They should be able to provide you with the proper help that you need, whether it is for parts or technical service.

In this manual you will find the most common maintenance and inspection procedures required for the AUTOMIZER™.

Parts

Labrie refuse vehicle parts are offered exclusively through Labrie*Plus* and Labrie*Plus* authorized dealers. The quality and reliability of Labrie parts are second to none in the industry.

Warning

Your AUTOMIZER™ unit MUST BE COMPLETELY LUBRICATED before its first use. Refer to the lube charts near the hopper on the curbside to know where the lubrication points are located on the vehicle and how often the parts should be lubricated.

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

With your safety in mind, we would like to remind you that ONLY QUALIFIED MECHANICS should service the hydraulic, electrical, and pneumatic systems on your side loader. In addition, they should also be fully knowledgeable in the operation of this unit. Please read the *Operator's Manual* prior to attempting any maintenance work on your AUTOMIZER™ unit.

AUTOMIZER™ Basic Maintenance

AUTOMIZER™ refuse bodies require routine maintenance to ensure product longevity as well as dependability. Various components have specific needs. A detailed portion of these items is listed below:

1) **Lubrication**

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

All moving parts require lubrication for continued operation, longevity and dependability.

Maintenance intervals should be adjusted according to the truck's route or duty cycle. Proper greasing ensures the maximum life from the moving parts as it flushes out water and contaminants from the joint.

When greasing it is important to understand that providing the proper amount of grease is a delicate balance between over greasing, which can result in seal damage as well as wasted lubricant. Only pump enough grease until the air purges from the joint. Commonly, a "popping" sound can be heard as the old grease begins to evacuate the seal. Equally important is to remove the excess grease from the component you are maintaining. Leaving the excess grease will attract dirt and contaminants which could work themselves into the joint causing potential future issues.

2) **Body**

The body contains grease fittings for every operating cylinder as well as all linkages.

Without proper lubrication and maintenance, these parts can become seized, galled, and/or break resulting in equipment damage or injury.

3) **Hydraulic Fluid and Filter**

Hydraulic fluid is the lifeblood of the AUTOMIZER™ side loader. Regular maintenance of the hydraulics will ensure long, trouble-free life.

As directed in all service training, the hydraulic filter needs to be replaced **after the initial 50 hours of new truck operation and then again every 6 months**, or when the filter restriction gauge is in the yellow. **The hydraulic fluid needs to be replaced once a year** along with the suction screen being removed, inspected, cleaned and/or replaced.

4) **Hardware**

Hardware needs to be verified that it is present and tight. Loose or missing hardware can cause severe damage and/or unsafe operational conditions.

5) **Limit and Proximity Switches**

Limit and proximity switches are used to limit travel of moving parts and/or to ensure conditions are safe for operation.

If these switches are not adjusted properly, damage to the equipment may occur as well as poor or dangerous functionality.

6) **Leaks**

Verify that there are not any leaking hydraulic cylinders, hoses, tubes, valves, or pumps. Leaks in the hydraulic system are an indicator of possibly overheating hydraulics, damage to a seal, over-pressurization, or general wear. To avoid costly and premature replacement of parts, ensure all leaks are addressed properly and timely.

7) **Cracks**

Ensure that there are not any cracks forming along the hopper floor edge, body, packer and tailgates. This is an indicator that something is worn, not adjusted properly or damaged.

8) **Bushings**/**Bearings**

Check for play in any bushing or bearing. This may require the use of a pry bar or lifting equipment.

2

Safety

Safety comes first and Labrie Environmental Group is committed to your safety. Ultimately, safety is everyone's responsibility when operating or maintaining the AUTOMIZER™ side loader. Make it your first priority! Be aware and apply the safety practices and features detailed in this manual.

Maintenance personnel should not perform any maintenance on the equipment if they are not well acquainted with the operations of the equipment as well as all safety precautions related to such operations.

Labrie Environmental Group will not accept any responsibility for failures and/or injuries caused by repairs done by the user and/or any persons other than authorized Labrie Environmental Group representatives.

Safety Decals

Recognizing and understanding safety decals can prevent damage and could prevent injury or even death.

See the following recommendations regarding safety decals:

- These decals must be obeyed at all times.
- These decals must be in place at all times. Report any damaged or missing decals to the proper authority at once.

Replacement decals can be ordered free of charge from Labrie*Plus* during the warranty period.

When ordering replacement decals, use the part number as printed on the bottom of each decal.

Bilingual decals are available in English/Spanish or English/French versions.

Safety decals fall into three main categories (see the following illustration).

Figure 2-1 Safety decal categories

Keep your decals clean and in good condition at all times. For a list of safety and informative decals for your AUTOMIZER™ unit, refer to the *AUTOMIZER™ Parts Manual*.

NOTE: Decals may vary from one unit to another depending on the options and features installed on the unit.

Conventions

Throughout this manual "**DANGER**" "**WARNING**" and "**CAUTION**" notations accompanied by an exclamation mark inside a triangle (an International Hazard Symbol) are used to alert the operator and mechanics to special instructions concerning a particular operation or service that may be hazardous if performed incorrectly or carelessly.

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, may result in ***minor or moderate injury or property/product damage.***

Strict compliance to these “safety alerts” combined with “common sense” operations are important accident-prevention measures.

The word “NOTE” is also used throughout the manual. It precedes information that provides special emphasis or clarification on a specific operation or procedure.

Basic Safety Notions

The following safety notions are related to the use of the AUTOMIZER™. It is important to point out that the safe use of the vehicle remains the user’s responsibility. He must heed all safety notions outlined in this manual and on the labels placed on 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 while you operate the AUTOMIZER™.

Danger!

Never get in the hopper area when the engine is running.
Only authorized personnel may do so following a lockout/tagout procedure (see *Locking Out and Tagging Out the Vehicle* on page 25).

Warning!

With your safety in mind, Labrie Environmental Group would like to remind you that ONLY qualified personnel should service the hydraulic, electrical and pneumatic systems on your refuse truck. They must also be knowledgeable about how to operate the truck and on-board equipment. Please read the *Operator’s Manual* prior to attempting any maintenance or repair on your AUTOMIZER™ vehicle.

Responsibilities

Safety is everybody’s responsibility. Both the employer and employees must play their part to ensure safe working conditions in, on, and around the truck and to promote and enforce safe work practices and procedures to prevent injuries and incidents as well as property/equipment damage.

Employer Responsibilities

It is the responsibility of the employer:

- To ensure that the AUTOMIZER™ is operated in accordance with all applicable regulations, including all safety requirements and codes set by the Occupational Safety and Health Administration (OSHA) and by the American National Standards Institute (ANSI).
- To ensure that employees are qualified for operating or maintaining the vehicle and its equipment, and that they all take safety measures before working in, on, and around them.
- To properly maintain all mobile equipment to meet all state/provincial and federal safety standards.

- To provide all employees – both operators and maintenance personnel – with proper training that includes safe vehicle operation procedures and to ensure that those procedures are monitored on a continuous basis.
- 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 make sure that the backup alarm works properly when the vehicle is in reverse.
- To take necessary measures to repair any damage or malfunction reported by an employee.
- To establish and ensure the application of a "lockout/tagout" procedure (see page 25) 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 provide necessary safety equipment and apparel.
- To ensure that all vehicle safety features, such as tailgate props, are properly used by all personnel when operating or servicing the vehicle.

IMPORTANT: Do not allow operation of the AUTOMIZER™ if damaged or malfunctioning. Have all repairs performed immediately.

Employee Responsibilities

It is the responsibility of the employee:

- To enforce all safety measures to meet the requirements set by the employer.
- To operate the AUTOMIZER™ only after having received instructions and training.
- To always utilize the vehicle's safety features, such as tailgate props.
- To wear all safety equipment prescribed by your employer.
- To immediately report any damage or malfunction to the vehicle or equipment to the employer or supervisor.
- To make sure that no one is near the vehicle before activating any of the controls, and to be prepared to stop at any indication of possible danger.

Do's

- Make sure that the area is clear of people or possible obstructions.

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

- Wear safety glasses and footwear, gloves, and any other safety equipment when servicing the unit.
- Make sure that mirrors, windows, lights, and monitor equipment are clean and properly adjusted.
- Check for explosive trash (e.g. televisions, paint cans, fluorescent light tubes, etc.).
- Drive carefully when carrying an unevenly distributed load.
- Inspect for overhead hazards (e.g. power lines) prior to hoisting the body or using the arm.
- Use the body safety prop when servicing under the body.
- *Always* use the tailgate safety prop before entering the area between the main body and the tailgate.
- Obey all warning and operation stickers.
- Make sure all safety interlock systems are functioning properly.
- Keep hands, floors, and controls free from water, grease, and mud to assure non-slip control.

Don'ts

- Do not operate any vehicle while under the influence of alcohol, narcotics or other intoxicants.
- Do not talk on a cell phone or listen to loud music while driving.
- Do not wear jewelry or loose clothing.
- Do not leave the vehicle before it is brought to a complete stop and the work or parking brake is engaged.
- Do not enter the hopper or 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 "Locking Out and Tagging Out the Vehicle" on page 25.
- Do not back up the vehicle with the tailgate fully raised. Backing up the vehicle when the tailgate is fully open can cause damage to the tailgate cylinders.
- Do not hoist the body if the vehicle is standing on uneven ground.
- Do not back up the vehicle when the body is raised.
- Do not use the body safety prop to prop a *loaded* body.
- Do not drive with the tailgate fully open unless it is to unload refuse at the landfill.

Warning!

Prior to its first use, your AUTOMIZER™ *must be completely lubricated*, as shown on the Lube Chart sticker located on the body curbside, near the hopper.
Initial lubrication carried out by Labrie Environmental Group is sufficient for production and transport purposes *only*.

General Precautions

Danger!

Operators 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.

IMPORTANT: ***Only qualified personnel*** **should service the hydraulic, electrical, and pneumatic systems of this vehicle. They should also be knowledgeable about the operation of the vehicle.**

- Read and make sure you fully understand this manual and all safety decals before performing maintenance on the vehicle.
- Read and make sure you understand the *Operator's Manual* for this vehicle. In case of doubt, ask a supervisor for clarifications.
- When driving the vehicle, keep both hands on the steering wheel at all times.
- Stop the vehicle completely and put on the parking brake before leaving the driving position.
- When the vehicle is parked, the parking brake *must* be applied.
- Before activating the lifting arm, 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.
- Never place head, body, fingers or any limbs into a scissors point or pinch point on the equipment.
- Start the engine following the manufacturer's recommended procedure.
- When driving, wear your seat belt.
- *Never* drive this vehicle with the tailgate unlocked.
- Ensure all co-workers are in view before operating or moving the unit or any of its controls.
- Make sure the backup alarm is working properly.
- When removing nylon lock nuts, *always* replace them by new ones.
- For any work (including cleaning and inspection) that has to be done between the body and the chassis, *always* use the body safety prop. Also, the vehicle *must* be on level ground.
- Before opening and closing the tailgate, make sure no one is behind the vehicle.
- Before operating the vehicle the driver must be thoroughly familiar with the employer's safety program concerning traffic rules, warning devices and hand signals.
- Be sure to know where to get assistance in the event of an emergency.
- Know your machine. Know the location and function of all controls, gauges, instruments and protective devices.
- Maintenance personnel must read and understand this manual before doing any repair work. In case of doubt, ask a supervisor for clarifications.
- Do not get into the hopper compartment 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 hopper *must* first lock out and tag out the vehicle, as required by the employer. For more information, see *Locking Out and Tagging Out the Vehicle* on page 25.

- If unit is equipped with a ladder, apply the following safety measures:
  - Do not use the ladder if it is defective or in poor condition.
  - Do not use the ladder if you have a medical condition that prevents you from climbing.
  - Always inspect the ladder before climbing.
  - Make sure the ladder is clear and free of any substance that could make it slippery.
  - Always use the 3-points of contact rule when climbing or descending the ladder.
- *Never* stand near or underneath a raised arm/grabber. Should a hydraulic component break, such as a hydraulic hose, failure to stay away from the arm may result in personal injury or even death.
- Follow all safety directions listed in both Operator and Maintenance Manuals under SAFETY.

Never, under any circumstances (maintenance or otherwise), stand underneath a *loaded* body..

Warning!

Do not operate the automated arm until you have been fully trained, and have read and understood both the *Operator's Manual* and the *Maintenance Manual* supplied with this unit.

Warning!

Make sure that all people and obstructions are sufficiently cleared from the automated arm before moving it. Failure to do so may result in unit and/or property damage, personal injury or death.

Warning!

Make sure there is enough clearance between a raised container and overhead power lines. The automated arm or the container must not come in direct contact with the electrical cables. If the unit comes in contact with a power line, stay in the cab and keep away from any metal parts.

Danger!

Never drive this vehicle if the automated arm is not fully retracted to its home position. The unit would be simply too wide to be driven safely. Failure to fully retract the arm will result in unit and /or property damage, severe injury or even death. Warning red lights on the dashboard flash when the arm is not completely retracted to its home position.

Warning!

Remove all control levers from the proportional valve. These levers should be used for maintenance purposes only.

Warning!

Units with two driving positions: Prior to changing driving position, stop the vehicle, apply the parking brake, push the emergency button and stop the engine. Properly adjust mirrors and set driving control switches including the arm-controlling joystick (if applicable) to the new driving position before restarting the engine. This will ensure that the automated arm is completely inoperative.

Caution!

Maintenance and repairs carried out on this vehicle must only be done by qualified mechanics who are familiar with the equipment.

Warning!

When servicing the truck, all post-repair functional tests must be carried out when no one is in the danger zone of the packer. It is also forbidden to be in the packer's danger zone without the truck being locked out and tagged out. Failure to do so could result in serious injury or death.

Warning!

Never put a truck back into service if one or more interlocks have been deactivated. Failure to do so could result in serious injury or death.

Warning!

A truck should not be put back into service if any part, safety device or hardware is missing as it may compromise workers' safety and violate the labor standards legislation. Failure to do so could result in serious injury or death.

Warning!

Inspect hydraulic hose crimps. Replace hoses if they show signs of rust, cracks, abrasion or wear. Failure to do so could result in spills, burns, or serious injury.

Warning!

Inspect hydraulic lines and bushings. Replace lines if rust, cracks or abrasion are present. Failure to do so could result in spills, burns, or serious injury.

Warning!

The EMERGENCY STOP button must *always* be in working order. Never operate a truck with a defective EMERGENCY STOP button. Failure to do so could result in serious injury or death.

Hydraulics

- Hydraulic fluid operates under high temperatures. Avoid contact with piping, hoses or cylinders to prevent burns.
- Never use hands to check for leaks. Hydraulic fluid escaping under pressure may cause injury.
- In case of injury seek proper medical treatment immediately.

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.

Fire Protection

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

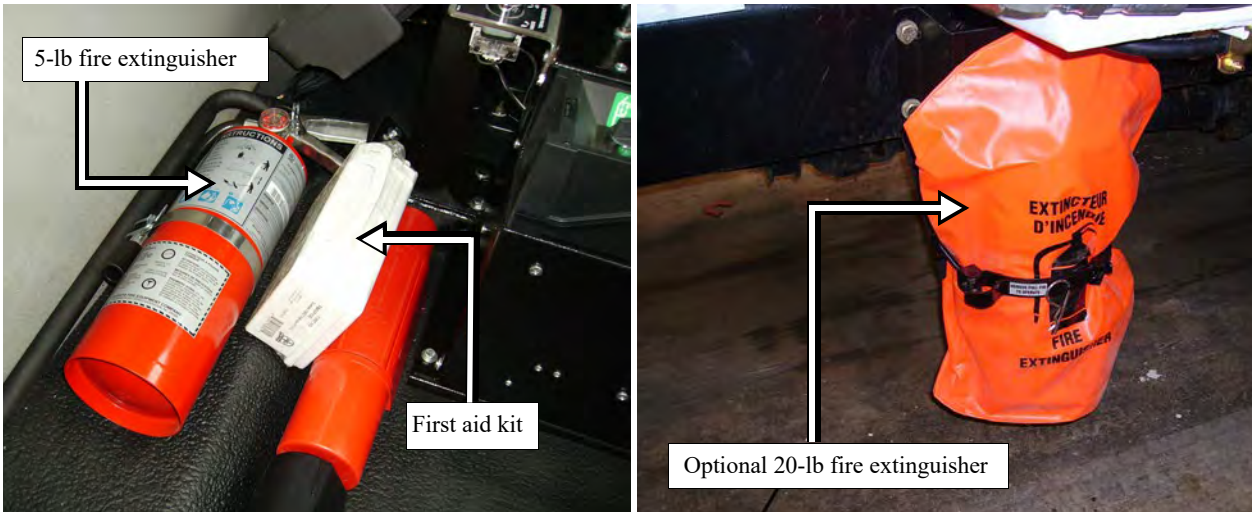
- The employer must also inform employees of an appropriate place to unload the body near the maintenance facility (preferably away from traffic, surface drains, and ditches).
- Keep a fire extinguisher accessible at all times.
- Never use lighted smoking materials, open flame or sparks around when working with flammable materials such as fuel tanks or storage batteries.
- Never have an open flame as a light source.

- Never load ashes or other materials which might be smoldering. These materials could ignite refuse in the body.

NOTE: AUTOMIZER™ vehicles are equipped with a 5-lb fire extinguisher, which is located inside the cab. A 20-lb fire extinguisher may also be installed as an option (see Figure 2-2). Each fire extinguisher must be checked regularly by qualified personnel.

NOTE: A first aid kit and a triangle kit are provided with the truck.

Figure 2-2 Fire extinguishers and first aid kit



Housekeeping

Good housekeeping habits are a major factor in accident prevention.

- Keep handrails and steps clean and free of grease or debris.
- Rubbish, scrap paper and litter are highly combustible. Such material should be stored in metal containers entirely clear of sparks and flames.
- Clean all lights and safety stickers so you and the surrounding pedestrians and drivers will be aware of the truck at all times.
- Ensure that the equipment works properly by removing any compacted garbage in the packer area after each body unloading (this applies to all AUTOMIZER™ units except AUTOMIZER™ Pendulum).
- If you need to clean debris from the edges of the tailgate(s), use a pole while standing to the side.

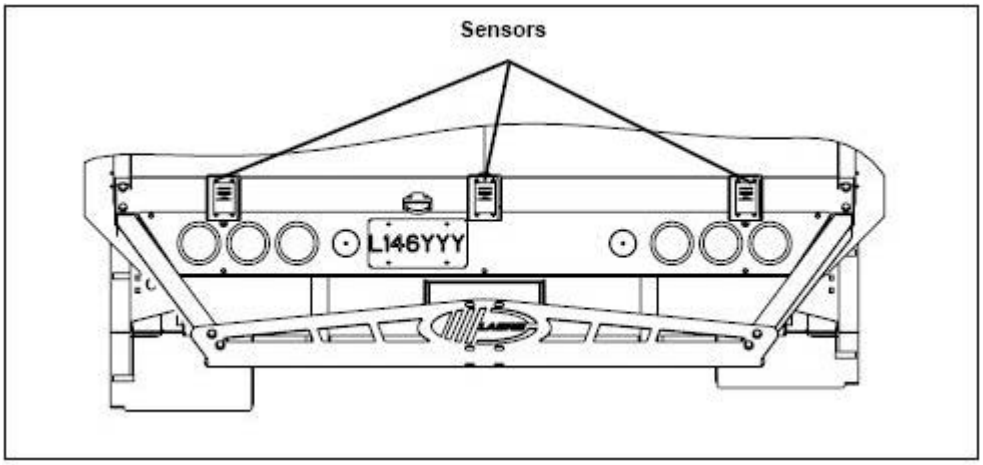
Safety Features

Global Motion Sensors (Optional)

This OPTIONAL safety system is used to detect objects located behind the truck. This system is turned on by placing the transmission in reverse.

Warning! The operator must read the manufacturer's installation manual before using the system.

The main components of this system are a control box placed in the cab, a set of sensors fixed on the rear bumper, and a solenoid valve mounted on the chassis.



When the system is turned on, a green light on the cab control box should light up to indicate that the system is operating. When an object is detected, a yellow light comes on and an audible alarm is heard. The vehicle brakes are automatically applied. The brakes can be disabled by pressing the AUTO BRAKE OFF switch on the control box. This will cause a red warning light to turn on indicating the brakes will not automatically engage. The yellow light and audible alarm will still operate in this mode as a safety precaution.

Warning!

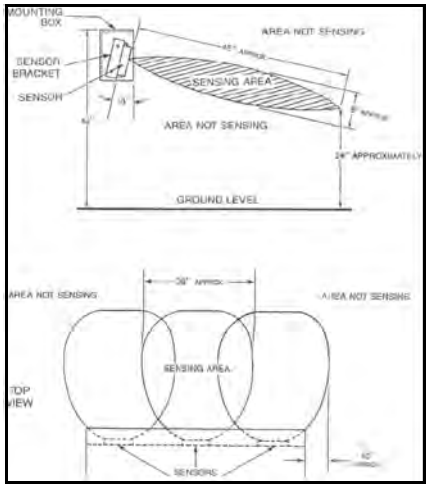
Sensor lenses must be kept clean to ensure proper operation of the system. If the lenses are allowed to become dirty, system range will be decreased.

The sensors are installed on the rear bumper and adjusted in order to obtain low coverage to ground.

For details on how to adjust the sensors, refer to the *Installation Manual of the sensor manufacturer*.

Troubleshooting and Maintenance

For information on troubleshooting and maintenance, refer to the *Troubleshooting Guide of Global Sensor Systems Inc.*



NOTE: Illustrations above taken from the *Installation Manual* of Global Sensor Systems Inc.

Back Up Alarm

The back up alarm sounds when the truck is in reverse or the tailgate is open.

Body Safety Prop

Safety props ensure that heavy body parts will not move inadvertently.

The body safety prop ensures that an ***empty*** body will not lower when you are working underneath it.

Danger!

Always set the body safety prop when performing maintenance underneath a raised body. Failure to do so may result in severe injury, or even death.

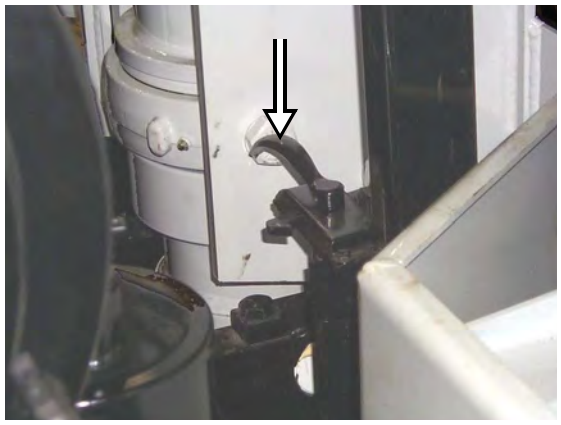
Figure 2-3 Body safety prop

Setting the Body Safety Prop

To set the body safety prop:

1. Make sure that there is enough clearance above the body to raise it safely.
2. Start the engine.
3. With the *Body Up* switch on the in-cab control panel, raise the body until the safety prop is free to tilt under it.
4. Release the safety prop using the safety prop handle and position it adequately.

Figure 2-4 Safety prop handle



5. Lower the body until it rests on the safety prop using the *Body Down* switch on the in-cab control panel.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

You can now work safely underneath the body.

Putting the Body Safety Prop Back in Place

To put the body safety prop back in place:

1. Make sure that there is enough clearance above the body to raise it safely.
2. Start the engine.
3. With the *Body Up* switch on the in-cab control panel, raise the body until the safety prop can move freely.
4. Put the safety prop back in its place.
5. Lower the body completely using the *Body Down* switch on the in-cab control panel.

Tailgate Safety Prop

The tailgate safety prop is used to support and keep the tailgate open during inspection or maintenance procedures. It is mandatory to set the safety prop every time the tailgate is open for such purposes.

NOTE: Co-Mingle vehicles have two tailgate safety props.

IMPORTANT: Make sure the body is empty before installing the safety prop.

Figure 2-5 Tailgate safety prop

Danger!

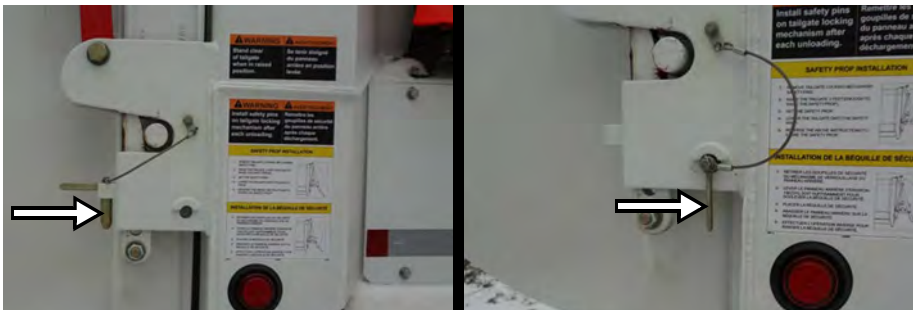
The safety prop shall be set each time the tailgate is opened for inspection and maintenance purposes.

Setting the Tailgate Safety Prop

To set the tailgate safety prop:

1. Make sure that the body is empty.
2. Remove the tailgate safety pin (see Figure 2-6).

Figure 2-6 Safety pin (in unlocked position, left; in locked position, right)



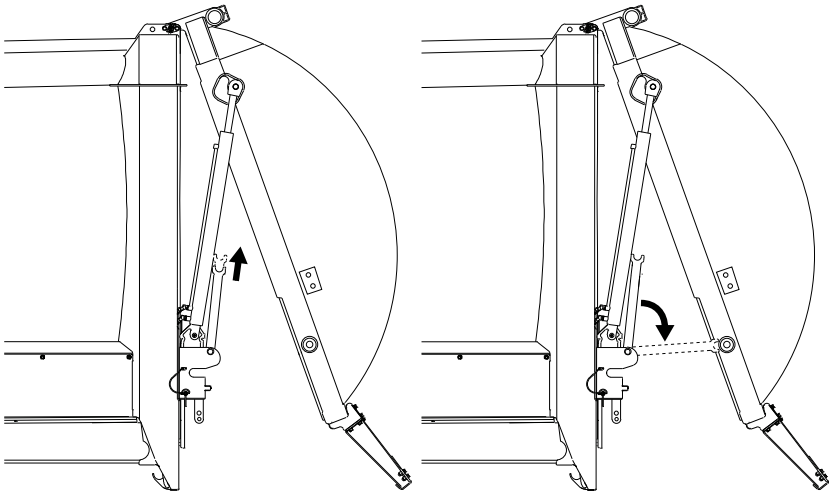
3. Start the engine.
4. Turn ON the hydraulic pump.

Danger!

Prior to raising the tailgate, make sure that no one is standing behind the vehicle and that the body is empty.

5. With the *Tailgate Up* switch on the in-cab control panel, raise the tailgate by about 3 feet (enough to raise the safety prop).
6. Pull the safety prop upward and set it down (see Figure 2-7).

Figure 2-7 Pulling safety prop upward (left) and setting it down (right)



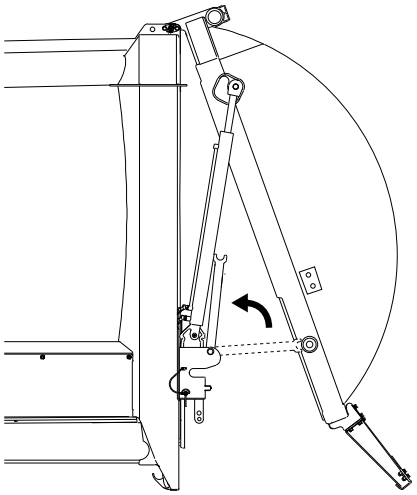
7. Lower the tailgate onto the safety prop using the *Tailgate Down* switch on the in-cab control panel.

Putting the Tailgate Safety Prop Back in Place

To put the tailgate safety prop back in its home position:

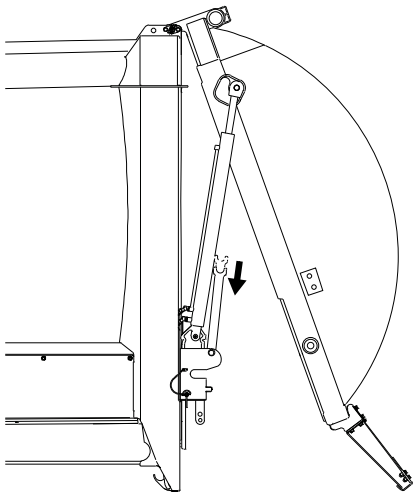
1. Start the engine.
2. Turn ON the hydraulic pump.
3. Raise the tailgate by about 3 feet using the *Tailgate Up* switch on the in-cab control panel.
4. Raise the tailgate safety prop.

Figure 2-8 Raising tailgate safety prop



5. Release your grip on the safety prop to set it in its home position.

Figure 2-9 Setting safety prop in home position



6. With the *Tailgate Down* switch on the in-cab control panel, fully close the tailgate.
   The TAILGATE OPEN light indicator should turn off.
7. Put the safety pin back in place.

Camera System (optional)

AUTOMIZER™ units can be equipped with up to four (4) cameras. The following are examples of location where they can be installed on the truck: inside the hopper (Figure 2-10, left), on the central right-hand side post (Figure 2-11), on the tailgate (Figure 2-10, right), and on the left-hand side mirror.

Figure 2-10 Camera inside hopper (left) and on tailgate (right)

Figure 2-11 Camera on central RHS post

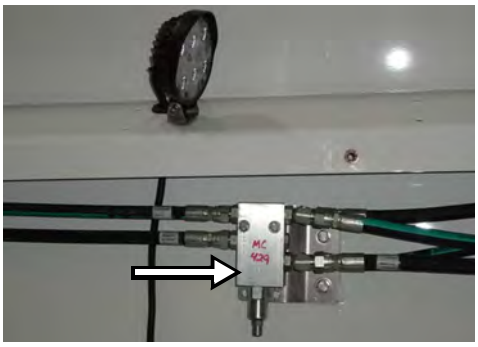
The operator can switch from one camera to the other using a selector switch located on the 7" LCD color monitor installed in the cab.

Refer to the camera manufacturer's manual for more information.

NOTE: On some units, the right-hand side camera may be installed on the right-hand side rail instead of on the central right-hand side post at the rear of the hopper.

Tailgate Holding Valve

Located behind the left rubrail panel near the tailgate, this holding valve ensures that the tailgate will not open during the packing cycle.



Locking Out and Tagging Out the Vehicle

For any inspection, repair or general maintenance being done on the vehicle, whether on the road or at the shop, it is the employer's responsibility to establish and see to the application of a proper lockout and tagout procedure.

To lock out and tag out your AUTOMIZER™ unit:

1. Park the vehicle on safe, level ground and apply the parking brake (see Figure 2-12).

Figure 2-12 Parking brake button

2. Make sure that the body is completely unloaded.
3. Switch off the hydraulic pump.
4. Turn off the engine, remove the key from the ignition, store it in a safe and controlled area (preferably on yourself), and tape over the ignition switch.
5. Turn off and lock the master switch.
6. Chock all wheels.

IMPORTANT: Depending on the chassis model, the battery set of the AUTOMIZER™ may be equipped with a master switch (see Figure 2-13) that must be turned off.

Figure 2-13 Master switch

7. Put an "OFF SERVICE" tag on the driver's wheel and on the front windshield.
8. Use safety props to block any system that could move by gravity (open tailgate, raised body, etc.).
9. Drain all air tanks.
10. Verify and inspect any security device and/or mechanism to make sure that there is no bypass and that they are all functional.

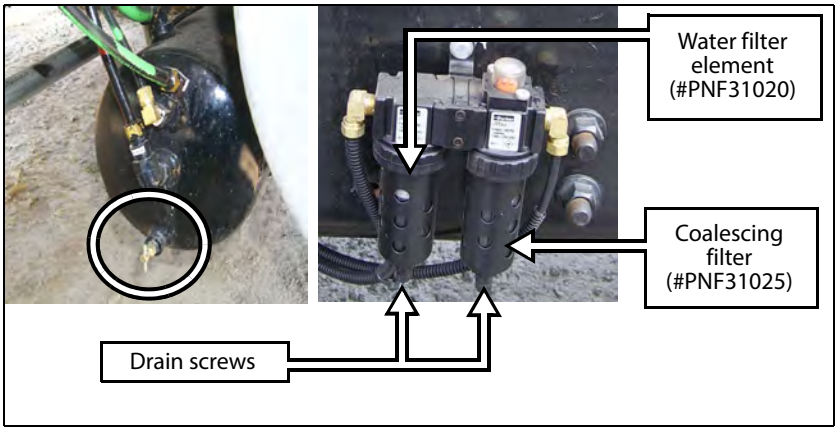
Shutting Down the Vehicle

If the vehicle has to be stored for an extended period of time, follow the chassis manufacturer's shutdown and maintenance requirements.

Also:

1. Park the vehicle on a hard, level surface and apply the parking brake.
2. Make sure that all moving parts are in their home position (tailgate, arm, body, crusher panel, packer, etc.).
3. Turn OFF, in sequence, the hydraulic pump, the electrical system, the engine and (if installed) the master switch.
4. Drain all air tanks, including the water filter and the coalescing filter of the air filter assembly.

Figure 2-14 Drain valve on air tank (left), air filter assembly (right)



NOTE: Both filters of the air filter assembly (#PNF31000) [see Figure 2-14] must be changed twice a year.

Starting Up the Vehicle

Apply this procedure to start up your vehicle:

1. Make sure no system will engage and/or start to operate as you start the engine.
2. Make sure the shut-off valve on the hydraulic tank is fully open before starting the vehicle (see Figure 2-15).

Figure 2-15 Shut-off valve

NOTE: The hydraulic tank model may vary according to the options installed.

Warning!

Failure to fully open the shut-off valve will cause immediate damage to the pump, even if the pump is turned off.

3. Start the engine according to the chassis manufacturer's recommendations.
4. Once the engine is started, wait for the air pressure to build up to *at least* 70 psi.

Figure 2-16 Air pressure indicator

IMPORTANT: Do not operate or move the vehicle until the air pressure has reached 70 psi.

5. Once the air pressure has reached 70 psi, engage the hydraulic system by turning ON the PUMP switch on the in-cab control panel (see Figure 2-17).

   The PUMP switch turns from blue to green.

Figure 2-17 PUMP switch

- A green switch means the pump is active.
- A blue switch means the pump is not active.

3

General Maintenance

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Cleanliness

Cleanliness is part of safety.

As such:

- Clean all vehicle lights, warning lights and safety stickers so that you and the vehicle surroundings are safe at all times.
- Clean the contact surface between the body and the chassis. Labrie Environmental Group recommends cleaning the chassis after every unloading.
- Remove any stacked garbage in the hopper area.
- Use the provided hoe to rake debris out of the clean-out doors (except for the Pendulum model).
- Keep the cab floor dry and clean to prevent slipping and falling.
- Make sure that the side step and/or hopper step (if installed) are clean and free of any slippery material.

Danger!

Always use the stepladder to reach the higher parts of the vehicle. Also, do not climb on to the truck roof as it has not been designed to be walked on.

AUTOMIZER™ Preventive Maintenance Chart

Component/System	Task	Daily	Weekly	Monthly	Yearly	Page
Limit/proximity switches	Proper adjustment of all limit/proximity switches is imperative		X			See page 76
	Check and clean area around limit/proximity switches	X				
Packer and accessories	Lubricate the packer and its accessories. See *Lubrication Chart* on side of vehicle	X				See page 114
Wiring System	Check for damaged harnesses and/or bad connections				X	See page 173
Battery Cables	Ensure cables are not coming in contact with an area that could rub through the insulation			X		
Operator controls	Check for proper operation	X				
Air tanks	Drain air tanks	X				See page 191
Air system	Check for leaks		X			See page 191
	Drain filter	X				
Safety systems	Check for proper operation (tailgate alarm and special devices)		X			See page 17
Lifting arm	Check hydraulic pressure	X				See *Lifting Arm Supplement*

Component/System	Task	Daily	Weekly	Monthly	Yearly	Page
Hydraulic system	Check oil level in tank, and refill if necessary	X				See page 148
	Check if the shut-off valve on the hydraulic tank is open	X				see Figure 2-15
	Check ground for overnight leaks	X				
	Check cylinders, pump, control valve and system for leaks. Repair or replace if required		X			See page 156 See page 132 See page 130
	Replace hydraulic filter[a]				Twice a year	See page 152
	Clean strainer and refill				X	See page 151
	Check pressure			X		See page 159
Hopper area	Clean traps on each side	X				See page 35
	Clean dirt under or behind the packer	X				See page 39
Rollers, hydraulic cylinders and cylinder pins, hoses, pipes and connections, wear of floor and hopper sides.	Visually inspect these items	X				
Body and chassis	Check for corrosion			X		
	Keep the contact surfaces clean between body and chassis	X				

a. **Also replace the return filter after the first 50 hours of operation.**

PTO Preventive Maintenance

The Power Take-Off (PTO) device on your truck needs regular maintenance to ensure it's operating at its highest efficiency. Please refer to the PTO manufacturer's manual for specific maintenance procedures. Periodic normal maintenance of the PTO device always includes bolt tightness and torque inspection.

Hopper

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

The area behind the packer MUST be cleaned out EVERY DAY. The packer will not work properly if waste accumulates in this area; it could cause severe damage to the packer and other related parts. Cleaning the hopper consists of 3 steps:

- Preparing the hopper for clean-up
- Cleaning up the hopper
- Inspecting the hopper after clean-up

Preparing the Hopper for Clean-Up

To prepare the hopper for clean-up:

1. Start the engine and engage the hydraulic pump (see Step 5 on page 29).
2. Using the joystick, extend the automated arm.
3. Make sure the hopper door is closed.

NOTE: The hopper door *MUST* be closed in order to move the packer.

4. Fully extend the packer (see Figure 3-1), then push the red emergency STOP button (see Figure 3-2).

Figure 3-1 Fully extended packer

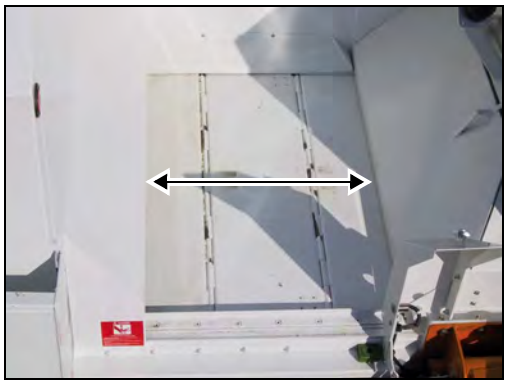
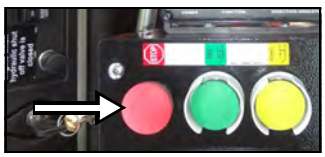


Figure 3-2 Emergency STOP button



5. Turn OFF the hydraulic pump and stop the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

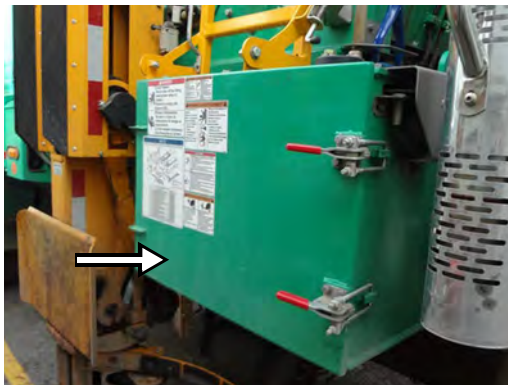
Cleaning Up the Hopper

NOTE: Packer must be fully extended before applying the following procedure (see *Preparing the Hopper for Clean-Up* on page 34).

Once the hopper has been prepared for clean-up:

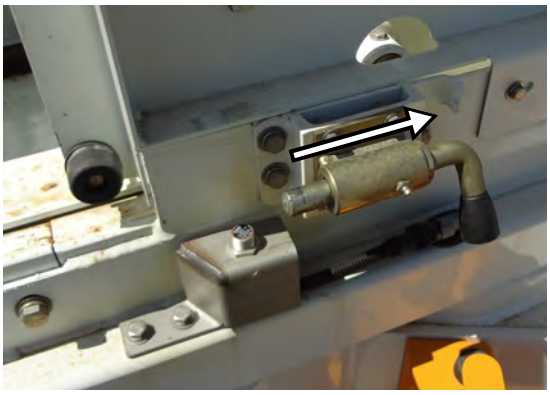
1. Open the clean-out traps on each side of the hopper (see Figure 3-3).

Figure 3-3 Clean-out trap



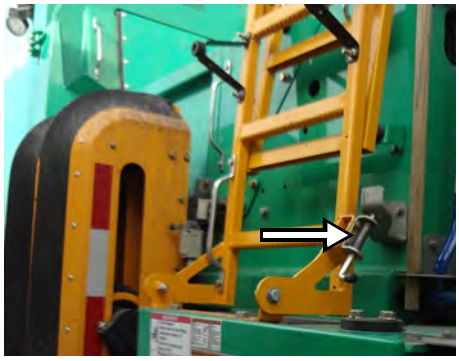
2. Open the hopper door. To do so:
   - **2 a.** Pull the door latch to the right.

Figure 3-4 Door latch



   - **2 b.** Pull the door open.
3. Tilt the stepladder towards you by pulling down the spring-loaded stepladder latch (see Figure 3-5).

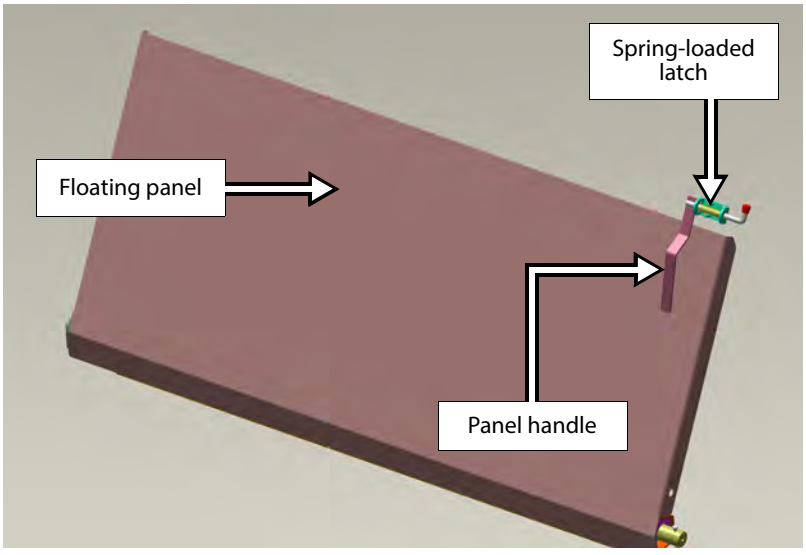
Figure 3-5 Stepladder latch



4. Climb inside the hopper using the stepladder.
5. Pull out the floating panel to gain access to the area behind the packer (see Figure 3-6). To do so:
   - **5 a.** Pull the spring-loaded latch to the right.
   - **5 b.** Turn the latch handle a quarter of a turn counter-clockwise so that the latch will not spring back to its original position.
   - **5 c.** Grab the panel handle and pull the panel towards you.

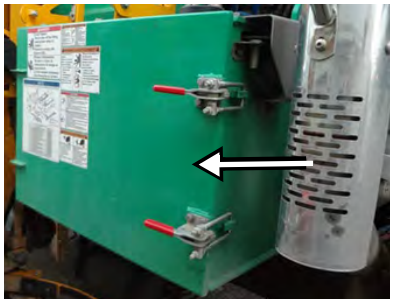
Caution! When opening or closing the floating panel, keep hands and fingers away from the pinch point area.

Figure 3-6 Floating panel



6. With a scraper or pressurized water, remove all accumulated dirt behind the packer, under the cylinder brackets, and inside side rails (see Figure 3-8).
7. Remove debris through the clean-out traps (see Figure 3-7).

Figure 3-7 Clean-out trap



8. Finish cleaning the area with pressurized water.
9. Once cleaning is complete, close the floating panel. To do so:
   - **9 a.** Push on the floating panel to close it.
   - **9 b.** Pull the spring-loaded latch to the right and turn the latch handle a quarter of a turn clockwise to release the spring so that the latch can return to its original position.

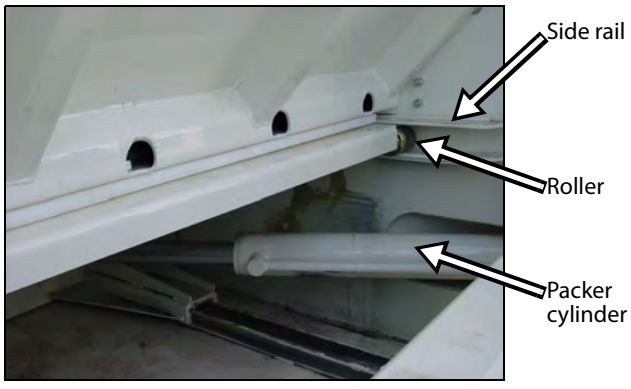
Caution! When opening or closing the floating panel, keep hands and fingers away from the pinch point area.

Inspecting the Hopper after Clean-Up

Once you are finished cleaning the hopper area, inspect your work:

1. Check the following components for proper working order and/or alignment:
   - Rollers
   - Cylinder pins
   - Hoses, pipes, connections and cylinders (for leaks, etc.)
   - Bolts (for tightness)
   - Hopper floor and sidewalls (for excessive wear)

Figure 3-8 Inside hopper area



2. After inspection, put the floating panel back in place (see Figure 3-6).
3. Use the stepladder to get down.
4. Retract the stepladder.
5. Start the engine, engage the hydraulic system and fully retract the packer.
6. Retract the automated arm to its original position.

Packer

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum. For information on the pendulum packer, see *Pendulum Packer* on page 266.

The AUTOMIZER™ 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 (1000 to 3000 cycles a day), Labrie Environmental Group recommends that *operators* perform a visual inspection of the packer and its components every day.

Maintenance personnel *must* perform weekly inspection and maintenance. Greasing all moving parts on a daily basis is very important and proper adjustment of the proximity switches is mandatory, especially on vehicles equipped with a multicycle feature. For more information on the lubrication schedule, see *Lubrication* on page 107.

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 during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Preparing the Packer for Inspection

To prepare the packer for inspection:

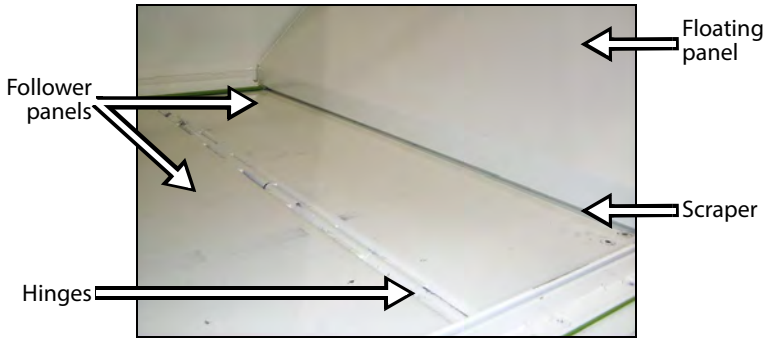
1. Start the engine and engage the hydraulic pump.
2. Fully extend the packer (see Figure 3-1), then push the red emergency STOP button (see Figure 3-2) to stop the packer in this position.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

Inspecting the Packer

To inspect the packer:

1. Check the follower panel hinges and verify that there is no wear on the panel surface.

Figure 3-9 Follower panels



2. Inspect the scraper (nylon strip) at the bottom of the floating panel (see Figure 3-9). This nylon strip wipes out dirt every time the packer goes back and forth.

   Replace this scraper before it is worn down to the top of its holding screws (see *Lower Wear Pad* on page 64).

3. Visually inspect both packer side rails (see Figure 3-10) and rollers.

   If signs of premature wear are apparent, replace the faulty parts (see *Sliding Shoes* on page 52, *Follower Panel Roller Assemblies* on page 68, and *Rollers* on page 70).

Figure 3-10 Side rail

4. Check out for leaks on hydraulic hoses and tubes.

   Tighten leaking connections and/or replace defective hoses.

5. Verify cylinder rods:

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

   5 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.

6. Check the packer for vertical and horizontal movements. See *Testing for Excessive Wear* on page 52 for correct procedure.

   If the packer shows vertical or horizontal movement, wear pads need to be replaced. Extensive wear on the hopper floor also suggests that sliding shoes require immediate replacement (see *Sliding Shoes* on page 52).

7. Verify packer panel adjustment for knocking noises.

   Knocking noises indicate that the Extend proximity switch requires adjustment (see *Adjusting Packer Extend Proximity Switch* on page 77). Proper adjustment is necessary to prevent cylinders from bottoming out under pressure.

8. Make sure that hydraulic cylinders are not leaking internally (resulting in insufficient packing power). For more information, see *Inspecting Hydraulic Cylinders* on page 156.

Preparing Packer for Removal - Method A

NOTE: There are 2 methods for preparing and removing the packer panel from an AUTOMIZER™ vehicle (Method A [taking packer out through the rear of the body] and Method B [taking packer out through the hopper]). If you use Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer. The same goes for Method B. The choice between both removal methods depends on numerous factors such as mechanics' preferences, the condition of various packer parts and the type of lifting systems available.

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!

Secure the area around the path of the automated arm when performing maintenance or repair.

3. Extend the packer panel to within 12 inches of the end of the stroke.

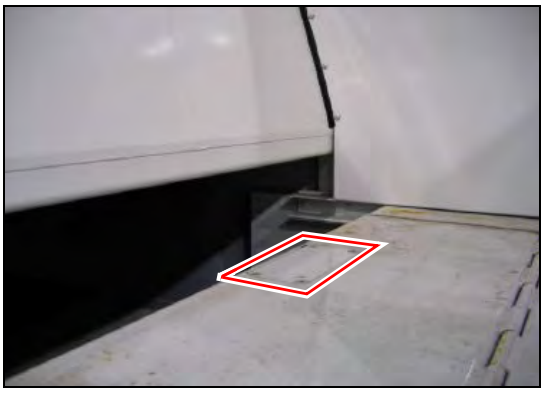
NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red emergency button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull that button back up then turn ON the PUMP switch on the in-cab control panel (see Figure 2-17).

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

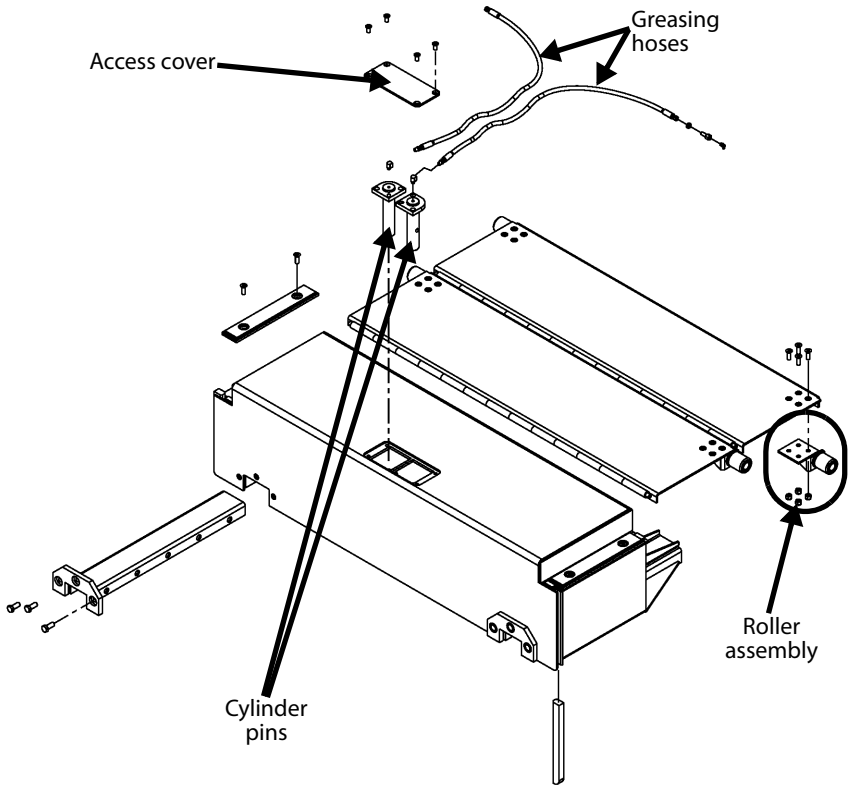
4. Fully open the tailgate using the TAILGATE UP switch on the in-cab control panel and install the tailgate safety prop.
5. Turn off the hydraulic pump and the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
7. Remove the packer cylinder pin access cover on the packer panel.

Figure 3-11 Packer cylinder pin access cover



8. Disconnect the cylinder pins from the greasing hoses (see Figure 3-18).
9. Remove the 2 rear cylinder pins (see Figure 3-18).

Figure 3-12 Removing pins and hoses



The cylinder pin top plate has 2 threaded holes to be used as a puller by inserting two ½ NC bolts.

Removing the Packer Panel - Method A

NOTE: There are 2 methods for preparing and removing the packer panel from an AUTOMIZER™ vehicle (Methods A and B). If you used Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer.

Once you have prepared the packer panel for removal, you can now proceed with the following removing procedure.

1. Attach a suitable chain/cable to the packer panel and pull the panel towards the rear of the body.

NOTE: When pulling the follower panels, they must be properly supported.

2. If necessary, carry out the procedure for replacing floor guides (see *Replacing Packer Wipers* on page 67).
3. Re-assemble in reverse order.

   When installing a new packer, put a new wiper blade on each side of the packer (see Figure 3-19).

These wiper blades may require to be adjusted to fit between the new packer and the hopper walls.

Preparing Packer for Removal - Method B

NOTE: There are 2 methods for preparing and removing the packer panel from an AUTOMIZER™ vehicle (Method A [taking packer out through the rear of the body] and Method B [taking packer out through the hopper]). If you use Method A for the preparation of the packer panel, you must then use Method A for the removal of the packer. The same goes for Method B. The choice between both removal methods depends on numerous factors such as mechanics' preferences, the condition of various packer parts and the type of lifting systems available.

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger! Secure the area around the path of the automated arm when performing maintenance or repair.

3. Fully retract the packer by pressing the yellow button on the packer control station.

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

4. Turn off the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

Accessing the Packer - Method B

Once you have prepared the packer for removal, you need to gain access to the packer.

To do so:

1. Remove both side rail shields (see Figure 3-13).
   6 bolts are to be removed to take off the right-hand side rail shield.
   5 bolts are to be removed to take off the left-hand side rail shield.

Figure 3-13 Side rail shields

2. Remove both side rails (see Figure 3-14 and Figure 3-15).

Figure 3-14 Right-side rail

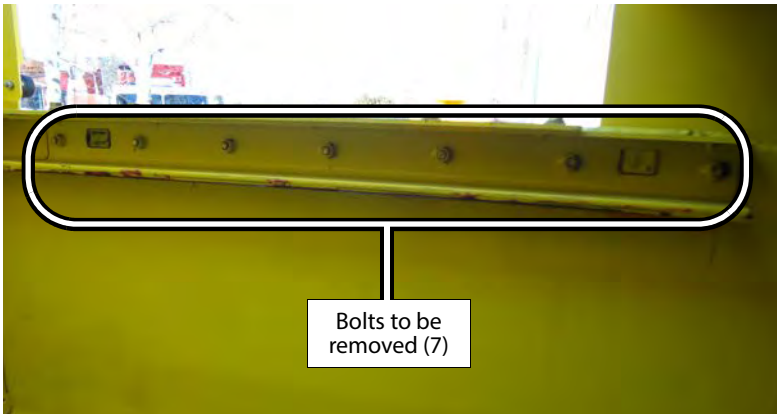
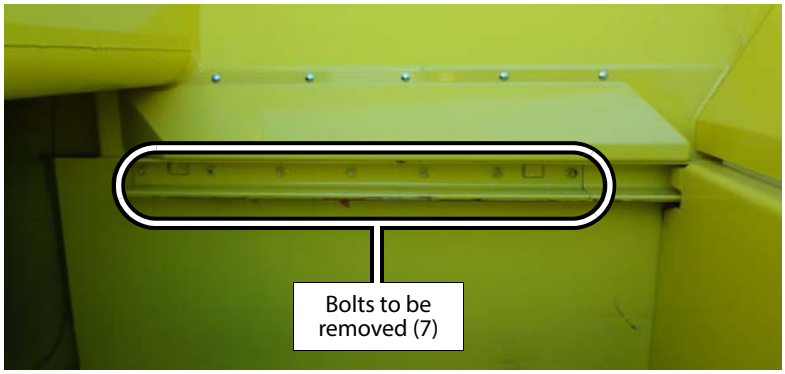
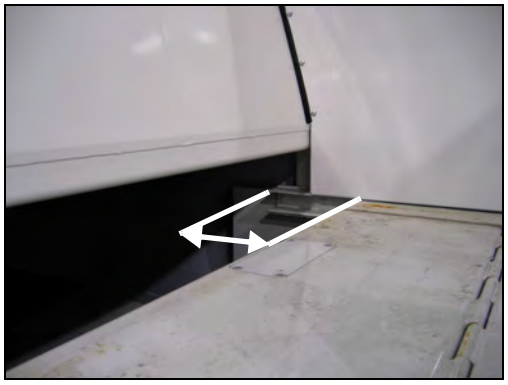


Figure 3-15 Left-side rail



3. Start the engine and engage the hydraulic pump.
4. Extend the packer to about 12 inches before the end of the stroke (see Figure 3-16).

Figure 3-16 Packer at about 12 inches from end of stroke



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

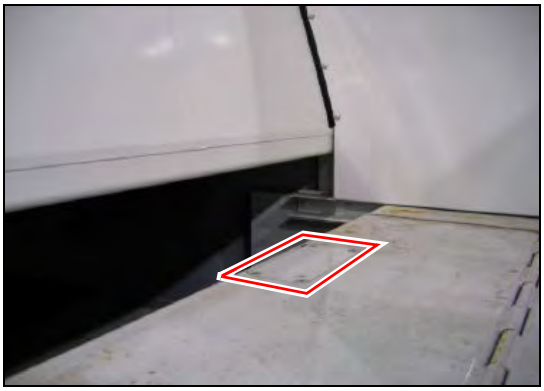
5. Turn OFF the hydraulic pump and the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

Disconnecting the Packer - Method B

Once you have gained access to the packer, you must now disconnect it:

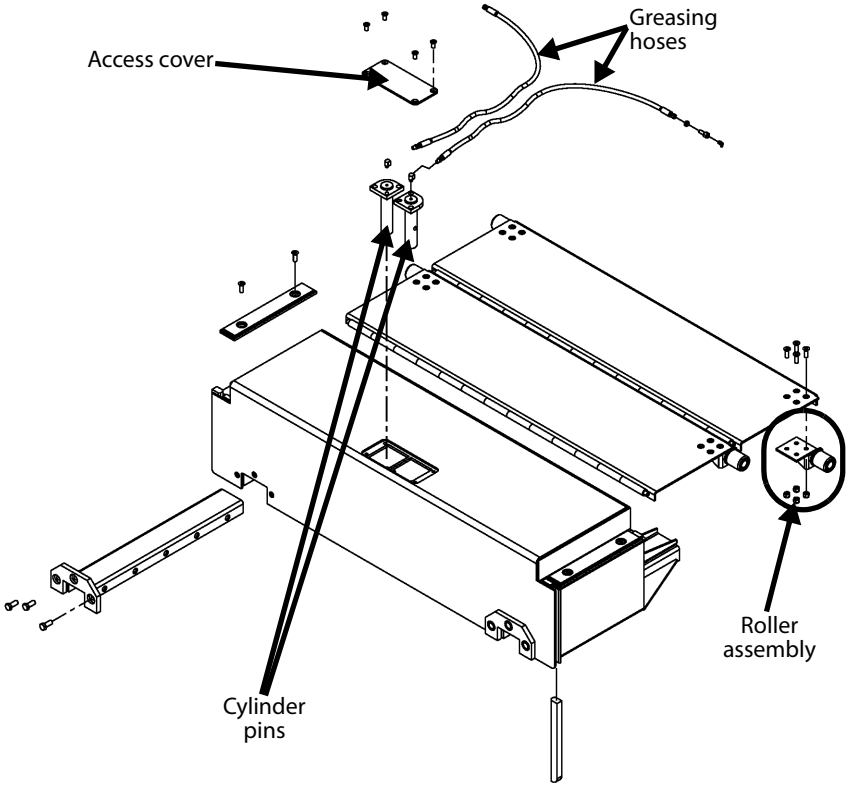
1. Remove the floating panel from the hopper (see *Removing Lower Wear Pad* on page 64).
2. Remove the access cover on the packer panel to reach the cylinder pins (see Figure 3-17).

Figure 3-17 Packer cylinder access cover



3. Disconnect the cylinder pins from the greasing hoses (see Figure 3-18).
4. Remove both cylinder pins (see Figure 3-18).

Figure 3-18 Removing pins and hoses



The cylinder pin top plate has 2 threaded holes to be used as a puller by inserting two ½ NC bolts.

5. Start the engine and engage the hydraulic pump.
6. Retract both hydraulic cylinders.
7. Turn OFF the hydraulic pump and the engine.
8. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

Removing the Packer Panel - Method B

NOTE: There are 2 methods for preparing and removing the packer panel from an AUTOMIZER™ vehicle (Methods A and B). If you used Method B for the preparation of the packer panel, you must then use Method B for the removal of the packer.

Once the packer has been prepared, accessed and disconnected, you can remove it from the hopper.

To do so:

1. Remove all packer roller assemblies from the follower panels (see Figure 3-18).
2. Fold the follower panels over the packer (see Figure 3-20).
3. Weld the follower panels to the packer.
4. Attach the packer to a lifting device (fork lift, etc.) and lift it out of the hopper.

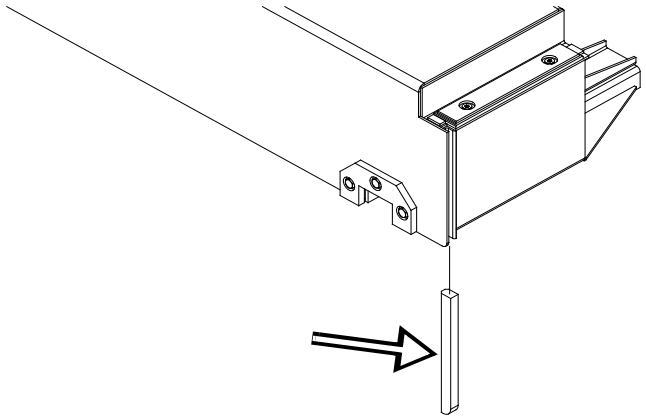
Installing a New Packer - Method B

To install a new packer:

1. Using a lifting device, lower the new packer into the hopper, properly aligning the packer with the floor guides.
2. Install a new wiper blade on each side of the packer (see Figure 3-19).

   These wiper blades may require to be adjusted to fit between the new packer and the hopper walls.

Figure 3-19 Plastic wiper blade



3. Install the roller assemblies and follow the procedure on page 46 — "Disconnecting the Packer - Method B" — in reverse order. Also, follow the procedure on page 44 — "Accessing the Packer - Method B" — in reverse order to reinstall both side rail shields.
4. Once finished re-assembling the removed components, lubricate and check for proper operation of the packer.

Packer Cylinders

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum. For information on pendulum packer cylinders, see *Packer Cylinders* on page 273.

Packer cylinders that become defective through time need to be replaced. To do so, you first have to access the faulty cylinder, remove it, and then properly proceed with the installation of the replacement cylinder. These steps are explained in the following sections.

Accessing Packer Cylinders

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

To access the packer cylinders:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get a better access to the hopper area.

Danger! Secure the area around the path of the arm when performing maintenance or repair.

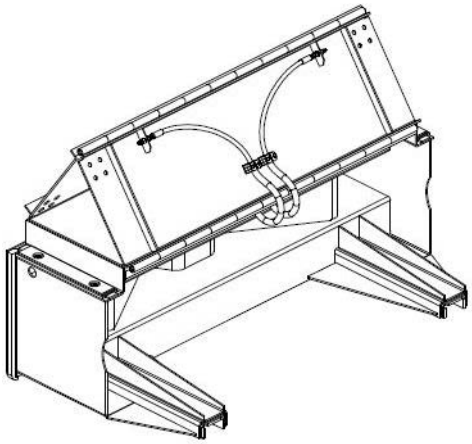
3. Fully extend the packer.

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

4. Disengage the pump and stop the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
6. Remove the floating panel (for details on how to remove the floating panel, see *Lower Wear Pad* on page 64).

7. Open the access cover.
8. Disconnect both rear cylinder pins from the greasing hoses (see Figure 3-18).
9. Remove both rear cylinder pins (see Figure 3-18).
10. Start the engine and engage the pump.
11. Fully retract both cylinders.
12. Disengage the pump and stop the engine.
13. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
14. Remove the roller assemblies on the follower panels (see *Follower Panel Roller Assemblies* on page 68).
15. Fold the follower panels over the packer (see Figure 3-20).

Figure 3-20 Folded follower panels



Removing Faulty Packer Cylinder

Caution!

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

To remove the faulty packer cylinder:

1. Carry out the preceding procedure (see *Accessing Packer Cylinders* on page 48).
2. Ensure the hydraulic pump is disengaged and the engine is stopped.
3. Ensure the truck is locked out and tagged out properly (see *Locking Out and Tagging Out the Vehicle* on page 25)
4. Disconnect both hydraulic hoses from the faulty cylinder (use absorbent material to catch oil spills).

Figure 3-21 Cylinder hydraulic hoses

5. Enter the hopper to attach and secure the cylinder to an appropriate lifting device.
6. Remove the piston side pin that holds the faulty cylinder to the front of the body. To do so:
   - **6 a.** Remove all 4 bolts that are on the top of the pin (see Figure 3-22).
   - **6 b.** Once all bolts have been removed, locate the 2 holes that are threaded.
   - **6 c.** Install puller screws into the threaded holes.
   - **6 d.** Tighten the screws to lift up the pin.
     Tighten until the cylinder breaks loose.

Figure 3-22 Bolts securing piston side of cylinder

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

7. Remove the proximity switch target and save it for the new cylinder.
8. Replace the faulty cylinder with a new one. If covered by warranty, contact Labrie*Plus* for replacement.

Finishing Up Packer Cylinder Replacement

To finish up cylinder replacement:

1. Reinstall the piston side pin and connect the hydraulic hoses.
2. Extend both cylinders.
3. Reinstall both rear cylinder pins.
4. Connect the greasing hoses to the cylinder pins.
5. Unfold the follower panels and reinstall the roller assemblies.
6. Grease the cylinder pins and check for proper packer operation (see *Packer* on page 122).
7. Readjust the proximity switch if need be (for proximity switch readjustment, see *Adjusting Packer Extend Proximity Switch* on page 77).

Sliding Shoes

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

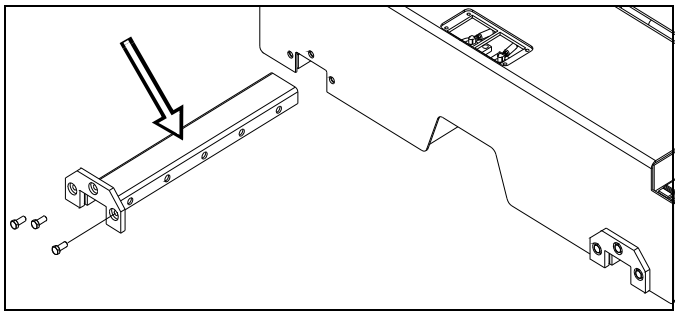
The packer guiding system is made of 2 different types of steel: sliding shoes are made of a softer steel type to wear out before the floor guides.

To keep the packer in good working order and prevent unnecessary down time, replace sliding shoes and wear pads (see page 60) before extensive wear or damage can be seen on the hopper floor and walls.

After continuous use over an extended period of time, floor guides may need to be replaced.

NOTE: It is not necessary to remove the packer to perform this procedure.

Figure 3-23 Sliding shoe



Testing for Excessive Wear

To test for excessive wear:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
2. With a pry bar, try to move the packer vertically (up and down motion) and horizontally (side to side motion).

   It should not move vertically by more than 3/16" and horizontally by more than 1/8". If movement is greater than the values indicated above, check for excessive wear on both packer sliding shoes and on the wear pads under the side rails (see page 60).

Preparing for Sliding Shoe Replacement

Follow this procedure before proceeding with sliding shoe replacement:

1. Start the engine and engage the hydraulic pump.
2. With the joystick, extend the automated arm to get better access to the hopper area.

Danger! Secure the area around the path of the automated arm when performing maintenance or repair.

3. Push the yellow button on the packer control station to fully retract the packer.

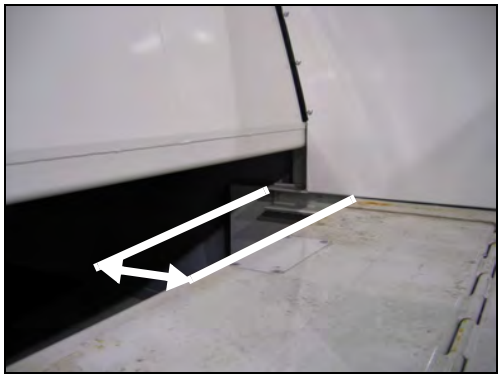
Danger! Never enter the hopper while the packer is moving.

4. Turn OFF the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
6. Go behind the packer and, with a grinder or cutting tools, remove the welds on both sliding shoes (see Figure 3-24).

Figure 3-24 Welds to be removed

7. From the cab, start the engine, engage the hydraulic pump and extend the packer to about 18 inches before the end of the stroke.

Figure 3-25 Packer at about 18 inches from end of stroke



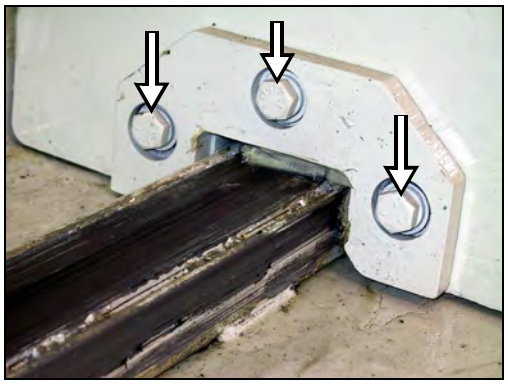
NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red emergency button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull that button back up then turn ON the PUMP switch on the in-cab control panel (see Figure 2-17).

Danger! Never enter the hopper while the packer is moving.

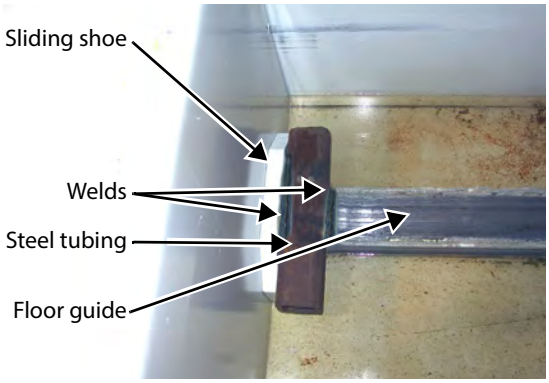
8. Turn OFF the hydraulic pump and the engine.
9. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
10. Remove all 3 bolts retaining each sliding shoe (see Figure 3-26).

Figure 3-26 Retaining bolts



11. Tack weld a piece of steel tubing to the floor rail and to the front of both sliding shoes.

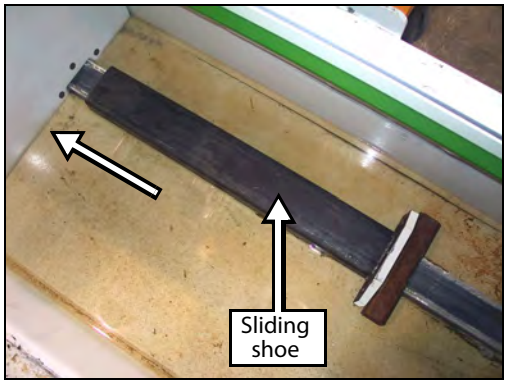
Figure 3-27 Tack welding



12. Start the engine, engage the hydraulic pump, and press the yellow button to slowly retract the packer.

The sliding shoes will come out under the packer as it is retracting (see Figure 3-28).

Figure 3-28 Packer retracting, exposing sliding shoe



Replacing Sliding Shoes

Mechanics must first follow the preceding procedure (*Preparing for Sliding Shoe Replacement* on page 53) before continuing with the procedure below.

To replace the worn-out sliding shoes, proceed this way:

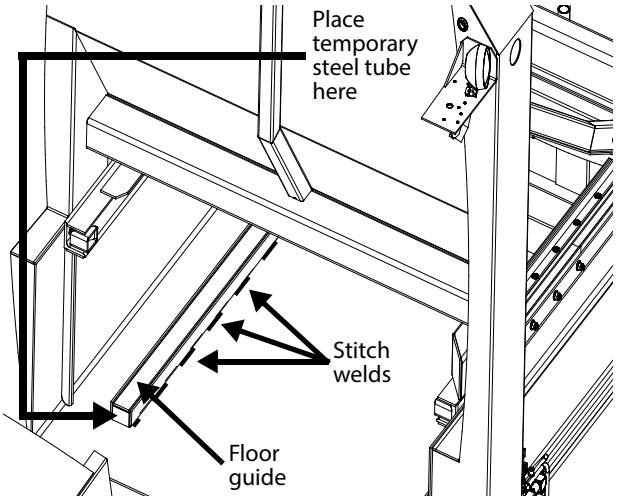
NOTE: This procedure includes removing and replacing the floor guides.

1. Turn OFF the hydraulic pump and the engine.
2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
3. Remove the old sliding shoes and temporary steel tubing.

NOTE: Removal of the packer panel is not necessary within this procedure. However, should you prefer to proceed with such removal, refer to "Removing the Packer Panel - Method B" on page 47.

4. Mark the *exact* location of both floor guides.
5. Using a grinder or cutting tool, remove the floor guides by cutting the stitch welds.

Figure 3-29 Stitch welds



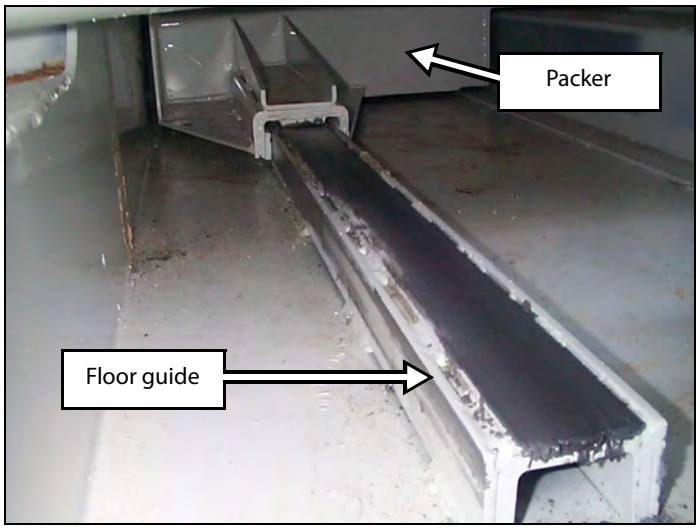
6. Clean the hopper floor and wall surfaces.
7. Install temporary steel tubes on the body side end of both floor guides (see Figure 3-29).
8. Position the new guides on the hopper floor using the marks made in Step 4 (do not tack or weld yet).

   Make sure the floor guides are parallel to the hopper walls.
9. (*If packer has been removed*) Reinstall the packer on the floor guides with the new sliding shoes on it.

   Reconnect cylinders to the packer. To do so, reverse the procedure entitled "Disconnecting the Packer - Method B" on page 46.

Then go to Step 19.

Figure 3-30 Packer sitting on floor guide



10. Install the new sliding shoes on the packer.
11. Weld a tube on both floor guides at the same position.
12. Exit the hopper.
13. Start the truck and engage the hydraulic pump.
14. Slowly extend the packer to make the sliding shoe go under the packer.

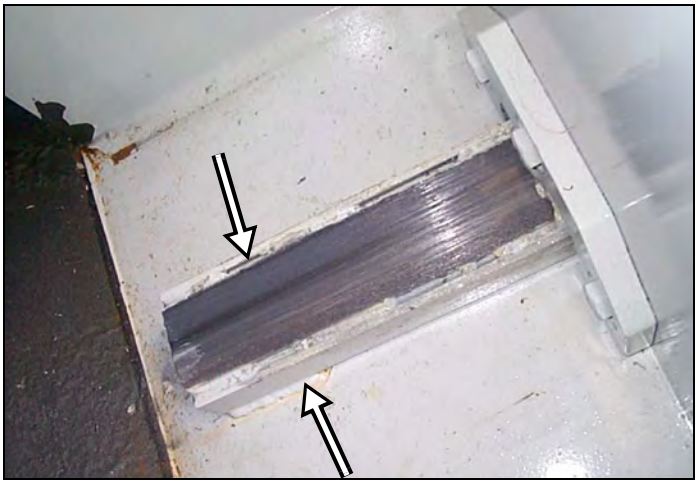
Danger! Never enter the hopper while the packer is moving.

15. When the sliding shoes are back in place, turn OFF the hydraulic pump and the engine.
16. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
17. Put back and tighten all retaining bolts.
18. Remove the tubes that were installed in Step 11, then grind down to a smooth surface.

NOTE: If the wear pads at the top of the packer need to be replaced, see *Upper Wear Pads* on page 60.

19. Start the truck and engage the hydraulic pump.
20. Extend the packer.
21. Turn OFF the hydraulic pump and the engine.
22. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
23. Align the packer with the hopper walls.
24. Tack weld both floor guides to the floor.

Figure 3-31 Tack weld on both sides of the floor guide



25. Start the truck and engage the hydraulic pump.

26. Retract the packer completely.

Danger! Never enter the hopper while the packer is moving.

27. Turn OFF the hydraulic pump and the engine.

28. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

29. Align the packer with the hopper walls.

30. Tack weld both floor guides to the floor in front of the packer.

31. Weld both sliding shoes to the packer.

Figure 3-32 View from behind fully retracted packer

Finishing Up Replacing Sliding Shoes and Floor Guides

Apply the following procedure to finish up replacing the sliding shoes and floor guides:

1. Run the packer a few times.

Danger! Never enter the hopper while the packer is moving.

1 a. If the packer is binding, apply some primer paint on the floor guide to find out where the rubbing is occurring.

1 b. Run the packer a few times again. The location where the paint has come off indicates the surface that needs to be grinded.

2. If the packer slides properly, weld the floor guides to the floor as illustrated in Figure 3-33.
3. Fully extend the packer to finish welding behind it.
4. Remove the temporary steel tubes installed in Step 7 on page 56.
5. Spray grease on the floor guides for preventing premature corrosion and wear.

Figure 3-33 Welds on both sides of floor guide

Floor Guides

Floor guides wear out over time, so their replacement is necessary for the packer to continue operating properly. Usually, replacement of floor guides is done at the same time when sliding shoes are replaced.

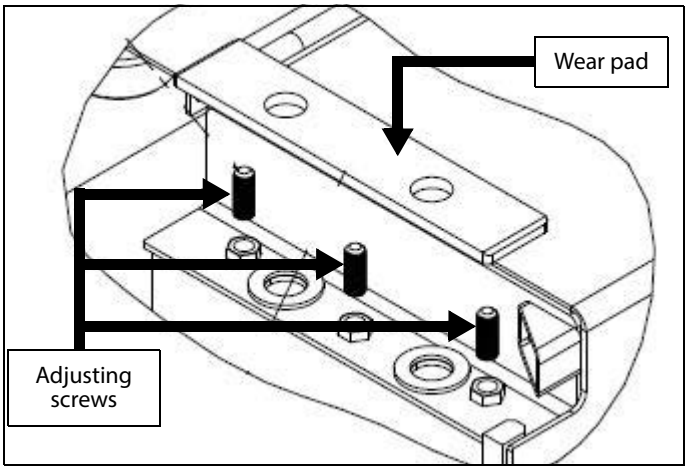
When sliding shoes need to be replaced because of wear, chances are floor guides need replacement too. To replace floor guides, apply the procedure detailed in the “Replacing Sliding Shoes” section on page 56. This procedure includes steps to remove and replace floor guides.

Upper Wear Pads

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

When the packer moves vertically by more than 3/16" (checked with a pry bar), the upper wear pads must be replaced.

Figure 3-34 Adjusting screws and upper wear pad



Preparing for Upper Wear Pad Replacement

Make sure you go through the following steps:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!

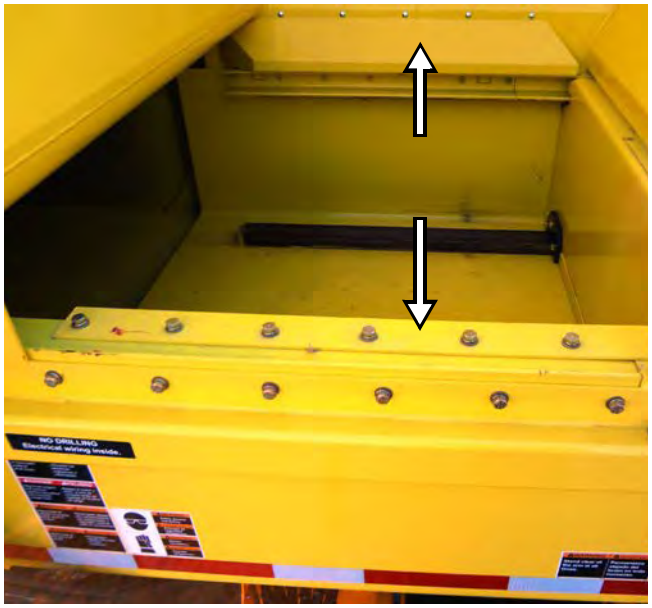
Secure the area around the path of the automated arm when performing maintenance or repair.

3. Turn OFF the hydraulic pump and the engine.
4. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
5. Remove both side rail shields (see Figure 3-35).

   6 bolts are to be removed to take off the right-hand side rail shield.

   5 bolts are to be removed to take off the left-hand side rail shield.

Figure 3-35 Side rail shields



6. Remove both side rails (see Figure 3-36 and Figure 3-37).

Figure 3-36 Right-side rail

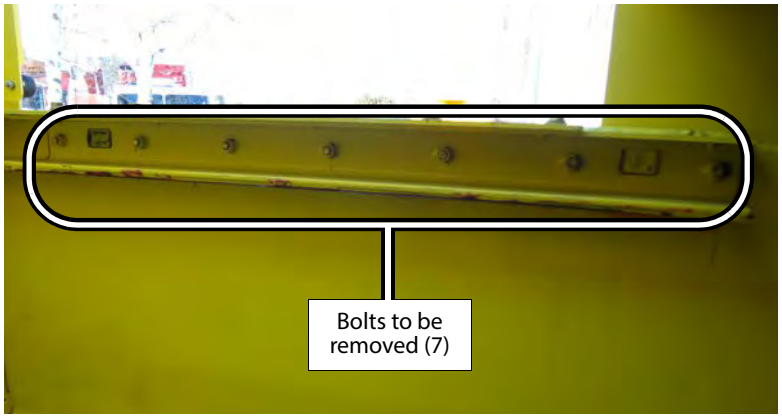
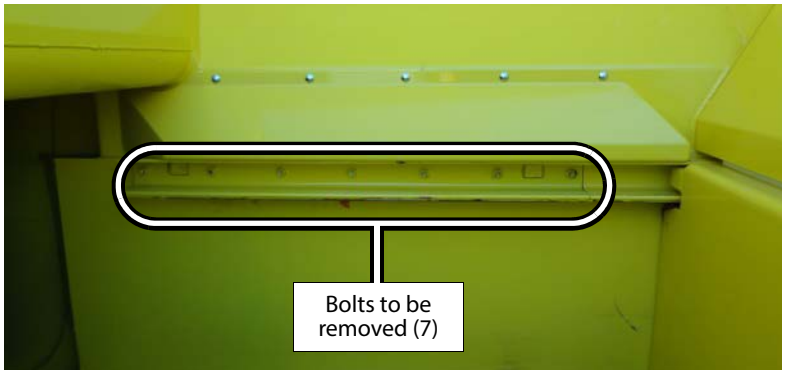
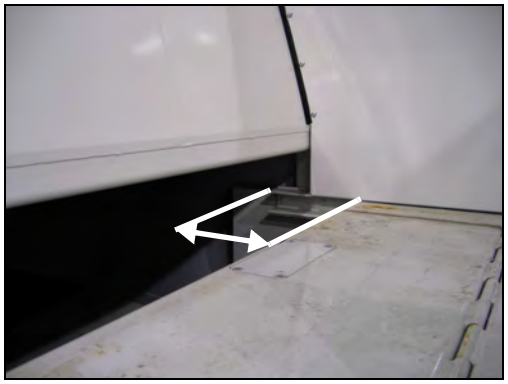


Figure 3-37 Left-side rail



7. Start the engine and engage the hydraulic pump.
8. Extend the packer to about 12 inches before the end of the stroke (see Figure 3-38).

Figure 3-38 Packer at about 12 inches from end of stroke



NOTE: To extend (or retract) the packer over a short distance, push the green (or yellow) button and then push the red button immediately. Repeat the process until the packer has reached the desired position.

NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull that button back up then turn ON the PUMP switch on the in-cab control panel (see Figure 2-17).

9. Turn OFF the hydraulic pump and the engine.

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

10. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

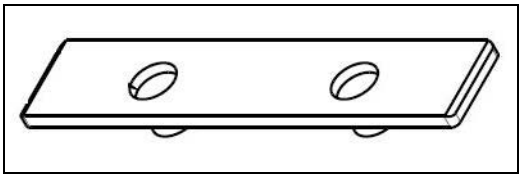
Replacing and Adjusting Upper Wear Pads

Follow this procedure to replace and adjust the upper wear pads:

1. Remove and replace both wear pads (see Figure 3-39 and Figure 3-40).

NOTE: Wear pads are not bolted or screwed to the packer. They are simply placed on each end of the packer, with the 2 protruding guides inserted into the holes provided.

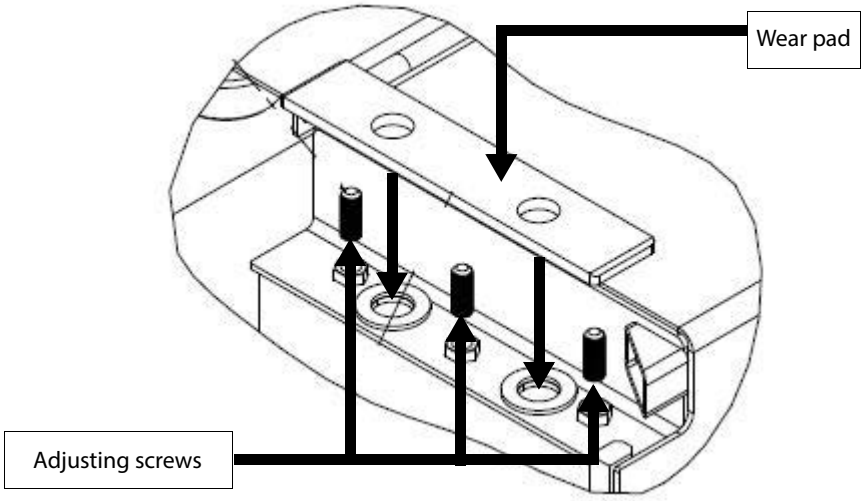
Figure 3-39 Wear pad



2. Use the adjusting screws (see Figure 3-40) to adjust the wear pads in order to maximize stability and smooth motion of the packer.

   Turn the adjusting screws clockwise/counter-clockwise to lower/raise the wear pad until the desired tightening or loosening effect is achieved. This adjustment is done from the inside underneath the follower panel.

Figure 3-40 Installing and adjusting wear pad



3. Start the engine and engage the hydraulic pump.
4. Retract the packer.

Finishing Up Upper Wear Pad Replacement

Use the following procedure to finish up replacing the upper wear pads:

1. Reinstall both side rails by putting all the bolts back in place (see Figure 3-36 and Figure 3-37).
2. Reinstall the side rail shields by putting all the bolts back in place (see Figure 3-35).
3. Reinstall the deflector cover.

Lower Wear Pad

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Removing Lower Wear Pad

To remove the lower wear pad, apply the following procedure:

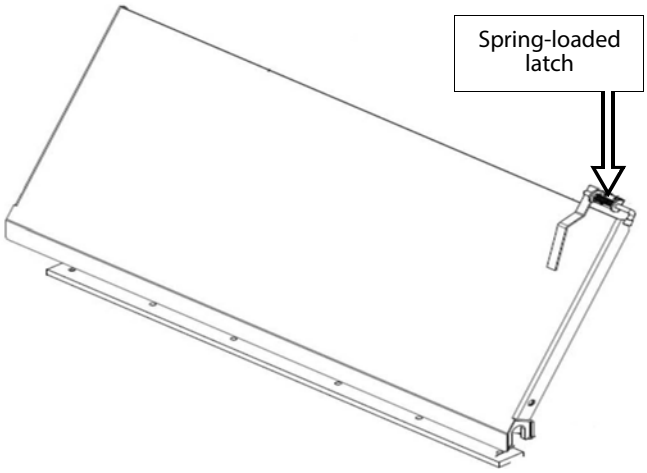
1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!

Secure the area around the path of the arm when performing maintenance or repair.

3. Fully extend the packer, then push the red emergency STOP button to maintain the packer in its fully extended position.
4. Disengage the hydraulic pump and stop the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
6. Take the floating panel out of the hopper with an appropriate lifting device. To do so:
   - **6 a.** Pull the panel spring-loaded latch to the right and turn its handle a quarter of a turn counter-clockwise so that the latch will not spring back to its original position.

Figure 3-41 Floating panel



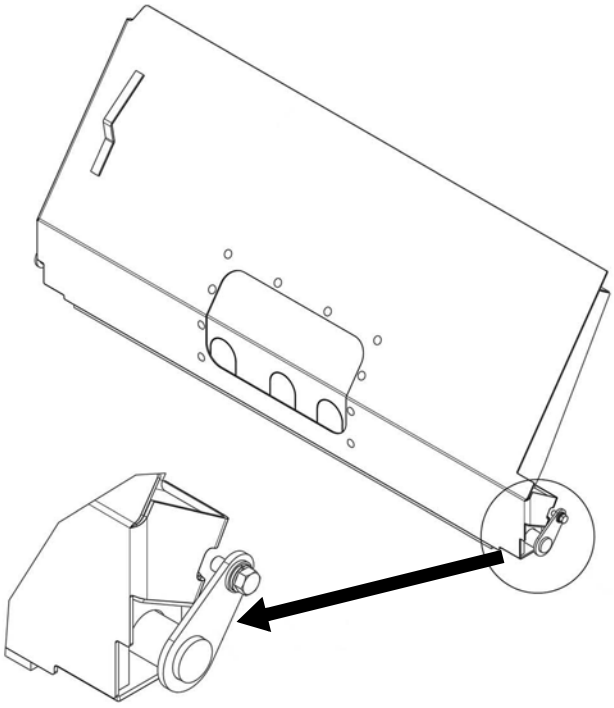
6 b. Open the panel mid-way.

Warning! Keep hands and fingers away from the pinch point of the floating panel.

6 c. Secure the panel with a sling or cable.

6 d. Remove the 2 pivots at the base of the floating panel (see Figure 3-42).

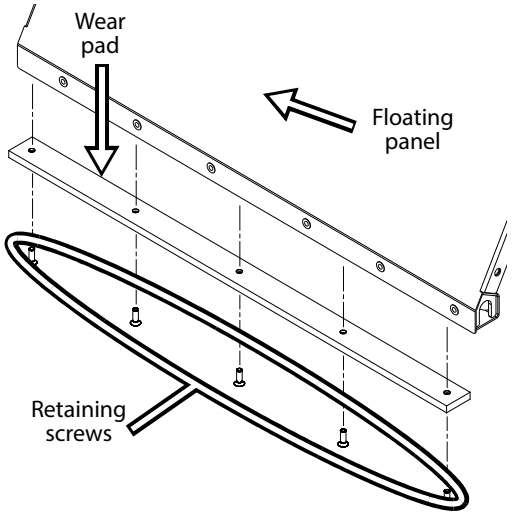
Figure 3-42 Pivot



6 e. Lift the floating panel out of the hopper using an appropriate lifting device.

7. Remove the retaining screws holding the lower wear pad in place (see Figure 3-43).

Figure 3-43 Retaining screws holding lower wear pad



8. Replace the old wear pad with a new one and put back all the retaining screws.

9. Reinstall the floating panel.

Use steps 6a.) to 6e.) in reverse order of disassembly.

10. After closing back the floating panel, turn the latch handle clockwise so that the latch can spring back to its original position.

11. Check for even contact between the wear pad, packer panel and follower panels.

Replacing Packer Wipers

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

To replace the packer wipers, do the following:

1. Proceed with the preparation of the hopper and the correct positioning of the packer (see *Preparing for Upper Wear Pad Replacement* on page 60).
2. Remove the old packer wipers and replace with new ones.
3. Adjust the packer wipers on both sides of the packer (see Figure 3-44).

   Packer wipers are generally made of UHMW plastic.
4. Use flat, rectangular metal shims as required for proper adjustment.

Figure 3-44 Packer wipers

Follower Panel Roller Assemblies

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

Packer rollers need to be replaced when damaged or when showing excessive wear or flat spots. The procedures outlined below will show you how to remove both bottom and top rollers and how to replace them.

Replacing Bottom Roller Assemblies

NOTE: This task must be performed by 2 people.

To replace the bottom roller assemblies:

1. Fully retract the packer.
2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
3. Open the floating panel completely (see *Lower Wear Pad* on page 64).
4. Remove the left-hand side bottom roller and replace it:
   - **4 a.** Using a 5/16-inch Allen wrench and a 3/4-inch box, remove all 4 bolts that keep the roller in place (see Figure 3-45).

Figure 3-45 Removing all 4 bolts

   - **4 b.** Remove the roller assembly and replace it with a new one.
   - **4 c.** Put back all 4 bolts in their respective holes before tightening them up.
5. Remove the right-hand side bottom roller and replace it by repeating Step 4.
6. Run full cycle to check for proper operation.

Replacing Top Roller Assemblies

NOTE: This task must be performed by 2 people.

To replace the top roller assemblies, apply the following procedure:

1. Once you have replaced the bottom rollers (see above procedure), start the engine and engage the hydraulic pump.
2. Extend the packer until the top rollers are at the same height as the bottom rollers were in the previous procedure.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
4. Replace both top rollers (one at a time):
   - **4 a.** Using a 5/16-inch Allen wrench and a 3/4-inch box, remove all 4 bolts that keep the roller in place (see Figure 3-45).
   - **4 b.** Remove the roller assembly and replace it with a new one.
   - **4 c.** Put back all 4 bolts in their respective holes before tightening them up.
5. Close back the floating panel.
6. Run full cycle to check for proper operation.

Rollers

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

If the roller itself has to be replaced because of wear, apply the following procedure:

1. Once the roller has been removed from the follower panel (see *Follower Panel Roller Assemblies* on page 68), remove the external snap ring.

Figure 3-46 Removing external snap ring

2. Remove the washer.

Figure 3-47 Removing washer

3. Slide out the roller.
4. Reverse the previous steps to reinstall the roller.

Body Hoist Cylinder

Because it is frequently used, the body hoist cylinder needs to be inspected to ensure proper operation at all times.

Figure 3-48 Body hoist cylinder

Inspecting Body Hoist Cylinder

The body hoist cylinder should be visually inspected every week as part of regular maintenance.

Check for leaks, cracks and loose parts that could cause failure.

To inspect the body hoist cylinder:

1. Park the vehicle on safe, level ground, and check the overhead clearance.
2. Fully raise the body and set the body safety prop (see *Body Safety Prop* on page 19).
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
4. Check each section of the cylinder for scratches or leaks, and make sure that the pivots at the base of the cylinder are greased and that the bolts are tight.
5. Make sure no hydraulic oil is leaking and the cylinder rod is straight.
6. When the inspection is completed, put back the safety prop and lower the body.

Replacing Body Hoist Cylinder

Danger! *Never* prop a loaded body. Unload the body prior to doing any repairs.

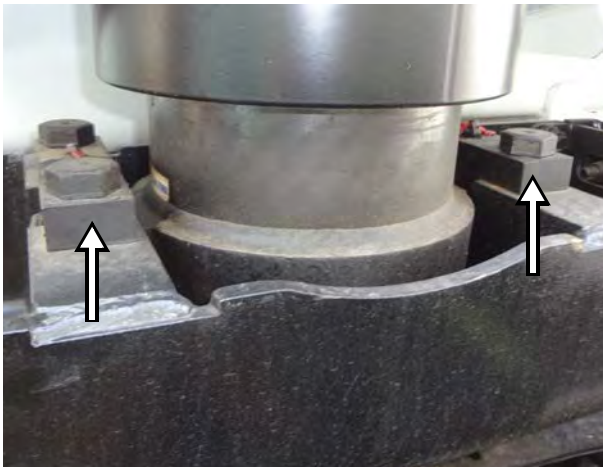
To replace the body hoist cylinder:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
2. Disconnect the hydraulic hose and fitting.

Figure 3-49 Hydraulic fitting

3. Remove the 2 cylinder base pillow blocks by unscrewing the bolts that hold them in place.

Figure 3-50 Base pillow blocks



4. Remove all 4 bolts that retain both hoist attachment blocks to the cylinder support (see Figure 3-51).

Both hoist attachment blocks will remain in place.

Figure 3-51 Hoist attachment blocks

5. Using a lifting device, lift the body just enough to be able to tilt the safety prop under the body. The cylinder will remain in place.

IMPORTANT: Ensure that the cylinder remains in vertical position while lifting the body.

6. Install the safety prop.
7. Lower the body on the safety prop.
8. Using a lifting device, remove the body hoist cylinder carefully.
9. Put the cylinder with care on a flat floor or platform.
10. Place a new set of attachment blocks on the pins of the new hoist cylinder (see Figure 3-51).
11. Using a lifting device, install the new body hoist cylinder on the base support.
12. Reinstall both base pillow blocks (see Figure 3-50) and fix them to the base support using all four (4) bolts. Tighten all bolts properly.
13. Using a lifting device, extend the cylinder in order to fix it properly to the body.

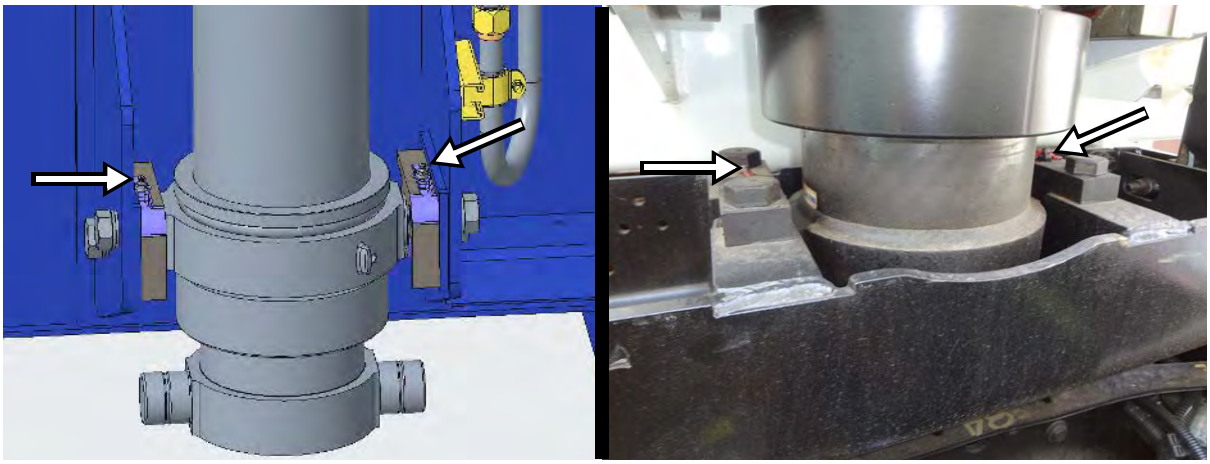
IMPORTANT: Removing the plug on the top of the cylinder before extending it is required to avoid a vacuum.

Figure 3-52 Securing cylinder to support

The attachment blocks that are fixed to the cylinder must be correctly positioned to allow insertion of the bolts through the support threaded holes (see Figure 3-52).

14. Put back the 4 bolts and tighten them to properly secure the cylinder to the support on the body front.
15. Reconnect the hydraulic hose atop the cylinder (see Figure 3-49).
16. Lubricate all cylinder grease fittings.

Figure 3-53 Grease fittings



17. Start the truck and engage the pump.
18. Slowly operate the body raise function.

    Raise the body just enough to be able to move the safety prop.
19. Move the safety prop back to its storage position.
20. Check for proper operation.

    Cycle the cylinder approximately 5 times to remove air.

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.

Figure 3-54 Rubber seal

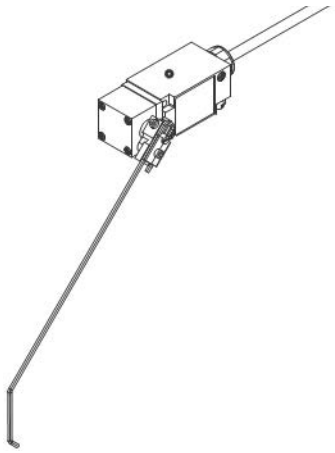
Proximity and Limit Switches

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 machinery with improperly adjusted switches.

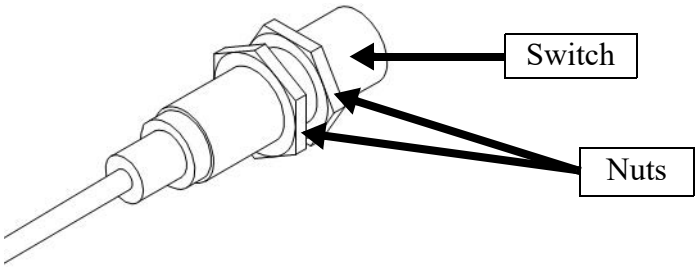
Limit Switch Adjustment



To adjust the limit switch:

1. Loosen the limit switch nut.
2. Move the lever arm to the approximate position where the switch is to be triggered.
3. Tighten the nut.
4. To fine tune the adjustment, loosen the 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 approximately 3/16 inch (4.8 mm) between the plate (target) and the switch.
3. Tighten 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 Packer Extend Proximity Switch

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum. For information on how to adjust pendulum packer proximity switches, see *Adjusting Pendulum Proximity Switches* on page 92.

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Packer proximity switches were adjusted at the factory for optimal packer operation. If the area behind the packer is not properly cleaned *daily,* proximity switches may no longer stop the packer, creating a knocking noise when the packer reaches the end of a stroke (bottoming out). The packer may also not retract far enough to trigger the proximity switch, preventing automatic cycles from working properly.

Furthermore, over time, misalignment of the components may occur due to the frequent back and forth motion of the packer. An adjustment might be necessary to prevent cylinders from completely extending and retracting to the end of their strokes.

Two proximity switches control the packer range of motion. The proximity switch that stops the packer during extension (packer extend) is located on the front right-hand side of the body corner, to the right of the packer retract proximity switch (see Figure 3-55). The other proximity switch (packer retract) is also located on the front right-hand side of the body corner, to the left of the packer extend proximity switch.

Figure 3-55 Packer extend proximity switch

To verify that the switch needs adjusting, empty all refuse from the body, start a pack cycle and observe the fully extended position of the packer.

If the packer stops before or after reaching the fully extended position, adjust the switch as follows:

Important This procedure must be performed by two people.

To adjust the packer extend proximity switch:

1. Start the engine and engage the hydraulic pump.
2. Push the green button on the packer control station to extend the packer about one inch from the fully extended position.

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

Figure 3-56 Packer at about one inch from fully extended position

3. When the packer reaches the correct position, push the red emergency STOP button.
4. Locate the packer extend proximity switch on the front right-hand side body corner (see Figure 3-55).
5. Loosen both bolts (see Figure 3-57) and adjust the proximity switch so that it gets triggered (its amber light turning on).

   Triggering occurs when the plate (target) is detected by the switch.
6. Tighten the bolts.
7. Pull up the STOP button and engage the hydraulic pump.
8. Check the packer for proper operation.

   Make sure that the proximity switch detects the plate properly.

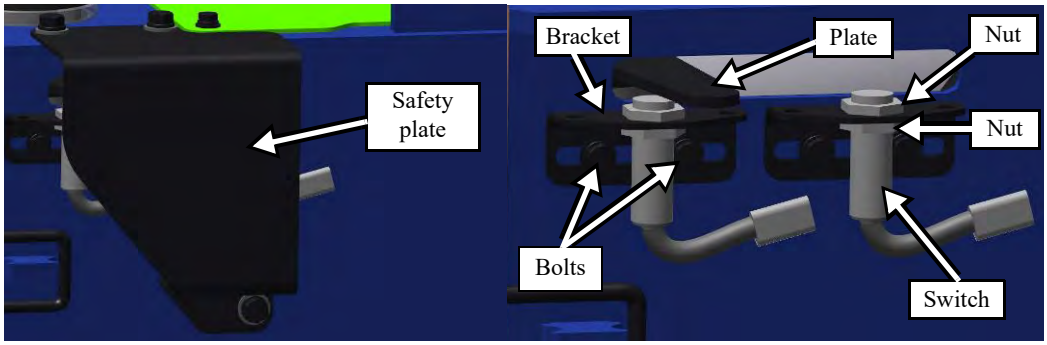
Ideally, there should be a gap of approximately 3/16 inch between the proximity switch and the plate. If this is not the case, apply the following procedure:

To adjust the gap between the proximity switch and the plate:

1. Remove the safety plate (see Figure 3-57).
2. On the proximity switch, loosen the nuts located on each side of the proximity switch bracket (see Figure 3-57).
3. Push or pull the proximity switch until there is a gap of 3/16 inch between the plate and the switch.
4. Tighten both nuts.
5. Make sure that the proximity switch detects the plate properly.
6. Test the packer for a full cycle.

   The test should be carried out at high engine speed and the packer should not hit hard at the end of its stroke before changing direction.
7. Once done, reinstall the safety plate.

Figure 3-57 Proximity switches



Adjusting Packer Retract Proximity Switch

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum. For information on how to adjust pendulum packer proximity switches, see *Adjusting Pendulum Proximity Switches* on page 92.

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Packer proximity switches were properly adjusted at the factory for optimal packer operation. If the area behind the packer is not properly cleaned *daily*, proximity switches may no longer stop the packer, creating a knocking noise when the packer reaches the end of a stroke (bottoming out). The packer may also not retract far enough to trigger the proximity switch, preventing automatic cycles from working properly.

Also, over time, misalignment of the components may occur due to the frequent back-and-forth movement of the packer. An adjustment might be necessary to prevent cylinders from completely extending and retracting to the end of their strokes.

Two proximity switches control the packer range of motion. Both are located on the front right-hand side of the body corner. The proximity switch that allows lowering of the crusher panel when the packer is in the home position and stops the packer during retraction (packer retract) is located to the left of the packer extend proximity switch (see Figure 3-58).

Figure 3-58 Packer retract proximity switch

To verify that the switch needs adjusting, empty all refuse from the body, start a pack cycle and observe the home position of the packer when it completes its cycle.

If the packer stops before reaching the home position or if the packer cylinders remain pressured up or abruptly bottom out while the packer is at the home position, adjust the switch as follows.

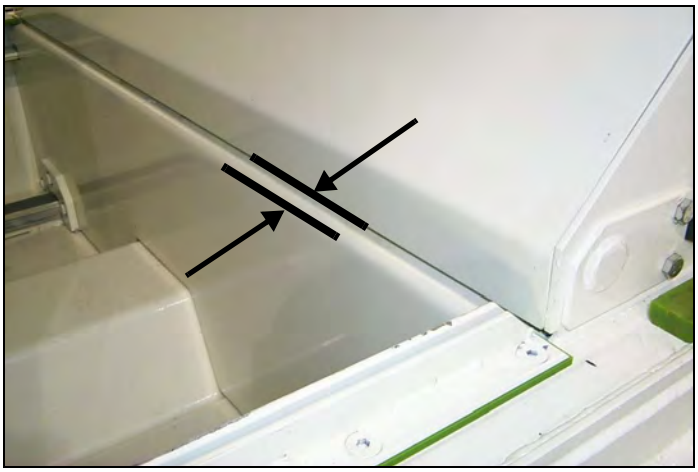
Important This procedure must be performed by two people.

To adjust the packer retract proximity switch:

1. Start the engine and engage the hydraulic pump.
2. Push the yellow button to retract the packer up to 1 inch from the fully retracted position (see Figure 3-59).

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

Figure 3-59 Packer retracted about 1 inch from end-of-stroke



3. When the packer reaches the correct position, push the red emergency STOP button.
4. Locate the packer retract proximity switch on the front right-hand side body corner (see Figure 3-58).
5. Loosen both bolts (see Figure 3-60) and adjust the proximity switch so that it gets triggered (its amber light turning on).

   Triggering occurs when the plate (target) is detected by the switch.
6. Tighten the bolts.
7. Pull up the STOP button and engage the hydraulic pump.
8. Check the packer for proper operation.

   Make sure that the proximity switch detects the plate properly.

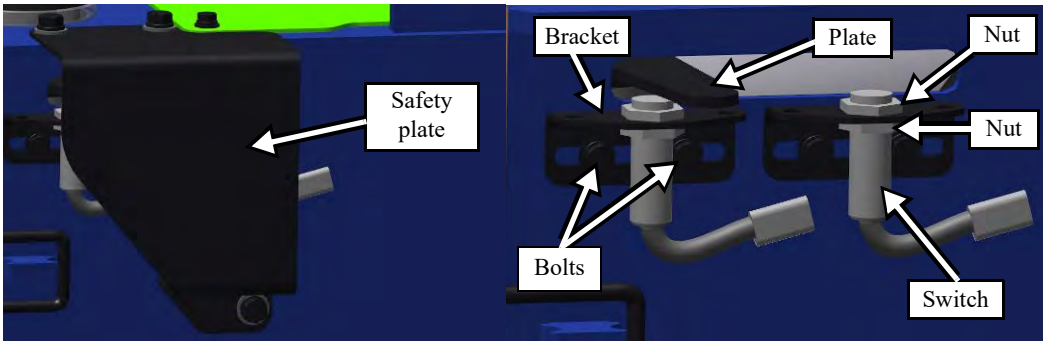
Ideally, there should be a gap of approximately 3/16 inch between the proximity switch and the plate. If this is not the case, apply the following procedure:

To adjust the gap between the proximity switch and the plate:

1. Remove the safety plate (see Figure 3-60).
2. On the proximity switch, loosen the nuts located on each side of the proximity switch bracket (Figure 3-60).
3. Push or pull the proximity switch until there is a gap of 3/16 inch between the plate and the switch.
4. Tighten both nuts.
5. Make sure that the proximity switch detects the plate properly.
6. Test the packer for a full cycle.

   The test should be carried out at high engine speed and the packer should not hit hard at the end of its stroke before stopping.
7. Once done, reinstall the safety plate.

Figure 3-60 Proximity switches



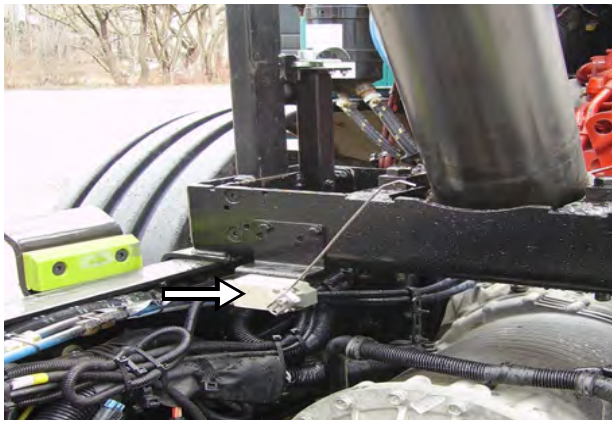
Adjusting Body-Raised Limit Switch

Danger!

Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

A limit switch located on the vehicle chassis near the body hoist cylinder activates the backup alarm and a warning buzzer, and turns on a warning light inside the cab as soon as the body is raised to a certain height from the chassis. It can also be combined with different interlocks, such as air suspension and tag axle interlocks. Adjust this limit switch accordingly if needed (see procedure below).

Figure 3-61 Body-raised limit switch



This safety feature is provided to warn people around that the vehicle is in the process of being unloaded and to remind the operator that the body is still raised.

To adjust the body raised limit switch:

1. Loosen the limit switch nut.
2. Move the body to the approximate position where the switch is to be triggered. The warning buzzer shall sound as soon as the body has reached a certain height above the chassis (usually about 12 inches above the chassis).
3. Tighten the nut.
4. To fine tune the adjustment, loosen the 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.

Adjusting Tailgate Unlocked Proximity Switch

Warning!

Ensure that no one is standing behind or near the tailgate when performing this procedure.

AUTOMIZER™ vehicles are equipped with a tailgate unlocked proximity switch on the tailgate left side near the upper end of the tailgate cylinder (see Figure 3-62). This switch gets triggered (amber light lights up) when the cylinder casing is sufficiently near the switch head. This occurs when the cylinder is fully retracted.

When the tailgate is unlocked/open, the tailgate cylinder is partially/fully extended and no triggering of the proximity switch occurs; the cylinder having moved downward away from the switch[1]. This activates the backup alarm and a warning buzzer inside the cab. This also turns on the TAILGATE UNLOCKED warning light in the cab and disables packing.

When the tailgate is closed/locked, the tailgate cylinder is fully retracted and triggering of the proximity switch occurs; the cylinder having moved upward toward the switch[2]. When the switch is triggered, the warning buzzer and backup alarm stop sounding, the TAILGATE UNLOCKED warning light turns off and packing operation can resume.

However, some troubles may occur if the tailgate unlocked proximity switch is out of adjustment. For example, the tailgate is locked but the in-cab buzzer is still sounding or the TAILGATE UNLOCKED warning light is off while the tailgate is still open. In such cases, adjusting the tailgate unlocked proximity switch is required.

1. **The first thing the tailgate cylinder does when the operator presses and holds the TAILGATE UP switch is to unlock the tailgate, resulting in the cylinder head moving away from the proximity switch, thus making triggering no more possible.**
2. **The last thing the tailgate cylinder does when the operator presses and holds the TAILGATE DOWN switch is to lock the tailgate, resulting in the cylinder head moving closer to the proximity switch, thus making triggering possible.**

Figure 3-62 Location of tailgate unlocked proximity switch

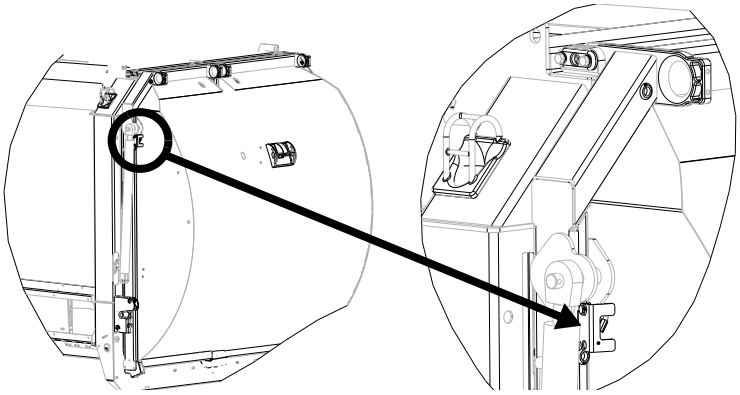
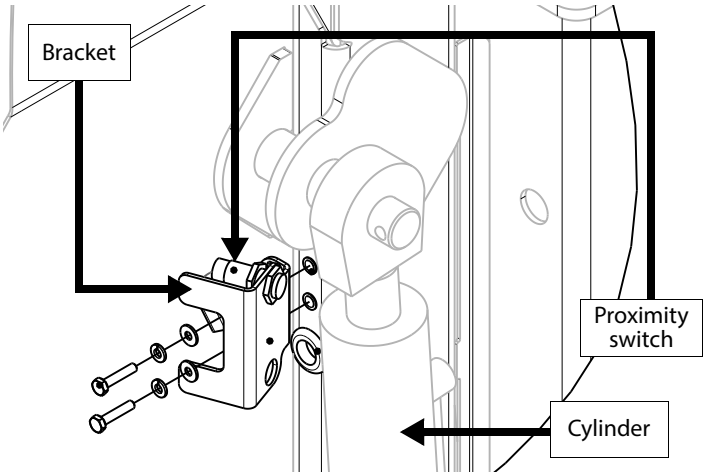


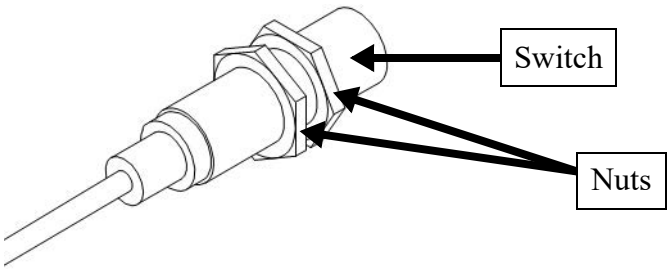
Figure 3-63 Proximity switch support assembly



To adjust the tailgate unlocked proximity switch:

1. Loosen the nuts on each side of the proximity switch bracket (see Figure 3-64).

Figure 3-64 Proximity switch



2. Adjust the proximity switch so that the switch can be triggered by the cylinder casing as the cylinder head moves upward. There should be a gap of approximately 3/16 inch between the cylinder casing and the switch.
3. Tighten both nuts.

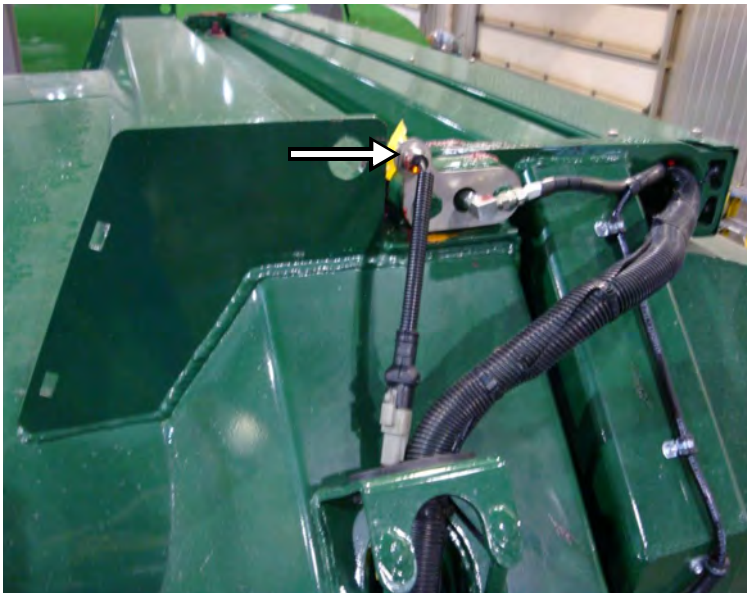
4. Open the tailgate using the TAILGATE UP switch on the in-cab control panel and listen if the warning buzzer and backup alarm start sounding after you press the switch.
5. Repeat the procedure if need be.

Adjusting Tailgate Fully Open Proximity Switch (Optional)

The tailgate fully open proximity switch (see Figure 3-65) allows the operator to raise the body when the tailgate is fully open.

This switch is present only when required by different interlocks.

Figure 3-65 Tailgate fully open proximity switch



This switch may be found on either side of the truck, or on both sides, near the tailgate hinge.

To adjust the tailgate fully open proximity switch:

1. Fully open the tailgate.
2. Adjust the switch so that it detects the target.

   If detection is achieved, the BODY RAISE ALLOWED warning light turns on.
3. Slightly close the tailgate to about an inch.

   The proximity switch should not now detect the target and the BODY RAISE ALLOWED warning light should go out.
4. Repeat the procedure until the proximity switch is properly adjusted.

Adjusting Hopper Door Proximity Switch

NOTE: This section applies to all AUTOMIZER™ TTD models with the exception of the AUTOMIZER™ Pendulum.

This proximity switch (see Figure 3-66) turns off all hydraulic power when the hopper door is not closed.

Figure 3-66 Hopper door proximity switch

This switch is located on the lower side door frame.

To verify that the switch needs adjusting, open the side access door by approximately 2 inches (5 cm) and try to operate any hydraulic function. No hydraulic function should be working.

Warning

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

To adjust the hopper door proximity switch:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximately 3/16 inch (5 mm) between the plate and the switch.
3. Tighten the nuts.
4. Test the operation.

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

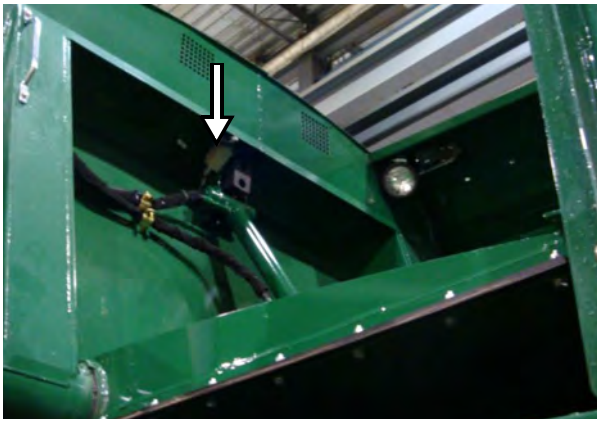
NOTE: The automated arm must be extended in order to open the hopper door and do the test.

Adjusting Crusher Panel Up Limit Switch (Optional)

NOTE: This section does not apply to the AUTOMIZER™ Pendulum.

The crusher panel up limit switch (see Figure 3-67) disables the arm operation when the crusher panel is not in its stowed position and redirects the arm power to the crusher panel up function when the enable switch on the arm joystick is activated. This forces the crusher panel to rise to the up position in order to let the arm works.

Figure 3-67 Crusher panel up limit switch



This switch is located behind the crusher panel itself.

NOTE: The crusher panel has to be lowered to access this limit switch.

To adjust the crusher panel up limit switch:

1. Lower the crusher panel using the CRUSHER PANEL DOWN switch on the in-cab control panel.
2. Turn OFF both the hydraulic pump and the engine.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
4. Enter the hopper.
5. Adjust the crusher panel up limit switch so that it is triggered when the crusher panel is in the up position.
6. Exit the hopper, close the hopper door and enter the cab.
7. Start the truck and engage the hydraulic pump.
8. Fully raise the crusher panel using the CRUSHER PANEL UP switch on the in-cab control panel.
9. Using the joystick, try to move the automated arm.

   The arm should move.

NOTE: Do not forget to depress the deadman switch on the joystick to activate joystick functions.

10. If the arm does not move, repeat the procedure until the limit switch is properly adjusted.

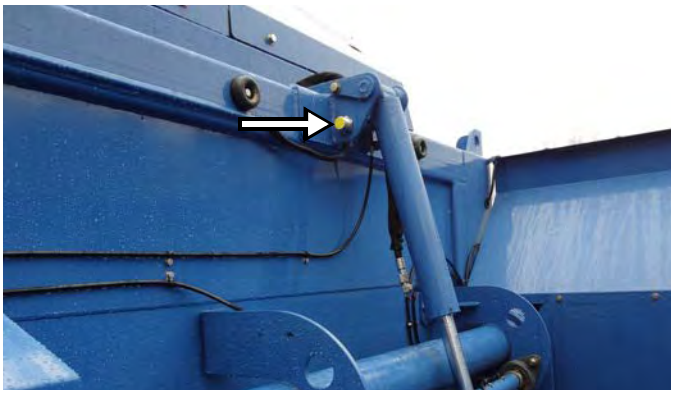
    The rod of the switch must touch the crusher panel when the panel is fully raised.

Adjusting Crusher Panel Up Proximity Switch (Optional)

NOTE: This section only applies to the AUTOMIZER™ Pendulum.

The crusher panel up proximity switch (see Figure 3-68) disables the lift from proceeding in an upward motion should the crusher panel not be completely raised. This proximity switch also triggers a crusher panel warning message to appear on the multiplex display screen.

Figure 3-68 Crusher panel up proximity switch



This switch is located behind the crusher panel itself.

NOTE: The crusher panel has to be lowered to access this proximity switch.

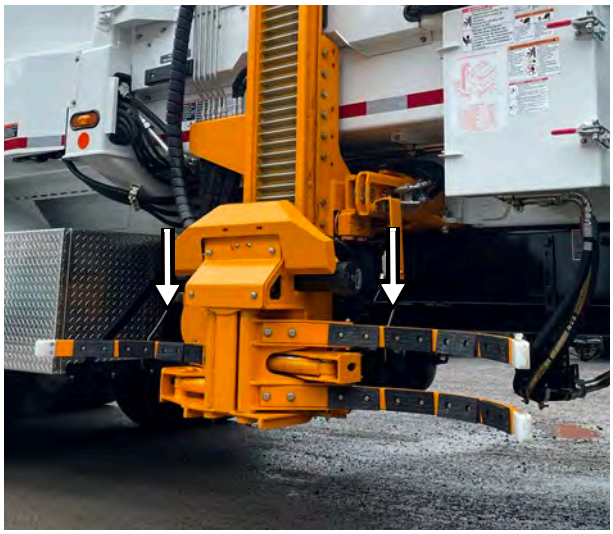
To adjust the crusher panel up proximity switch:

1. Fully lower the crusher panel.
2. Complete the Lockout/Tagout Procedure (refer to "Locking Out and Tagging Out the Vehicle" on page 25).
3. Enter the hopper.
4. Loosen the proximity switch mounting nuts.
5. Slide the switch forward or backward in the mount to achieve a gap of approximately ¼" with the tab of the crusher panel.
6. Tighten the proximity switch nuts.
7. Exit the hopper.
8. Test the operation of the switch and Repeat the steps as necessary.

Adjusting Arm Stowed Limit Switches (2)

The arm stowed limit switches illuminate the ARM OUT warning lights in the dashboard when the operator extends the arm or closes the grabber. If these limit switches are misaligned, the warning lights on the dashboard may continue to flash even if the grabber is fully open and the arm fully retracted. The arm stowed limit switches also activate an audible alarm when the arm is out and the vehicle speed is greater than about 3 mph (5 km/h).

Figure 3-69 Arm stowed limit switches on an AUTOMIZER™ Alley-Hand

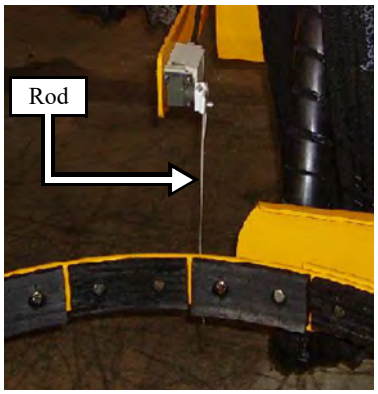


These limit switches are located behind each of the grabber fingers (one for each finger).

To adjust the arm stowed limit switches:

1. Park the vehicle on safe, level ground.
2. Fully open the grabber and retract the arm alongside the body.
3. Adjust both limit switches in such a way that the ARM OUT warning lights stop flashing when the grabber is fully open and the arm is fully retracted. To do this:
   - **3 a.** Loosen the limit switch nut.
   - **3 b.** Adjust the rod so that the grabber finger will trigger the limit switch (click sound) and turn off the warning lights.

     For the ARM OUT warning lights to stop flashing, both limit switches may require to be adjusted.



3 c. Tighten the nut.

4. Slightly close the grabber or extend the arm out (about 1 inch). The ARM OUT warning lights should start flashing.
5. Repeat the procedure until the limit switches are properly adjusted.

Danger!

All limit switches MUST be working at all times. Otherwise, the operator may not be aware that the arm is not fully retracted or that the grabber is open or closed. This may cause accidents, injuries and/or property damage.

Caution!

This procedure must be done correctly before adjusting the grabber auto-closing system.

Adjusting Pendulum Proximity Switches

NOTE: This section only applies to the AUTOMIZER™ Pendulum.

Both the pack and return proximity switches are mounted on a plate above the pendulum arm pivot at the rear of the hopper bowl on the streetside of the vehicle. These proximity switches are protected by a removable cover (see Figure 3-71).

Figure 3-70 Pack and return proximity switches

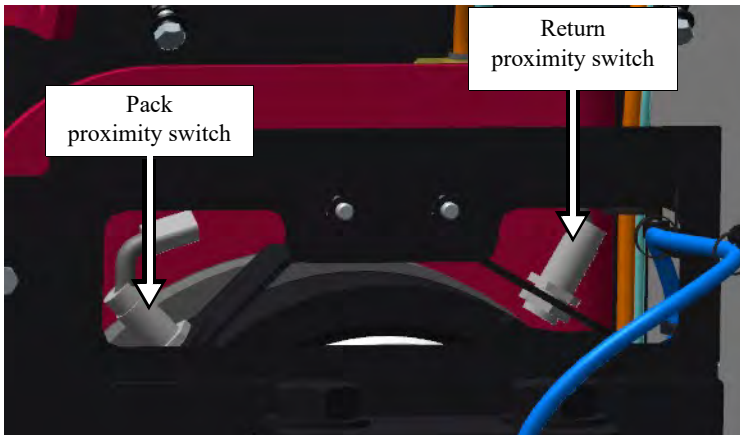
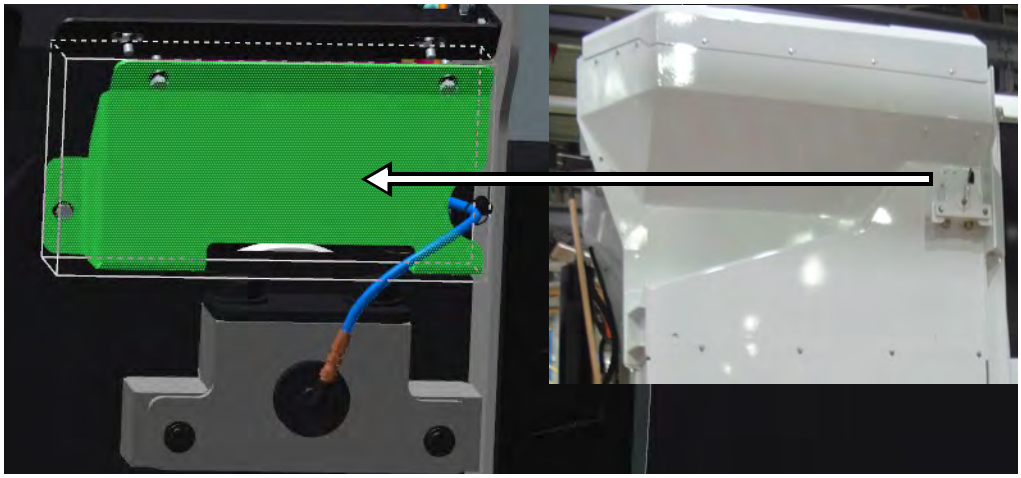


Figure 3-71 Removable cover



The *pack and return proximity switches* are normally open. These switches control the autopack cycle as follows:

- The *pack proximity switch* is triggered by a tab mounted to the pendulum arm pivot. When the pendulum travels to the rear of the hopper bowl, the tab activates the proximity switch and the contacts close. This sends a signal to the control module, which then sends a signal to the pendulum to begin the packing sweep.

- The *return proximity switch* is triggered by a tab mounted to the pendulum arm pivot. When the pendulum travels to the front of the hopper bowl, the tab activates the proximity switch and the contacts close. This sends a signal to the control module, which then sends a signal to the pendulum to begin the return sweep.

Adjusting Pack and Return Proximity Switches

NOTE: This adjustment is carried out with the system 'LIVE', that is, the pump is ON and the pendulum is in operation. *Two persons are required to make this adjustment*, one in the cab to operate the controls and a second to adjust the proximity switches from the outside of the hopper bowl.

Danger!

Extreme caution must be exercised when completing this adjustment as falling into the hopper while the pendulum is in operation will almost certainly result in death.

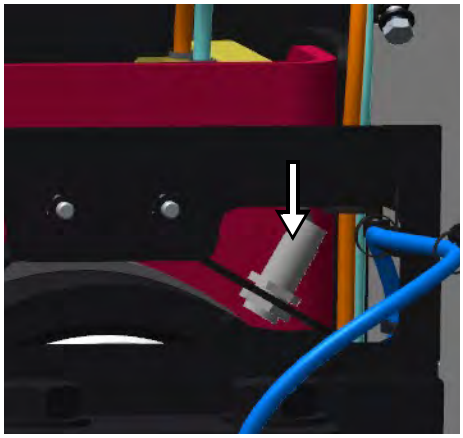
To adjust the pack and return proximity switches:

1. Remove the protective cover (see Figure 3-71).
2. Loosen the mounting nuts for the *pack proximity switch* (see Figure 3-70) and move it fully forward in the mounting slot.
3. Operate a manual pack cycle and move the pendulum fully to the rear of the hopper bowl.
4. Adjust the proximity switch within the slot until the tab is in front of the proximity switch face.

   Note that the proximity switch indicator light will be ON. Ensure the proximity switch gap is approximately ¼".
5. Tighten the proximity switch mounting nuts.
6. Loosen the mounting nuts for the *return proximity switch* (see Figure 3-70) and move it fully forward in the mounting slot.
7. Operate a manual return cycle and move the pendulum fully to the front of the hopper bowl.
8. Adjust the proximity switch within the slot until the tab is in front of the proximity switch face (see Figure 3-72).

   Note that the proximity switch indicator light will be ON. Ensure the proximity switch gap is approximately ¼".
9. Tighten the proximity switch mounting nuts.
10. Initiate an autopack cycle and observe the sweep of the pendulum.
11. If no more adjustment is needed put back the protective cover.

Figure 3-72 Return proximity switch and tab



In the PACK MODE, the pendulum should complete a full sweep and enter the body chamber by several inches without the cylinders bottoming out (fully stroked). Repeat steps 2 through 5 as necessary.

In the RETURN MODE, the pendulum should travel fully forward in the bowl and stop before the cylinders bottom out (fully retracted). Repeat steps 6 through 9 as necessary.

NOTE: The autopack cycle should be checked with the engine running at 1500 rpm. The pendulum should transition smoothly between the PACK and RETURN cycles with no banging at the top and bottom of the motion.

Cycle Times	
At idle	18 seconds
At 1500 rpm	12 seconds

Main Control Valve

Main Control Valve Resealing

The following work instructions outline the procedure to reseal the main control valve (or directional control valve) on the AUTOMIZER™.

NOTE: These repairs should be performed only by trained, experienced technicians.

Tools Required

- Ratchet
- ¾" socket
- ½" socket
- 6" extension
- Torque Wrench
- ¾" combination wrench
- O-ring pick
- Large Phillips Driver
- Lifting device, minimum 500-lb capacity (overhead winch, shop crane, etc.)
- Nylon sling, minimum 500-lb rating
- Lint free rags
- silicone-based and ester-based lubricants

Parts Required

Consult the *Parts Manual* appropriate for your unit's serial number to obtain the necessary seal kits.

Valve Removal

1. Thoroughly clean the valve, connecting hoses and the area directly surrounding the valve.
2. Remove the hydraulic tank fill cap to relieve any air pressure from the reservoir.

Caution! Always loosen the fill cap slowly to let the internal air pressure dissipate in order to avoid serious injury.

3. Remove the hoses.

   Label the hoses prior to removal to aid in re-assembly.
4. Attach the lifting device to the valve using the nylon sling, then using the ¾" socket, 6" extension and ratchet remove the four ½" bolts attaching the valve to the body.
5. Remove the valve and mounting plate.
6. Drain the oil from the valve and set it on a clean, flat surface.
7. Using the ¾" socket and ratchet, remove the valve mounting plate from the valve.

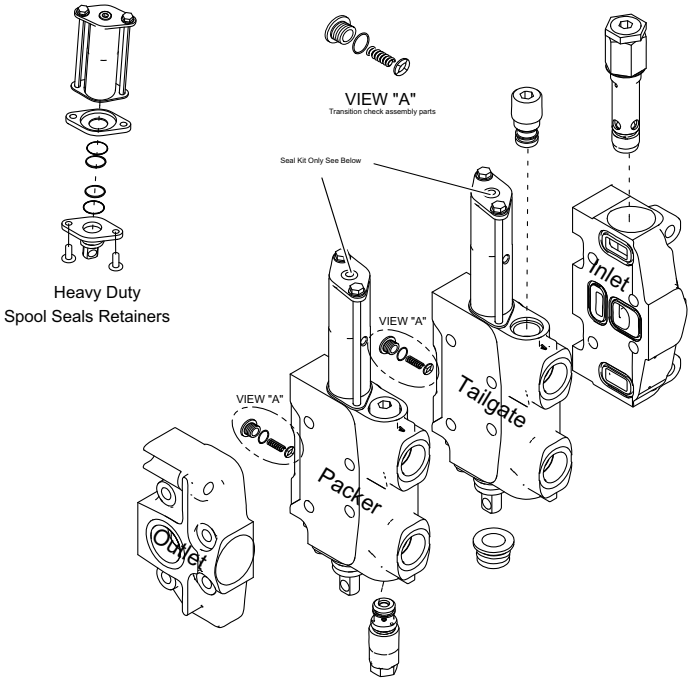
Valve Resealing

1. Using the ¾" socket and ratchet, and a ¾" combination wrench, remove the four tie rods holding the valve assembly together, and remove the tie rods.

   Thoroughly clean the tie rods, nuts and washers, and lightly lubricate the threads of the tie rods.
2. On the inlet section of the valve assembly, use an o-ring pick to remove and discard the old o-rings.
3. Clean the inside face of the plate, and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
4. Slide the tie rods through the inlet cover and stand it upward (on end).
5. Lubricate the o-rings with silicone-based and ester-based lubricants, and install them into their corresponding seat in the inlet section.

   Ensure the o-rings are pushed fully and evenly into their seats.
6. Starting with the first valve work section, clean the sealing surface of the valve work section, and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
7. Carefully lower the valve work section over the tie rods and mate it to the end plate.
8. Using an o-ring pick remove and discard the old o-rings.
9. Clean the seats in the o-ring seal face and inspect for cracks, abnormal wear, rust, or uneven sealing surfaces.
10. Using silicone-based and ester-based lubricants, lubricate and install the new o-rings, ensuring they are seated fully into their corresponding seats.

Figure 3-73 Seal configuration



11. Repeat steps 6-10 with the remaining valve work sections.

12. Ensure that the flat sealing surface of the valve end cap is clean and inspect it for cracks, abnormal wear, rust, or uneven surfaces.
13. Carefully lower the valve end cap over the tie rods and mate it to the valve work section.
14. Install the washers and nuts on the tie rods.
15. Using a 3-step torque method, torque the tie rods to 75 ft-lb (102 Nm).
16. Starting with the first valve section, use the ½" socket and ratchet and remove the bolts attaching the spool actuator to the valve work section.
17. Using the large Phillips driver remove the 2 screws attaching the spool eye end dust boot and seal plate.
18. Remove the dust boot and seal plate.
19. Pull the spool out of the valve work section by grasping the valve spool actuator and gently pulling it out.
20. Using an o-ring pick, remove and discard the o-rings and back-up rings from the spool and/or valve body.
21. Clean and inspect the valve spool, the bore and seal seats in the valve body, and the seal and dust boot retaining plates for cracks, abnormal wear, rust, or uneven surfaces.
22. Clean and inspect the dust boot for damage, cracking or swelling.

    The dust boots are not included with the seal kits. Replace if necessary with Labrie part number HYV02887 dust boot.

NOTE: LabriePlus part number HYJ04104 seal kit contains an o-ring marked with a red or orange dot. This is not to be used and should be discarded.

23. Lubricate a spool backup ring and seal with silicone-based and ester-based lubricants, and install them onto the valve spool, backup ring first, using care not to cut them on the spool lands.
24. Slide the backup ring and seal against the seal retainer plate on the actuator.
25. Lubricate the spool with clean hydraulic oil and slide it into the valve body gently, seating the o-ring into the valve body seal recess.
26. Using silicone-based and ester-based lubricants, lubricate and install the o-ring then back-up ring onto the spool eye end of the valve spool.
27. Using the seal retaining plate, press the spool seal and backup ring into the valve body recess.
28. Ensure the actuator is properly attached to the valve spool, and position the actuator with the breather hole in the actuator sleeve pointing toward the bottom of the valve, and pneumatic ports correctly positioned (air actuated models).

NOTE: Actuators also have seals to be replaced.

29. Tighten the actuator retaining hardware to 25-30 in-lb (2.8-3.4 Nm).
30. Install the spool eye end seal retaining plate and dust boot, and tighten the retaining hardware to 32-36 in-lb (3.6-4.1 Nm).
31. Repeat steps 16 through 30 with the remaining valve work sections.

Valve Installation, Testing and Adjustment

1. Clean the valve mounting plate and install it to the valve assembly.
2. Tighten the hardware securing the valve to the mounting plate to 85 ft-lb (118 Nm).
3. Using a suitable lifting device, reinstall the valve assembly to the body.
4. Tighten the hardware securing the valve or valve mounting plate to the body to 85 ft-lb (118 Nm).
5. Install the hoses that were previously labeled to their respective fittings.
6. Install and tighten the hydraulic tank fill cap.
7. Operate all functions until the hydraulic fluid is at operating temperature, and check for leaks.
8. Attach a 0-4000 psi hydraulic gauge on the test port of the inlet cover.
9. Start the truck and engage the pump.
10. Check and adjust pressures (refer to "Hydraulic Pressures" on page 159).
11. Add hydraulic fluid as required to the hydraulic tank.

Arm Control Valve

Arm Control Valve Resealing

The following work instructions outline the procedure to reseal the arm control valve (or proportional control valve) on the AUTOMIZER™.

NOTE: These repairs should be performed only by trained, experienced technicians.

Tools Required

- Ratchet
- ¾" socket
- ½" socket
- 13 mm socket
- 5 mm Hex Key Driver
- 4 mm Hex Key Driver
- 3 mm Hex Key Driver
- 6" extension
- 10 mm Combination Wrench
- 13 mm Combination Wrench
- Torque Wrench
- O-Ring Pick
- Small Snap-ring pliers
- Small Flat Blade Screw Driver
- Lifting device, minimum 500-lb capacity (overhead winch, shop crane, etc.)
- Nylon sling, minimum 500-lb rating
- Lint free rags
- Silicone-based and ester-based lubricants

Parts Required

- LabriePlus part number HYV04429 Section Seal Kit: one kit required for each section + end cap (does not include port relief adjusting screw seals, plug seal washers, or dust caps)
- LabriePlus part number HYV04335-01 Electric Actuator Seal Kit: one kit required for each actuator
- LabriePlus part number HYV04330 Manual Actuator Seal Kit: one kit required for each actuator
- LabriePlus part number HYV04428 includes, among other items, a set of port relief adjusting screw o-ring seals, a port relief dust cap and a plug seal washer (as required, not included in seal kit)

Valve Removal

1. Thoroughly clean the valve and coils

NOTE: The use of brake clean, or similar solvents, may cause damage to the actuator coils.

2. Remove the hydraulic tank fill cap to relieve any air pressure from the reservoir.

Caution!

Always loosen the fill cap slowly to let the internal air pressure dissipate in order to avoid serious injury.

3. Remove the hoses and electrical connectors (label them prior to removal to aid in re-assembly).
4. Attach the lifting device to the valve with the sling, then using the ¾" socket, 6" extension and ratchet, remove the four ¾" bolts holding the valve mounting plate to the body.
5. Drain the oil from the valve, set it on a clean, flat surface and, using the ½" socket and ratchet, remove the valve mounting plate from the valve.

Valve Resealing

1. Using the 13 mm socket/ratchet and 13 mm combination wrench, remove the three tie rod nuts holding the valve assembly together, and remove the tie rods.
2. Thoroughly clean the tie rods, nuts and washers, and lightly lubricate the threads on the tie rods.
3. On the end plate of the valve section, use an o-ring pick to remove and discard the old o-rings, clean the inside face of the plate, and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
4. Slide the tie rods through the backing plate and stand it upward (on end).
5. Lubricate the o-rings with silicone-based and ester-based lubricants, and install them into their corresponding seats on the backing plate.
6. Ensure the o-rings are pushed fully and evenly into their seats.
7. Starting with the first valve work section, remove the electric coil actuator from the valve work section using a 5 mm Hex key driver to remove the four socket head bolts that secure it to the valve body.

IMPORTANT: Use caution when removing the coil as there are small plungers that may fall out of the coil.

8. Clean the sealing surfaces of the valve work section, and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
9. Setting the coil carefully on end with the seal side up, use an o-ring pick to remove and discard the old o-rings. Keep the bubble-shaped screen filter aside.
10. Clean the seats in the coil face and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
11. Using silicone-based and ester-based lubricants, lubricate the new o-rings and seal edge of the bubble-shaped screen filter.

12. Install the new o-rings and bubble-shaped screen filter, ensuring that they are pushed fully and evenly into their seats (see the illustrations at the end of this section for seal configuration).
13. Carefully install the coil to the valve section, taking care to not dislodge the small plungers, and torque the four socket head bolts to 67-75 in/lb (7.5-8.5 Nm) in a cross-pattern.

NOTE: If the LabriePlus part number HYV04315 Manual Actuator is leaking from the manual lever pivot, the actuator must be replaced; this seal is not serviceable (the LabriePlus part number HYV04315 Manual Actuator includes the seals required for installation).

14. Note the amount of threads exposed past the jam nut on the spool stop screws, and using the 10 mm combination wrench loosen the two spool stop screw jam nuts on the manual valve actuator, then using a 3 mm Hex key driver remove the stop screws.
15. Remove the four socket head bolts holding the actuator to the valve work section using a 5 mm Hex key driver.
16. Turn the manual actuator lever to disengage it from the valve spool, and remove the actuator.
17. Clean the sealing surfaces of the valve work section, and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
18. Using an o-ring pick, remove and discard the old o-rings in the face of the actuator.
19. Clean the seats in the actuator face and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
20. Using silicone-based and ester-based lubricants, lubricate and install the new o-rings, ensuring that they are pushed fully and evenly into their seats (see the illustrations at the end of this section for seal configuration).
21. Carefully install the actuator to the valve section, ensuring that the valve spool is properly attached to the manual actuator lever, and torque the four socket head bolts with a 5 mm Hex key driver to 67-75 in-lb (7.5-8.5 Nm) in a cross-pattern.
22. Install the spool stop screws and adjust them to their original setting and tighten the spool stop set screw jam nuts to 61-79 in-lb (7-9 Nm).

NOTE: The LabriePlus part number HYV04428 washer seals are not included with the valve seal kits, and should only be resealed if any of the plugs on the back of the valve work sections are leaking. If resealing is necessary, remove the plug and replace the washer seal on the plug, install the plug and torque to 281-335 in-lb (32-38 Nm).

23. With the valve section fully assembled, ensure that the flat sealing surface is clean and inspect it for cracks, abnormal wear, rust or uneven surfaces.
24. Carefully lower the flat sealing surface over the tie rods and mate it to the end plate.
25. Using an o-ring pick, remove and discard the old o-rings.
26. Clean the seats in the o-ring seal face and inspect for cracks, abnormal wear, rust or uneven sealing surfaces.
27. Using silicone-based and ester-based lubricants, lubricate and install the new o-rings, ensuring they are seated fully into their corresponding seats (see the illustrations at the end of this section for seal configuration).
28. Repeat steps 7 through 27 with the remaining valve work sections.

29. Ensure that the flat sealing surface of the valve end cap is clean and inspect it for cracks, abnormal wear, rust or uneven surfaces.
30. Carefully lower the flat sealing surface over the tie rods and mate it to the valve work section.
31. Lightly lubricate the threads on the tie rods, and install the three washers and nuts on the tie rods. Using a 3-step torque method, torque them to 195-239 in-lb (22-27 Nm).

NOTE: The LabriePlus part number HYV04428 valve work port relief adjusting screw seals are not included with the standard seal kit, and should only be resealed if leaking.

32. If resealing is necessary, lay the valve flat on the work bench with the ports facing upward, and, using a small flat blade screw driver or o-ring pick, remove the port relief adjusting screw dust caps.
33. Use the small snap ring pliers to remove the snap ring retaining the work port relief adjusting screw.
34. Using a 4 mm Hex key driver, turn the adjusting screw counter-clockwise, counting the revolutions until the adjusting screw is removed.

    Ensure the spring and needle under the adjusting screw stays in position when the adjusting screw is removed.
35. Remove and discard the old o-ring from the adjusting screw, lubricate the new o-ring with silicone-based and ester-based lubricants and install it onto the adjusting screw, ensuring that it is fully seated in the groove.
36. Coat the outside surface of the o-ring with silicone-based and ester-based lubricants, and reinstall the adjusting screw, turning it the appropriate revolutions in accordance with the counted revolutions recorded during removal.
37. Clean and reinstall the snap-ring and dust cap.

    If the dust cap is damaged or missing, install a new LabriePlus part number 155L6377 dust cap.
38. Repeat steps 32 through 37 on all leaking port relief adjusting screws.

Valve Installation, Adjustment and Testing

1. Clean the valve mounting plate and install it to the valve assembly.
2. Tighten the hardware securing the valve to the mounting plate to 24 ft-lb (32.5 Nm) and, using a suitable lifting device, reinstall the valve assembly to the body.
3. Tighten the hardware securing the valve mounting plate to the body to 85 ft-lb (115 Nm).
4. Install the hoses and harness connectors that were previously labeled to their respective fittings and connectors.
5. Install and tighten the hydraulic tank fill cap.
6. Attach a 0-4000 psi hydraulic gauge on the test port of the inlet cover.
7. Start the truck, and engage the pump.
8. Check and adjust all function pressure and cycle times (refer to “Hydraulic Pressures” on page 159).
9. Operate all functions until the hydraulic fluid is at operating temperature, and check for leaks.
10. Add hydraulic fluid as required to the hydraulic tank.

Figure 3-74 Electric actuator seal configuration

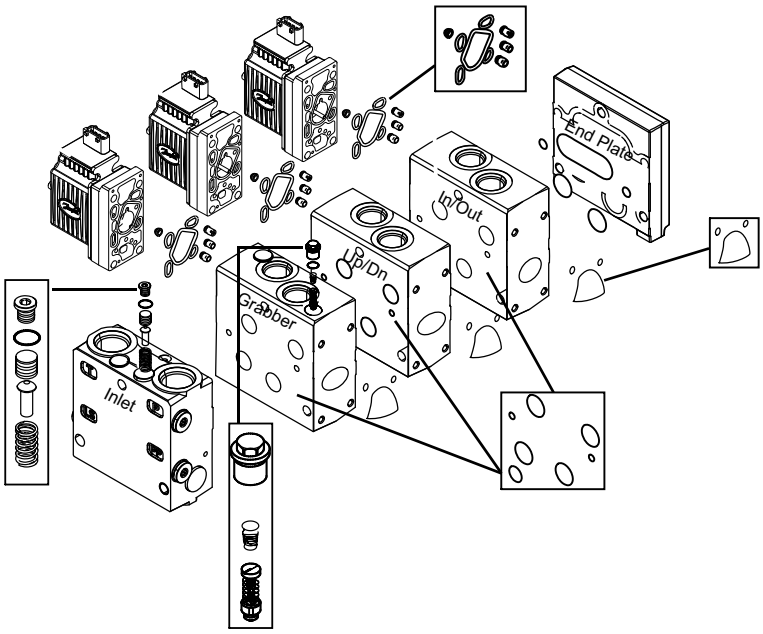


Figure 3-75 Manual actuator seal configuration

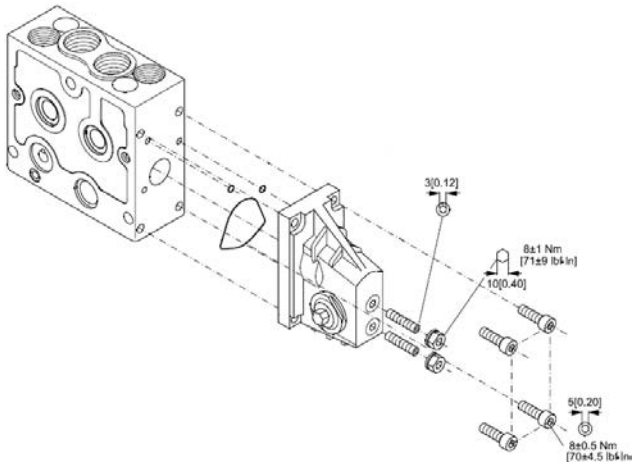
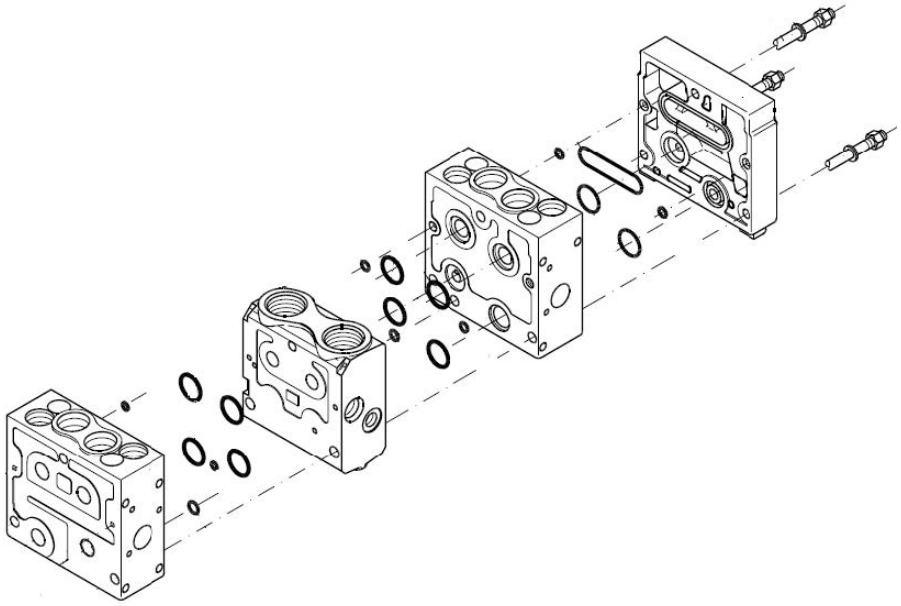


Figure 3-76 Valve section seal configuration

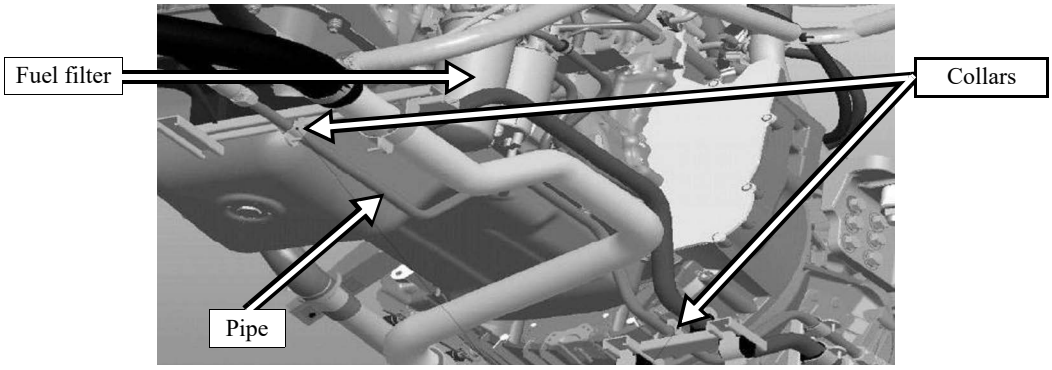


Fuel Filter Replacement

Fuel filter needs to be replaced periodically according to manufacturer's specifications. If your AUTOMIZER™ unit is a Mack LR, special procedure must be followed to change the fuel filter.

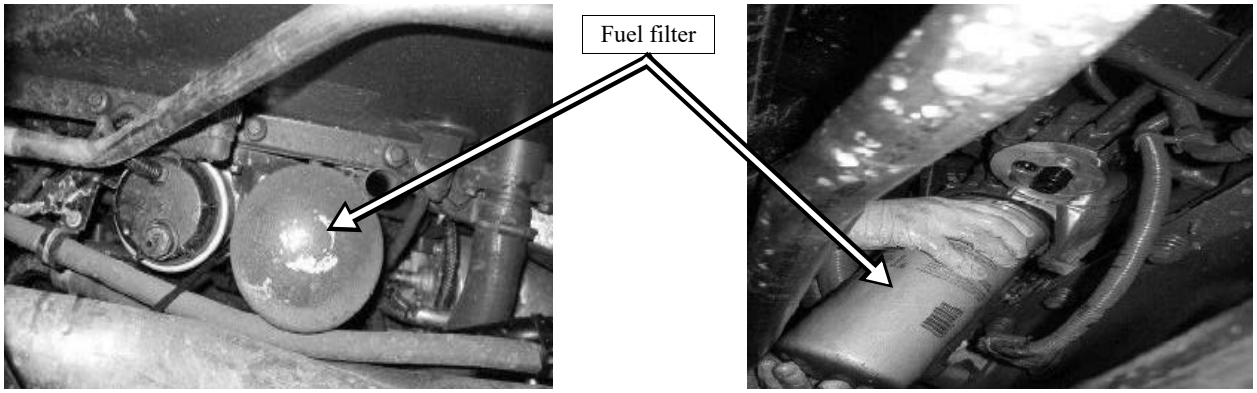
To change the fuel filter of your AUTOMIZER™ unit with a Mack LR chassis, do the following:

1. Unclip the pipe from the collars.



2. Move the pipe close to the oil pan for more working space.
3. Proceed with the replacement of the fuel filter.

NOTE: Always follow your chassis manufacturer's recommendations regarding fuel filter replacement.



4. After installing the fuel filter, move back the pipe to its original place.
5. Clip the pipe on the collars.

IMPORTANT: To prevent air from getting into the system, make sure the fuel filter that you install is full of fuel.

4

Lubrication

To help the various systems of your truck run smoothly and extend the life time of the many critical parts that affect performance, there is one thing that you must do and that is:

LUBRICATE, LUBRICATE AND LUBRICATE!

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

See the following sections for detailed lubrication points on packer, cylinder pins, hopper door hinges and body-chassis hinges.

Also, refer to the lubrication charts located on the side of the vehicle for a complete list of lube locations and the frequency with which they should be greased.

Recommended Lubricants

You will find below the recommended types of lubricants.

Grease

Any lithium-based commercial multipurpose grease may be used.

Hydraulic Oil

The most crucial element to the hydraulic system is the hydraulic oil. It provides the system with vitality. The oil transports damaging contaminants to filtering systems, lubricates and provides anti-wear protection against component corrosion.

Regular oil changes are vital to the lifespan of hydraulic system components. Overtime, particles in the oil will deteriorate the hydraulic system. Observation of the oil color change signifies oxidization and the need to be replaced. At that time, the oil will appear cloudy or milky. Keep in mind operational performance, load and environmental conditions are variables that determine the frequency of hydraulic oil renewal.

Following stringent maintenance schedules and performing routine oil analysis are effective methods of obtaining information to determine the cleanliness of the hydraulic oil. Labrie Environmental Group ***recommends that the hydraulic oil be replaced at least once a year or when contaminated. Failure to maintain hydraulic cleanliness to recommended guidelines may result in failure of hydraulic components and void your warranty.***

Oil Recommendations

All Labrie hydraulic systems are filled at the factory with a high-quality anti-wear hydraulic fluid meeting an ISO 32 specification. On vehicles that are used in high ambient temperatures or that sustain high duty cycles, it may be desirable to change the fluid to an ISO 46 specification which has higher viscosity. For vehicles working in colder climates or performing light duty cycles, an ISO 22 might be more appropriate. The International Standards Organization (ISO) assigns specification numbers in order that a consumer receives the same product from different suppliers.

ISO Grade	22	32	46
Viscosity @ 100 F, SUS	115	163	231
Viscosity @ 210 F, SUS	43	47	53
Viscosity Index (Min.)	160	147	153
Pour Point	-65 F	-60 F	-54 F

Other important points to note:

- The oil must contain anti-wear and anti-foam additives, rust and oxidation neutralizers and self-protecting agents.
- The oil must be absolutely clean and free of contaminants.

Any hydraulic oil that possesses such properties may be used on an AUTOMIZER™ unit.

IMPORTANT: It is the customer's responsibility to use oil that is appropriate to the climate.

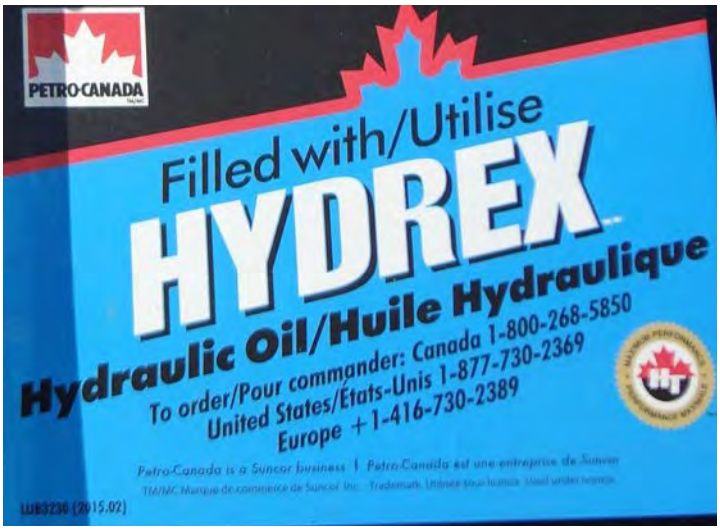
Caution! Do not mix different brands of oil. In doubt, drain and refill with new oil.

Oil Identification

The AUTOMIZER™ has an oil identification tag that specifies the manufacturer's brand of hydraulic oil that your vehicle has been filled at the Labrie factory. When oil replacement becomes necessary other equivalent oil by other manufacturers may also meet your application requirements.

The oil identification tag is located on the hydraulic tank. Replacement decals may be ordered from the Labrie Parts Department.

Figure 4-1 Example of an oil identification tag



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.

Testing Hydraulic Oil

It is recommended to have the hydraulic oil tested and analyzed by a lab to prevent hydraulic system or pump failures. This will also optimize the oil change frequency. Apply the following procedure to take oil samples on Labrie vehicles.

NOTE: The following is a general procedure for taking oil samples. Call your local oil supplier or your local oil expert or oil analysis laboratory for specific oil sampling procedures and details on how to obtain sampling kits (bottles, labels, probes, etc.). Procedures and sampling kits may differ from one laboratory to another. LabriePlus can provide you with a probe to help with oil sampling. Ask us for part HYF10189 (see Figure 4-2).

Figure 4-2 Probe

Caution!

Highly contaminated hydraulic fluid must be changed promptly to avoid any damage in the hydraulic system.

Hydraulic Oil Sample Preparation

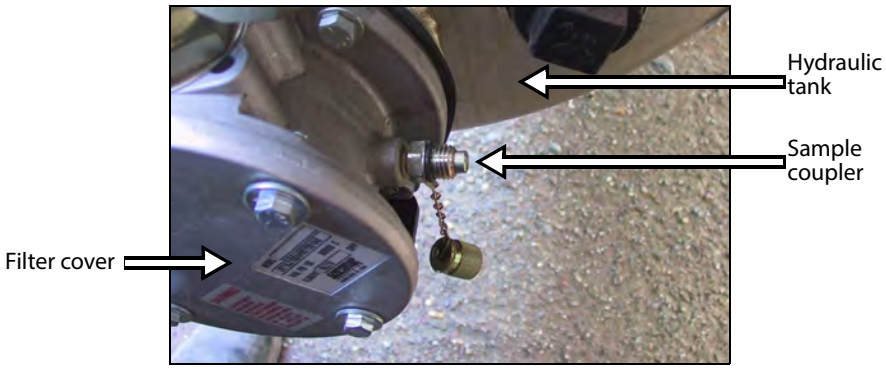
Before taking hydraulic oil samples:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Locate the oil sample coupler.

   It is located at the back of the hydraulic tank, on the filter housing (see Figure 4-4).

Figure 4-3 Oil tank

Figure 4-4 Oil sample coupler



3. Remove the cap from the sample coupler and clean the coupler with a clean rag.
4. Push on the coupler spring ball using a small tip to purge oil before taking a sample. The residual pressure in the system will push the oil out of the coupler. Use a small container to recuperate the oil that will come out. Let the oil leak for a few seconds (about half a cup). In this operation, the pump must be engaged.

Taking an Oil Sample

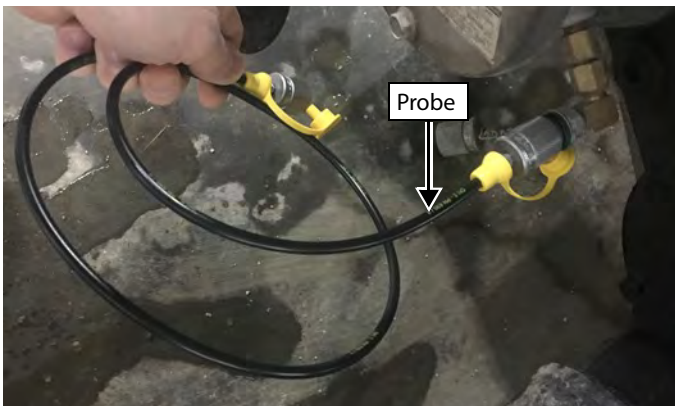
Once you have released the residual pressure, you can take the sample.

NOTE: Sample taking procedures may vary from one oil analysis lab to another. Use the procedure thats comes with your sampling kit.

To take an oil sample:

1. Remove the sample kit from its bag.
2. Remove the vent cap from the bottle cap, if needed.
3. Remove the protective cap from the probe, if needed.
4. Install the probe on the coupler to fill the sample bottle (see Figure 4-5).

Figure 4-5 Installing probe on coupler



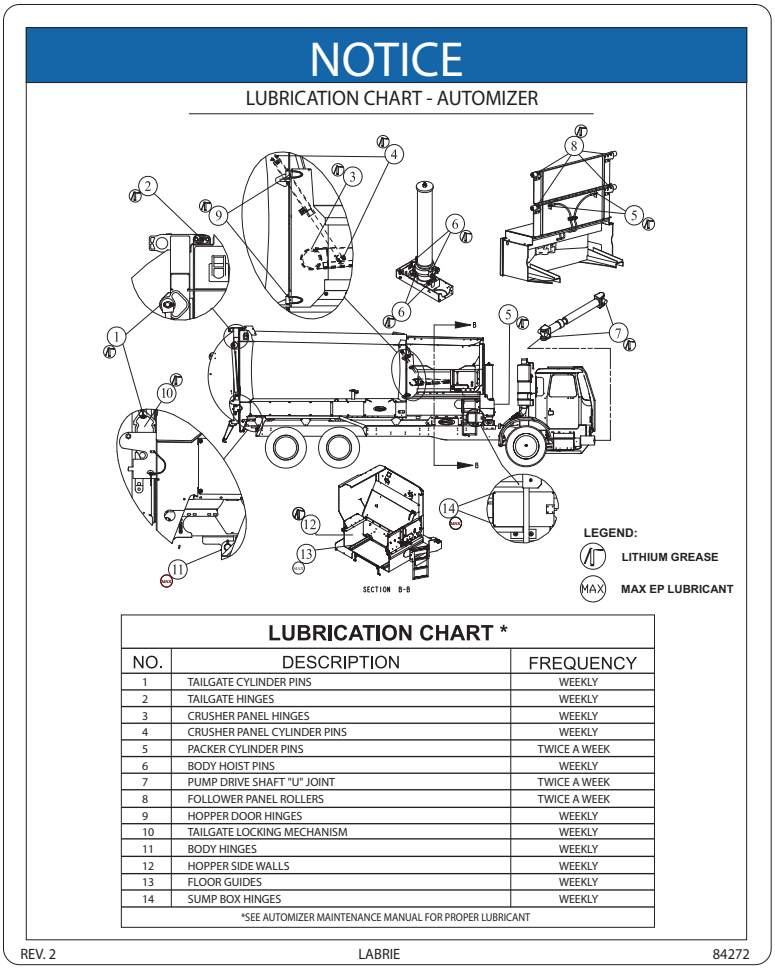
5. Fill the bottle to the level mark (the pump must be engaged to do this). Remove excess oil through the vent (if present). *DO NOT OPEN THE BOTTLE!*
6. Once the sample is taken, remove the probe from the coupler and the bottle.
7. Put the seal cover over the bottle cap, if provided.
8. Fill in the identification form (sticker) and apply it on the sample bottle.
9. Send the bottle to the laboratory for analysis.

AUTOMIZER™ Lubrication Charts

The AUTOMIZER™ lubrication charts in this manual (Figure 4-7 and Figure 4-8) may differ from the one displayed on your vehicle. For lubrication specifications, always refer to the charts on your vehicle.

Figure 4-6 AUTOMIZER™ lube chart on right-hand side of vehicle

Figure 4-7 AUTOMIZER™ lubrication chart



NOTICE

LUBRICATION CHART - AUTOMIZER

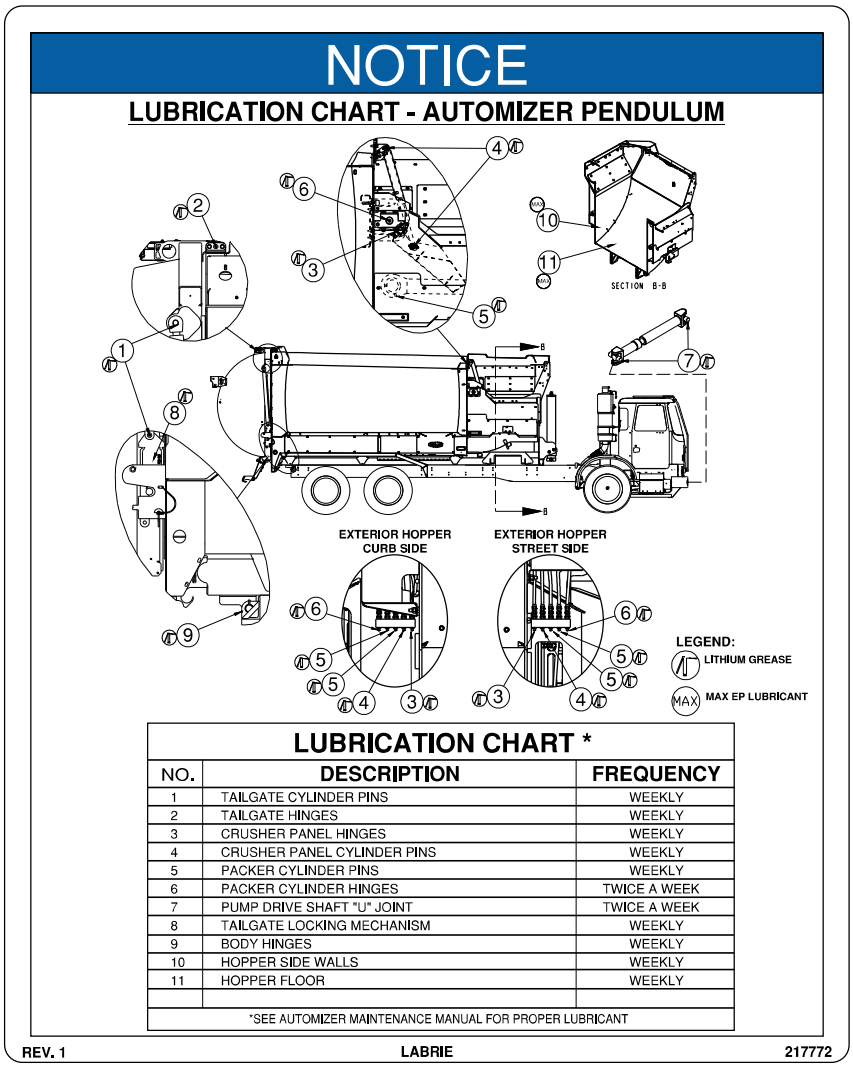
LUBRICATION CHART *

NO.	DESCRIPTION	FREQUENCY
1	TAILGATE CYLINDER PINS	WEEKLY
2	TAILGATE HINGES	WEEKLY
3	CRUSHER PANEL HINGES	WEEKLY
4	CRUSHER PANEL CYLINDER PINS	WEEKLY
5	PACKER CYLINDER PINS	TWICE A WEEK
6	BODY HOIST PINS	WEEKLY
7	PUMP DRIVE SHAFT "U" JOINT	TWICE A WEEK
8	FOLLOWER PANEL ROLLERS	TWICE A WEEK
9	HOPPER DOOR HINGES	WEEKLY
10	TAILGATE LOCKING MECHANISM	WEEKLY
11	BODY HINGES	WEEKLY
12	HOPPER SIDE WALLS	WEEKLY
13	FLOOR GUIDES	WEEKLY
14	SUMP BOX HINGES	WEEKLY

*SEE AUTOMIZER MAINTENANCE MANUAL FOR PROPER LUBRICANT

REV. 2 LABRIE 84272

Figure 4-8 AUTOMIZER™ Pendulum lubrication chart



LUBRICATION CHART *

NO.	DESCRIPTION	FREQUENCY
1	TAILGATE CYLINDER PINS	WEEKLY
2	TAILGATE HINGES	WEEKLY
3	CRUSHER PANEL HINGES	WEEKLY
4	CRUSHER PANEL CYLINDER PINS	WEEKLY
5	PACKER CYLINDER PINS	WEEKLY
6	PACKER CYLINDER HINGES	TWICE A WEEK
7	PUMP DRIVE SHAFT "U" JOINT	TWICE A WEEK
8	TAILGATE LOCKING MECHANISM	WEEKLY
9	BODY HINGES	WEEKLY
10	HOPPER SIDE WALLS	WEEKLY
11	HOPPER FLOOR	WEEKLY

*SEE AUTOMIZER MAINTENANCE MANUAL FOR PROPER LUBRICANT

Caution!

Never grease the side rails and the outside of rollers. Sand and other abrasives stick to grease, which may cause premature component wear (all units except Pendulum).

Caution!

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

Greasing Crusher Panel (optional)

NOTE: This section applies to all AUTOMIZER™ models with the exception of the AUTOMIZER™ Pendulum.

To properly maintain the crusher panel:

1. Grease the crusher panel cylinder heads by using the grease fittings.
2. Grease the crusher panel bushings every week.
3. Grease the grease fittings on the lower tube rings every week (see Figure 4-10).

Figure 4-9 Grease areas

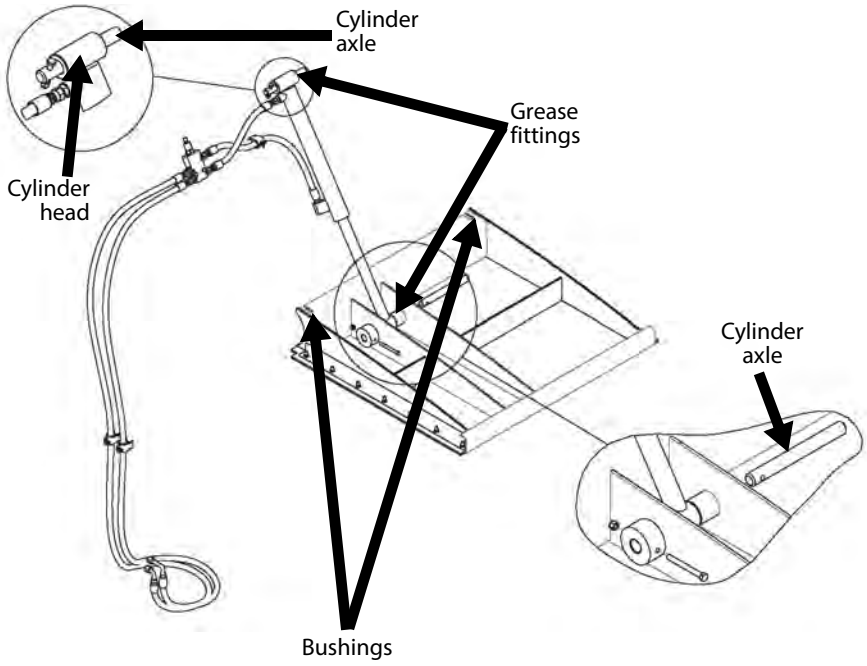
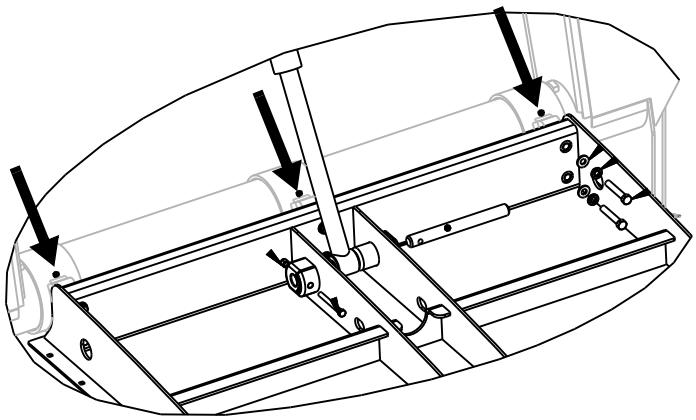


Figure 4-10 Grease fittings on lower tube rings



Body Hinges

Greasing Body Hinges

The body hinges should be lubricated weekly. Also, check for cracks or corrosion. Any crack must be reported, and repaired by *qualified* personnel. If necessary, contact Labrie*Plus* for technical support.

Danger!

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

Figure 4-11 Body hinge

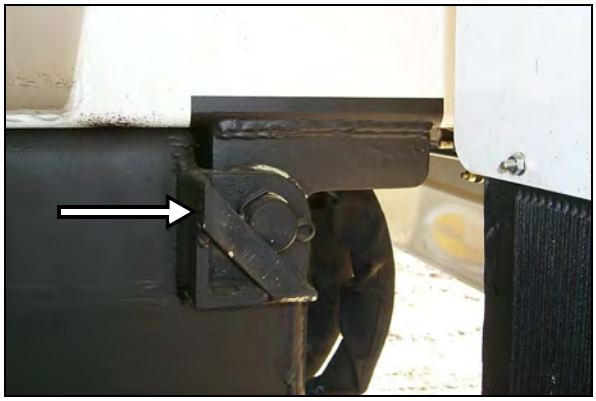
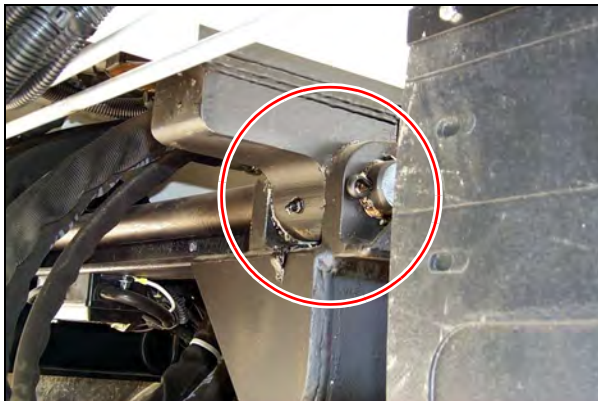


Figure 4-12 Body hinge (view from behind rear mudguard)



Tailgate

Greasing Tailgate Hinges, Locking Mechanism and Cylinder Pins

It is important to lubricate the tailgate hinges, locking mechanism and cylinder pins every week with multipurpose grease (see *Recommended Lubricants* on page 107), as per the lubrication schedule.

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

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

- tailgate hydraulic cylinders
- cylinder pins and circlips
- tailgate hinges and safety pins
- wear on the locking mechanism
- wear on the tailgate-locking pins
- tailgate rubber seal

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

Figure 4-13 Tailgate-locking mechanism

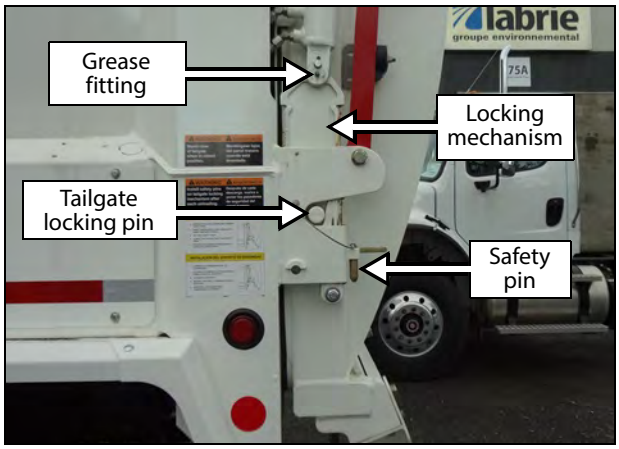


Figure 4-14 Cylinder head

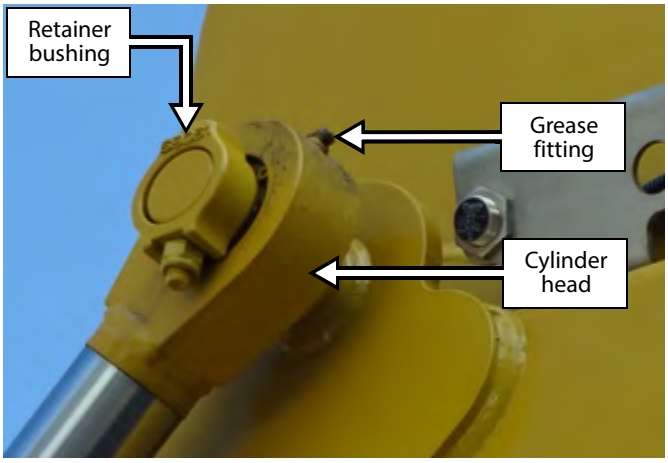
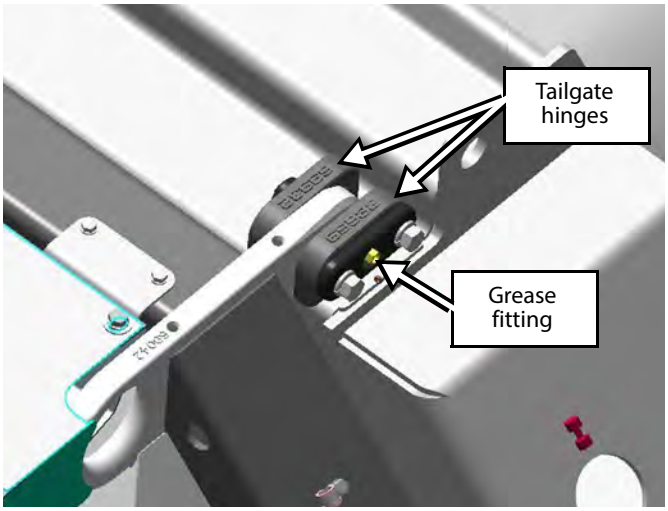


Figure 4-15 Tailgate hinges



Hopper Door Hinges

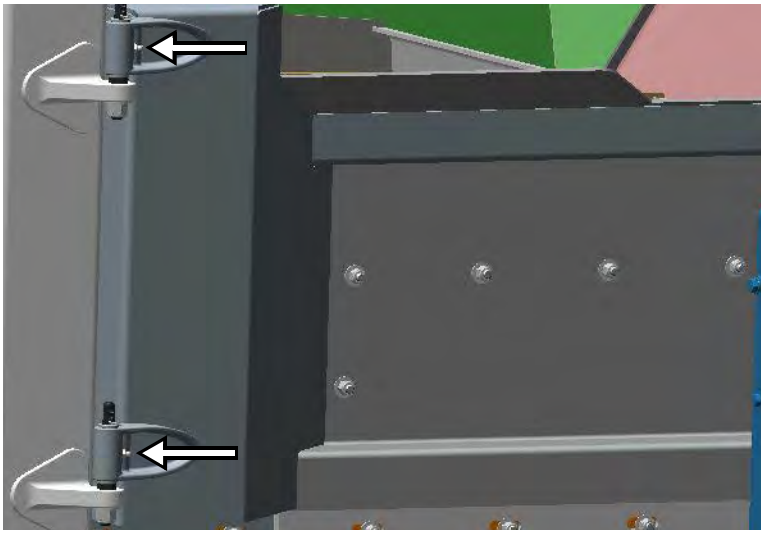
NOTE: This section applies to all AUTOMIZER™ models with the exception of the AUTOMIZER™ Pendulum.

To protect and reduce wear on the hopper door hinges, lubricate them every week with multipurpose grease (see *Recommended Lubricants* on page 107).

To lubricate the hopper door hinges:

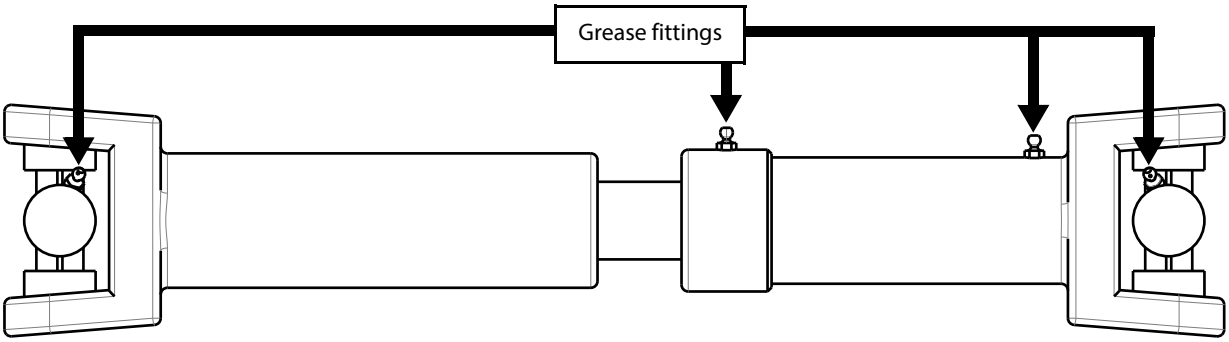
1. Disengage the hydraulic pump and turn OFF the engine.
2. Proceed with the LOTO procedure. See *Locking Out and Tagging Out the Vehicle* on page 25.
3. Locate the grease fitting on each door hinge (see Figure 4-16).
   The AUTOMIZER™ hopper door has two (2) hinges.
4. Apply lubricant with a grease gun.

Figure 4-16 Grease fittings on hopper door hinges



Pump Drive Shaft “U” Joint & Spline

NOTE: To be lubricated twice a week. LOTO procedure must be applied (see page 25).



Sump Box Hinges

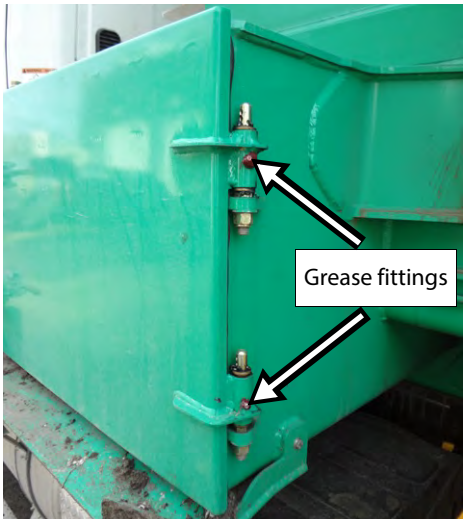
NOTE: This section applies to all AUTOMIZER™ models except the Pendulum.

To protect and reduce wear on the sump box hinges, lubricate them every week with multipurpose grease (see *Recommended Lubricants* on page 107).

To lubricate the sump box hinges:

1. Disengage the hydraulic pump and turn OFF the engine.
2. Proceed with the LOTO procedure. See *Locking Out and Tagging Out the Vehicle* on page 25.
3. Locate the grease fitting on each sump box hinge (see Figure 4-17).
4. Apply lubricant with a grease gun.

Figure 4-17 Sump box hinges



Packer

NOTE: This section applies to all AUTOMIZER™ models with the exception of the AUTOMIZER™ Pendulum.

Packer components that need to be lubricated include the follower panel rollers and the cylinder base/head pins. Use multipurpose grease (see *Recommended Lubricants* on page 107) twice a week to lubricate these components.

Caution!

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

Figure 4-18 Grease fittings on follower panel rollers and cylinder head pins

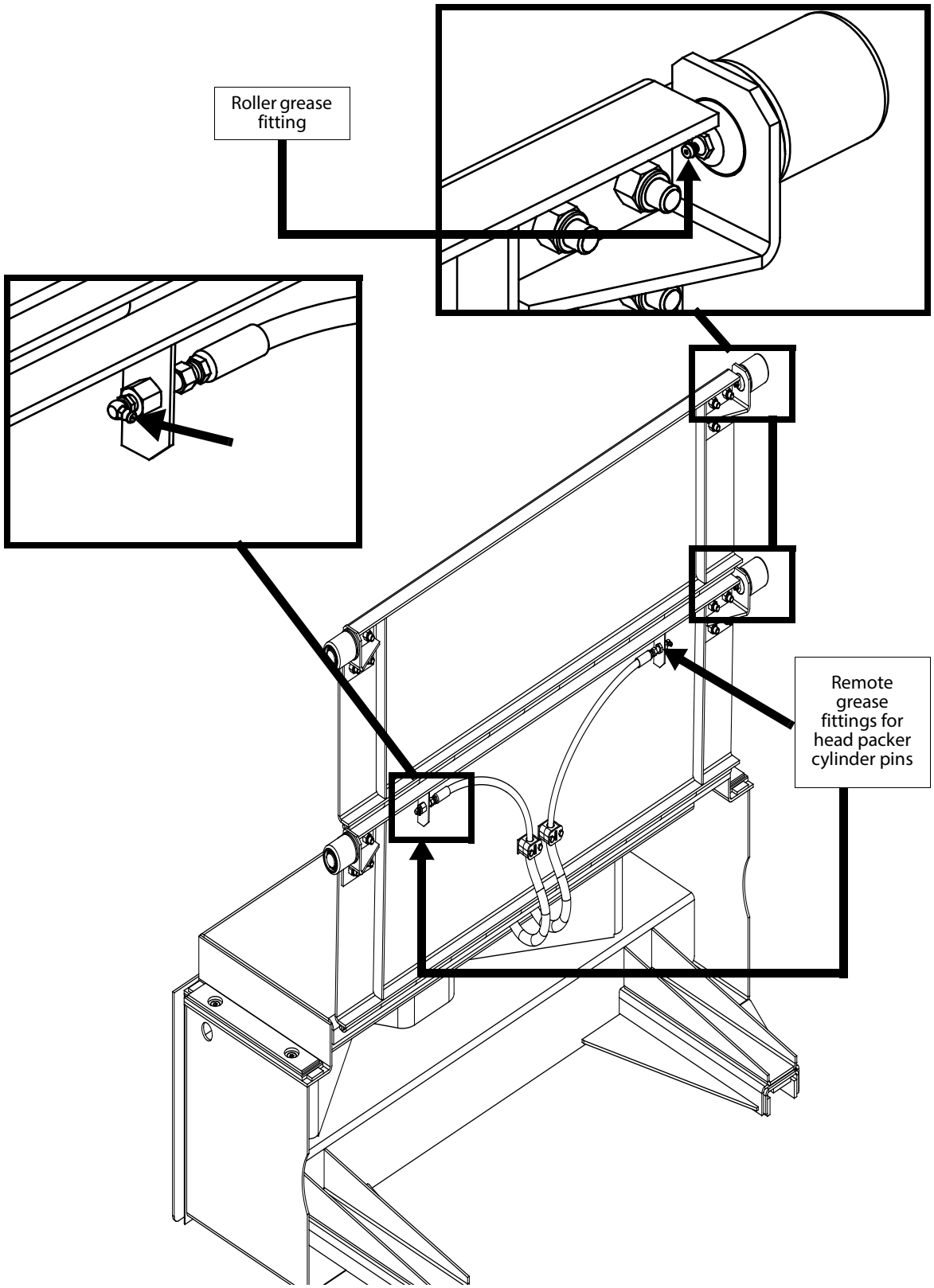


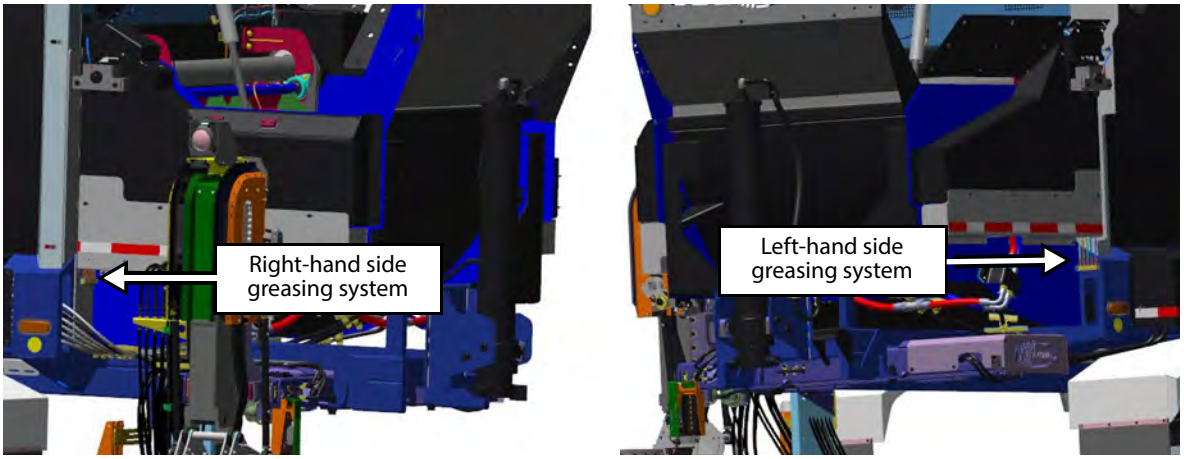
Figure 4-19 Grease fittings on cylinder base pin

Remote Greasing Systems

NOTE: This section only applies to the AUTOMIZER™ Pendulum.

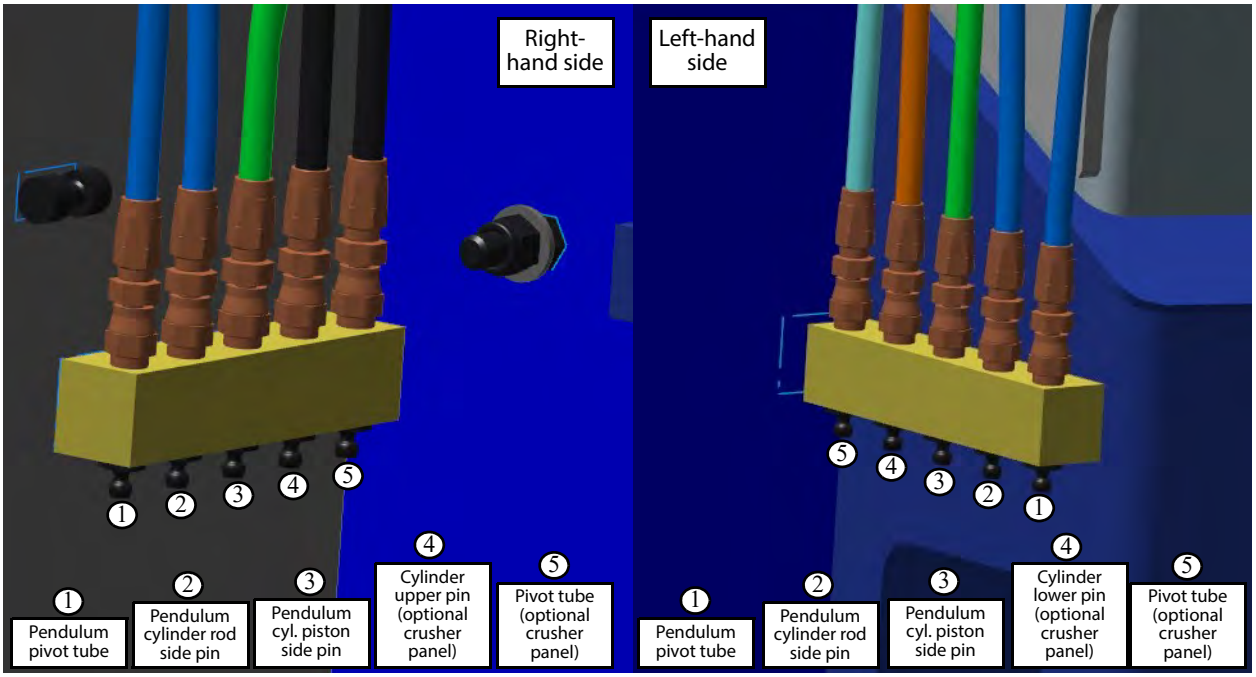
The AUTOMIZER™ Pendulum is fitted with 2 remote greasing systems, one on each side of the truck (see Figure 4-20). These systems are used to easily lubricate mobile parts of the optional crusher panel and sections of the pendulum cylinders. So no need to climb into the hopper to grease those parts that are subject to wear and tear. Mechanics can do it simply while standing on the ground.

Figure 4-20 Remote greasing systems - Location on the truck



Each lube hose of a remote greasing system allows lubrication of a particular part. To determine which hose to use for a specific part, refer to Figure 4-21.

Figure 4-21 Determining which lube hoses to use



5

Hydraulic System

Maintenance on the hydraulic system must be carefully and regularly done. The hydraulic system supports most of the functions of the AUTOMIZER™ body.

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 *Locking Out and Tagging Out the Vehicle* on page 25).

Danger!

Human skin can be easily penetrated by high pressure oil (2000 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.

General Maintenance

To keep the hydraulic system efficient and reliable, the following care must be taken:

- Every day, check that hydraulic lines and connections are not leaking. Correct if necessary.
- Inspect the pump for leaks or unusual noises.
- When maintenance is carried out, protect all hoses, fittings, pipes, or any other ingress points from dirt that would eventually get into the oil. Plug hoses that are not connected.
- Inspect the hydraulic system at least once a month, and adjust pressure if necessary (see *Hydraulic Pressures* on page 159).
- For new vehicles, change the return filter element after 50 hours of use, and twice a year afterwards or when the filter restriction indicator is in the yellow zone (see Figure 5-16), whichever comes first (see *Replacing Filter Elements* on page 152).
- Clean the strainer inside the hydraulic tank while replacing the hydraulic oil (see *Cleaning the Strainer* on page 151).
- Hydraulic oil must be replaced at least once a year, or when contaminated (see *Emptying the Hydraulic Tank* on page 150).

NOTE: The ball valve (or shut-off valve) on the hydraulic tank (see Figure 2-15) must be completely open before engaging the pump or starting the engine.

Labrie Environmental 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 Environmental 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.

It is therefore mandatory to change the return oil filter and the hydraulic fluid and to clean the strainer as per the recommended maintenance schedule mentioned above. 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. Labrie vehicles are now equipped with an "oil sampler coupler." For more information, see *Testing Hydraulic Oil* on page 110.

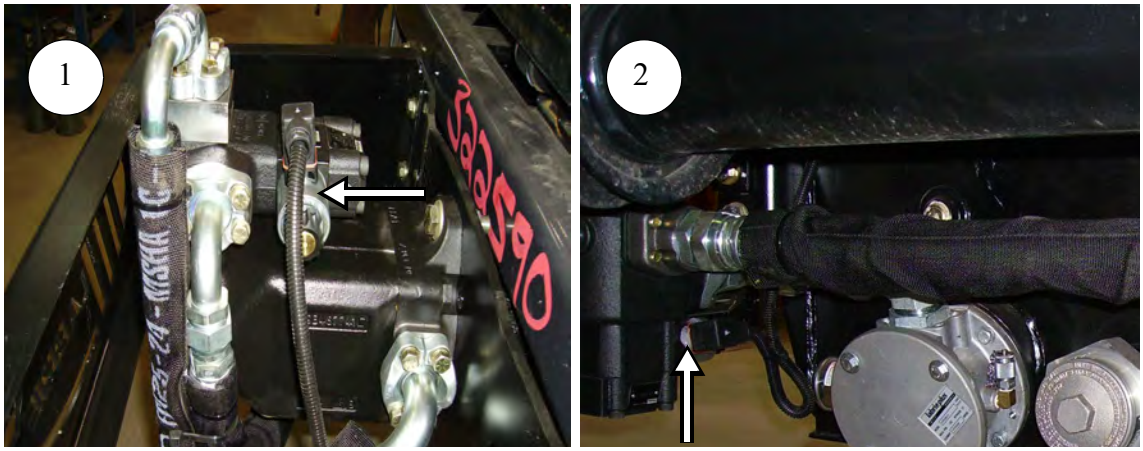
NOTE: Evidence of maintenance and/or fluid samples could be requested when filing warranty claims concerning the hydraulic system or pump.

Introducing the Dual Vane Pump

AUTOMIZER™ vehicles are equipped with a dual vane pump. Both sections of the dual vane pump are activated by two electric solenoid valves. One is mounted on the pump and the other on the chassis (see Figure 5-1). The electrical signal that activates the solenoid is sent by the pump switch on the control panel.

NOTE: If the vehicle is equipped with a hot-shift PTO, no solenoid valve is installed.

Figure 5-1 Vane pump solenoid valve on the pump (1) and on the chassis (2)



When the dual vane pump is turned on, the transmission electronic control unit (ECU) starts monitoring the vehicle and engine speed, and allows the vane pump to engage (or not). If the vehicle is going faster than 15 mph (25 km/h) or if the engine speed exceeds 900 rpm, the vane pump will not engage.

The first section of the vane pump, known as the *body* vane pump, located closer to the pump shaft, powers all body functions (tailgate, body hoist, and packer) through the directional control valve (see next page). It is capable of delivering a flow of 20 gallons per minute (gpm) at 700 rpm. A dump valve located on the chassis (see Figure 5-1) limits the flow to the valve to 45 gpm. All excess flow is sent back to the hydraulic tank. When the pump is turned off, the oil returns to the hydraulic tank.

NOTE: When a hot-shift PTO is disengaged, the pump stops rotating.

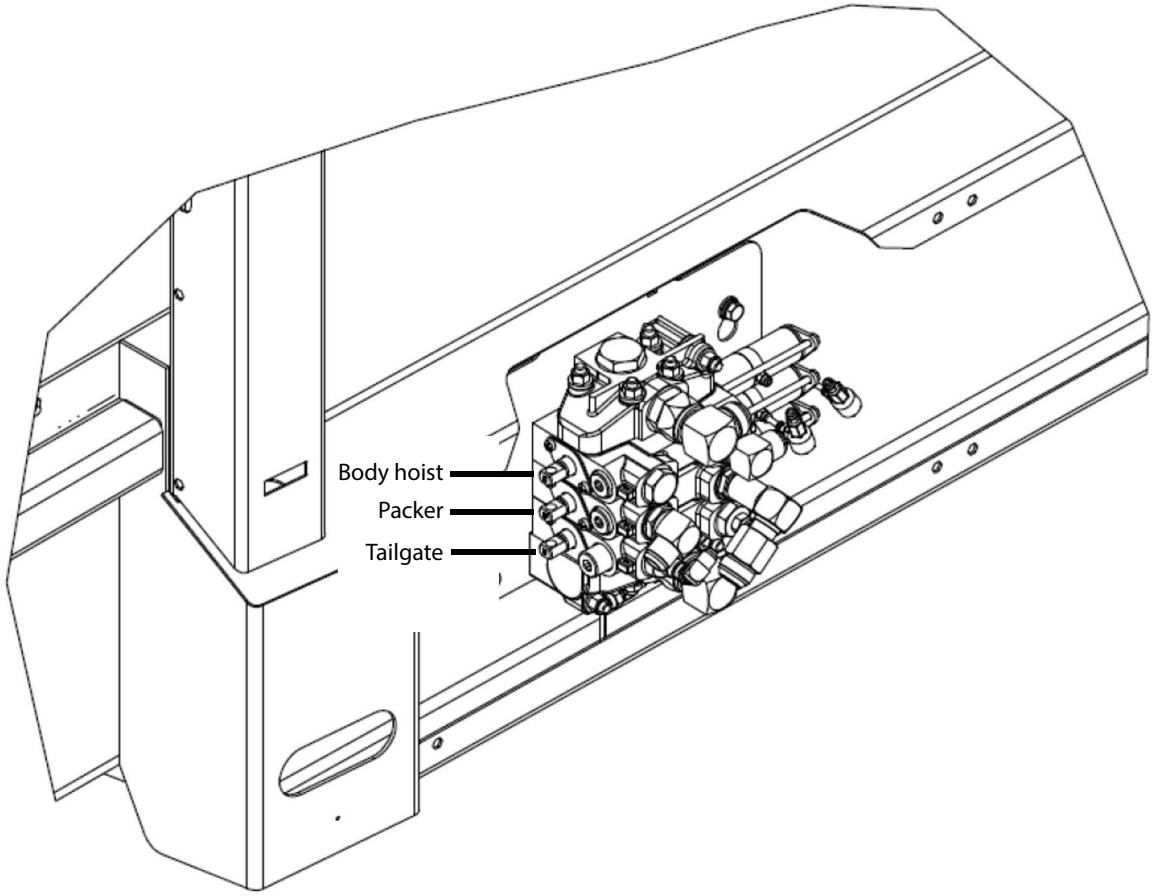
The second section of the vane pump, known as the *arm* vane pump, powers lifting arm functions and other options through the proportional valve (see *Proportional Valve* on page 131). It is capable of delivering a flow of 16 gpm at 700 rpm. A dump valve located at the pump outlet limits the flow (see Figure 5-1) to the valve to 20 gpm. All excess flow is sent back directly to the pump inlet. When the pump is turned off, all the oil returns to the inlet.

NOTE: When a hot-shift PTO is disengaged, the pump stops rotating.

Directional Control Valve

AUTOMIZER™ vehicles are equipped with a directional control valve (see Figure 5-2), as part of the *body* vane pump, that powers all body functions (tailgate, body hoist, and packer).

Figure 5-2 Directional control valve



- **Tailgate**: 4 ways, 3 positions
- **Packer**: 4 ways, 3 positions
- **Body hoist**: 3 ways, 3 positions

NOTE: All sections are air-actuated. Electro-hydraulic actuators are also available.

To learn how to adjust hydraulic pressures, see *Hydraulic Pressures* on page 159.

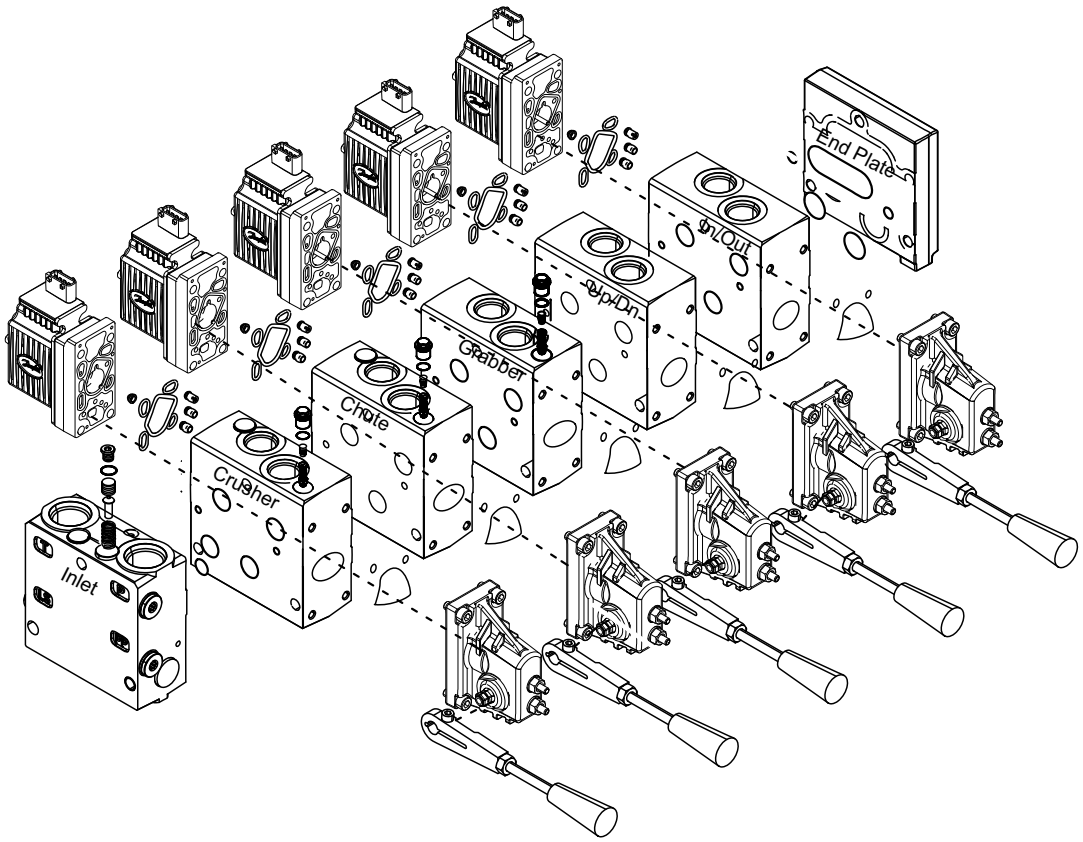
Proportional Valve

AUTOMIZER™ vehicles are equipped with a proportional valve (see Figure 5-3), as part of the *arm* vane pump, that powers all arm functions (grabber [open/close], lifting arm [extend/retract, up/down], chute [left/right], crusher panel [up/down], etc.) and other options.

As such, the amount of flow coming out of this valve will be according to the position of the spool[1]. This feature, called proportional control, allows infinite control of the speed and movement of the arm.

Each section of this valve is actuated by an electro-hydraulic actuator located under the valve.

Figure 5-3 Proportional valve



- **Input/output cover**: provided with main relief valve
- **Crusher panel section** (optional): not proportional, with load sensor relief
- **Chute section** (optional): not proportional, with load sensor relief
- **Grabber section (open/close)**: not proportional, with load sensor relief
- **Lifting arm section (up/down)**: proportional, no load sensor relief
- **Lifting arm section (extend/retract)**: proportional, no load sensor relief

1. **Except for the grabber, chute (optional) and crusher panel (optional) sections of the valve which do not modulate the hydraulic flow.**

Caution!

Very corrosive chemicals used to wash trucks may cause serious damage to the point where the valve coils may crack due to these chemicals. These issues can occur if the potting in the PVE is experiencing prolonged exposure to diesel- or kerosene-type liquids.
Be careful when washing your truck especially around the proportional valve. Use noncorrosive chemicals as much as possible to avoid corrosion problems such as those reported. Soap and water pressure are good alternatives to strong corrosive chemicals.

Inspecting the Pump

The hydraulic pump is powered by the vehicle engine through a drive shaft or by an optional PTO. The pump should be visually inspected every workday.

NOTE: On some units, the pump is directly installed on a PTO with no drive shaft.

Figure 5-4 Hydraulic 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. Open the cab grill (if necessary) to check for oil leaks under the pump and at connection points.
3. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

If electrical problems occurred with the pump, see *Troubleshooting* on page 197.

Caution!

If the unit has to be driven away for repairs on the hydraulic system, remove the drive shaft between the engine and the pump before restarting the engine.

Replacing the Hydraulic Pump

Occasionally, circumstances such as a broken pump drive shaft, a leaking or noisy pump or a lack of hydraulic pressure or oil flow may necessitate the replacement of the pump.

Before proceeding with the replacement of the pump, determine the type of pump setup that is used on your AUTOMIZER™ unit. There are 3 types of pump setups: front-mounted, PTO-driven mounted (pump connected to PTO via a drive shaft) and direct mount PTO. Basically, each setup calls for the same replacement method but with some differences due to the position of the pump.

A. **To replace a front-mounted hydraulic pump**, perform the following procedure:

1. Disengage the pump and turn OFF the engine.
2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to "Locking Out and Tagging Out the Vehicle" on page 25).
3. Close the shut-off valve (see Figure 2-15).
4. Slowly loosen the breather cap on the hydraulic tank (see Figure 5-19) to depressurize the tank.

   If tank is of the pressurized type.

Caution! Always loosen the breather cap slowly to let the internal air pressure dissipate in order to avoid serious injury.

5. Remove the pump guard.

Figure 5-5 Pump guard

6. Disconnect the electric coil on the dump valve (if equipped).
7. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution! Before disconnecting the hydraulic hoses from the pump, place a pan under the pump to catch oil that may drip down from the disconnected lines.

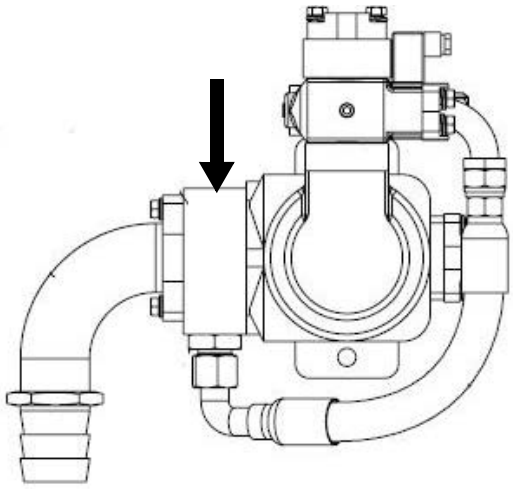
8. Remove the dump valve (if equipped).

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

9. Remove the suction block (see Figure 5-6) and save it for the new pump.

Figure 5-6 Suction block



10. Disconnect the drive shaft by removing the 4 bolts that secure the shaft to the engine.

    Some mechanics may rather want to disconnect the drive shaft from the pump.

    The choice is up to the mechanics and is based on the type of chassis the vehicle is built on.

11. Attach the pump to a lifting device and remove both 5/8" bolts that hold the pump to the pump support.
12. Remove the pump.

    If need be, disconnect the drive shaft from the pump and save it for the replacement pump.

13. Install the new pump.

    Before attempting to install the new pump, it is very important to check the port configuration on that pump; the ports on the replacement pump must be positioned the same way as on the old pump. If they are not, proceed with the indexing of the new pump.

The replacement pump must be oriented in such a way to facilitate reconnection to the hydraulic system and attachment to the chassis frame.

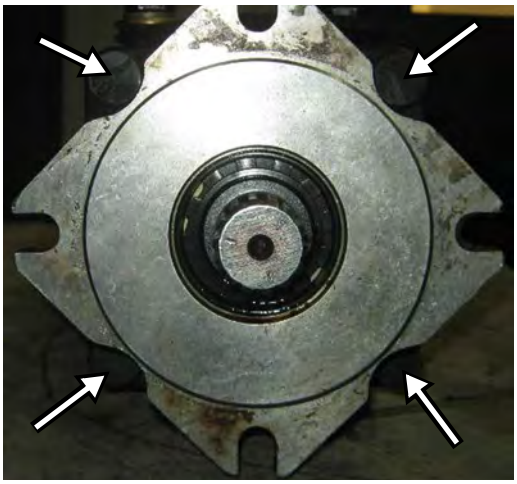
NOTE: Both sections of the pump are indexable: the body section and the arm section.

To index the new pump, proceed this way:

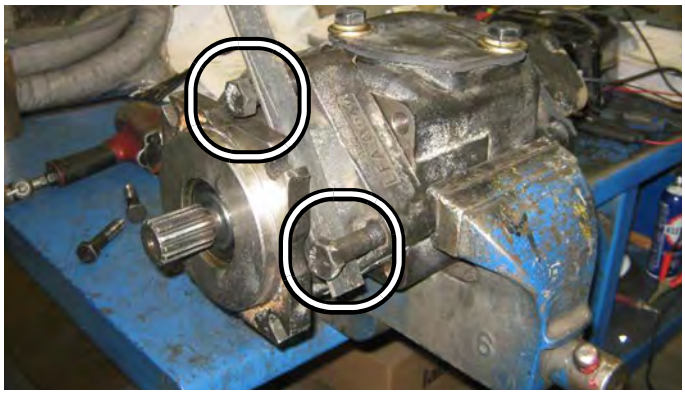
13 a. Put the pump on a flat surface or in a vise.

BODY SECTION

13 b. Remove all 4 retaining bolts that hold the mounting cap in place.



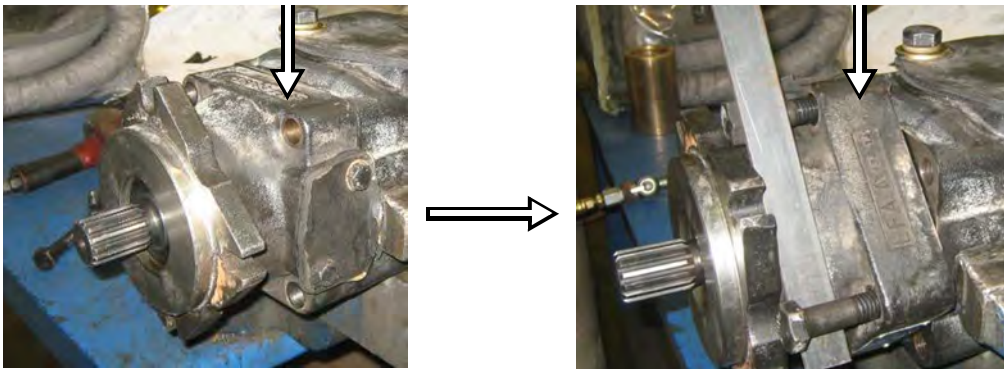
NOTE: You may leave two retaining bolts partially unscrewed to facilitate rotation with a metallic bar.



13 c. Rotate the mounting cap accordingly.

Rotation can be done by turning the mounting cap clockwise or counter-clockwise with your hands or by using a metallic bar as illustrated in the above picture.

NOTE: Make sure pump sections do not separate.



NOTE: The cartridge will rotate with the housing.

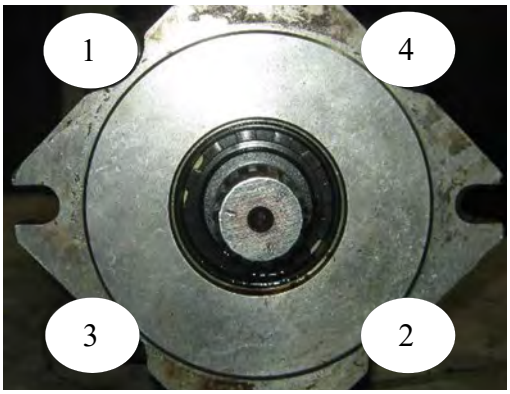
IMPORTANT: Do not pull on the mounting cap as inside components may shift and damage the pump.

13 d. Put all 4 bolts back in place and hand tighten.

13 e. Check if the shaft rotates freely.

13 f. Tighten all bolts to the torque of 138-140 ft-lb.

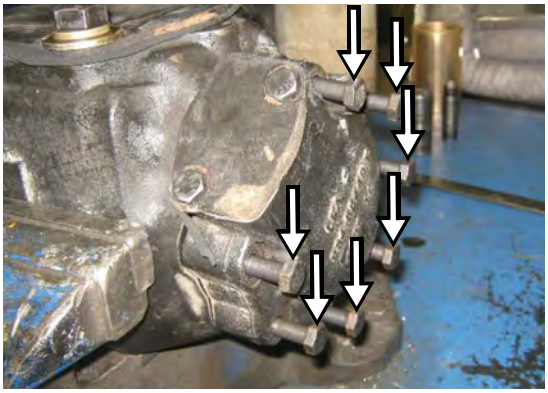
When tightening bolts, be sure to respect the following number sequence to avoid damaging the seals:



ARM SECTION

NOTE: If the front section of the pump still needs to be reoriented, proceed with step 13g.

13 g. Remove all 7 retaining bolts that hold the front cap in place.

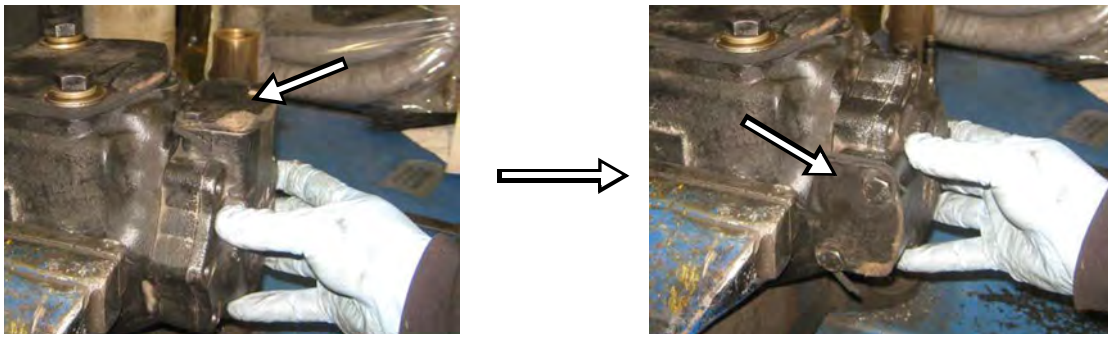


NOTE: You may leave two retaining bolts partially unscrewed to facilitate rotation with a metallic bar.

13 h. Rotate the front cap accordingly.

Rotation can be done by turning the front cap clockwise or counter-clockwise with your hands or by using a metallic bar.

NOTE: Make sure pump sections do not separate.



IMPORTANT: Do not pull on the front cap as inside components may shift and damage the pump.

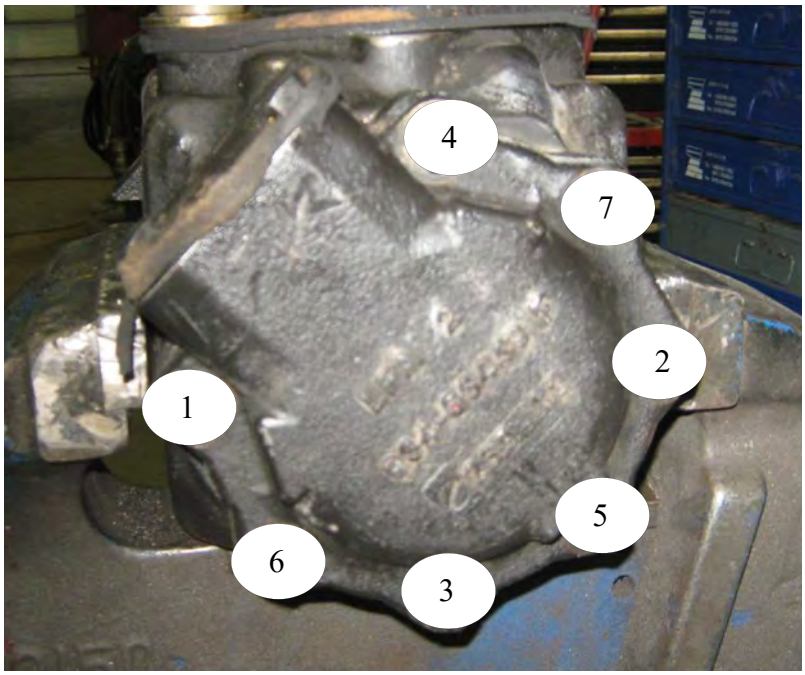
NOTE: The cartridge will rotate with the housing.

13 i. Put all 7 bolts back in place and hand tighten.

13 j. Check if the shaft rotates freely.

13 k. Tighten all bolts to the torque of 50 ft-lb.

When tightening bolts, be sure to respect the following number sequence to avoid damaging the seals:



Now the pump is properly ported and ready for install.

14. Reinstall the drive shaft if it has been removed from the engine.

NOTE: Before proceeding with the installation of the drive shaft, apply the following procedure to ensure a strong mechanical connection between the pump yoke and input shaft.

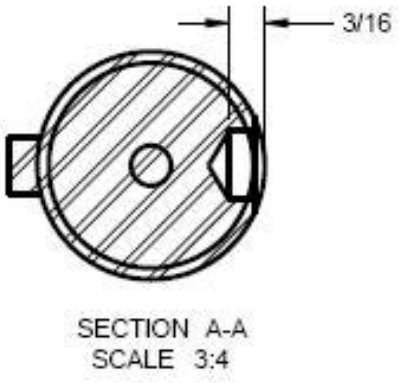
14 a. On the drive shaft mark the location where a hole must be drilled.

Use the yoke as a jig to determine where exactly the hole must be drilled then remove it.

NOTE: The yoke must be fully engaged on the shaft before determining the exact location where the hole must be drilled.

14 b. Drill a detent with a diameter of 5/16" and depth of 3/16" on the pump shaft.

Figure 5-7 Depth of detent to be drilled



14 c. Reinstall the drive shaft, placing the yoke on the shaft as illustrated on page 146.

The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).

14 d. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.

14 e. Install a steel wire on the yoke bolt (the wire must be tight around the bolt head, in a fashion that prevents LH rotation) [see Figure 5-12].

15. Using a suitable lifting device, install the new pump on the pump support.

16. Put both 5/8" bolts back in to secure the pump to the plate.

17. Go through Steps 5 to 9 in reverse order to reinstall the various components of the pump assembly.

18. Fill the pump housing with new oil.

19. Tighten the breather cap (if applicable).

20. Open the shut-off valve (see Figure 2-15)

21. Prime the new pump (see *Priming a New Pump* on page 147).

22. Put the front pump guard back on (see Figure 5-5).

Caution! Check level of hydraulic oil in the tank. Add oil if needed.

NOTE: Labrie Environmental Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank after the installation of a new pump (see *Replacing Filter Elements* on page 152 and *Replacing Hydraulic Oil* on page 153).

B. **To replace a PTO-driven hydraulic pump**, perform the following procedure:

1. Disengage the pump and turn OFF the engine.
2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to "Locking Out and Tagging Out the Vehicle" on page 25).
3. Close the shut-off valve (see Figure 2-15).
4. Slowly loosen the breather cap on the hydraulic tank (see Figure 5-19) to depressurize the tank. If tank is of the pressurized type.

Caution! Always loosen the breather cap slowly to let the internal air pressure dissipate in order to avoid serious injury.

5. Disconnect the electric coil on the dump valve (if equipped).
6. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution! Before disconnecting the hydraulic hoses from the pump, place a pan under the pump to catch oil that may drip down from the disconnected lines.

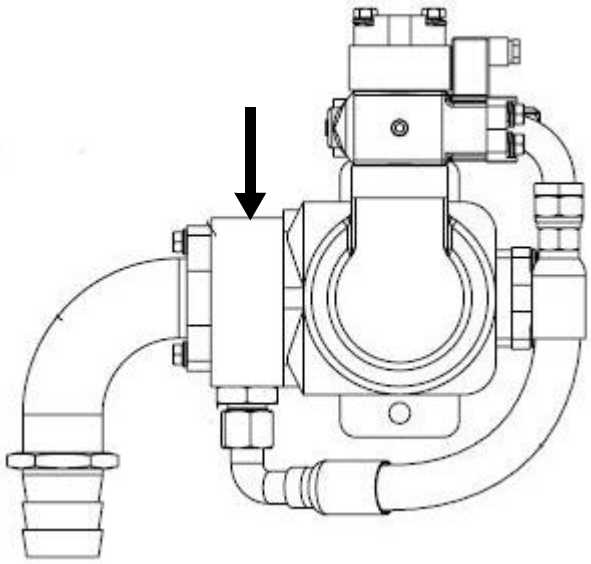
7. Remove the dump valve (if equipped).

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

8. Remove the suction block (see Figure 5-8) and save it for the new pump.

Figure 5-8 Suction block



9. Disconnect the drive shaft by removing the 4 bolts that secure the shaft to the PTO.

Some mechanics may rather want to disconnect the drive shaft from the pump.

The choice is up to the mechanics and is based on the type of chassis the vehicle is built on.

10. Attach the pump to a lifting device and remove both 5/8" bolts that hold the pump to the pump support.

11. Remove the pump.

If need be, disconnect the drive shaft from the pump and save it for the replacement pump.

12. Install the new pump.

Before attempting to install the new pump, it is very important to check the port configuration on that pump; the ports on the replacement pump must be positioned the same way as on the old pump. If they are not, proceed with the indexing of the new pump.

The replacement pump must be oriented in such a way to facilitate reconnection to the hydraulic system and attachment to the chassis frame.

Go to **page 135** to know how to index the new pump; procedure begins with Step 13 a.

13. Reinstall the drive shaft if it has been removed from the PTO.

NOTE: Before proceeding with the installation of the drive shaft, apply the following procedure to ensure a strong mechanical connection between the pump yoke and input shaft.

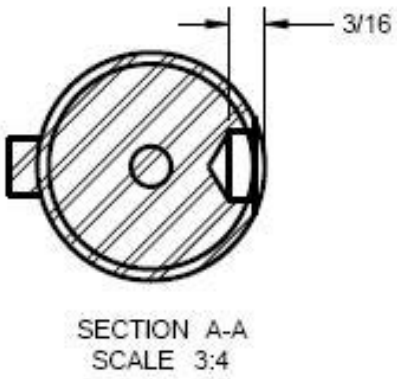
13 a. On the drive shaft mark the location where a hole must be drilled.

Use the yoke as a jig to determine where exactly the hole must be drilled then remove it.

NOTE: The yoke must be fully engaged on the shaft before determining the exact location where the hole must be drilled.

13 b. Drill a hole with a 5/16" diameter on the drive shaft.

Figure 5-9 Depth of hole to be drilled



13 c. Reinstall the drive shaft, placing the yoke on the shaft as illustrated on page 146.

The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).

13 d. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.

13 e. Install a steel wire on the yoke bolt (the wire must be tight around the bolt head, in a fashion that prevents LH rotation) [see Figure 5-12].

14. Using a suitable lifting device, install the new pump on the pump support.

15. Put both 5/8" bolts back in to secure the pump to the plate.

16. Go through Steps 5 to 8 in reverse order to reinstall the various components of the pump assembly.

17. Fill the pump housing with new oil.

18. Tighten the breather cap (if applicable).

19. Open the shut-off valve (see Figure 2-15).

20. Prime the new pump (see *Priming a New Pump* on page 147).

Caution! Check the level of hydraulic oil in the tank. Add oil if needed.

NOTE: Labrie Environmental Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank after the installation of a new pump (see *Replacing Filter Elements* on page 152 and *Replacing Hydraulic Oil* on page 153).

C. **To replace a direct mount PTO**, apply the following procedure:

1. Disengage the pump and turn OFF the engine.
2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to "Locking Out and Tagging Out the Vehicle" on page 25).
3. Close the shut-off valve (see Figure 2-15).
4. Slowly loosen the breather cap on the hydraulic tank (see Figure 5-19) to depressurize the tank.

   If tank is of the pressurized type.

Caution!

Always loosen the breather cap slowly to let the internal air pressure dissipate in order to avoid serious injury.

5. Disconnect the electric coil on the dump valve (if equipped).
6. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (4) that are attached to the pump.

Caution!

Before disconnecting the hydraulic hoses from the pump, place a pan under the pump to catch oil that may drip down from the disconnected lines.

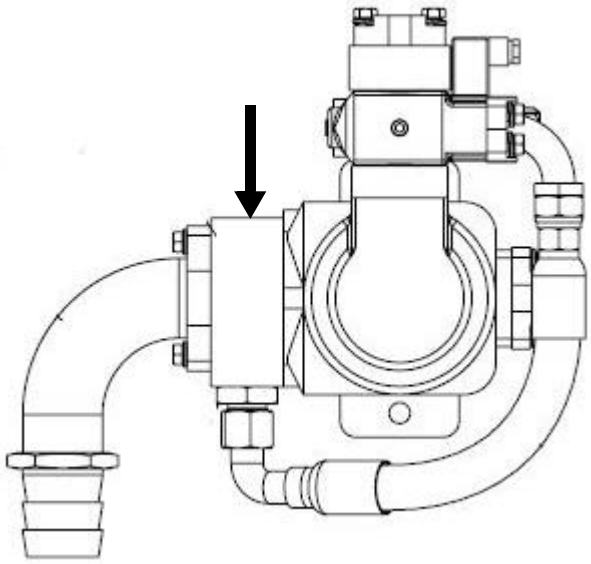
7. Remove the dump valve (if equipped).

NOTE: The dump valve is usually, but not necessarily, located atop the pump.

NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

8. Remove the suction block (see Figure 5-10) and save it for the new pump.

Figure 5-10 Suction block



9. Attach the pump to a suitable lifting device and remove all 5/8" bolts that hold the pump to the PTO extension shaft.
10. Remove the pump.

NOTE: Be sure to place a pan under the pump to catch the transmission oil that will flow out.

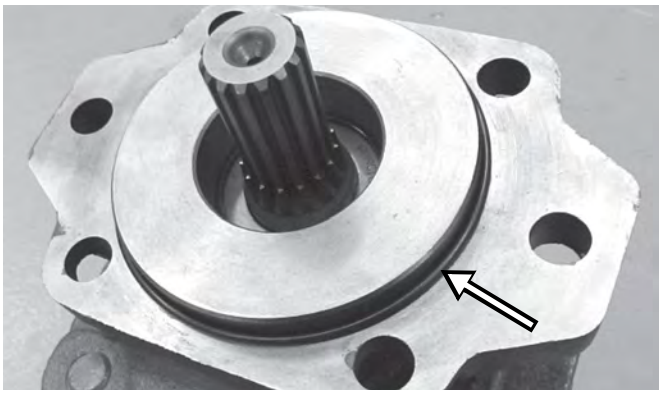
11. Install the new pump using a suitable lifting device.

    Before attempting to install the new pump, it is very important to check the port configuration on that pump; the ports on the replacement pump must be positioned the same way as on the old pump. If they are not, proceed with the indexing of the new pump.

    The replacement pump must be oriented in such a way to facilitate reconnection to the hydraulic system and attachment to the chassis frame.

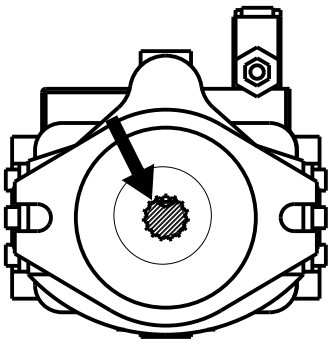
    Go to **page 135** to know how to index the new pump; procedure begins with Step 13 a.

NOTE: If the old pump had an o-ring on the front cap, the replacement pump must have a new o-ring installed. Make sure this is done before installing the pump.



12. Connect the pump to the PTO extension shaft. Align the splines on the PTO to those on the pump for ease of connection.

Figure 5-11 Splines on pump



13. Put all 5/8" bolts back in to secure the pump to the shaft.
14. Go through Steps 5 to 8 in reverse order to reinstall the various components of the pump assembly.
15. Fill the pump housing with new oil.
16. Tighten the breather cap (if applicable).
17. Open the shut-off valve (see Figure 2-15).
18. Prime the new pump (see *Priming a New Pump* on page 147).

Caution!

Check the level of hydraulic oil in the tank. Add oil if needed. Also check the transmission oil level.

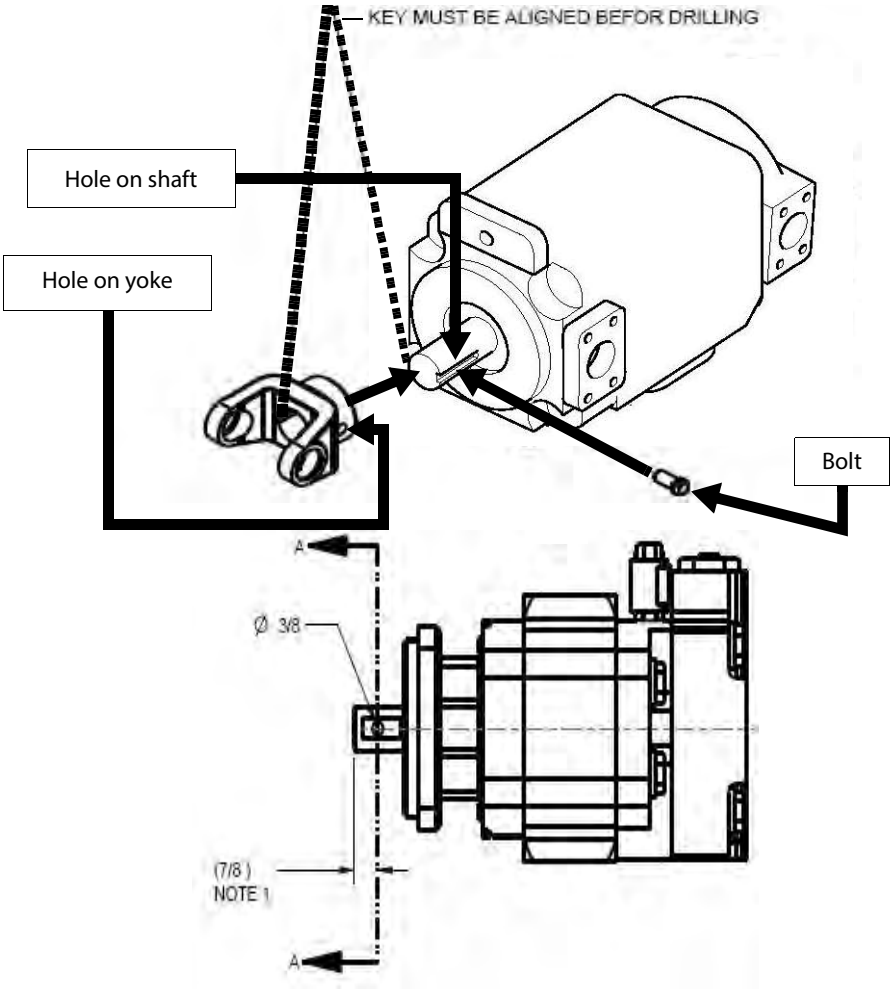
NOTE: Labrie Environmental Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank before starting a new pump (see *Replacing Filter Elements* on page 152 and *Replacing Hydraulic Oil* on page 153).

Installing a Yoke-Locking Bolt

NOTE: It is important to perform this procedure after a pump replacement or a pump drive shaft replacement.

To install a yoke-locking-bolt, do the following:

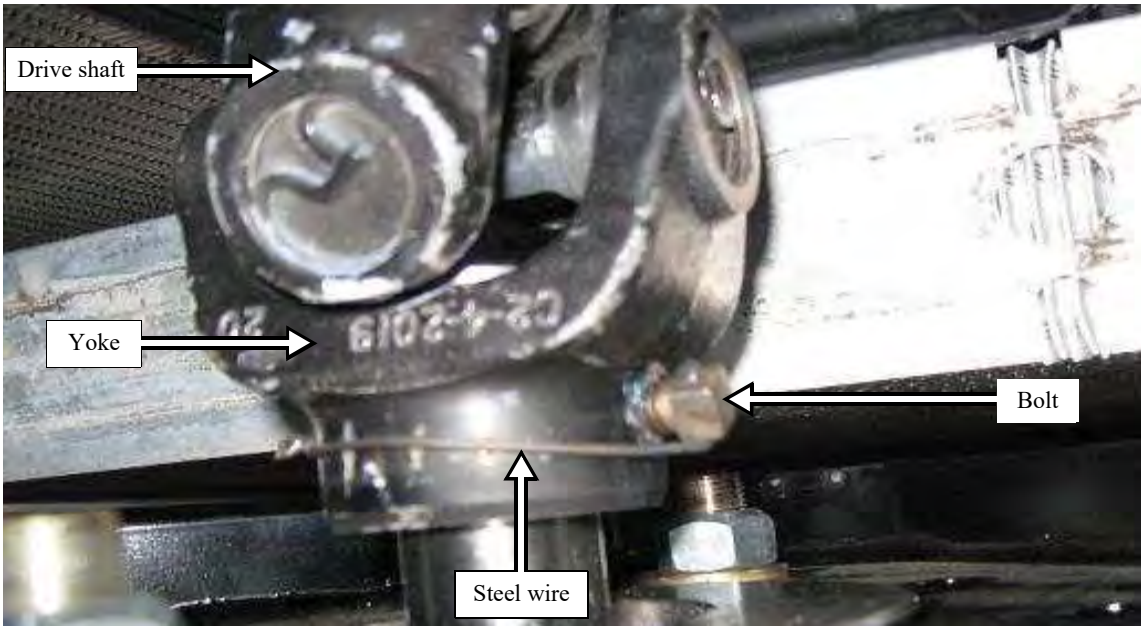
1. Locate the hole on the yoke and the hole on the drive shaft (see illustration below).



2. Place the yoke on the shaft as illustrated above.

   The yoke must be fully engaged on the shaft with both holes aligned (one hole over the other).
3. Apply Loctite 243 (medium strength) to bolt threads and insert the bolt firmly into the holes to properly secure the yoke to the shaft.
4. Install a steel wire on the yoke bolt (the wire must be tight around the bolt head, in a fashion that prevents LH rotation) [see Figure 5-12].

Figure 5-12 Steel wire on yoke



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 "Locking Out and Tagging Out the Vehicle" on page 25).

Danger!

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

2. With the shut-off valve closed (see Figure 2-15), 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 shut-off 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 hydraulic 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.

Hydraulic Tank

Inspecting the Hydraulic Tank

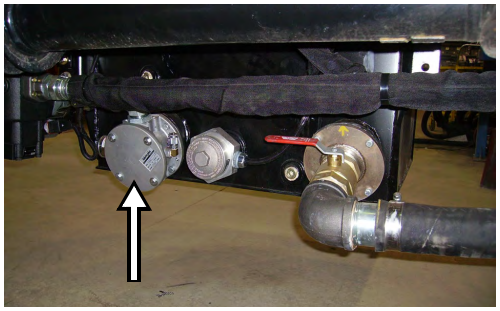
Verify that the oil in the tank is clean (not colored) and always at the appropriate level.

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 *Locking Out and Tagging Out the Vehicle* on page 25).
2. Replace the filter element inside the tank after the first 50 hours of service (see *Replacing Filter Elements* on page 152).

Figure 5-13 Filter housing element



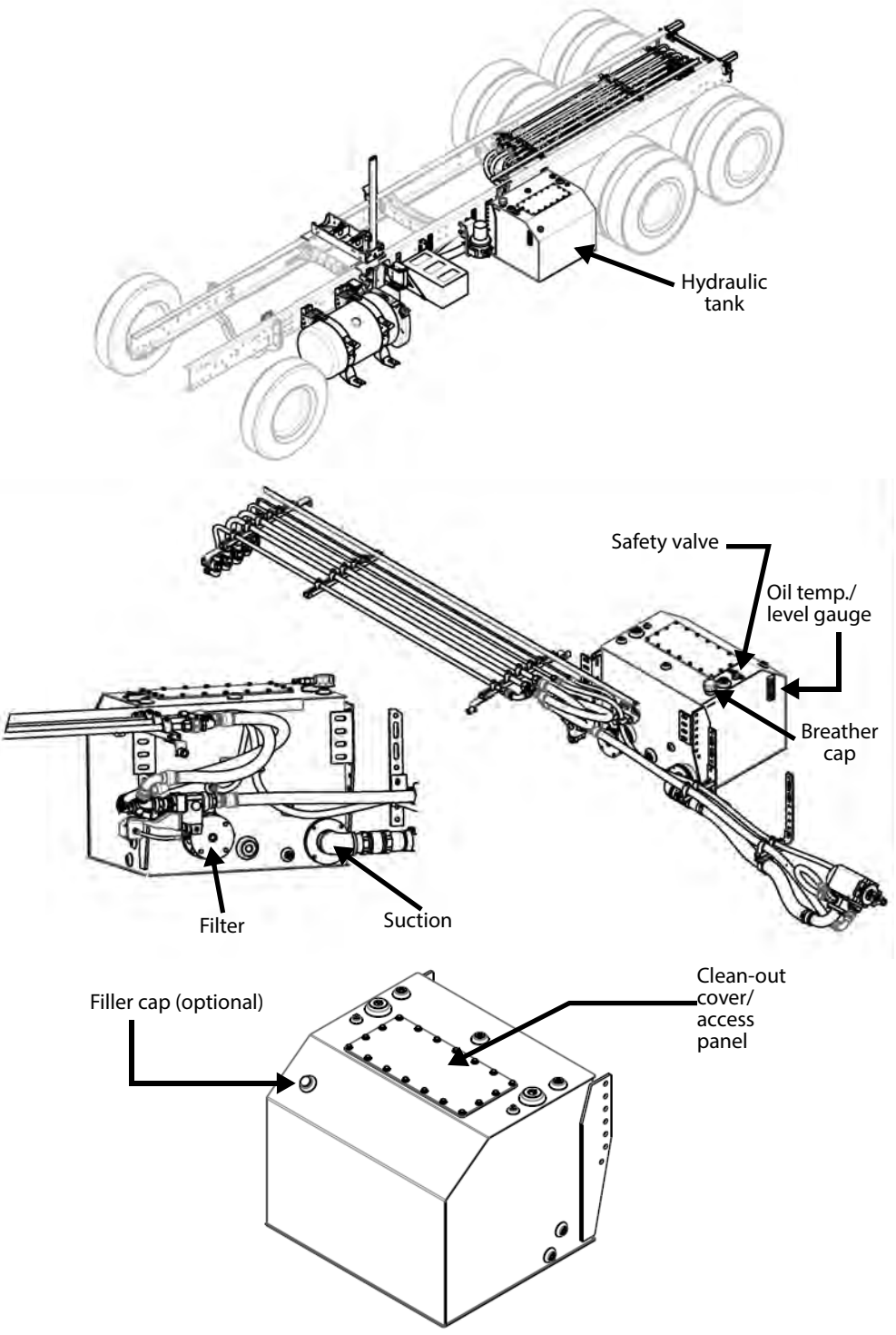
For more information on maintenance schedule, see AUTOMIZER™ *PREVENTIVE MAINTENANCE CHART* on page 32.

3. If the optional filler cap is present on the tank (see Figure 5-14), make sure it is not obstructed and works properly.
4. Make sure that the hydraulic oil is clean (not colored) and that the oil level is at least at ¾ full on the oil level gauge (see Figure 5-14).

   All cylinders must be retracted.

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

Figure 5-14 Steel hydraulic tank



NOTE: The illustration above shows the model of hydraulic oil tank most often installed on our trucks. However, other models exist and your truck may be equipped with one of those.

Inspecting Hydraulic Oil

Inspecting hydraulic oil is a very important maintenance task that must be done as per your *Preventive Maintenance Chart*. The most important items to look at when inspecting hydraulic oil are:

- color
- amount
- texture (usually in the form of air bubbles or foam) and
- temperature

To inspect the hydraulic oil color:

1. Make sure the AUTOMIZER™ is parked in a safe area for maintenance.
2. Turn ON the engine and engage the hydraulic system.
3. Return all hydraulic devices to their "home" position (retract the packer, close the tailgate, etc.).

NOTE: The "home" position is where there is little or no hydraulic oil in the cylinders, which are completely retracted. Most of the oil has flowed back into the tank.

4. Disengage the pump and turn OFF the engine.
5. Inspect the oil through the gauge located on the hydraulic tank.

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 pump.

Emptying the Hydraulic Tank

To empty the hydraulic tank:

1. Prepare the vehicle accordingly:
   - **1 a.** Apply the parking brake.
   - **1 b.** Start the engine.
   - **1 c.** Engage the hydraulic pump.
   - **1 d.** Retract all cylinders (packer, crusher panel, tailgate, etc.).
   - **1 e.** Disengage the hydraulic pump.
   - **1 f.** Stop the engine.
2. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).

3. Clean around the filler cap (see Figure 5-15) and remove it, if present.

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

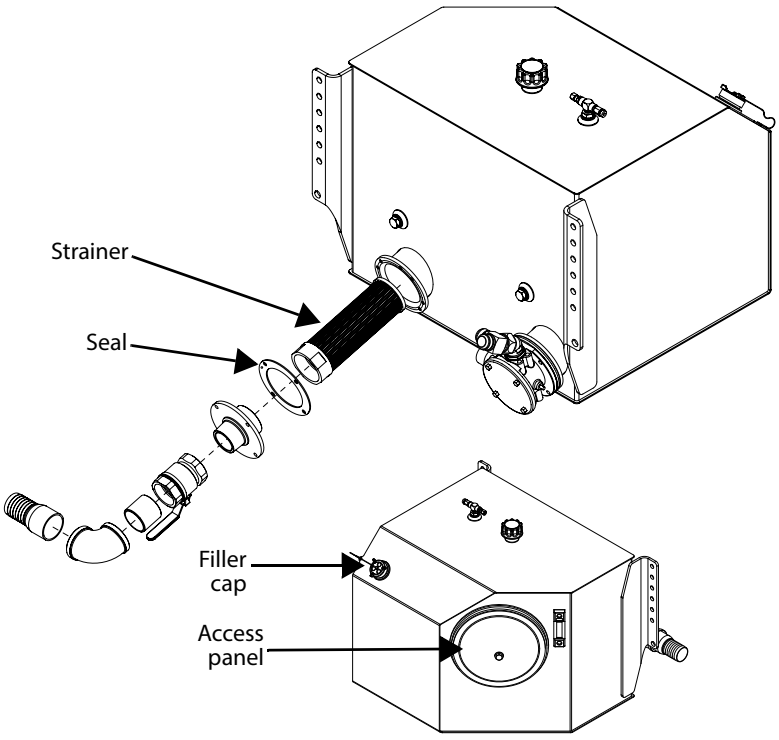
4. Place a clean container (minimum capacity: 60 gallons) under the drain plug.
5. Remove the drain plug under the tank and let the tank drain completely.
6. Reinstall the drain plug.

Cleaning the Strainer

To clean the strainer:

1. Empty the hydraulic tank (see previous section).
2. Remove the hose clamp from the suction hose.
3. Slide the hose over the pipe until it clears the ball valve (slide towards the frame of the vehicle).
4. Remove the strainer from the tank port (see Figure 5-15).
5. Clean the strainer using solvent, and check for damage; replace if necessary.
6. Replace the seal (if necessary).
7. Reinstall the strainer.

Figure 5-15 Strainer assembly on steel tank

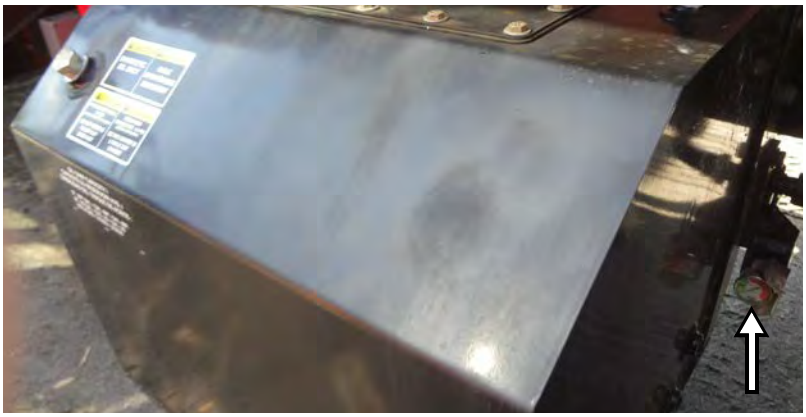


Replacing Filter Elements

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 (see AUTOMIZER™ *PREVENTIVE MAINTENANCE CHART* on page 32).

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

Figure 5-16 Filter restriction indicator (steel tank)

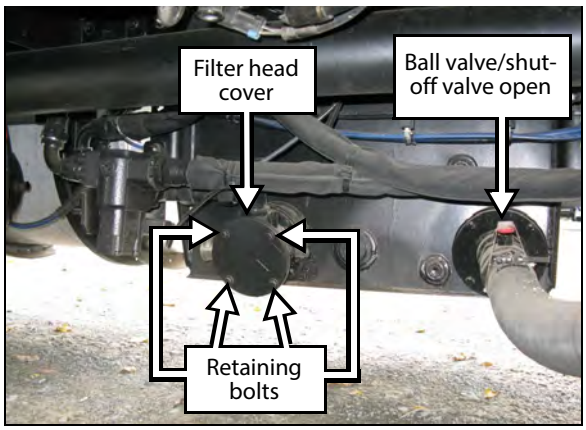


To replace the hydraulic filter:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
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 (see Figure 5-17).

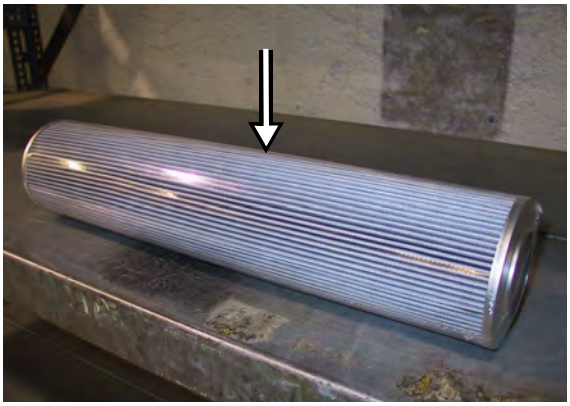
   This in-tank return filter system contains a check valve that closes when the cartridge is removed, thus preventing the whole tank from draining.

Figure 5-17 Filter head cover (cylindrical tank)



4. Replace the filter element with a new one.

Figure 5-18 Filter element



5. Reinstall the filter head cover and put all 4 bolts back in to secure the cover.

Replacing Hydraulic Oil

Caution!

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

IMPORTANT: Hydraulic oil must be replaced at least once a year.

To do so:

1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 150).
2. Empty the suction line.
3. Clean the strainer, if necessary (see *Cleaning the Strainer* on page 151).
4. With a clean dry cloth, remove all metal particles and debris accumulated at the bottom of the hydraulic tank:
   - **4 a.** Remove the screws retaining the access panel (see Figure 5-14 and Figure 5-15).
   - **4 b.** Insert your hand inside and clean the interior with a dry clean cloth.
5. Change the return filter element (see *Replacing Filter Elements* on page 152).
6. Using a filtering screen, refill the tank with high-quality oil until it reaches the ¾ mark on the oil gauge (see *Recommended Lubricants* on page 107 for specifications).

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

Caution!

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

7. If the suction line has been replaced, fill the line until oil reaches the pump (see *Pump Cavitation* on page 203).
8. Reinstall the filler cap, if any, and fully open the ball valve (or shut-off valve).

Caution!

Failure to open the ball valve (or shut-off valve) may seriously damage the pump and the hydraulic system.

9. Prime the pump (see *Priming a New Pump* on page 147).
10. Start the engine.

Pressurizing the Tank System

NOTE: For chassis-mounted tanks only. No pressurization is needed for behind-the-cab mounted tanks.

Cavitation inside the pump generates excessive wear and noise.

To prevent cavitation, air pressure inside the hydraulic tank must be set between 3 and 3.5 psi. A gauge and a pressure regulator are installed to adjust air pressure inside the tank. This gauge is located inside the frame rail on the curbside of the chassis; it can be accessed only when the body is raised.

Danger!

Install the body safety prop before performing any work under the body.

To adjust the pressure, turn the knob until the pressure reaches 3 to 3.5 psi. The hydraulic tank is also equipped with a 5-psi relief valve and a pressurized screw-on breather cap.

Figure 5-19 5-psi relief valve and breather cap

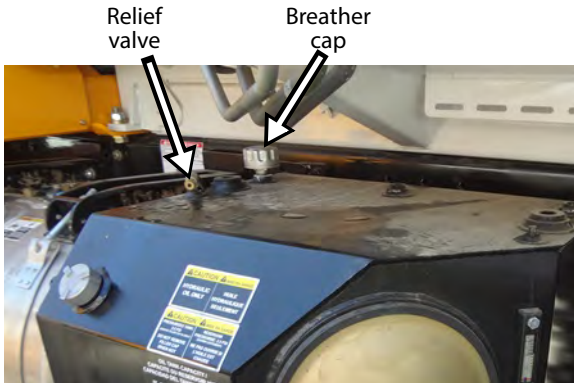
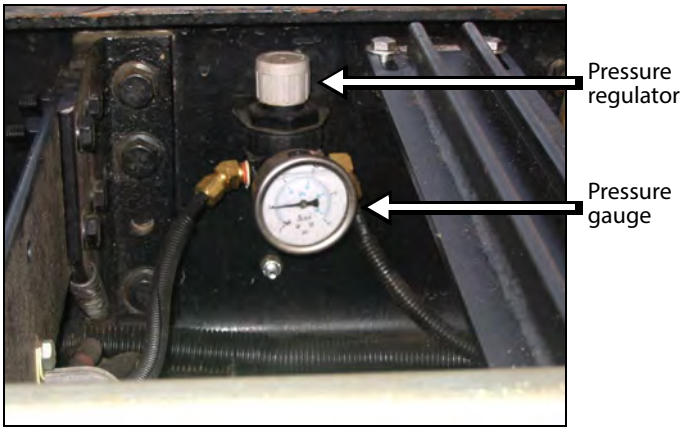


Figure 5-20 Pressure gauge and regulator



Caution! The air pressure inside the tank shall not exceed 5 psi.

NOTE: Check the tank breather cap every week to make sure that it is not clogged. If clogged, replace it with a new one. Replacement of the breather cap should be done concomitantly with the replacement of the hydraulic filter. However, the breather cap does not have to be changed after the first 50 hours of truck service as it is the case for the hydraulic filter. Always open the breather cap slowly.

Inspecting Hydraulic Cylinders

Danger!

Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 25).

IMPORTANT: You must inspect all hydraulic cylinders at least once a month.

When you do so:

1. Make sure that the ball valve (or shut-off valve) [see Figure 5-17] on the suction line is completely open before starting the engine.

Warning!

Failure to open the ball valve (or shut-off valve) may damage the hydraulic system including the pump.

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 cylinders' 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 5-21). 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:

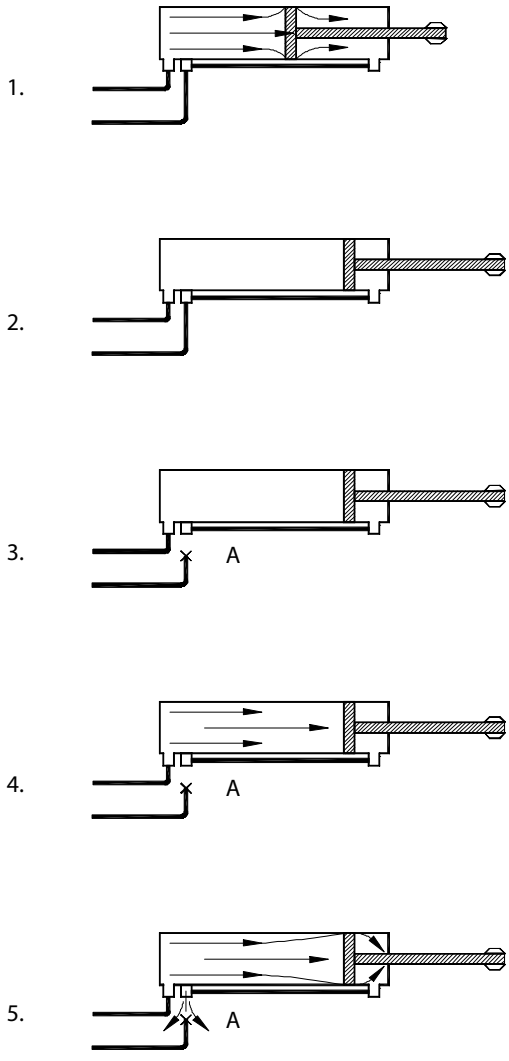
1. Apply all safety measures, and set the parking brake.
2. Pull on the red emergency STOP button.
3. Start the engine and engage the hydraulic pump.
4. Fully extend the packer cylinders, then disengage the hydraulic pump.
5. Disconnect the packer extend proximity switch (Figure 3-55).

   This prevents the packer from returning to its initial position.
6. Disconnect and plug hose "A".
7. Re-engage the hydraulic pump.

8. Push the green 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 5-21 Detecting cylinder internal leaks



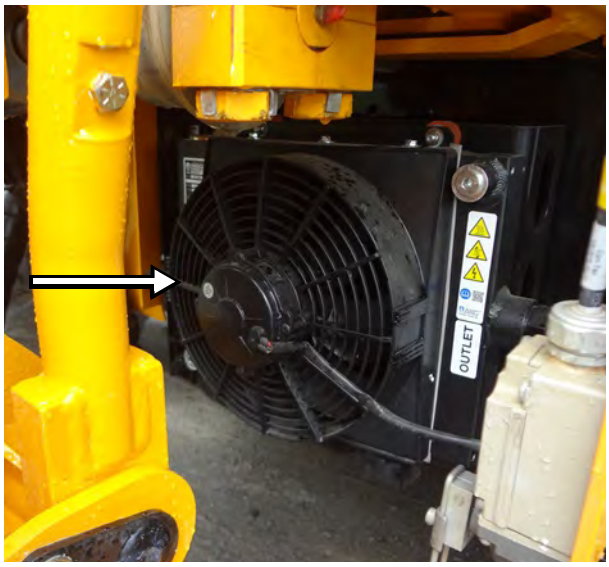
Hydraulic Cooler (optional)

Periodic maintenance is recommended for the AUTOMIZER™ side-loaders equipped with the optional hydraulic oil cooler. The cooler should be cleaned a minimum of every 1000 hours of operation.

Cleaning methods vary depending on the type of contamination (wet or dry). For dry contamination, such as dust, compressed air may be used; if contamination is wet or caked on, the fan unit should be removed from the cooler; then the hydraulic cooler may be treated with a liquid cleaner, flushed with water, and dried with compressed air for drying and removal of debris.

Care should be taken when using compressed air, a high pressure water cleaner or steam cleaner. The electric fan or the fins of the element may be damaged by high pressure water or steam. The blow direction for air, water or steam must be opposite of the direction of normal, fan-driven airflow, parallel to the cooling fins, to ensure effective cleaning. On vehicles used in corrosive environments (salt), clean the cooler frequently with water to prevent corrosion which may damage the element.

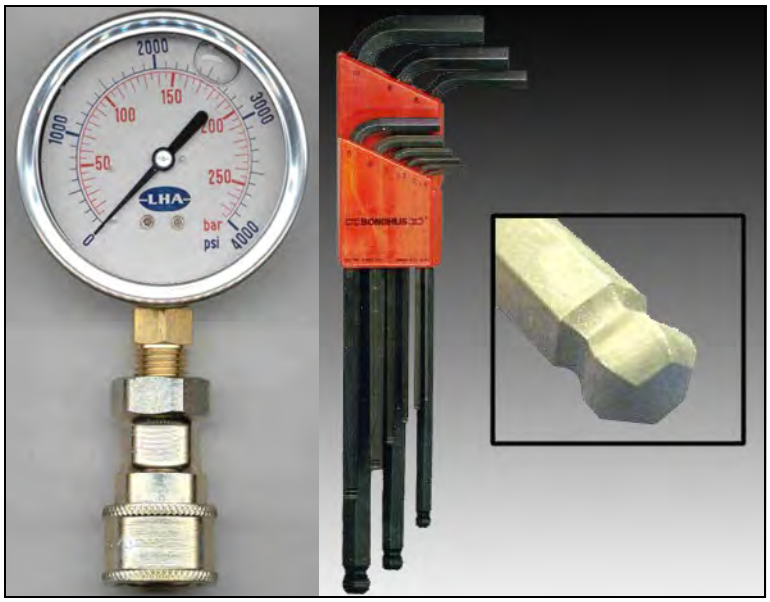
Figure 5-22 Oil Cooler



Hydraulic Pressures

A 0–4000 psi pressure gauge as well as a set of ball-end hex keys are required for adjusting the different working pressures of the truck's hydraulic system (see Figure 5-23).

Figure 5-23 Pressure gauge and ball-end hex key



Adjusting Vane Pump Relief Valves (if equipped)

The body and arm sections of the dual vane pump may have their own relief valve on the dump valve; one located on the pump, the other on the chassis. Adjustment of vane pump relief valves must be done before adjusting the relief valve of the directional control valve.

The following pressure chart shows the correct adjustment pressure for body functions on an AUTOMIZER™ with a standard packer. Use this chart to adjust the relief valve for the body vane pump. For an AUTOMIZER™ equipped with a pendulum packer, see Table 2 on page 160. For arm functions, refer to the *Lifting Arm Supplement* specific to the automated arm of your AUTOMIZER™.

Table 1 Pressure chart (standard packers only)

Pump	Chassis	Cylinder bore (packer)	Main relief pressure (±50 psi)	Dump valve pressure (if equipped) (±50 psi)
Vane pump	6×4 (tandem axle)	4 inches	3000 psi at idle	3300 psi at idle
	4x2 (with tag axle)	4 inches	3000 psi at idle	3300 psi at idle
	4×2 (single axle)	4 inches	2000 psi at idle	2200 psi at idle

Table 2 **Pressure chart (pendulum packers only)**

Pump	Chassis	Cylinder bore (packer)	Main relief pressure (±50 psi)	Dump valve pressure (if equipped) (±50 psi)
Vane pump	6×4 (tandem axle)	4 inches	2700 psi at idle	3000 psi at idle
	4x2 (with tag axle)	4 inches	2700 psi at idle	3000 psi at idle
	4×2 (single axle)	4 inches	2700 psi at idle	3000 psi at idle

Figure 5-24 **Relief valve on pump**

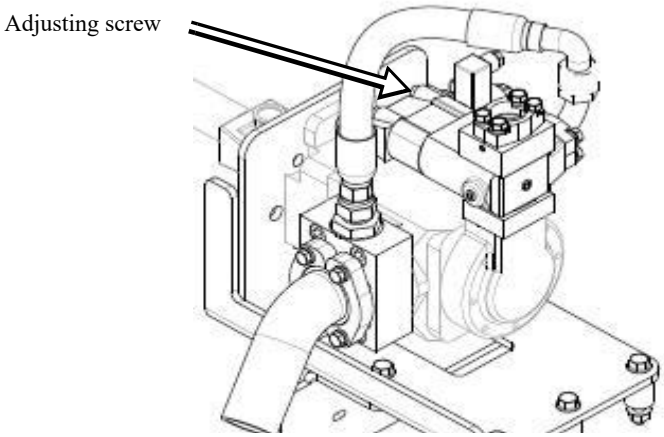
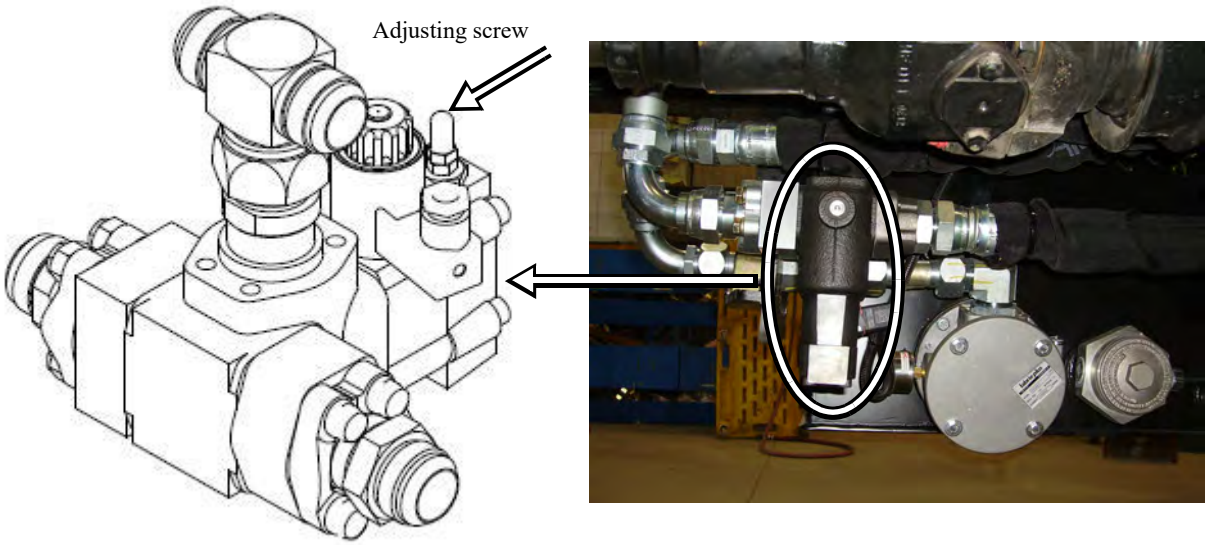


Figure 5-25 **Relief valve on chassis**



To adjust the body vane pump relief valve:

1. With the engine off, install a 0–4000 psi pressure gauge on the quick-connect fitting located at the valve inlet cover.
2. Start the engine and engage the hydraulic pump.
3. Release the body vane pump relief.

   Unscrew the pump relief completely.

   To adjust the vane pump relief valve, fully screw in the main relief body valve adjusting screw (see *Adjusting Pressure on the Air-Actuated Directional Control Valve* on page 162).
4. If your unit is equipped with a standard packer, disconnect the packer extend proximity switch (see Figure 3-55).

   If your unit is equipped with a pendulum packer, disconnect the pack proximity switch (see Figure 3-70).
5. Activate the packer extend or pack function until both packer cylinders reach the end of their stroke.
6. For units equipped with a standard packer, adjust the body vane pump relief valve according to Table 1.

   For units equipped with a pendulum packer, adjust the body vane pump relief valve according to Table 2.
7. Once the body vane pump relief valve is adjusted, back out the main relief.

IMPORTANT: When the body and arm vane pump relief valves are adjusted to the proper pressure, adjust the relief valve of the directional control valve according toTable 1 on page 159 for units with a standard packer or Table 2 on page 160 for units with a pendulum packer.

Adjusting Pressure on the Air-Actuated Directional Control Valve

To adjust the pressure:

1. Start the engine and engage the hydraulic system.
2. Install a 0–4000 psi pressure gauge on the quick-connect coupler located on the hydraulic valve.

Figure 5-26 0–4000 psi pressure gauge

3. If your unit is equipped with a standard packer, disconnect the packer extend proximity switch (see Figure 3-55).

   If your unit is equipped with a pendulum packer, disconnect the pack proximity switch (see Figure 3-70).
4. Activate the packer extend or pack function until both packer cylinders reach the end of their stroke.
5. Check the pressure on the gauge to make sure the pressure builds up in the system.
6. Adjust the directional control relief valve as needed by loosening the locknut and by turning the adjusting screw (see Figure 5-27).

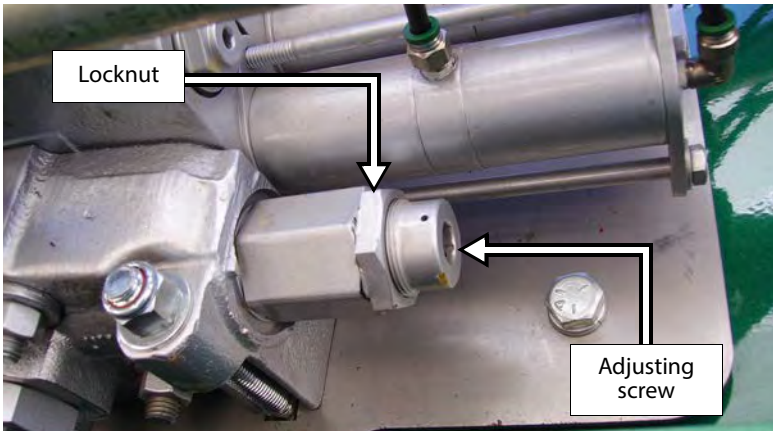
   In the case of an AUTOMIZER™ equipped with a standard packer, the pressure should be set to the pressure indicated in Table 1 on page 159.

   In the case of an AUTOMIZER™ equipped with a pendulum packer, the pressure should be set to the pressure indicated in Table 2 on page 160.

   Using a ½" Allen key, turn the adjusting screw clockwise to increase pressure or counter-clockwise to reduce pressure.

   Use a 1½" key to screw/unscrew the locknut.
7. Reconnect the packer extend proximity switch (see Figure 3-55) or the pack proximity switch (see Figure 3-70).

Figure 5-27 Relief valve



Adjusting the Body Relief Valve (Electro-Hydraulic Valve Only)

To adjust the body relief valve:

1. Once the body vane pump relief valve is adjusted, back out the main relief (see F on Figure 5-28).
2. Install the pressure gauge at the valve inlet cover (see E on Figure 5-28).
3. If your unit is equipped with a standard packer, disconnect the packer extend proximity switch (see Figure 3-55).

   If your unit is equipped with a pendulum packer, disconnect the pack proximity switch (see Figure 3-70).
4. Activate the packer extend or pack function until both packer cylinders reach the end of their stroke.
5. If this is not reading, adjust the utility section of the electric valve (see next section).
6. If your unit is equipped with a standard packer, set the pressure at idle to 2000 psi for a single axle or to 3000 psi for a tandem chassis or a 4x2 chassis with a tag axle.

   For an AUTOMIZER™ unit with a pendulum packer, set the pressure at idle to 2700 psi for a 6x4 chassis or a 4x2 chassis with or without a tag axle.

Adjusting the Utility Section (Electro-Hydraulic Valve Only)

To adjust the utility section:

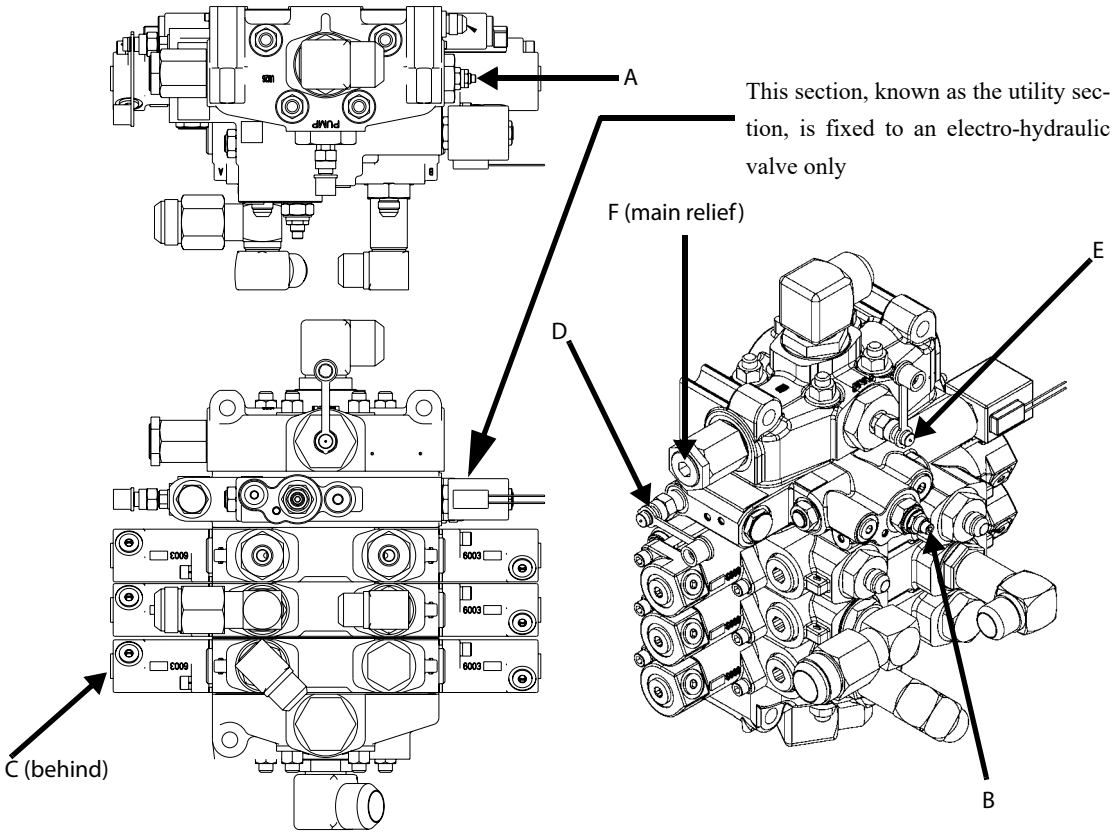
1. Disconnect the Body Up coil (see C on Figure 5-28).
2. Connect a 0–600 psi pressure gauge to the inlet cover (see E on Figure 5-28).
3. Back out the generated pilot pressure valve (see A on Figure 5-28).
4. Turn ON the pump.
5. With the engine at idle, adjust the generated pilot pressure (see A on Figure 5-28) to 420 psi (±20 psi) while the Body Up function is activated. The valve adjusting screw is located on the right-hand side of the valve section when facing it.
6. Reconnect the Body Up coil.

7. Remove the pressure gauge from the inlet cover and install it on the pilot pressure port (see D on Figure 5-28).
8. If your unit is equipped with a standard packer, disconnect the packer extend proximity switch (see Figure 3-55).

   If your unit is equipped with a pendulum packer, disconnect the pack proximity switch (see Figure 3-70).
9. Back out the pressure reducing valve (see B in Figure 5-28).
10. Activate the packer extend or pack function until both packer cylinders reach the end of their stroke.
11. .Adjust the pilot pressure to 550 psi (±20 psi) using the adjusting screw located at the front of the valve (see B on Figure 5-28).
12. Test the valve.

    The valve should shift sharply.

Figure 5-28 Valves and ports (on an electro-hydraulic valve)

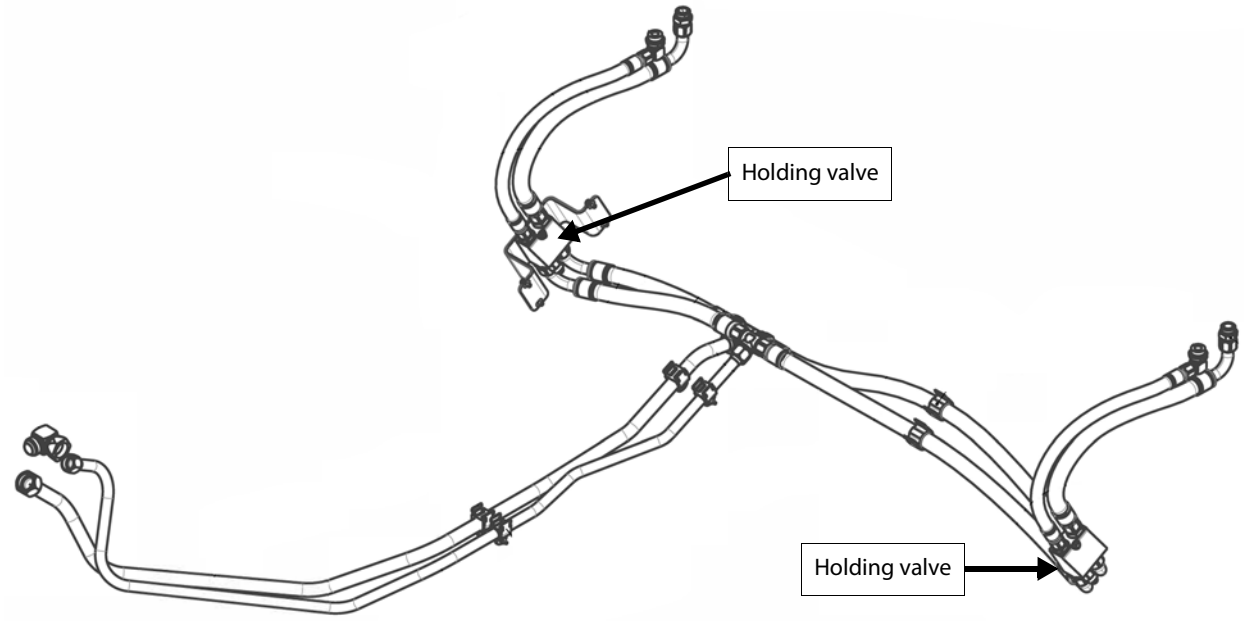


Adjusting Packer Holding Valves

NOTE: This section applies only to all AUTOMIZER™ units equipped with a pendulum packer.

Your AUTOMIZER™ unit has two (2) packer holding valves, one on each side of the body (see Figure 5-29).

Figure 5-29 Packer hydraulic system



Setting the correct pressure for both packer holding valves is crucial to ensure safe, efficient, and leak-free operation of the packer mechanism. Here's how to set the correct pressure safely and accurately:

Warning!

Always follow the manufacturer's instructions for your specific truck and valve model. Working with hydraulics can be dangerous due to high pressure.

NOTE: A packer holding valve is used to maintain hydraulic pressure in the packer cylinder when the pump is off or neutral. It prevents drift or backflow of the cylinder. It is a counterbalance valve with a pressure setting.

NOTE: The precise adjustment of this valve to 2000 psi can only be done with a test bench.

To adjust the packer holding valve:

1. Ensure the truck is parked on level ground.
2. Start the engine and engage the PTO.
3. Run the packer to its fully retracted position.
4. Disengage the PTO and shut the engine.
5. Observe whether the packer moves downward after a specific period of time.
6. If it does, proceed with the proper adjustment:

   6 a. First determine what type of holding valve is present on your AUTOMIZER™ unit.

   It will be labeled either CBEH-LKN or CBEH-LJN on the cartridge (see Figure 5-30).

   6 b. Adjust the valve with proper tools (usually an Allen wrench).

   For a CBEH-LKN valve, the adjustment range is 1000 to 2500 psi. Turn the adjustment screw (see Figure 5-31) fully counterclockwise. Then, turn it 1.25 turns clockwise. This should correspond to a 2000 psi adjustment.

   For a CBEH-LJN valve, the adjustment range is 2000 to 5000 psi. Turn the adjustment screw (see Figure 5-31) fully clockwise. This should correspond to an adjustment of 2000 psi, the minimum adjustment for this cartridge.

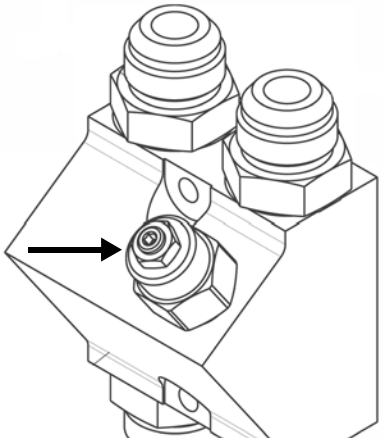
NOTE: Turning the adjustment screw counterclockwise will increase the holding pressure, turning it clockwise will decrease it.

NOTE: If, even after adjusting the holding valve pressure to around 2000 psi, the packer continues to descend, the cartridge may be defective or the cylinder may be bypassing.

NOTE: If the packer becomes unstable when moving down after adjusting the holding valve pressure, reduce the pressure by turning the adjustment screw clockwise 1/8 turn at a time.

Figure 5-30 Type of holding valve written on SUN cartridge

Figure 5-31 Adjustment screw



7. Once the adjustment is done, start the truck and engage the PTO.
8. Cycle the packer and re-check.
9. Verify that the holding valve is working properly.

   In case of drifting, increase pressure slightly and test again.
10. Tighten the adjustment screw locknut.
11. Inspect for any hydraulic leaks.
12. Repeat this procedure for the other holding valve on the opposite side of the body.

Warning! Do not exceed the rated pressure of the cylinder or valve.

Adjusting Pressure on the Proportional Valve

Refer to the *Lifting Arm Supplement* specific to the automated arm you are operating to correctly adjust the pressure for each function of the arm.

Pressure and Cycle Time Chart

Table 3 Pressure and Cycle Time Chart - VG-35 Circuit

Function	Pressure Setting	Engine RPM	Minimum Cycle Time (sec.)	Maximum Cycle Time (sec.)
Main relief valve (4x2 chassis)	2000 ± 50 psi	700	n/a	n/a
Pendulum: Main relief valve (4x2 chassis)	2700 ± 50 psi	700	n/a	n/a
Main relief valve (4x2 chassis w/ tag or 6x4 chassis)	3000 ± 50 psi	700	n/a	n/a
Pendulum: Main relief valve (4x2 chassis w/ tag or 6x4 chassis)	2700 ± 50 psi	700	n/a	n/a
Dump valve R5P (if adjustable) - 4x2 chassis	2200 ± 50 psi	700	n/a	n/a
Pendulum: Dump valve R5P (if adjustable) - 4x2 chassis	3000 ± 50 psi	700	n/a	n/a
Dump valve R5P (if adjustable) - 4x2 chassis w/ tag or 6x4 chassis	3300 ± 50 psi	700	n/a	n/a
Pendulum: Dump valve R5P (if adjustable) - 4x2 chassis w/ tag or 6x4 chassis	3000 ± 50 psi	700	n/a	n/a
Body hoist up	1700 ± 100 psi (non adjustable)	700	30.0	40.0
Body hoist down	n/a - single acting cylinder	700	15.0	25.0
Packer extend	system pressure	700	n/a	n/a
Packer retract	system pressure	700	n/a	n/a
Packer complete cycle without regeneration	n/a	1200	10.0	12.0
Pendulum: Packer complete cycle	system pressure	700	14,0	18,0
Packer complete cycle without regeneration, with an E-PTO	n/a	1900	18,0	21,0
Packer complete cycle with regeneration	n/a	700	12.0	14.0
Pendulum: Packer holding valve	2000 ± 50 psi	700	n/a	n/a
Pilot generating relief valve on utility section (electro-hydraulic valve only)	420 ± 20 psi	700	n/a	n/a
Pressure reducing valve on utility section (electro-hydraulic valve only)	550 ± 20 psi	max.	n/a	n/a

Table 3 Pressure and Cycle Time Chart - VG-35 Circuit

Function	Pressure Setting	Engine RPM	Minimum Cycle Time (sec.)	Maximum Cycle Time (sec.)
Tailgate up	system pressure w/ power bleed	700	15.0	21.0
Tailgate down	system pressure w/ velocity fuse to drain	700	15.0	26.0
Tailgate holding valve (to keep TG closed)	600 ± 50 psi	700	n/a	n/a

6

Electrical System

This chapter is divided into two sections. The first section describes how the electrical components work and the second section describes how to adjust and repair the electrical components.

Electrical Schematics

Electrical schematics are provided as part of the AUTOMIZER™ documentation package, located inside the cab.

The electrical schematics show how components are wired to each other. These schematics are useful when diagnosing electrical circuits and should be kept for future reference.

Each AUTOMIZER™ unit has its own set of electrical schematics based on the options that are installed.

At the end of this chapter you will find a set of electrical schematics which are given as examples and may differ from the schematics found in the cab of your truck. For specific details pertaining to your truck, always refer to the schematics located inside the cab.

How the Electrical System Works

The electrical system includes the following components:

- Control panel
- Electronic controllers
- Harnesses
- Valve controls
- Limit/proximity switches
- Sensors (ex. temperature, pressure sensors)

The control panel is centrally mounted in the cab. It has push-buttons, toggle switches and warning lamps. The multiplex monitor may be placed directly on the panel (as illustrated) or fixed next to it.

Some units also have auxiliary controls located on the curbside or streetside of the truck.

The multiplex electronic controller makes the truck more reliable by reducing the number of wires and components. Electrical maintenance is different from relay logic. The use of this electronic controller enables mechanics to perform troubleshooting, which facilitates the debugging process.

Labrie Environmental Group offers training on this technology. To learn more about multiplex electronic controllers and training schedule, please call Labrie*Plus*.

Proximity switches control packer and tailgate operations, and provide the means for safety lockouts.

Limit switches control packer, crusher panel and arm operations, and provide the means for safety lockouts.

Harnesses connect all electrical components. They are generic and therefore may contain wires and connectors that are not used. Make sure unused connectors are always protected by caps in order to avoid electrical failure.

Adjusting and Repairing Electrical Components

The required electrical system adjustments include:

- Fuses and circuit breakers
- Limit and proximity switches

Fuses and Circuit Breakers

Power for the electrical system on board the AUTOMIZER™ is protected by a set of fuses and circuit breakers.

Fuses

Two fuses (30A and 40A), which are located inside the ignition relay box (see Figure 6-3), are used to protect the Labrie electrical system.

The 40A circuit is subdivided into 2 secondary circuits (10A and 30A) which are protected by in-line fuses.

Figure 6-1 Circuit schematic - Ignition relay box

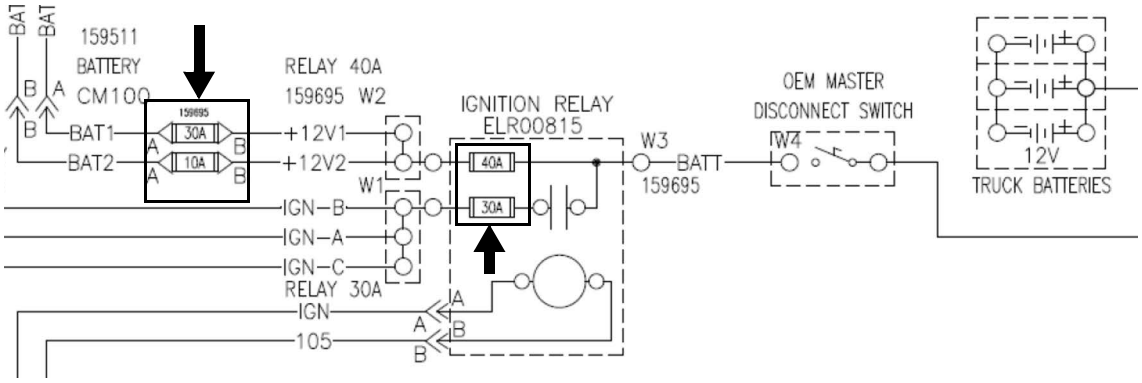


Figure 6-2 Ignition relay box (with/without cover)

NOTE: When a fuse blows, always replace it with a fuse of the same kind and same amperage. Fuses 30A and 40A are protected by a plastic cover (see Figure 6-3). Just remove that plastic cover to gain access to these fuses. For fuses 10A and 30A found just outside the relay box (see Figure 6-4), they are also protected by a plastic cover that needs to be removed to gain access to the fuse. Always check amperage before attempting to replace a dead fuse.

Figure 6-3 Fuses inside relay box

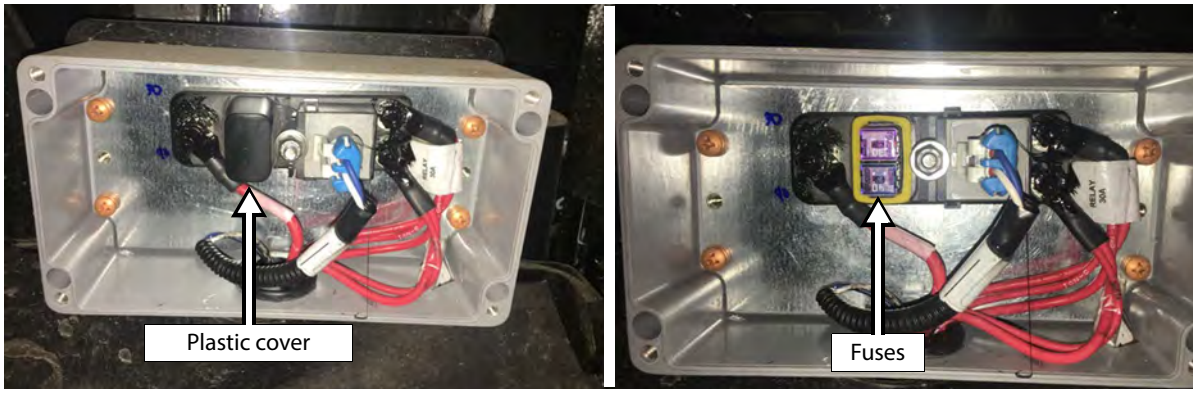


Figure 6-4 Fuses outside relay box

Circuit breakers

The AUTOMIZER™ may have up to 6 manual reset circuit breakers, depending on the options installed. These breakers are located within the in-cab control box.

Mounted on each circuit breaker is a button which, once pushed, resets the breaker (see Figure 6-5).

Figure 6-5 Circuit breaker

Caution!

Never hold down the reset button when the reset operation fails. This may result in severe electrical damage. Report this problem to your supervisor and maintenance department.

NOTE: Consult the OEM manual for information on equipment not manufactured by Labrie Environmental Group.

The following table provides a description of the circuit breakers located in the control box inside the truck cab.

Function	Ampere	Circuit Number
Monitor (W2)	10	141
Cab fan (W3)	15	135
Scale Air-Weigh System power & acc. (W4)	10	161
Electronic controller (W5)	10	168

Limit and Proximity Switches

Limit and proximity switches act as remote electrical ON/OFF switches.

The following is a list of limit and proximity switches that are installed on an AUTOMIZER™ unit:

- Packer extend proximity switch
- Packer retract proximity switch
- Tailgate unlocked proximity switch
- Tailgate fully open proximity switch
- Hopper door proximity switch - All AUTOMIZER™ units except Pendulum
- Crusher panel up limit switch (optional)
- Crusher panel up proximity switch (optional) - Pendulum only
- Arm stowed limit switches (2)
- Body raised limit switch

For information on the limit and proximity switch adjustment, go to page 76 and the following.

Warning! Limit and proximity switches must operate properly. Improperly adjusted limit/proximity switches may cause serious damage or even death.

Multiplex System-Related Interventions

The following interventions will enhance the effectiveness and efficiency of the multiplex control system.

IFM Program Update Process

Occasionally, the Labrie IFM multiplex control system program may require modification or updating. If a revision to the control system program is required, the following list of action items must be addressed prior to making a program change:

- Verify the program number and revision currently installed.
  - Place the vehicle ignition key in the on/run position. When the IFM display shows its home screen, press the button below “Menu" on the IFM display. The system “MAIN MENU” screen will appear.
  - Using the up/down arrow on the IFM display module, highlight “Program Version”, and press the button below “OK”.
  - The current program and revision is listed next to “Module 10 =”. The program number should match the new program to be installed, the revision number will be different (example: if the program number currently installed is “10_10922”_R3”, the new, updated program number to be downloaded would have a higher revision; i.e. “10_10922_R4”).
  - Press the button below “Esc” to return to the “MAIN MENU” screen.
- Verify the current baud rate setting.

NOTE: This setting must match the chassis baud rate. Otherwise, the J1939 CAN data bus communication can be corrupted.

  - In the “MAIN MENU” screen, using the up/down arrow button on the IFM display module, highlight “Settings”, and press the button below “OK”. The “Settings” screen will appear.
  - Using the up/down button, highlight “J1939 Baud rate”, and press the button below “OK”. The “J1939 Baud rate” screen will appear. Note the current “Baud rate”; either 250 or 500.
- Upload the program that is currently installed prior to re-programming. To do so, use Service Kit 01208.

Figure 6-6 Service kit #01208

Labrie does not archive previous revisions of programs; this will ensure if there is any issue with the new program the original may be installed back into the module. Failing to upload the original program will result in it being lost when the revised program is installed.

- Connect a PC with the CoDeSys program installed, to the Labrie control console.
- Turn the vehicle ignition to the on/run position
- Open the IFM Download program on the PC.
- Select the Identity tab to ensure that the PC is communicating with the Labrie IFM system.
- Select the Upload tab. A prompt will appear to name the program; typically, the original program and revision number is used.
- Save the program on the PC (This will take several minutes).
- Once the IFM program uploads an "UPLOAD COMPLETE" message will appear; select "OK".

After completing these steps, the new program may be downloaded.

Once the download is completed, click on the "RUN" button on the Download program (see Figure 6-7). Check to ensure that the baud rate setting matches the original setting noted earlier to avoid chassis/Labrie system communication issues.

Figure 6-7 Download program

Once the updated program is loaded and verified to be working correctly the original uploaded file should be deleted from the PC to avoid future confusion.

J1939 Baud Rate

Starting in 2016, chassis manufacturers increased the J1939 communication data bus baud rate from 250 Kbps to 500 Kbps. If the baud rate is incorrectly set, the chassis may generate multiple and various fault codes.

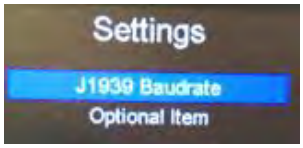
If re-programming the system or replacing node 10, the baud rate should be recorded prior to the work being performed, then checked/adjusted after the work is performed to match the previous setting. Failure to do so may result in chassis fault codes.

To ensure the baud rate setting is correct and the chassis is communicating with the Labrie multiplex system, it may be checked and adjusted using the Labrie multiplex display screen. With the engine running, depress the menu button to access the main menu. Use the directional pad to highlight **I/O STATUS**, and press **OK**.

In the Module I/O Status menu, use the directional pad to highlight **J1939**, and press **OK**.

The J1939 screen shows the values that Labrie's multiplex system is sampling from the chassis multiplex system. Verify that these systems are correctly communicating by accelerating the engine; the Engine rpm value on the Labrie J1939 screen should match the chassis dash tachometer.

If the engine rpm value on the Labrie system is not changing and synchronized with the chassis tachometer, the baud rate most likely needs to be reset to 500 Kbps. Effective early 2016, The Labrie system has been modified to allow changes to this value. Using the directional pad, select the **SETTINGS** option in the main menu and press **OK**. Then, highlight the **J1939 BAUDRATE** and press **OK**.



The baud rate may be changed by depressing either the left or right arrow on the directional pad, to select 500 Kbps. After any modification to the baud rate, the ignition switch must be turned off for at least 10 seconds to reset the system. Go back into the Settings option and verify the baud rate value.

Ensure that the Labrie system and the chassis system are communicating correctly by checking the engine rpm as explained earlier.

Checking Control Module (Node) Supply Voltage

A benefit to the IFM multiplex control systems used on the AUTOMIZER™ is the ability to verify inputs and outputs through the display screen quickly, without the need to connect a diagnostic reader or laptop PC. However, prior to checking the status of these outputs, the supply power voltage for each control module (Node) must be checked to ensure that it is at least 12 volts.

Effective on production models manufactured in early 2017, the diagnostic features of the IFM multiplex control system have been further enhanced; supply voltages for the control modules (Nodes) may now be checked through the on-board display, as follows:

1) Turn the ignition switch to the "run" position, activating the IFM display.

2) On the IFM display, select "Menu", then select "I/O Status".

3) Using the up/down arrows on the directional pad, scroll down and select "Others".

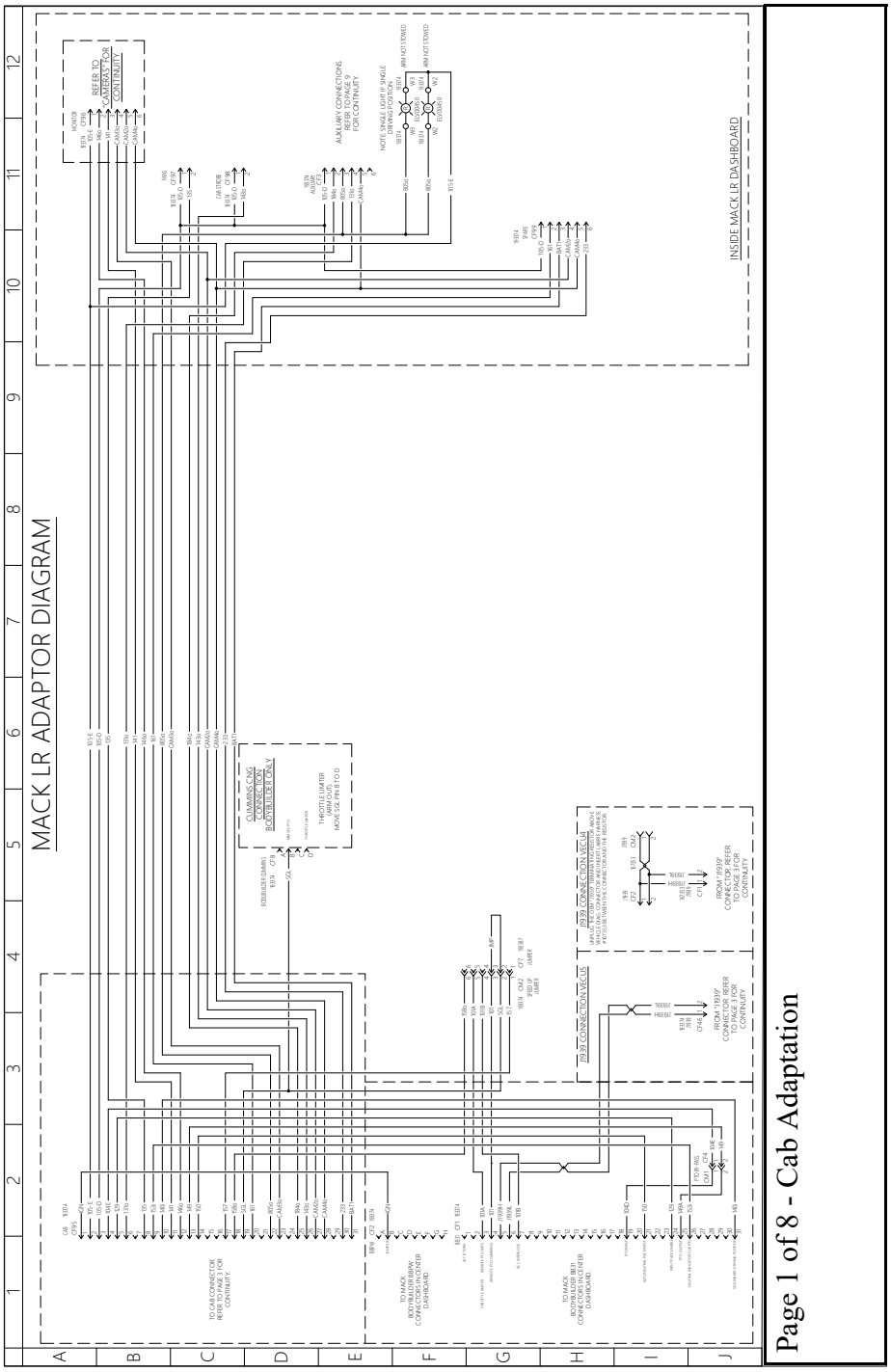
4) The real-time supply voltages of the control modules (Nodes) will be displayed:

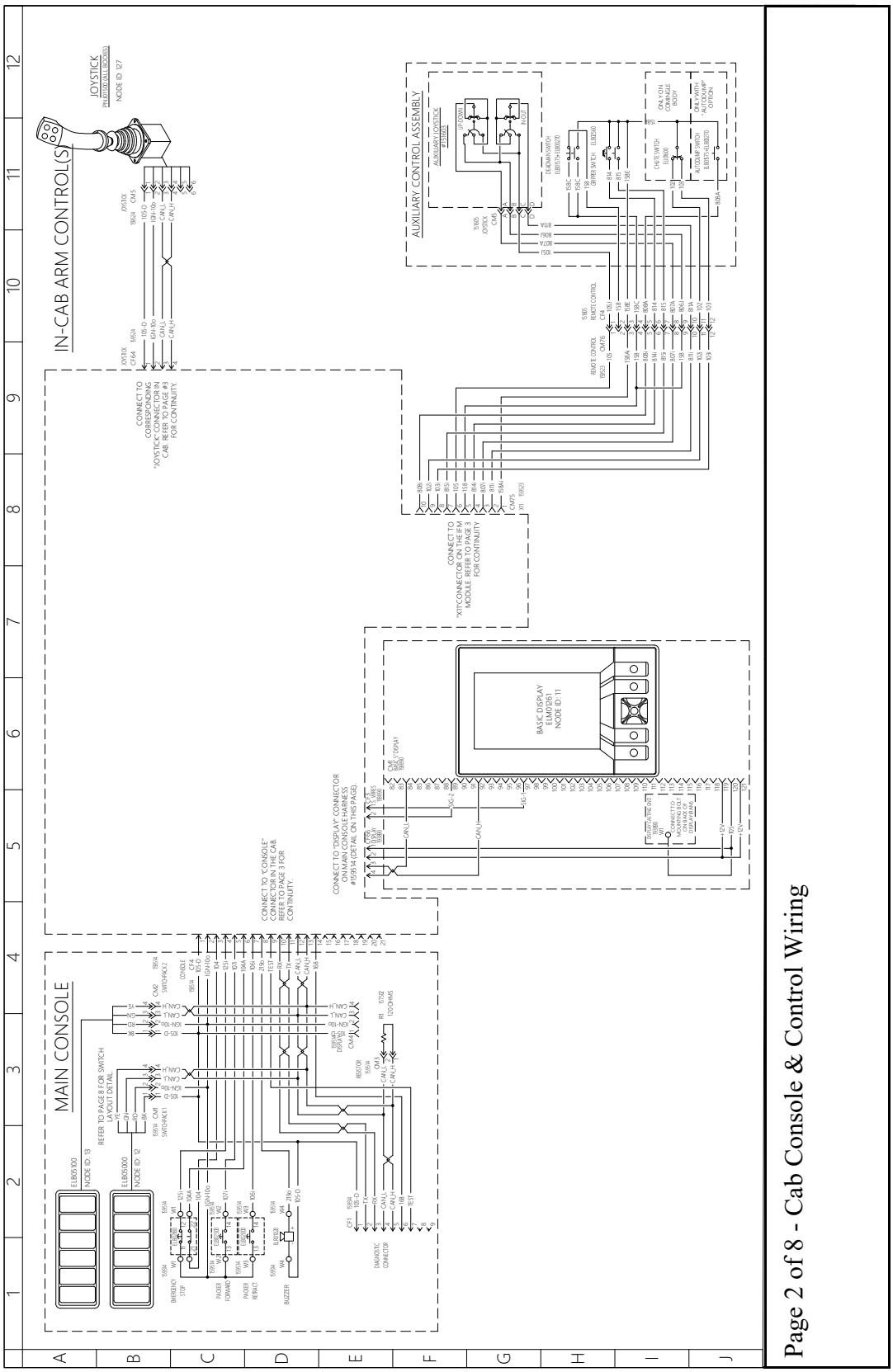
If voltage(s) are below 12 volts, check the supply power to the module; if all voltages are below 12 volts, check the chassis battery voltage.

This helps diagnose error messages such as a module disconnected or functions of a module not receiving their outputs. Once the supply voltages have been verified, further troubleshooting of various outputs may then be investigated.

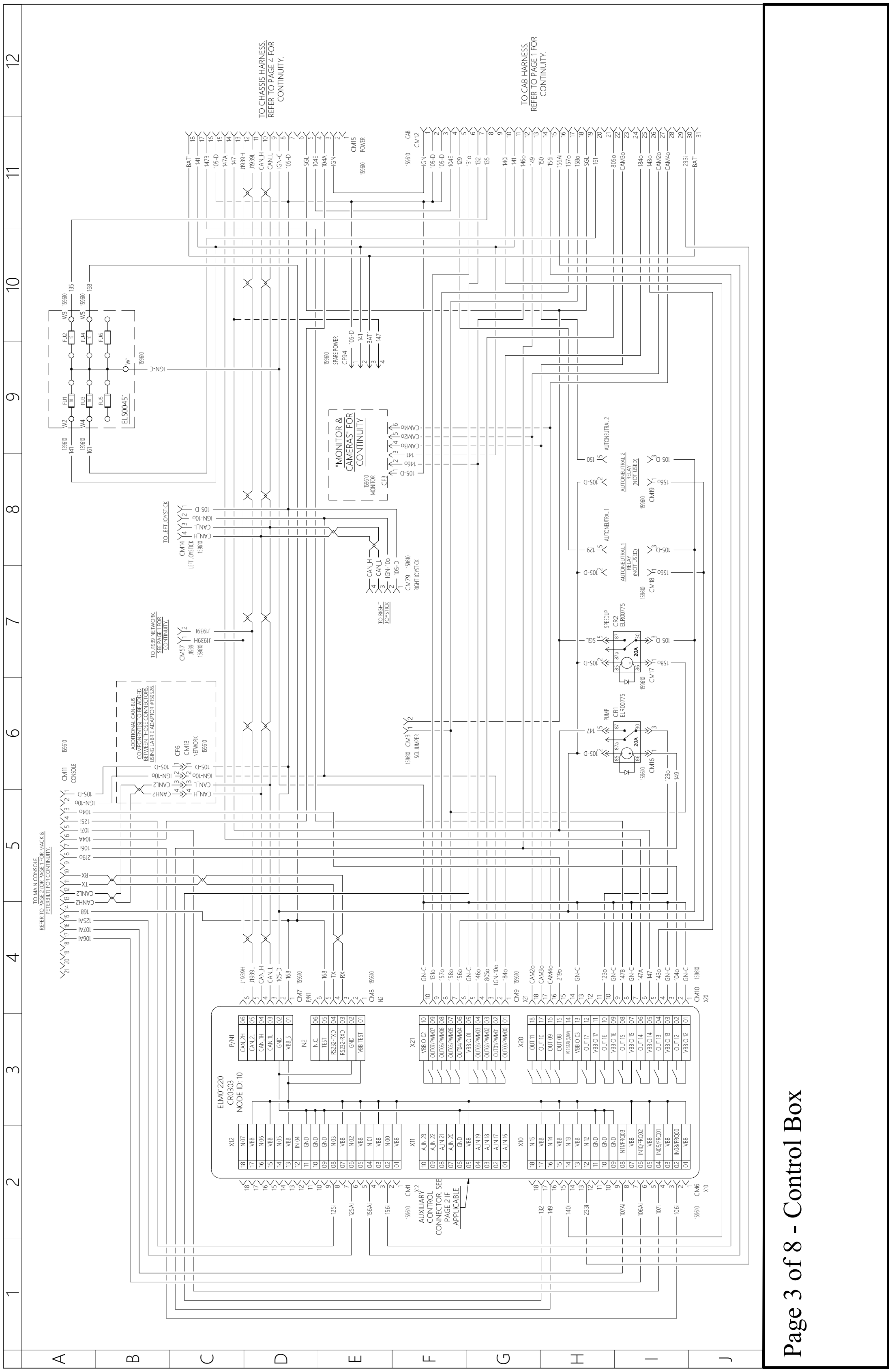
Electrical Schematics

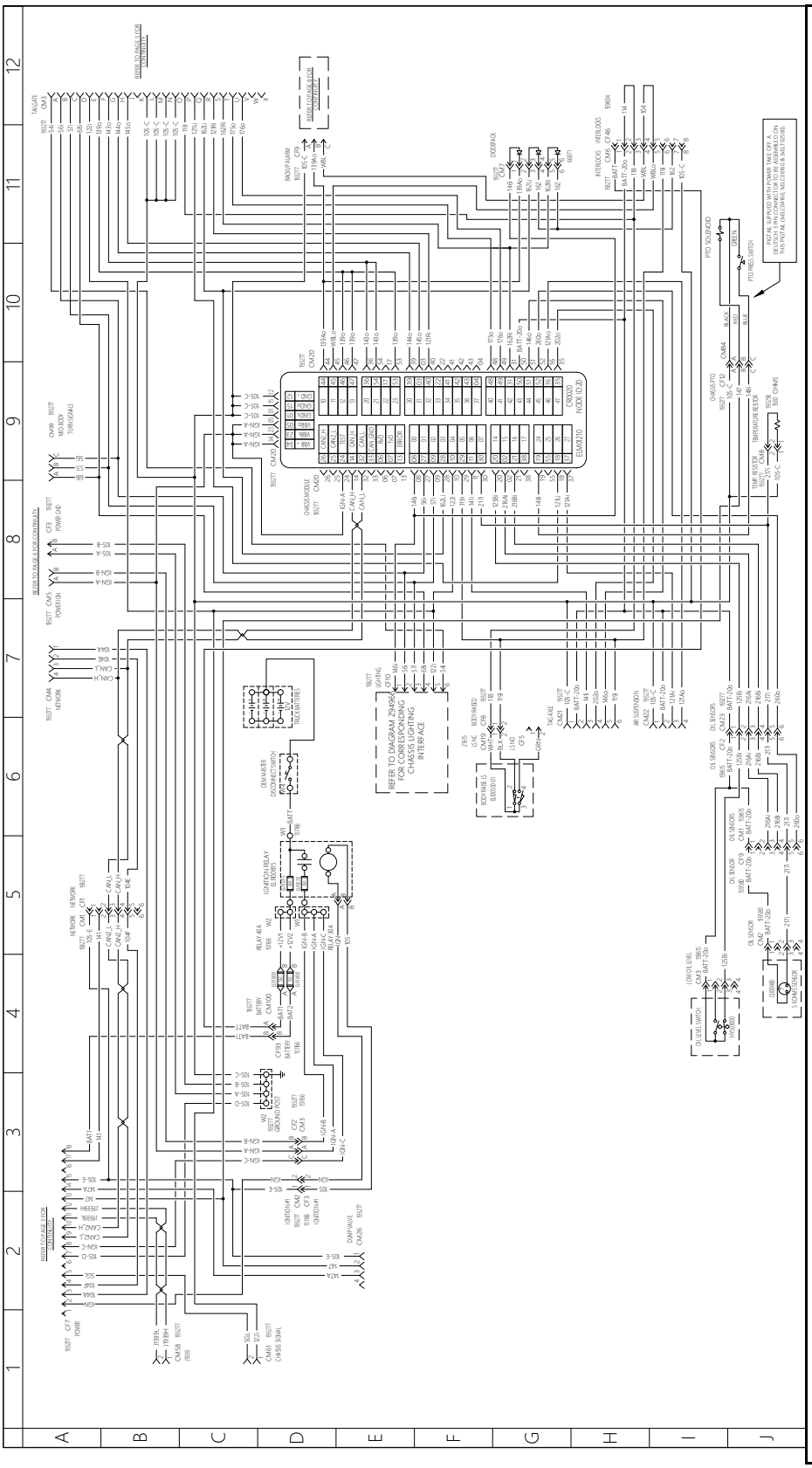
NOTE: The following schematics are shown for reference only. Always refer to the schematics and diagrams provided with your truck for information about installation and wiring connections that is specifically related to your AUTOMIZER™ unit.



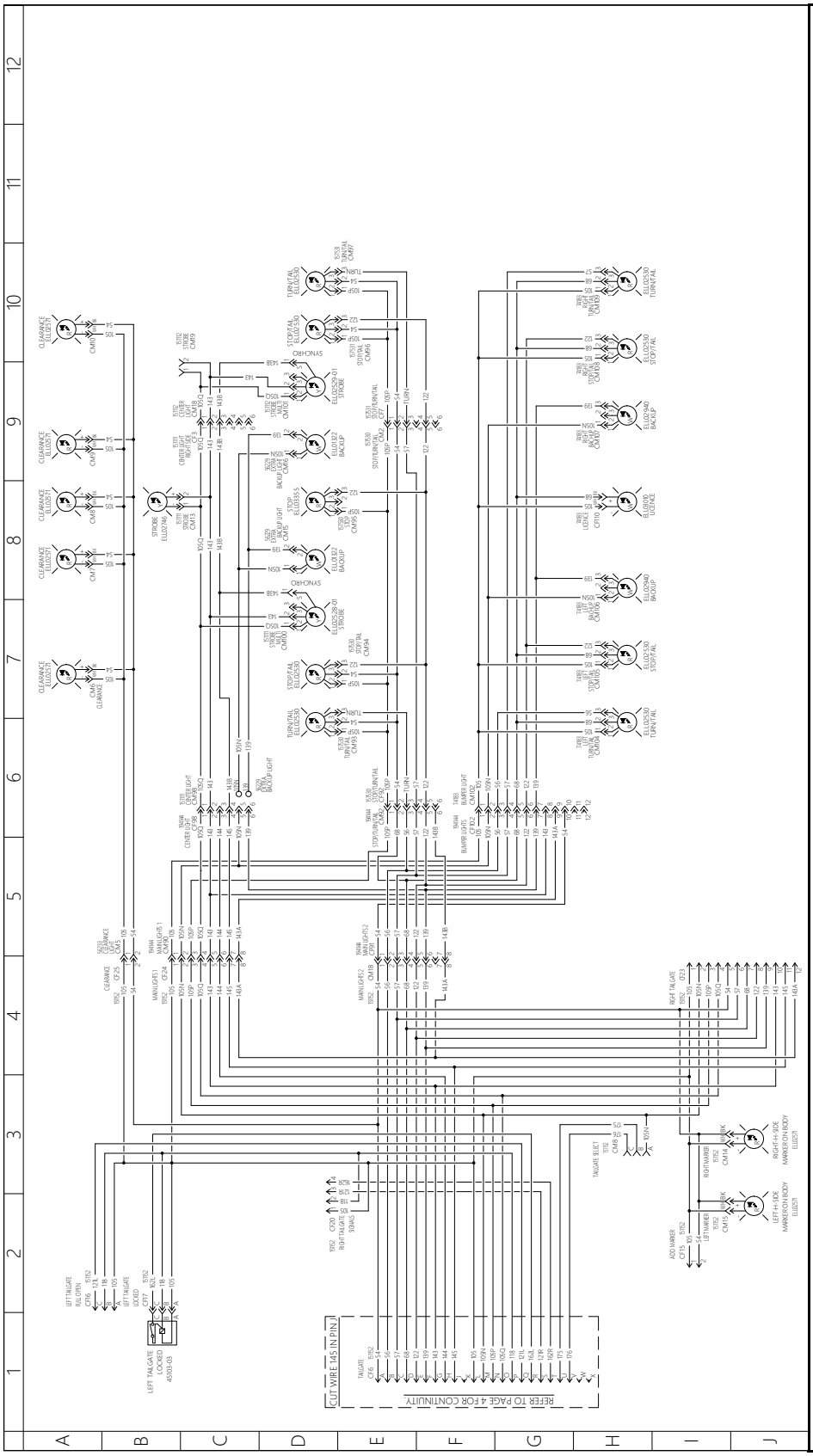


Page 2 of 8 - Cab Console & Control Wiring

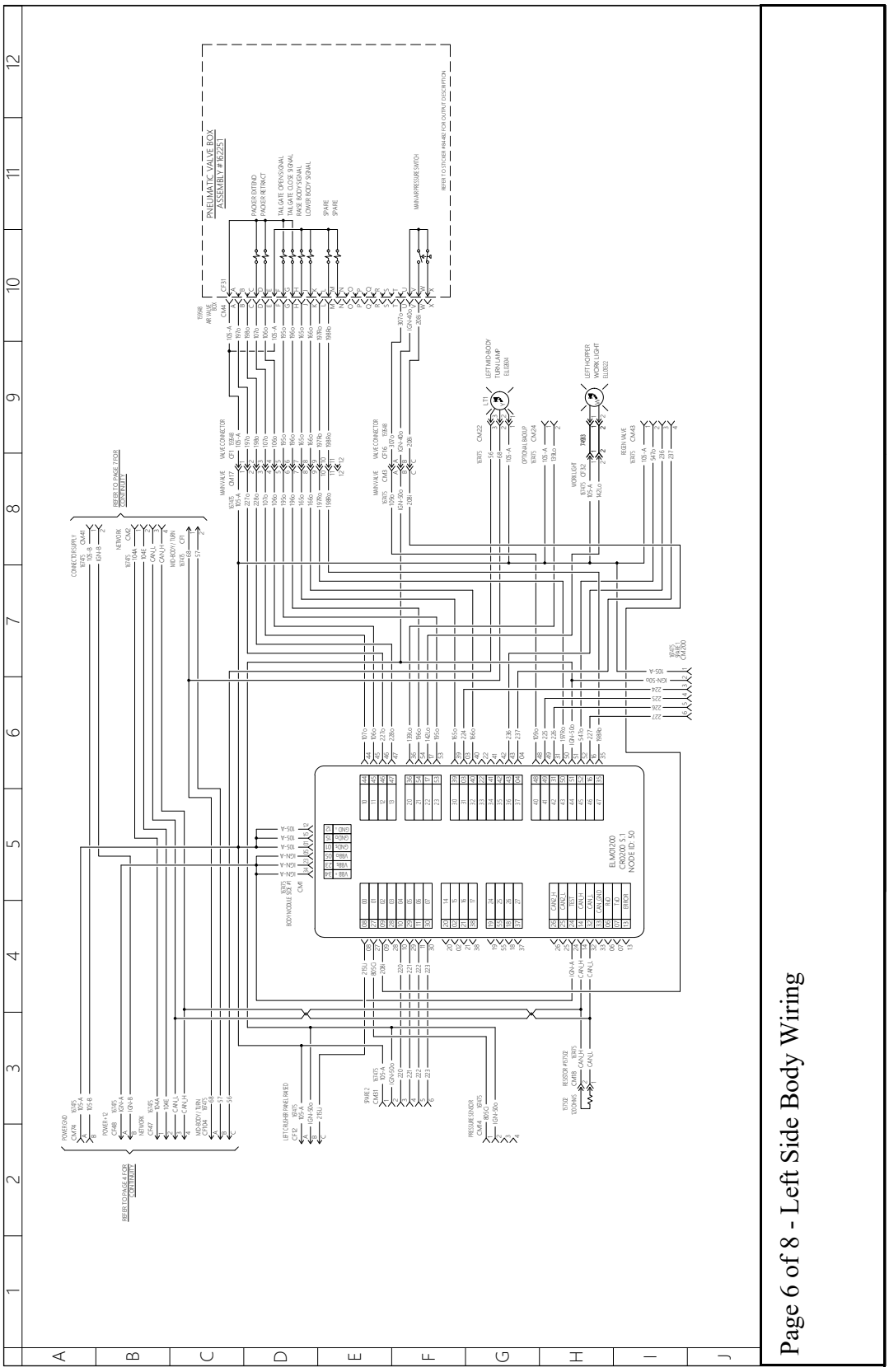

Page 3 of 8 - Control Box
TO CHASSIS HARNESS. REFER TO PAGE 4 FOR CONTINUITY.
TO CAB HARNESS. REFER TO PAGE 1 FOR CONTINUITY.
"MONITOR & CAMERAS" FOR CONTINUITY
TO LEFT JOYSTICK
TO RIGHT JOYSTICK
TO J1939 NETWORK. SEE PAGE 1 FOR CONTINUITY.
TO MAIN CONSOLE
AUXILIARY CONTROL CONNECTOR. SEE PAGE 2 IF APPLICABLE
ELM01220
CR0303
NODE ID: 10
ELS00451
SPEED/UP
PUMP
AUTONEUTRAL 1
AUTONEUTRAL 2

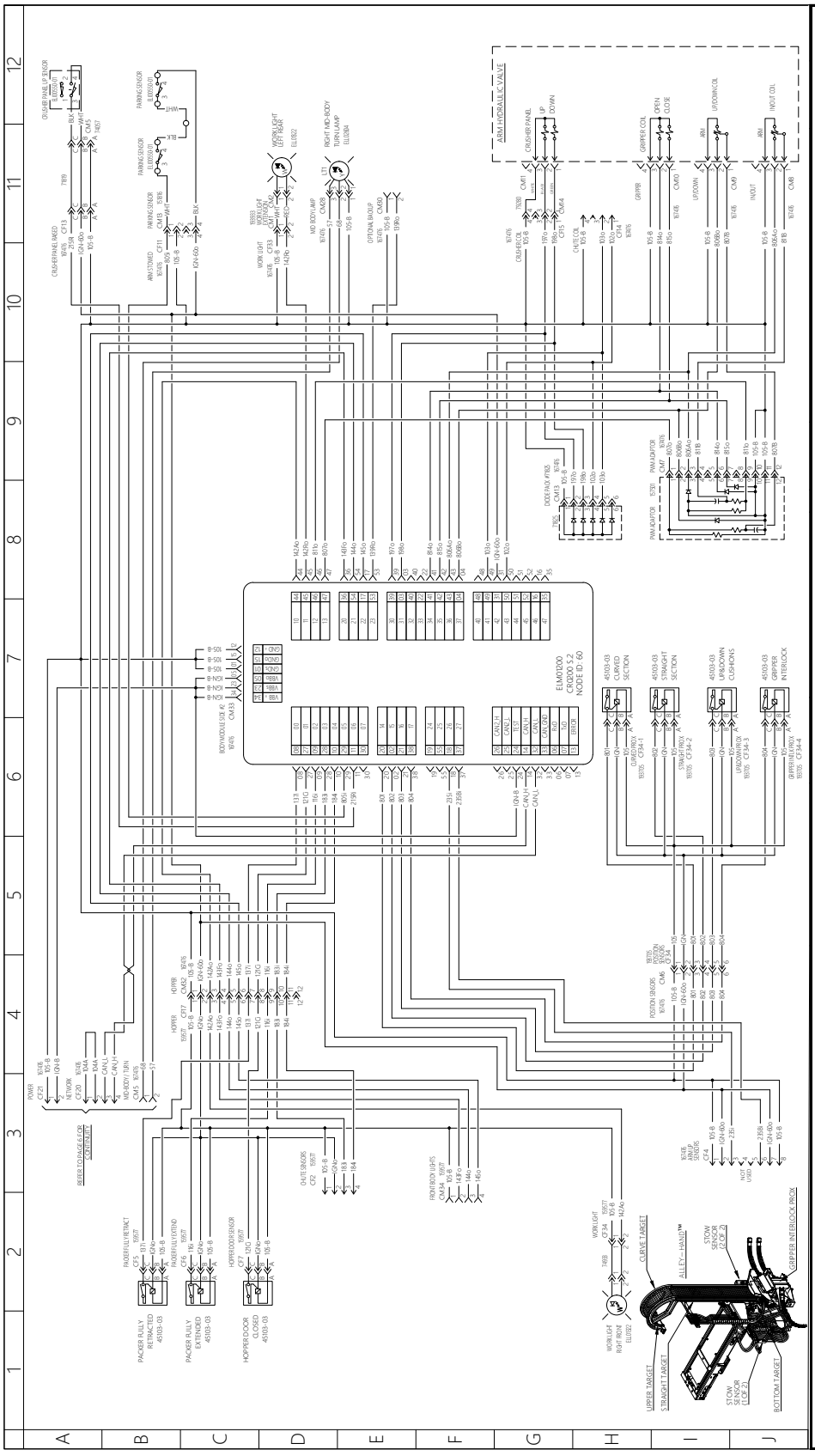


Page 4 of 8 - Chassis



Page 5 of 8 - Tailgate Lighting

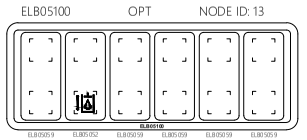

PNUEMATIC VALVE BOX
ASSEMBLY # 162251
ELM07020
CR02020 S.1
NODE ID: 50
Page 6 of 8 - Left Side Body Wiring

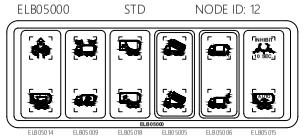


Page 7 of 8 - Right Side Body Wiring

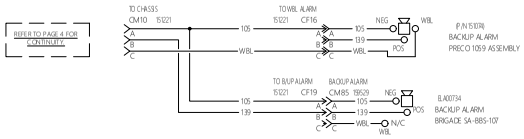
NO LABRIE INSTALLED CAMERA ON
CURRENT TRUCK(S).

PACKER CONTROL LAYOUT
INSIDE CAB





DUAL ALARM



Page 8 of 8 - Camera(s), Switchpack Details & Options

7

Pneumatic System

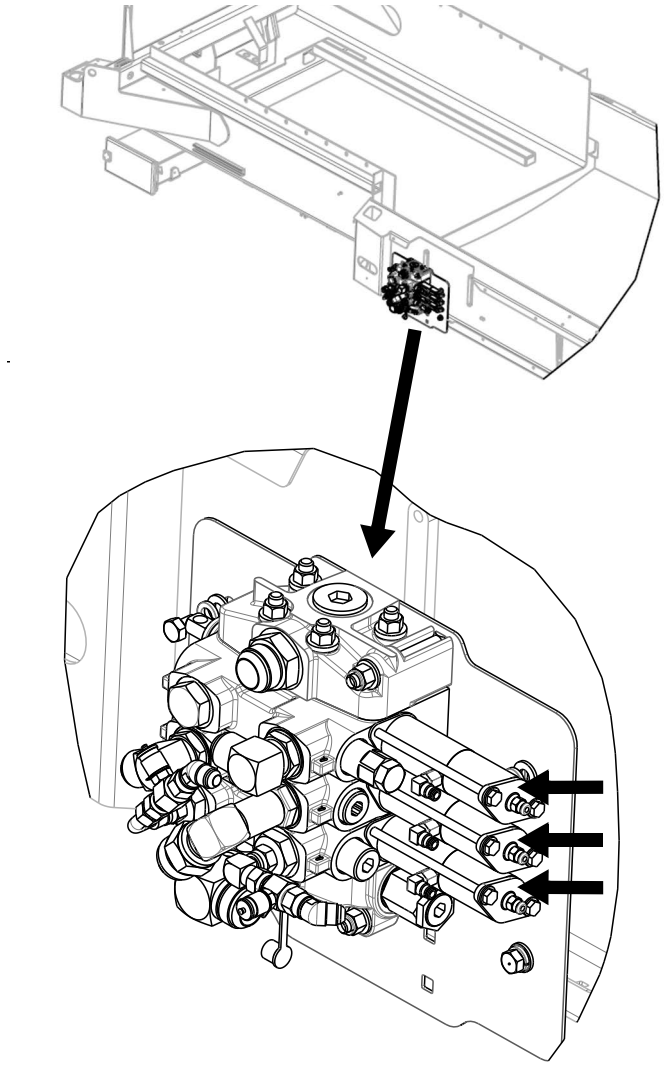
The air (pneumatic) system is crucial for efficient brake and body operations.

NOTE: Before searching for parts, identify the type of cab of your unit (cab over or conventional). The mounting of some components for the body depends on the type of cab configuration.

Air Actuators

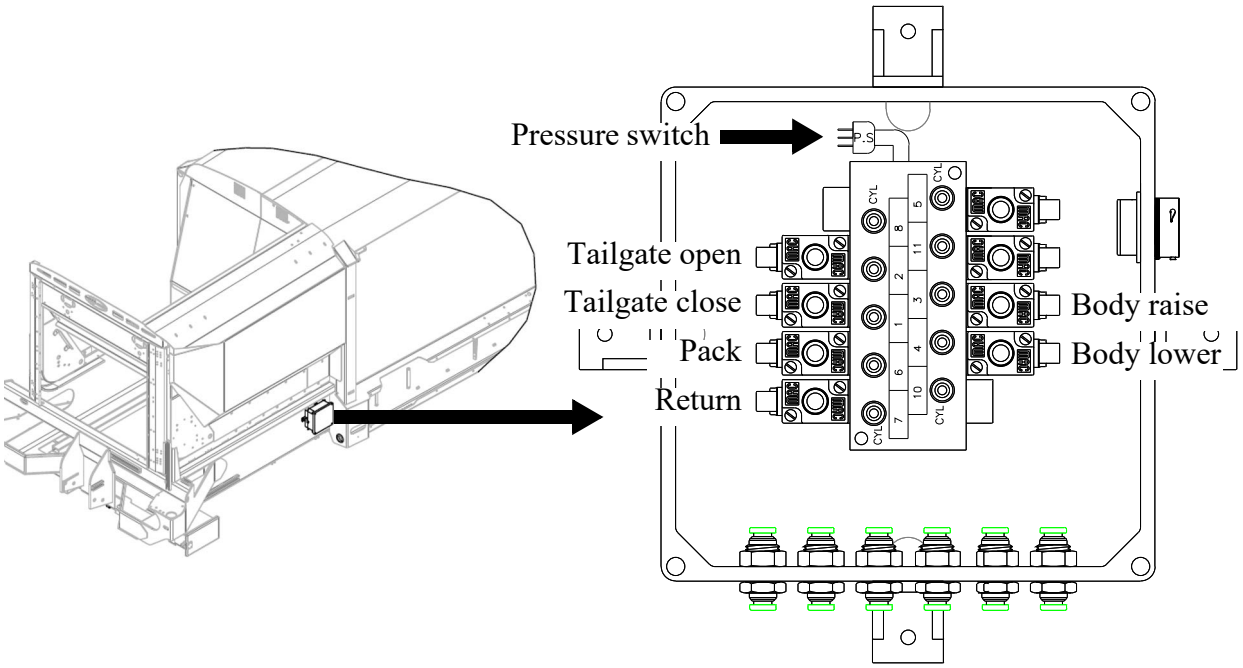
The main hydraulic valve, which controls body functions, is activated by air actuators.

Figure 7-1 Air actuators



When the tailgate or body switch on the control panel is activated, the corresponding solenoid valve in the pneumatic valve box (see Figure 7-2) sends air to the corresponding air actuator on the main valve. This results in a movement of the hydraulic spool inside the valve.

Figure 7-2 Pneumatic valve box



The packer system is similar except that the electric signal goes through the electronic module, located on the truck body, before reaching the pneumatic valve box. For more details, see page 195.

To avoid affecting control of the packer or other air systems on the vehicle (especially under cold weather conditions), you must maintain the air system regularly: drain all air tanks and the air filter assembly (see Figure 7-4) at the end of every workday and prior to any maintenance work. Also, both filter elements of the air filter assembly must be replaced twice a year.

Air Actuator Maintenance and Replacement

Air from the air valves is routed to the air actuators mounted on the hydraulic valve sections. The air actuators are dedicated to a particular hydraulic function and influence the direction in which the valve spool is moved. The air actuators have two ports in a cylinder case located on either side of a piston, which is attached to the valve spool. As air is supplied to a port, it pushes the piston, which in turn, shifts the valve spool to operate the function. Once the air supply is removed from the actuator, the valve spool is centered by its spring, and the actuator returns to the neutral position.

The air actuators on the valve assembly look very similar to each other; all actuators are the same except the actuator on the tailgate raise/lower section. The tailgate air actuator limits the stroke of the valve spool due to the hydraulic needs of the tailgate circuit and the power-bleed circuit.

When troubleshooting an actuator that is not operating correctly, refer to the following tips:

- Verify the air actuator is receiving the proper air pressure. To do this:
  - Install a 0-150 psi air gauge in-line with the pressurized line.

  - The gauge should read a minimum of 90 psi.
- Verify the opposite port of the air actuator is not plugged. To do this:
  - Remove the air line from the air actuator and operate.
- Verify that the air pressure inside the air actuator is not bypassing internally by following these simple steps:
  - Remove both air lines from the air actuator.
  - Apply shop air to one side of the air actuator while feeling/listening for air exhausting from the opposite port of the air actuator. Repeat in both directions.
  - If air is bypassing, service or replacement of the air actuator is necessary.
- Ensure the inside of the air actuator is free from debris and damage. Clean with a lint-free rag and lightly lubricate with Parker's Super-O-Lube or a silicon-based equivalent.

Labrie*Plus* offers a seal kit to replace the internal seals in the actuator. Contact Labrie*Plus* for more details.

Air Tanks

To avoid problems with the air system of your AUTOMIZER™ (especially in cold weather conditions), Labrie Environmental Group strongly recommends draining the air tanks at the end of every workday and prior to any maintenance.

Caution

The operator **must** wear safety glasses to protect his eyes against dust and suspended matters. The operator must also stay away from the stream to avoid potential injuries.

To drain the air tanks, apply the following procedure:

1. Locate the drain valves on the air tanks (see Figure 7-3).

NOTE: Some trucks are equipped with more than one drain valve.

2. Open the valves by turning them one-quarter turn clockwise.

IMPORTANT: Before opening the valves, be sure to stay away from the stream.

3. Leave the valves open until moisture is removed.
4. When all moisture has been drawn out, close the valves by turning them one-quarter turn counter-clockwise.

Figure 7-3 Drain valves

IMPORTANT: Pay particular attention to the dryer cartridge. On this type of equipment, the compressor works all the time due to the frequent use of the brake system. As a result, a lot of moisture is injected into the air system. For more information, see *Air Dryer* on page 194.

Air Filter Assembly

The air filter assembly is composed of two main parts: the water filter element and the coalescing filter (see Figure 7-4). Both filters must be changed twice a year and both bowls must be drained at the end of every workday.

To bleed the air filter assembly, do the following:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
2. Using a rag, unscrew the drain screws (see Figure 7-4).

   This will bleed all the water from the water filter bowl and all the air from the coalescing filter bowl.

   The water filter bowl helps keep residual moisture out of the body air system while the coalescing filter bowl helps capture particles in the air stream.
3. Once both bowls have been completely drained, screw back the two drain screws.

To change both filters of the air filter assembly, do the following:

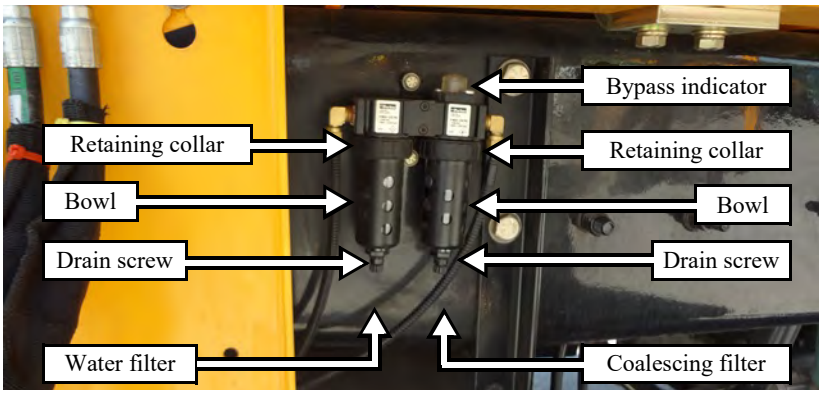
1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
2. Shut off the air supply and depressurize the unit before servicing.
3. Unscrew the retaining collar of one of the bowls.
4. Unscrew the bowl.

NOTE: Avoid scratching internal surfaces.

5. Replace the filter element.
6. Reverse the procedure to reinstall the other components (bowl and retaining collar).

7. Repeat Steps 3 - 6 for the other filter bowl.

Figure 7-4 Air filter assembly

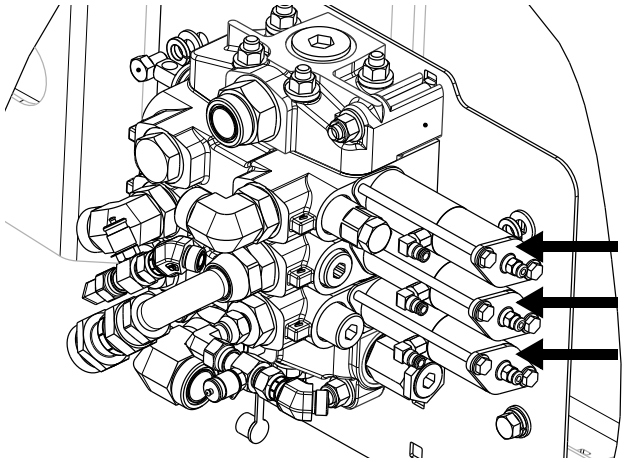


Packer Air System

The hydraulic valve, which controls some of the hydraulic functions, is equipped with air actuators.

The packer air actuator pushes back and forth on the hydraulic spool of the valve, resulting in a movement of the packer (extension or retraction).

Figure 7-5 Packer air actuators



As the packer reaches the end of a stroke, the proximity switch, located behind the packer, sends a signal to the electronic module to indicate that the packer has reached the end of its stroke. The multiplex module then operates the air solenoid valve, inside the pneumatic valve box, with a 12-volt signal (one signal for packer extend, one signal for packer retract).

When receiving the 12-volt signal (extend or retract) from the module, the air solenoid valve enables the air pressure to reach the actuator on the main control valve. The spool moves according to the signal received.

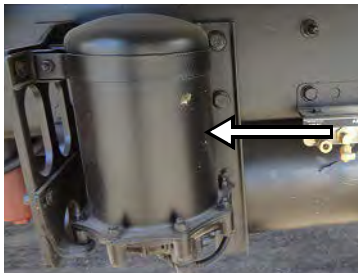
Air Dryer

Some units are equipped with an air dryer (see Figure 7-6) 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.

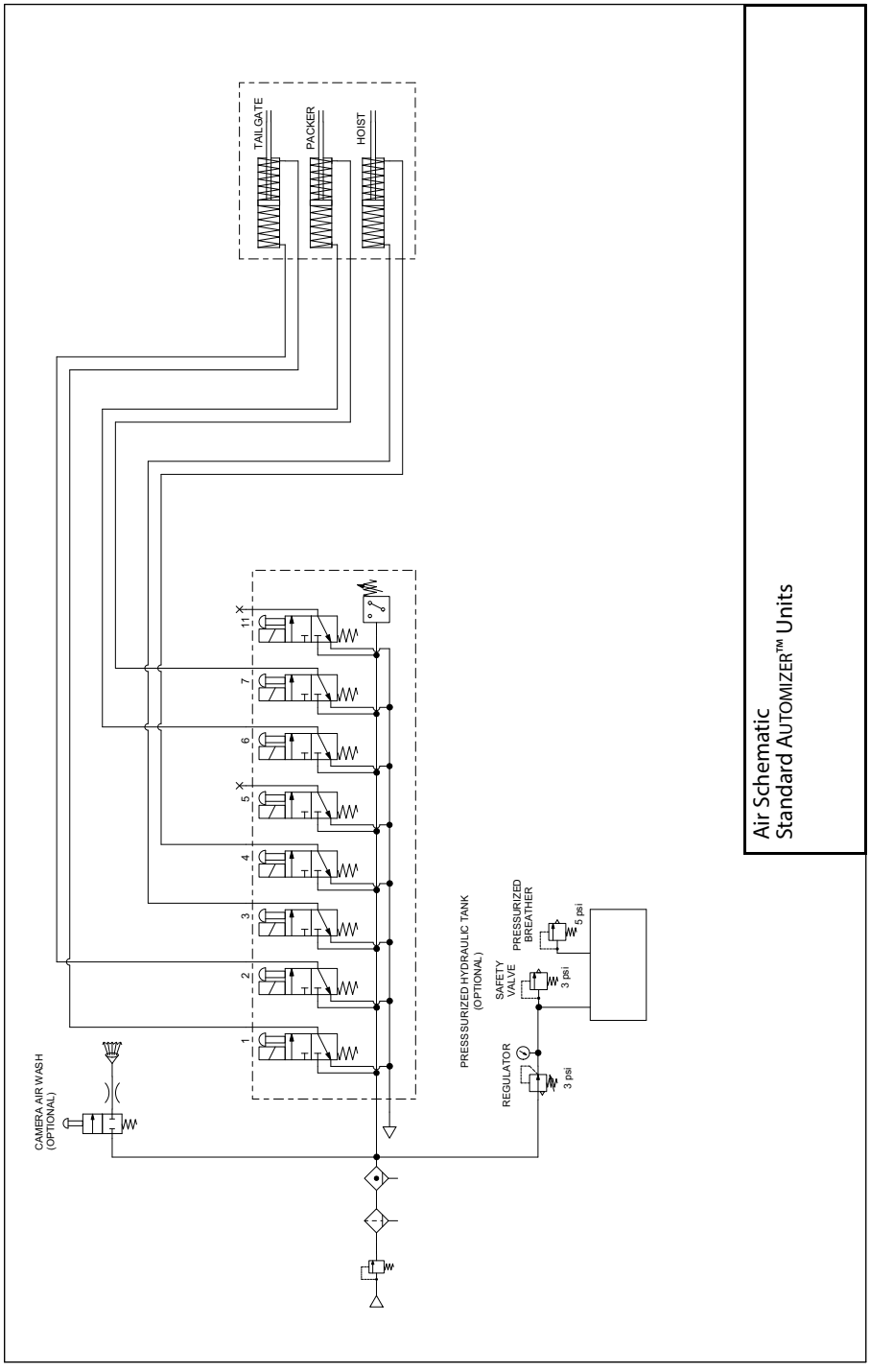
Maintenance on the air dryer and/or alcohol evaporator is covered in the chassis manufacturer's maintenance manual.

Figure 7-6 Air dryer



Air Schematic

NOTE: The following schematic is shown for reference only. Always refer to the schematics and diagrams provided with your truck for information specifically related to your AUTOMIZER™ unit.



8

Troubleshooting

This chapter contains information to help you narrow down and/or solve problems that might occur with your AUTOMIZER™. Procedures throughout this chapter require that the people performing troubleshooting tasks have basic knowledge in electrical, hydraulic and pneumatic systems.

The employer shall ensure that maintenance personnel is properly trained prior to starting troubleshooting.

Before performing maintenance on a vehicle, make sure that all safety procedures are applied. The lockout/tagout procedure outlined on page 25 is mandatory.

See *Troubleshooting Guide* on page 199 to resolve commonly seen problems, or contact Labrie*Plus* to talk to one of our product specialists.

NOTE: Any time you have a problem with a Labrie unit, you should contact your Labrie authorized dealer first. They should be able to provide you with the proper help that you need, whether it is for parts or technical service.

IMPORTANT: Schematics provided in this manual are for reference only. Vehicle-specific schematics are found in the vehicle's cab.

Tools

When trying to pinpoint the cause of a problem on a vehicle, you need certain tools to test components of electric, hydraulic, and pneumatic systems. On the next page you will find a list of the minimal tool set required to perform troubleshooting procedures throughout this manual. Brand names are only suggested.

Figure 8-1 Digital Multimeter or VOM (Volt-Ohm-Milliammeter)

NOTE: **The ammeter must support at least 10 amps.**

Figure 8-2 Jumper wire with alligator clips

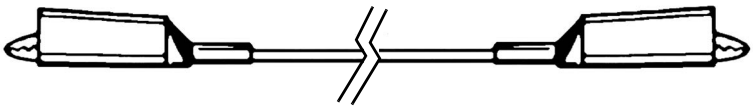
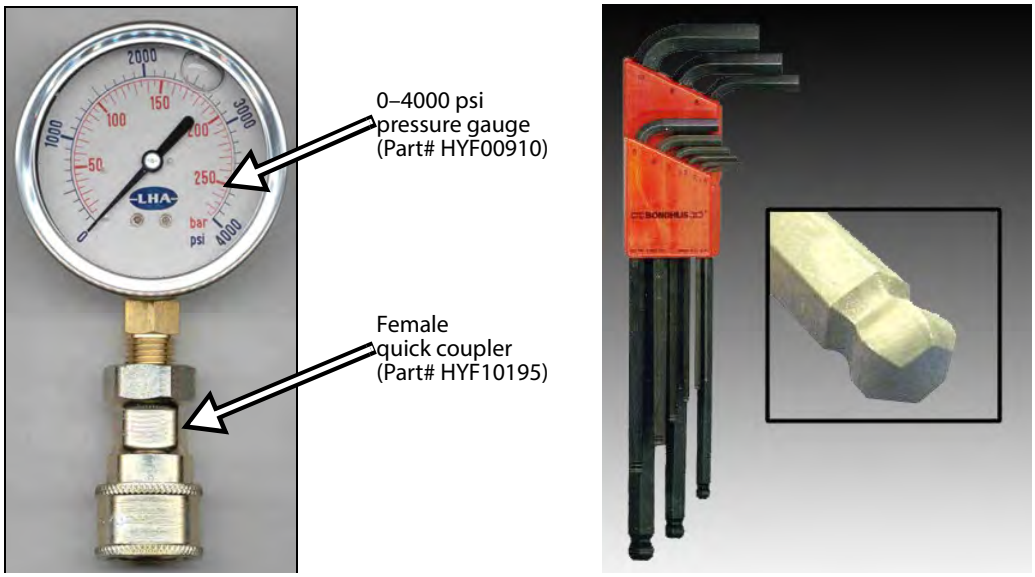


Figure 8-3 0–4000 psi oil pressure gauge (left), ball-end hex wrench (metric and SAE) [right]



NOTE: **Some troubleshooting tasks require the use of two (2) 0-4000 psi pressure gauges.**

Troubleshooting Guide

This troubleshooting guide will help identify the most commonly seen problems on the AUTOMIZER™. It will also provide the possible cause of the problem and give solutions to resolve that problem.

For further information regarding customized options that might not be found in this troubleshooting guide, contact Labrie*Plus*.

Problem	Possible causes	Solution
Insufficient packing ratio	Low oil pressure	See *Hydraulic Pressures* on page 159.
	Packer hydraulic cylinders internally bypassing	See *Detecting Cylinder Internal Leaks* on page 156.
	Defective pump	Replace the pump.
Overheating hydraulic oil (temperature above 77°C [180°F])	Low oil level in the hydraulic tank	Add oil to the required level. See *Replacing Hydraulic Oil* on page 153.
	Hydraulic pressure too low or too high	See *Hydraulic Pressures* on page 159.
	Not the proper grade of oil (that is too thin in hot temperatures or too thick in cold temperatures)	Change for oil indicated in *Recommended Lubricants* on page 107 (see *Emptying the Hydraulic Tank* on page 150).
	Contaminated oil	Clean the strainer and change the return filter element. Fill with clean oil. See *Cleaning the Strainer* on page 151, *Replacing Filter Elements* on page 152, and *Replacing Hydraulic Oil* on page 153.
	Restriction in the system	Check all hydraulic components for debris that could cause restriction in the system. Have the pump inspected by a specialist.
Foaming oil	Low oil level	Add oil to the required level. See *Replacing Hydraulic Oil* on page 153.
	Air entering the system	Tighten all hose and pipe connections between the pump and the hydraulic tank.

Problem	Possible causes	Solution
	Not the proper grade of oil	Empty oil and refill with anti-foaming oil. See *Recommended Lubricants* on page 107 and *Emptying the Hydraulic Tank* on page 150.
Cavitation, excessive noise or vibration of the pump.	Shut-off valve on suction line not fully open	Fully open the ball valve on the hydraulic tank. See *Starting Up the Vehicle* on page 28.
	Low oil level	Add oil to the required level. See *Replacing Hydraulic Oil* on page 153.
	Oil too thick	See *Recommended Lubricants* on page 107 for proper type of oil to use. See also *Emptying the Hydraulic Tank* on page 150.
	Air in the system	See *Pump Cavitation* on page 203. Check all hose and pipe connections and tighten them if necessary.
	Particle contamination or dirty strainer	Clean the strainer and change the return filter. Fill with clean oil. See *Cleaning the Strainer* on page 151, *Replacing Filter Elements* on page 152, and *Replacing Hydraulic Oil* on page 153. Take an oil sample for further analysis (see *Testing Hydraulic Oil* on page 110).
	Blocked suction hose	Unblock or replace hose.
The pump (PTO) does not engage	Red emergency STOP button engaged	Ensure that the red STOP button on packer control station is pulled out.
	Engine speed higher than 900 rpm	Reduce engine speed below 900 rpm. If the speed cannot be reduced under 900 rpm, contact your local chassis dealer.
	Electrical failure	Check fuses inside the control panel and the main fuses inside the battery box. See *Adjusting and Repairing Electrical Components* on page 173.
	Faulty electric dump valve	Replace the electric dump valve.
No hydraulic pressure	Pump not engaged	Turn on the PTO switch.

Problem	Possible causes	Solution
	Low oil pressure	See *Hydraulic Pressures* on page 159.
	Hydraulic pressure not properly adjusted	Properly adjust pressure. See *Hydraulic Pressures* on page 159.
	Stuck hydraulic spool inside valve	Make sure that no spool inside the body control valve is stuck in a position that could redirect the hydraulic flow to the tank.
	Faulty electric dump valve	Replace the electric dump valve.
Pump is leaking oil	Loose connections	Tighten all connections to the pump.
	Pump is damaged	Have the pump repaired by an authorized service center.
Packer is moving vertically or sideways	Worn down packer wear pads (standard packer)	Inspect or replace wear pads as indicated in *Upper Wear Pads* on page 60 and *Lower Wear Pad* on page 64.
	Worn down sliding shoes (standard packer)	Inspect or replace sliding shoes as indicated in *Sliding Shoes* on page 52.
Tailgate is unlocking or lowering by itself	Dirty or defective velocity fuse	Clean or replace the velocity fuse. See *Tailgate-Locking Mechanism* on page 208.
	Inverted hydraulic hoses on main hydraulic valve	Test the power bleed on the tailgate section of the valve. See *Tailgate-Locking Mechanism* on page 208.
Packer does not complete a full cycle	Body is full	Empty the body as explained in the AUTOMIZER™ *Operator's Manual*.
	Garbage behind the packer (standard packer)	Clean behind the packer (see *Cleaning Up the Hopper* on page 35).
	Misaligned packer proximity/ limit switches or presence of debris	Clean the area around proximity/ limit switches, or readjust switches (see *Proximity and Limit Switches* on page 76).
	Defective air control systems	See *Pneumatic System* on page 189.
Packer does not start at all when pressing the green button	PTO/PUMP switch is off	Make sure the PTO/PUMP switch is turned on.

Problem	Possible causes	Solution
	Red emergency STOP button is engaged	Make sure all emergency stop buttons are pulled out.
	Hydraulic pressure not properly adjusted	See *Hydraulic Pressures* on page 159.
	Faulty harness between packer module and control station	
	Defective packer module	
	Hopper door open	Close hopper door.
Packer does not perform enough cycles	Multicycle module programming	Reprogram the module for higher number of cycles (see *Multicycle* on page 229 for IFM system or *Changing Multicycle Settings* on page 249 for EnviroLink system).
Packer moves forward but stops at the end of stroke	Packer sliding shoes are worn out (standard packer)	Replace sliding shoes. See *Replacing Sliding Shoes* on page 56.
	Packer extend limit/proximity switch is misaligned	Adjust switch. See *Adjusting Packer Extend Proximity Switch* on page 77 or on page 92 for Pendulum units).
Backup alarm and warning buzzer inside the cab work all the time	Misaligned tailgate unlocked proximity switch	Adjust proximity switch (see *Adjusting Tailgate Unlocked Proximity Switch* on page 84).
	Body-raised limit switch out of adjustment	Adjust the limit switch rod correctly (see *Adjusting Body-Raised Limit Switch* on page 83).
	Faulty proximity switch	Check the proximity switch with a multimeter or VOM for proper operation (ON/OFF or click). Replace if necessary.
	Faulty harness	Check for continuity on the electrical harness that is connected to the proximity switch. Change the electrical harness if necessary.
Arm is too fast/too slow	Flow limiter on arm control valve out of adjustment	Recalibrate cylinder speed (see *Adjusting Arm Speed* in the Lifting Arm Supplement that came with your truck).

Problem	Possible causes	Solution
Flashing lights on dashboard always blinking	Misaligned arm stowed limit switches	Adjust limit switches (see *Adjusting Arm Stowed Limit Switches (2)* on page 90).
	Cut off or defective power cables	Perform a continuity test on the cable. Replace faulty cables if necessary.
	Faulty limit switch(es)	Replace faulty limit switch(es).
Arm does not respond to joystick (assuming that the PUMP switch is ON)	Cut off or defective power cables	Follow wires on the electrical schematic for 12-volt supply (move joystick to get signal).
	Faulty joystick	Contact Labrie*Plus*.

Pump

The pump is operated by a control switch located on the control panel (see Figure 2-17). When it is engaged, the switch turns green.

Three conditions must be met for the pump to engage and the switch to turn green:

- Air pressure must be at approximately 70 psi
- Engine speed must be lower than 900 rpm
- Emergency STOP button (red) must be pulled out

Air pressure condition is verified by a pressure switch and engine speed, by the transmission control module (TCM).

If the pump does not engage when the pump switch is turned on, it may be related to a voltage supply problem in the pump circuitry. Contact your LabriePlus service technician for instructions on how to solve this problem.

NOTE: Neither the engine throttle nor the transmission not being in Neutral will affect pump operation once the pump is engaged.

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 replacement or after flushing the hydraulic system (refer to “Priming a New Pump” on page 147). 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 0–4000 psi pressure gauge to the main valve (see Figure 8-4) to ensure that no pressure has built up in the system (electric valve only).
3. Apply the parking brake and start the engine.
4. Engage the hydraulic pump (PUMP/PTO switch "ON").
5. Place a pan or a bucket under the plug located on the output section of the main control valve (see Figure 8-5) and slowly loosen the adapter.

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

Figure 8-4 Quick-connect coupler

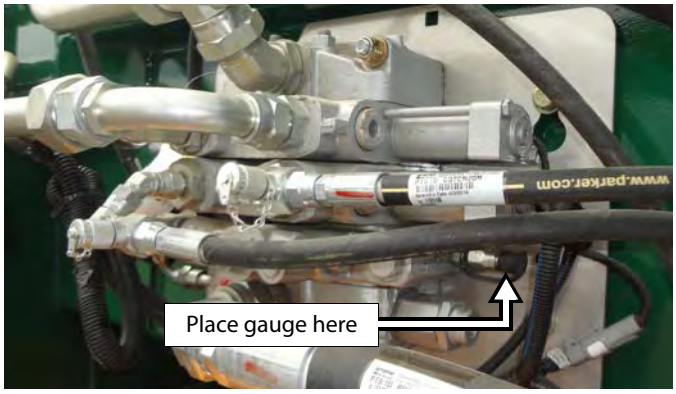
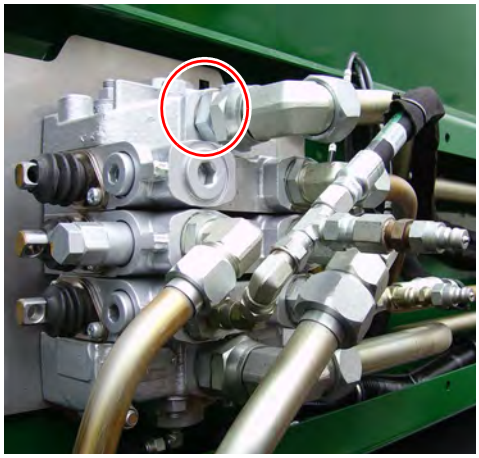


Figure 8-5 Adapter to loosen



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 there are no leaks and the pump is running smoothly.
8. Disconnect the gauge.

Bypassing a Dump Valve for Diagnostic Purposes

This procedure explains how to bypass the arm dump valve off of a front-mounted pump for an AUTOMIZER™ side loader.

When arm cycle times and pressures are not able to be achieved, typically there are 2 components that cause this: the dump (or recirculation) valve or the pump. The first step in troubleshooting is to verify that the electrical system is operating correctly. If the dump valve is receiving proper power and ground, causing the coil to magnetize, then we can continue with bypassing the arm dump valve.

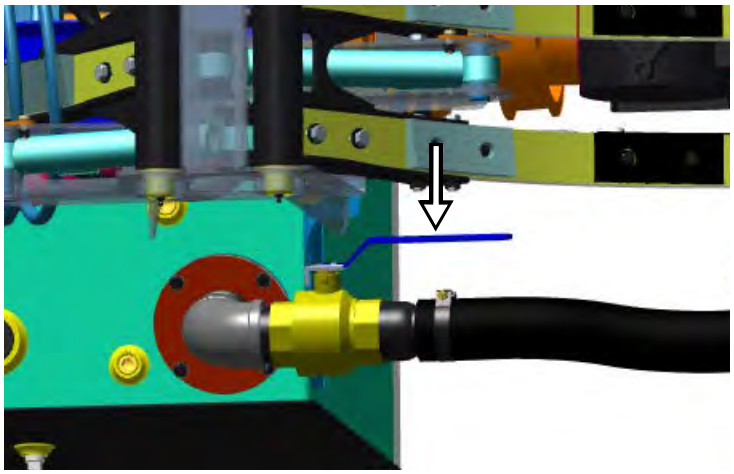
Next step is to remove the dump valve all together and verify operation. If the arm operates with the correct cycle times and pressures, then we can conclude that the dump valve is faulty and needs to be replaced.

However, should the arm continue to have slow cycle times and low pressures, then the fault more than likely is with the pump.

To bypass the arm pump dump valve on a front-mounted pump, apply this procedure:

1. The truck should be off and locked out/tagged out following all required procedures.
2. Relieve the air pressure from the hydraulic tank.
3. Close the shut-off valve on the suction line, which is on the right side of the hydraulic tank.

Figure 8-6 Shut-off valve



4. Unplug the arm pump dump valve electrical connector and stow the harness safely out of the way.
5. Remove the recirculation hose from the body pump and cap off both the disconnected hose end and the port at the body pump.

Figure 8-7 Recirculation hose (arm dump valve)

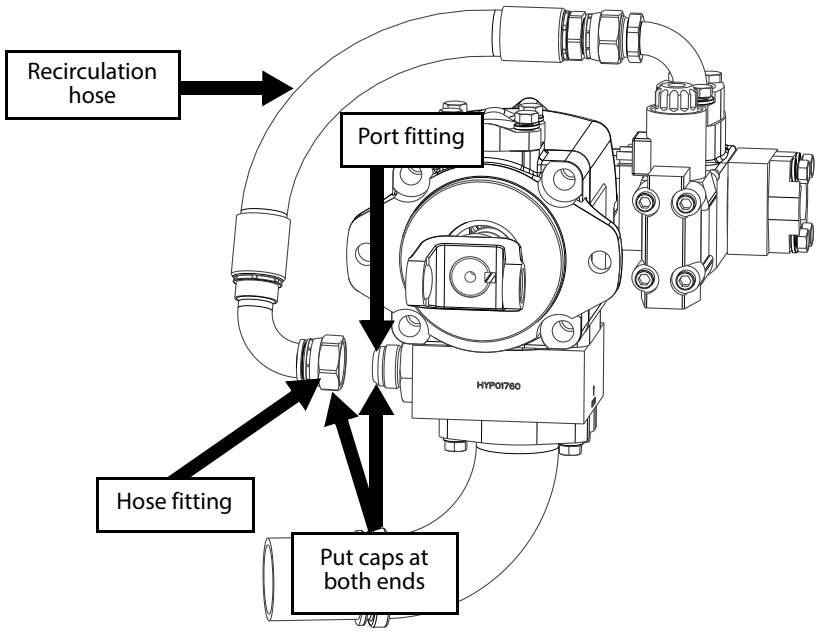
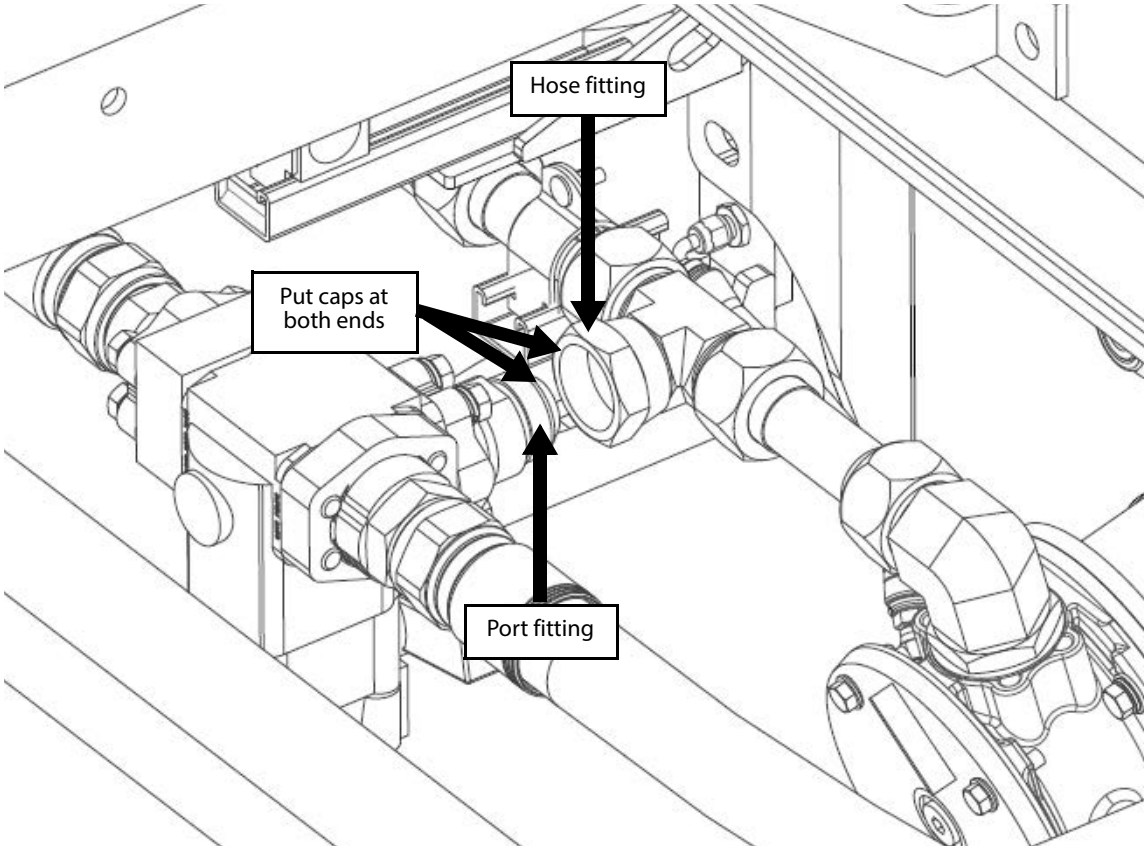


Figure 8-8 Body dump valve assembly inside chassis



6. Open the shut-off valve that was closed in step 3.
7. Start the truck.

Warning!

Note that the second the truck is running there will be hydraulic fluid going to the arm valve assembly. The Emergency Stop will not stop the hydraulics from working, only turning the truck off will. Ensure everyone, and everything, is out of the way of the arm in case it moves on its own should there be an electrical short or a catastrophic failure internal to the valve assembly. Never operate the truck without the dump valve being functional. The truck must remain at idle speed. The pump is always running and, in addition, there is no flow limitation. Always use caution when bypassing a dump valve.

Now that the arm dump valve is bypassed, we will be able to identify if the arm pump or arm dump valve is faulty. Simply go to the arm valve assembly and operate the arm manually.

- If the cycle times and pressures are correct, then the arm dump valve is faulty.
- If the cycle times and pressures are still not correct, then the arm pump is faulty.

8. Assembly in the opposite of disassembly.

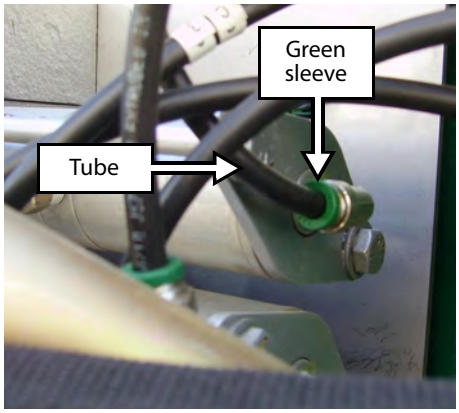
Packer Air System

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 over the main valve (if applicable) to get access to the air tubes.
3. Remove one of the air tubes from the packer section actuator by pushing on the green sleeve with a screwdriver and pulling the tube.

Figure 8-9 Air tube

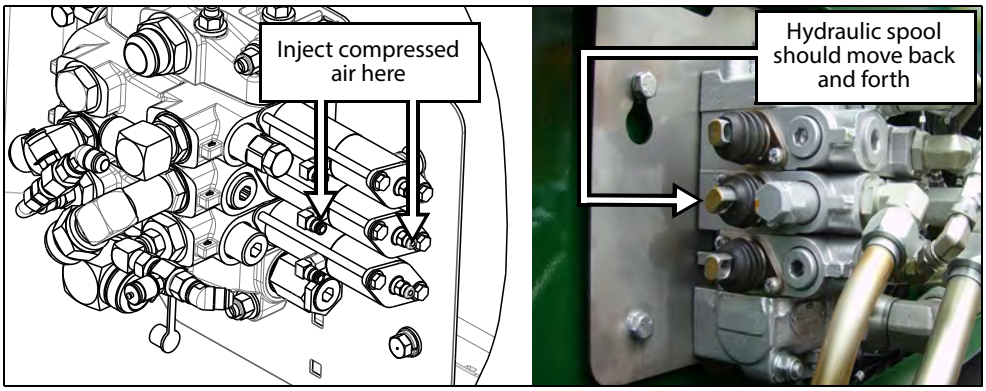


4. Inject compressed air into the actuator to ensure that the spool moves freely inside the valve.

   Check the movement of the spool, if any, on the left side of the valve (see Figure 8-10, picture on the right).
5. If the spool is not moving freely, lubricate or replace the air actuator.
6. Try to operate the packer using the in-cab controls and see if air comes out of the air tube.

7. If no air comes out of the air tube, check the tube is not blocked or bent and, if necessary, replace the air tube.
8. Repeat Steps 3 - 7 for the other air tube.

Figure 8-10 Injecting compressed air



IMPORTANT: If air is leaking by the opposite port of the pressurized side of the actuator when both tubes 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.

Tailgate-Locking Mechanism

The tailgate-locking mechanism is equipped with hydraulic safety devices that prevent accidental unlocking of the tailgate during operation. One of these devices is the velocity fuse (see Figure 8-12) with a *power bleed* feature, the other is the holding valve (see Figure 8-11).

The spool inside the tailgate section of the valve is designed in such a way as to allow pressure to pass through it every time pressure is building up in the hydraulic system (that is when the packer is working). The pressure "burst" goes to the holding valve into port D1 and then out to the cylinder through port U1 (see Figure 8-11). This will keep the tailgate cylinders pressurized and the tailgate closed when packing refuse.

The velocity fuse, located on the right-hand side of the valve, will make sure to drain any slow moving oil coming from the piston side of the tailgate cylinders. Since the rod side is being pressurized with the "power bleed" system, the other side has to drain to avoid any pressure build-up. The velocity fuse makes the piston side open to tank when the oil is moving under 3 gallons per minute, and will shut close when a flow signal is sent.

Figure 8-11 Tailgate holding valve

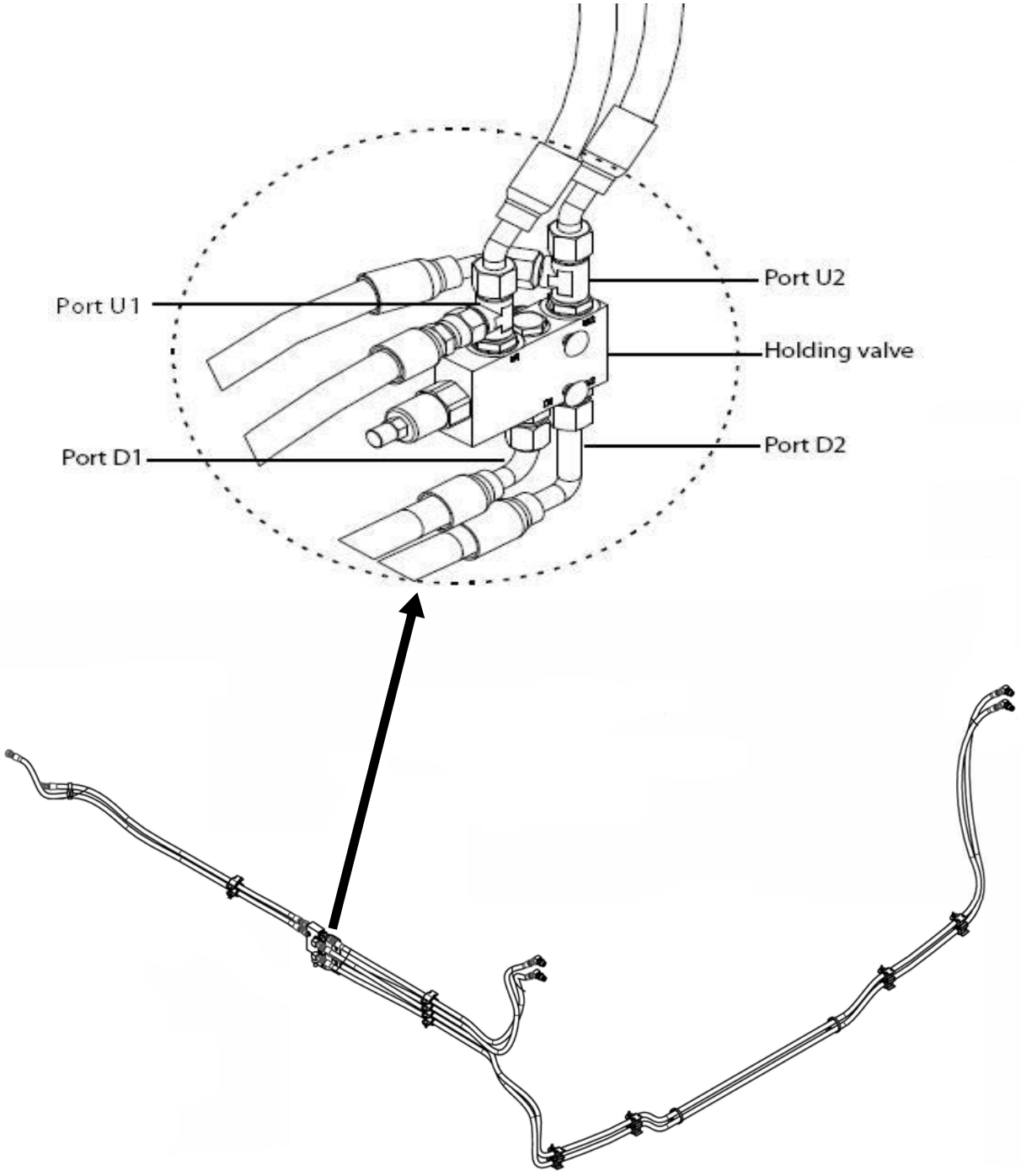
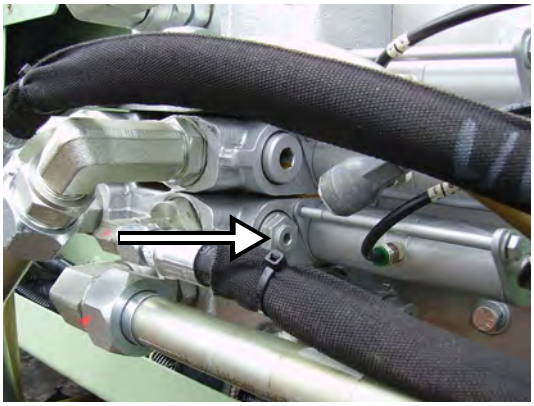


Figure 8-12 Velocity fuse



Tailgate Unlocking Spontaneously

If the tailgate seems to unlock by itself when using the packer, the "power bleed" inside the valve might not be working on the right side of the hydraulic cylinder.

To fix this problem:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Ensure that the parking brake is applied.
3. Disengage the hydraulic pump and turn OFF the engine.
4. Install a pressure gauge on each port of the valve tailgate section (see Figure 8-13).

   An adapter fitting may be required for connecting the gauge to the port (see Figure 8-14).

Figure 8-13 Ports #1 and #2

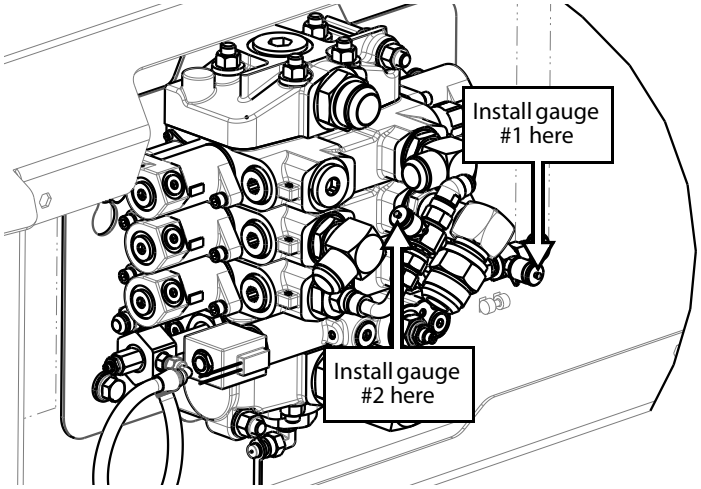
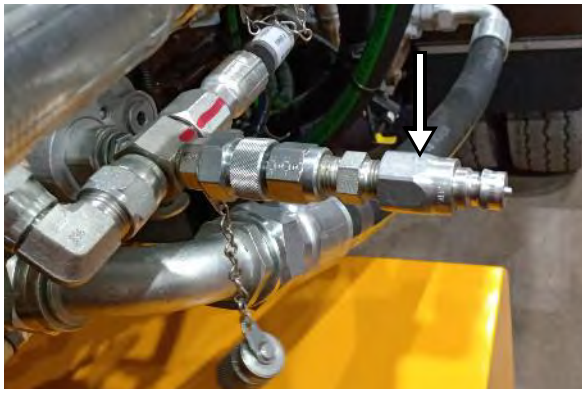


Figure 8-14 Adapter fitting



5. Disconnect the packer extend proximity switch.

   This will prevent the packer from returning to its initial position.
6. Start the engine and engage the hydraulic pump.
7. Push the green "start cycle" button to start the packer and pressurize the system.

   Gauge #1 (on the velocity fuse side) should always indicate 0 psi and gauge #2 should indicate a sudden burst of pressure (from 0 psi to 3000 psi) each time the packer reaches the end of a stroke. If gauge #1 indicates pressure, this may be caused by a faulty holding valve or velocity fuse or by some hydraulic hoses not properly connected.

Tailgate Lowering Spontaneously

If the tailgate seems to lower by itself, a faulty velocity fuse might be involved.

To fix the problem:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Ensure that the parking brake is applied.
3. Ensure that the tailgate is closed.
4. Disengage the hydraulic pump and turn OFF the engine.
5. Remove the velocity fuse (see Figure 8-12).

   Tailgate must be closed before removing the velocity fuse.
6. Make sure that the velocity fuse is clean and that its plunger is moving freely. Replace if necessary.

"PUMP: Trans Not OK"

NOTE: This section only applies to the IFM Multiplex System.

Since the release of the Labrie *Multiplex Diagnostic Manual* for the AUTOMIZER™ (part #153143), a more effective method for troubleshooting the failure mode identifier "**Pump: Trans not ok**" has been identified.

The method outlined below can be used in conjunction with the Labrie *Multiplex Diagnostic Manual*. Only basic tools are needed for this troubleshooting: a quality multimeter (preferably used with back probe leads), assorted screwdrivers, and a set of cutting pliers (for removing zip ties).

NOTE: Accurate diagnostic information will require use of the body serial number specific electrical schematics. This ensures correct connection information as connector/wire numbers are dependent on chassis manufacturer as well as whether a Labrie cab conversion has been performed.

IMPORTANT: Be sure to follow all appropriate lockout/tagout procedures (see *Locking Out and Tagging Out the Vehicle* on page 25) as well as your standard shop/facility procedures before attempting this procedure.

*"**Pump: trans not ok**"* indicates a breakdown in one of the two portions of the pump circuit.

Wire 104o originates at Node 10. When the pump switch is depressed, voltage is sent through wire 104o. Wire 104o is used to sense all safety features are met and terminates as an input into the Transmission Control Module as "Pump Request Chassis".

The 104 circuit acts as a request circuit to ask the chassis for a return signal after stating the body is ready to allow pump engagement.

When the transmission parameters are met, a return signal via wire 149i sends voltage to two specific locations. The ***first*** 149i runs to is Node 10 as input "Pump Running Chassis" and the ***second*** location is spade location 1 of the pump relay.

A breakdown in either of these circuits will cause this error code to manifest.

It is important to note, specifically with wire 149i, the system may believe the pump is engaged but due to a broken splice or other fault, the relay may not latch. This situation would prevent voltage from passing through the relay to the dump valves/PTO, thus preventing hydraulic function even though Node 10 is seeing power on wire 149i. This scenario would NOT result in a "**PUMP: TRANS NOT OK**" code.

Step #1) With the engine running, attempt to engage the pump and verify the complaint. **If the display screen** shows "PUMP: TRANS NOT OK", continue to step #2.

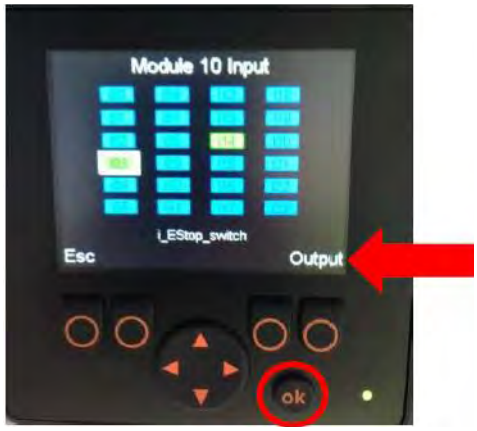
Step #2) Cycle the key "OFF" and to the "ON" position only. Starting the engine is not necessary.

Utilizing the Labrie multiplex display, perform the following steps:

1. Depress “Menu” then select “I/O Status”.

2. Next, select Module: “10_Cabine”.

3. Once in the Module 10 screen, depress the “Output” button.



4. After entering the output screen, select the “Force” button.

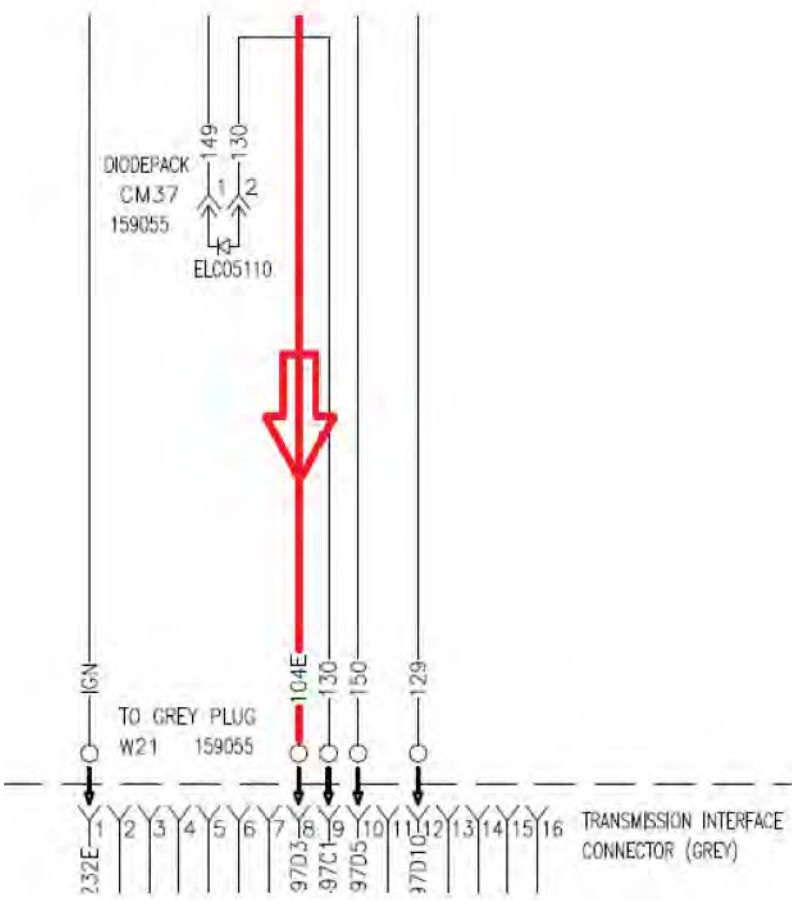
5. After selecting “Force” a countdown will begin. At the end of the countdown, press the “OK” button to enter force mode.

Note the addition of “Force Active” in the center of the screen. This is to alert the technician that force mode has been entered successfully. Also note the buttons on the far right have become an “ON” and “OFF” toggle.

Step #3)

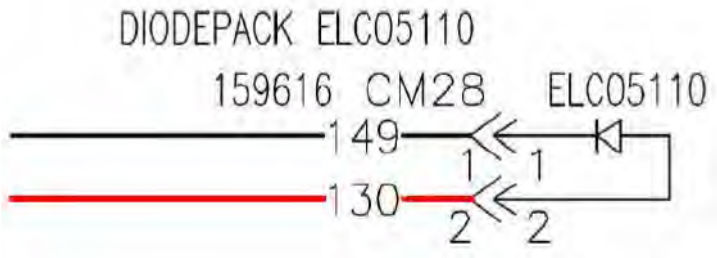
A) Locate output "OUT 12" and force it "ON". With this output forced move to the appropriate Labrie/chassis interface connector (see body serial number specific drawings for exact connector number). Measure voltage on the pump trans request wire (104E). **If voltage is present** proceed to step #4.

B) **If no voltage is present**, verify that voltage is leaving Node 10, wire 104o, pin 02, connector X20. **If voltage is not** leaving the module then the node 10 is defective/damaged; replace it. **If voltage is** leaving the module; there is one of two issues. Either a break in the wiring caused by an Emergency stop switch/panic bar or an outside fault (such as an abraded/cut wire, corrosion/water in a connector, etc.) is present. Repair the 104 wire before proceeding to step #4.

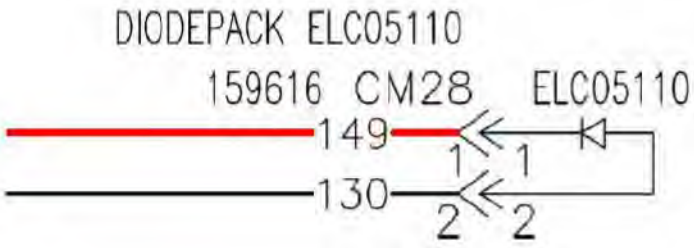


Step #4) Locate wire 130 on the same chassis interface connector and check for voltage. **If no voltage** is present, the transmissions parameters for pump engagement are not met (service transmission and/or TCM). **If voltage** is present on wire 130 then locate the diode pack; this is located between wires 130 and 149. Remove the diode pack and proceed to step #5.

Step #5) Perform a check of the diode pack using a digital multimeter. With the multimeter set to the diode check function, place the red lead on pin 2 and the black lead on pin 1. There should be continuity through the diode.



Next, place the red lead on pin 1 and the black lead on pin 2. There should not be continuity through the diode.



- **If the diode passed** the above test proceed to step #6.
- **If the diode did not pass** the above test replace the diode and then proceed to step #6.

NOTE: Connector CM28 & wire 149 on the illustrations are for reference only; the specific connector & wire numbers may vary. To find the diode on the wiring schematic, locate wire #130 and trace it to the diode pack, typically on page 1.

Step #6) Reconnect the diode onto wires 130 and 149. Check for voltage on wire 149.

- **If voltage is not present,** then the diode continuity check was performed incorrectly. Replace the diode.
- **If voltage is present** on wire 149 then proceed to step #7.

Step #7) Locate wire 149 at Node 10, connector X10, pin 16 AND spade location 1 of the pump relay. Check for voltage.

- **If voltage is present,** then the node 10 is defective/damaged, replace it.
- **If no voltage is present,** then the 149 wire is broken between the diode location and Node 10. Locate the break and repair.

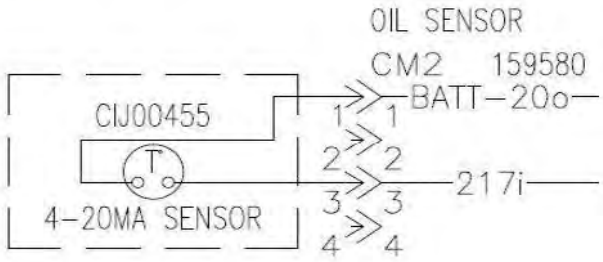
Troubleshooting Harnesses

To simplify electrical troubleshooting on any AUTOMIZER™ side loader, a kit of different harnesses is available for use. These harnesses enable digital multimeter readings of both voltage and resistance without poking or damaging wires. Simply connect the compatible harness between two (2) existing connectors and use the additional connector as test points (see pictures below).

NOTE: Two (2) harnesses in this kit have a reference chart to work with:
1. harness #151202, which is used to measure the temperature sensor, and
2. harness #151199, which is used to measure the pressure sensor

CIJ00455 TEMPERATURE SENSOR

°F	°C	mA
-13	-25	4
1,0625	-17,1875	5
15,125	-9,375	6
29,1875	-1,5625	7
43,25	6,25	8
57,3125	14,0625	9
71,375	21,875	10
85,4375	29,6875	11
99,5	37,5	12
113,5625	45,3125	13
127,625	53,125	14
141,6875	60,9375	15
155,75	68,75	16
169,8125	76,5625	17
183,875	84,375	18
197,9375	92,1875	19
212	100	20

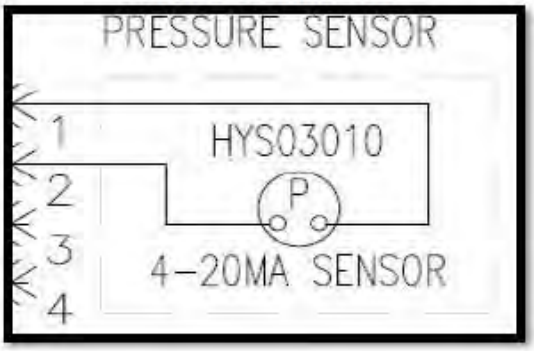


HARNESS TOOL
#151202

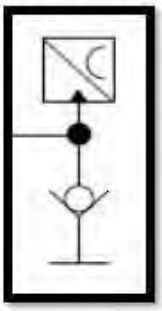
HARNESS TOOL #151199

HYS03010	
PSI VS mA @ 12v	
PSI	mA
0	4
100	4,4
200	4,8
300	5,2
400	5,6
500	6
600	6,4
700	6,8
800	7,2
900	7,6
1000	8
1100	8,4
1200	8,8
1300	9,2
1400	9,6
1500	10
1600	10,4
1700	10,8
1800	11,2
1900	11,6
2000	12
2100	12,4
2200	12,8
2300	13,2
2400	13,6
2500	14
2600	14,4
2700	14,8
2800	15,2
2900	15,6
3000	16
3100	16,4
3200	16,8
3300	17,2
3400	17,6
3500	18
3600	18,4
3700	18,8
3800	19,2
3900	19,6
4000	20

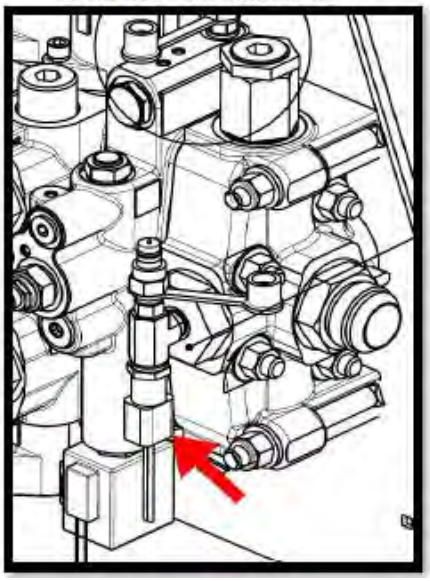
Electrical schematic view



Hydraulic schematic view



Located on the inlet cover



9

Multiplexing

As Labrie Environmental Group vehicles become more and more efficient, they require more automation features and thus some programming. Currently, AUTOMIZER™ vehicles require programming of:

- Labrie's CAN bus-based multiplex system
- the Allison transmission parameters, and
- the Cummins engine parameters

The following pages provide the necessary information for these tasks.

IFM Multiplex System

NOTE: The IFM Multiplex System is one of the two multiplex systems currently being used by Labrie Environmental Group, the other being the EnviroLink™ Multiplex System. Both multiplex systems share many common features and elements, and generally speaking, operate almost the same way. The focus of this section is about the *IFM Multiplex System*. If your waste truck is rather equipped with the *EnviroLink™ Multiplex System*, refer to the *EnviroLink™ Section* on page 241.

Labrie Environmental Group has equipped your AUTOMIZER™ unit with a CAN bus-based multiplex system, which integrates a monitor, a control panel, a joystick, and a set of electronic modules. This whole system has been designed to help you operate your unit in an efficient and easy way. The IFM Multiplex System is reliable and safe, and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor (see Figure 9-1), the IFM Multiplex System informs you of any malfunctions that may occur during the operation of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Yellow-highlighted messages indicate that caution should be used while red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 9-1 Monitor

Each time the operator turns the ignition key on, a complete bit test of the multiplex system is conducted. This test takes about 5 seconds to complete.

NOTE: A flashing green light on the monitor indicates that the power is on. This light should be blinking steadily at 2 Hz during normal operation. If it blinks at a faster rate, it is a sign of a problem with the monitor. A flashing red light on the monitor is also a sign of a problem. Call Labrie*Plus* for support.

The logo of Labrie appears momentarily on the monitor screen at the start of the system (see Figure 9-2).

Figure 9-2 Labrie logo on monitor screen

NOTE: If the Welcome Screen with the Labrie logo stays on continuously, there may be a communication problem between the monitor and the master control module. Report this problem to the maintenance personnel.

NOTE: The monitor screen works even if the engine is not started. All it needs is electrical power. However, if you start the engine, the monitor will reboot to reflect the changes caused by the starting of the truck.

Main Page

The next page that comes up after the Welcome Screen is the Main Page (see Figure 9-3). Here you will find the link to the Main Menu (see *Main Menu* on page 229) as well as any warnings and errors that may occur during the operation of the unit. The Main Page may also have the following optional indicators: Time and Date Indicator, Hydraulic Oil Temperature Indicator and Cart Counter.

Cart Counter (optional)
This indicator tells you how many carts have been emptied so far. If your vehicle is equipped with 2 arms, you should see 2 counters, one for each arm.

Figure 9-3 Main page

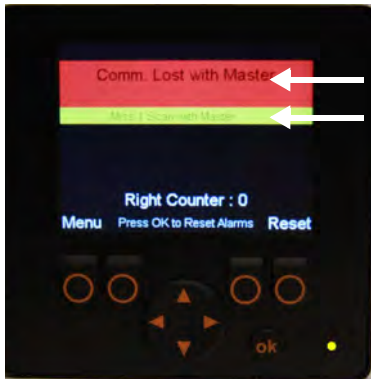
Press the far right button to reset the counter display to zero.

Time and Date Indicator (optional)
A time and date indicator may be found on the upper left-hand side corner of the screen. The availability of this indicator is based on the chassis on which the body is mounted. If the chassis provides real-time clock information through J1939 bus, time and date will appear on the screen. To set the Time and Date indicator, go to the Main Menu and choose Time Adjust.

Hydraulic Oil Temperature Indicator (optional)
This optional indicator, when provided, shows you the current hydraulic oil temperature. This indicator is found on the upper right-hand side corner of the screen.

Warning and Caution Messages
On the monitor screen, yellow-highlighted messages indicate that caution should be used and red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 9-4 Warning and caution messages on monitor



See Table 1 for a list of warning and caution messages. Please note that this list is not exhaustive.

Table 1 Warning messages

Warning and Caution Messages	Solution
Arm:Body Raised	Lower Body
Arm:Hopper Door Not Close	Close Hopper Door
Arm:Pump Not Started	Engage Pump
Arm:Tailgate Unlocked	Lock Tailgate
Body:Pump Not Started	Engage Pump
Buzzer:Arm Not Stow	Retract Arm to Stowed Position
Buzzer:Body Raised	Lower Body
Buzzer:TailGate Unlocked	Lock Tailgate
Crusher:Arm Too High	Lower Arm
Crusher:Hopper Door Not Closed	Close Hopper Door
Crusher:Packer Not Retracted	Retract Packer
Crusher:Pump Not Started	Engage Pump
ESTOP:Aux Cab EStop	Pull Out Aux Cab EStop Button
ESTOP:Cab EStop	Pull Out Cab EStop Button
Gripper Open:Arm Too High	Lower Arm
High Hydraulic Oil Temp.	Turn Off Engine and Refer to your Maintenance Personnel

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
Low Hydraulic Oil	Add Hydraulic Oil
Miss 1 Scan with Master	Refer to Maintenance Personnel or Labrie*Plus*
Packer Extend:Air Weigh Signal	Unload Body
Packer:Already Extended	Refer to Maintenance Personnel or Labrie*Plus*
Packer:Already Retracted	Refer to Maintenance Personnel or Labrie*Plus*
Packer:Pump Not Started	Engage Pump
Packer:Tailgate Not Open	Open Tailgate
Pump Not Started:Aux Cab Estop	Pull Out Aux Cab EStop Button
Pump Not Started:Cab EStop	Pull Out Cab EStop Button
Pump Not Started:Hopper Door Not Closed	Close Hopper Door
Pump Not Started:Main Air Pressure	Let the Air Build Up to Required Pressure
Pump Not Started:RPM to High	Lower Engine Speed Below 900 RPM
Pump:Aux. CloseGripper Switch ON	Release Aux. CloseGripper Switch prior to Engaging Pump
Pump:Aux. Deadman Switch ON	Release Aux. Deadman Switch prior to Engaging Pump
Pump:Aux. OpenGripper Switch ON	Release Aux. OpenGripper Switch prior to Engaging Pump
Pump:BodyLower Switch ON	Release BodyLower Switch prior to Engaging Pump
Pump:BodyRaise Switch ON	Release BodyRaiseSwitch prior to Engaging Pump
Pump:Hopper Door Not Close	Close Open Door
Pump:CrusherDown Switch ON	Release CrusherDown Switch prior to Engaging Pump

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
Pump:CrusherUp Switch ON	Release CrusherUp Switch prior to Engaging Pump
Pump:J1 CloseGripper Switch ON	Release J1 CloseGripper Switch prior to Engaging Pump
Pump:J1 Deadman Switch ON	Release J1 Deadman Switch prior to Engaging Pump
Pump:J1 OpenGripper Switch ON	Release J1 OpenGripper Switch prior to Engaging Pump
Pump:J2 CloseGripper Switch ON	Release J2 CloseGripper Switch prior to Engaging Pump
Pump:J2 Deadman Switch ON	Release J2 Deadman Switch prior to Engaging Pump
Pump:J2 OpenGripper Switch ON	Release J2 OpenGripper Switch prior to Engaging Pump
Pump:Packer Extend Switch ON	Release Packer Extend Switch prior to Engaging Pump
Pump:Packer Retract Switch ON	Release Packer Retract Switch prior to Engaging Pump
Pump:PTO or Trans. Not OK	Refer to Maintenance Personnel or Labrie*Plus*
Pump:RPM Too High	Lower Engine Speed Below 900 RPM
Pump:TailgateDown Switch ON	Release TailgateDown Switch prior to Engaging Pump
Pump:TailgateUp Switch ON	Release TailgateUp Switch prior to Engaging Pump
Raise Body:Arm Not Stow	Retract Arm to Stowed Position
Raise Body:Truck Moving	Bring Truck to a Standstill
Service Oil Filter #1	Replace Oil Filter #1
Service Oil Filter #2	Replace Oil Filter #2

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
TailGate Up:Truck Moving	Bring Truck to a Standstill
TailGate:Packer Not Retracted	Retract Packer
TailGate:Pump Not Started	Engage Pump

Table 2 Error messages

Error Messages	Solution
Button Pack 12 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 13 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 14 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Button Pack 15 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
CAN Error Level 1	Refer to Labrie*Plus*
CAN Error Level 2	Refer to Labrie*Plus*
CAN Error Level 3	Refer to Labrie*Plus*
Comm. Lost with Master	Refer to Maintenance Personnel or Labrie*Plus*
Module 11 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 11 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 20 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 20 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 30 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 30 not Connected	Refer to Maintenance Personnel or Labrie*Plus*

Table 2 Error messages (cont'd)

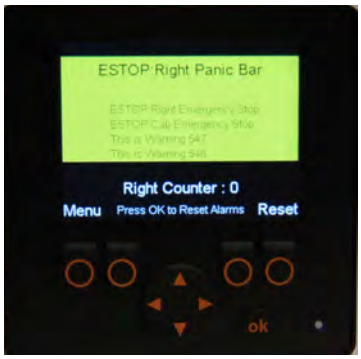
Error Messages	Solution
Module 50 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 50 not Connected	Refer to Maintenance Personnel or Labrie*Plus*
Module 60 is disconnected	Refer to Maintenance Personnel or Labrie*Plus*
Module 60 not Connected	Refer to Maintenance Personnel or Labrie*Plus*

Should the system issue a warning or caution message, it will appear on the Main Page.

For example, if the following caution message "Pump Not Started: Main Air Pressure" is issued by the system, it will appear on the Main Page of the monitor. An action that could be taken by the operator, when faced with such a situation, would be to wait until the required main air pressure level is reached.

For a specific problem or condition that requires special attention, the multiplex system can alert the operator to a possible cause, which appears in bold and large print on the monitor screen (active cause). The operator should check if the problem stems from the highlighted or active cause. One possible cause is highlighted at a time. What is shown in light and small print in the lower part of the screen are causes that have already been dealt with (non active causes) [see Figure 9-5].

Figure 9-5 Example of possible cause



NOTE: If the system detects a problem, a beep will sound and a message will appear on the monitor screen.

NOTE: To go back to the Main Page or Main Menu, press "Esc" as needed until the desired page is displayed.

Main Menu

To access the Main Menu, press the far left button when the Main Page is displayed.

When the Main Menu is displayed, you can have access to the following sections:

- Multicycle
- I/O Status
- Password (optional)
- Program Version
- Pump Usage (optional)
- Time Adjust (available according to chassis)
- Auto-retract on auto-packing
- Programmed auto-packing
- Deep stroke

Displayed in the lower center of the screen is an indicator that monitors traffic on the network. This indicator is called Network Load, and it shows values that reflect such traffic.

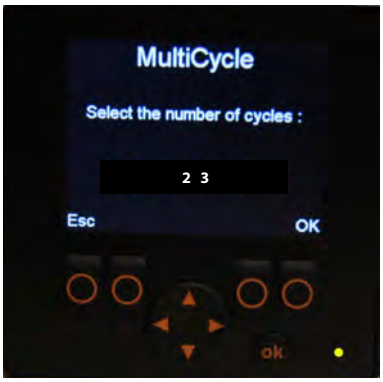
NOTE: The higher the network load value is, the heavier the traffic is on the network.

To exit this page and return to the Main Page, press "Esc". To choose a section from the Main Menu, highlight the desired section using the up/down arrows and press the "OK" button.

Multicycle

The monitor used as part of the IFM Multiplex System is user-friendly. Let's say you want to change the multicycle settings of the packer. All you have to do is select MAIN MENU by pressing the corresponding button at the bottom left corner of the monitor. From the displayed menu, choose the option SELECT THE NUMBER OF CYCLES. If need be, use the arrow to choose that option and press "OK". The multicycle settings can be changed from two to three cycles. Choose the desired number of cycles and press "OK".

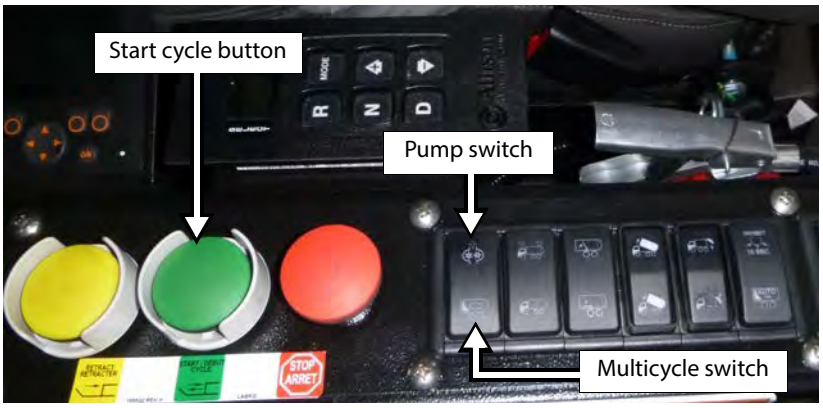
Figure 9-6 Multicycle page



NOTE: The packer multicycle function has been preset at the factory to carry out three cycles.

When the MULTICYCLE switch on the control panel is on and the packer is activated, the packer will move according to the default number of cycles (that is 3) or to the number of cycles you chose.

Figure 9-7 Control panel



To test the new packer settings:

1. On the control panel press the MULTICYCLE switch and the green START CYCLE button (see Figure 9-7).
2. Once the packer has completed its cycles and come to a stop, switch off the hydraulic pump and turn OFF the engine.

The number of cycles needs to be adjusted depending on the type of collection route used by the vehicle. For example, in a residential area, if the houses are numerous and close to one another, it may be required to select the higher number of cycles. This will allow the hopper to be clear for the next house pickup.

Each time the packer completes a full cycle, the packer limit/proximity switch sends a signal to the electronic module. The module then counts the amount of cycles that the packer does, and will stop the packer after the preset amount of cycles has been reached.

I/O Status

In this section, you will find helpful information to troubleshoot body-related problems that you may face during your day-to-day tasks. These problems can be of any nature, from hydraulic to mechanical, electrical or pneumatic.

Select the control module corresponding to the part of the truck that needs to be checked.

For example, if you want to check all functions that are found in the cab, choose module #10. For all functions that pertain to the right hopper, choose module #50 or #60, etc.

To choose a particular module, use the up/down arrows to select it and press “OK”.

NOTE: Pressing “OK” can be done two ways: either press the far right button or the “OK” button.

Press “Esc” to return to the preceding page.

Figure 9-8 Module I/O Status page

Input Status

The Input Status page is accessible from the Module I/O Status page. After selecting the desired module and pressing "OK", the Input Status page of the selected module is displayed (see Figure 9-9).

Figure 9-9 Input Status page

The Input Status page contains a set of rectangles. Each of these rectangles represents input elements, which in turn correspond to a particular function of the truck. For example, if you select rectangle I00, a short description appears in the lower part of the screen, which indicates that this rectangle relates to the input element coming from the service brake pressure switch.

NOTE: Each rectangle is numbered and relates to a specific function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 3 Colored rectangles

Rectangles (inputs)	Function Status
Blue	Inactive
Green	Active

Press “Esc” to return to the preceding page.

Press the “Output” button to display the Output Status page.

Output Status

The Output Status page (Figure 9-10) is accessible from the Input Status page.

Figure 9-10 Output Status page

The rectangles on this page are used to check the status of different outputs.

NOTE: Each rectangle is numbered and relates to a specific function of the truck. However, for a given number, the related function may vary from truck to truck.

Table 4 Colored rectangles

Rectangles (outputs)	Function Status
Blue	Inactive
Green	Active
Red	Closed short-circuit
Yellow	Open circuit

Press “Esc” to return to the preceding page.

Press the “Force” button to display the Force page.

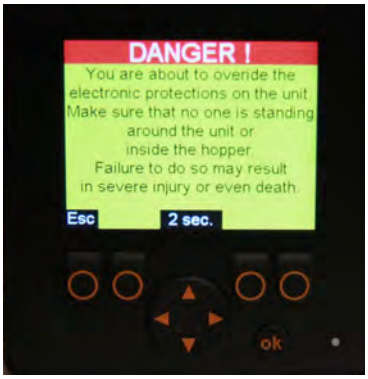
NOTE: To go back to the Main Page or Main Menu, press “Esc” as needed until the desired page is displayed.

Force

The Force page is accessible from the Output Status page. Just press the corresponding button to access the Force page.

But before the Force page is displayed, a warning message appears on the monitor screen (see Figure 9-11).

Figure 9-11 Warning message



This message stays on for 15 seconds. Then an "OK" prompt appears on the lower right-end corner of the screen.

IMPORTANT: It is very important to read this message entirely before accessing the next page.

Figure 9-12 Warning message w/ "OK" prompt

Press "OK" to go to the Force page or "Esc" to return to the preceding page.

After pressing "OK", the Force page appears on the screen.

Figure 9-13 Force page (input)

As no input function can be forced to be active or inactive, the operator must press the “Output” button to go to the following page (see Figure 9-14).

Figure 9-14 Force page (output)

The Force page allows the operator to force a function to be overridden, that is, to make an inactive function active and an active function inactive.

This page contains a set of rectangles. Each of these rectangles is numbered and corresponds to a specific function of the truck.

Colors are used to indicate whether the corresponding function is active or not:

- a blue rectangle means the corresponding function is inactive
- a green rectangle means the corresponding function is active

Also:

- a red rectangle means there is a closed short-circuit
- a yellow rectangle means there is an open circuit

A white-bordered rectangle means that this rectangle is selected. Use the directional arrows to select a specific rectangle or function. When a rectangle is selected, a short description of the corresponding function appears at the bottom of the screen.

After selecting a rectangle:

- press “ON” to activate the corresponding function (rectangle turns from blue to green)

- press “OFF” to deactivate the corresponding function (rectangle turns from green to blue)
- press “RESET” to have the software control the status of the corresponding function

NOTE: To cancel changes made in this page and restore the default values, all you have to do is cut power to the multiplex system by turning the ignition key off.

NOTE: To go from one module to another (e.g. from module 10 to 50), the operator has to go back to the Module I/O Status page (see Figure 9-8) and select module 50.

Press “Esc” to return to the preceding page.

Joystick

The Joystick page is accessible from the Module I/O Status page (see Figure 9-8). From that page select “Joystick” using the up/down arrows and press “OK”. The Joystick page opens up (see Figure 9-15).

Figure 9-15 Joystick page

The Joystick page allows the operator to check if all functions of the joystick are working correctly. If one joystick is installed on your vehicle, it will be represented on the monitor screen by joystick 127. However, if two joysticks are installed on your vehicle, any of the two joystick numbers (127 and 72) can represent either joystick on the screen.

If you press a joystick button, the corresponding button on the monitor will turn green. If nothing happens, there may be a communication problem between the joystick and the master control module. Refer to the maintenance personnel or Labrie*Plus*.

Also, if you move the joystick backwards, forwards or sideways, you should see the values under the illustration changing. If no change occurs when moving the joystick, a communication problem between the joystick and the master control module may be the cause. Refer to the maintenance personnel or Labrie*Plus*.

Press “Esc” to return to the preceding page.

J1939

The J1939 page is useful when you need some specific information (e.g. current gear, road speed, brake status).

Figure 9-16 J1939 page

Your vehicle is equipped with 2 different CAN-based communication buses:

- the **J1939 bus**, which is used for the chassis equipment; and
- the **CANopen bus**, which is used for the body.

These 2 communication buses are completely independent of one another, except for some specific data that are transferred from the chassis J1939 bus to the IFM Multiplex System, where they are used. These specific data are the following:

- selected gear
- current gear
- road speed
- engine rpm
- brake
- parking brake

Press “Esc” to return to the preceding page.

Managing Passwords (optional)

With this optional feature, data protection passwords can be added to the IFM Multiplex System display. This feature can also be used to change or remove already saved passwords.

Data that can be protected by passwords relate to the following features: Output Force, Multicycle and J1939 baudrate.

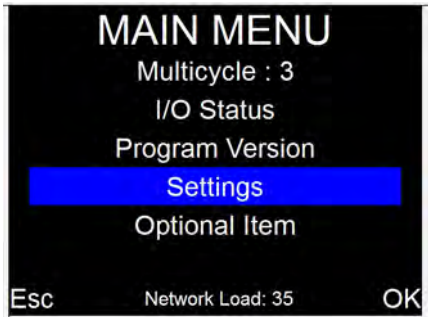
NOTE: Only adjustable data in Output Force, Multicycle and J1939 Baudrate can be protected by passwords.

The **Password Menu** is available through the **Settings Menu**. An associated menu, **Locked Features**, is also available, allowing you to choose among the features that can be "locked".

After creating a new password, write it down in a safe place for reference. You will be required to provide it to gain access to a locked adjustable feature when logging on anew (after the sign out and back on).

To create, change or remove a password, do the following:

1. Go to the Main Menu.
2. Select "Settings".



3. Select "Password".

4. If no password has been created, enter a password using the arrow keys.

   Press "Esc" to quit or OK to set password.

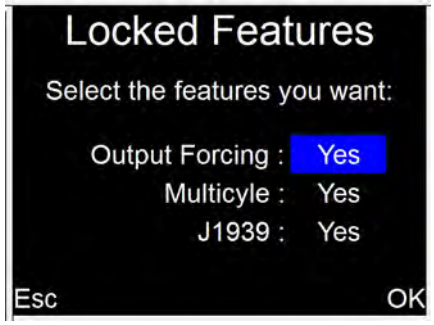
5. If a password already exists, enter it using the arrow keys.
   Press "Esc" to quit or OK to erase the password.

6. Enter a new password using the arrow keys.
   Press "Esc" to quit or OK to create a new password.

NOTE: Entering a new password with only zeros as the number, such as "000000", will result in deactivating the password function.

7. Go back to the Settings Menu by pressing "Esc".
8. In the Settings Menu, select Locked Features.

9. Select the feature(s) that you want to lock using the password created or saved.



NOTE: If you have forgotten your password, please contact the Labrie*Plus* Service Department.

Module Software Version

On the Module Software Version page, you will find the software version currently used by each of the modules installed on the truck and by the master control module.

Figure 9-17 Software Version page

With the information on this page it is possible for the operator or maintenance personnel to determine the electrical schematic number pertaining to a specific vehicle. Looking at Figure 9-17 above you will notice the following digit string 8-8-5-1 between, for example, 10 and R1. As all Labrie electrical schematics begin with ZS00, you simply add those digits to that base number to get the corresponding electrical schematic number. So, in this case, the electrical schematic number is ZS008851.

Press “Esc” to return to the preceding page.

Pump Usage

This section contains an optional hour meter that tracks pump usage for maintenance purposes.

Press “Esc” to return to the preceding page.

Time Adjust

This section allows you to set the Time and Date indicator.

Press “Esc” to return to the preceding page.

Auto-Retract on Auto-Packing (On/Off)

This standard option allows the packer to automatically retract on auto-packing.

Press “Esc” to return to the preceding page.

Programmed Auto-Packing (On/Off)

This standard option allows the packer to automatically skip 1 every 2 carts.

Press “Esc” to return to the preceding page.

Deep Stroke (On/Off) - Full-Eject Version Only

This standard option allows the packer to extend further into the body for recycling applications.

Press “Esc” to return to the preceding page.

NOTE: To go back to the Main Page or Main Menu, press “Esc” as needed until the desired page is displayed.

EnviroLink™ Multiplex System

NOTE: The EnviroLink™ Multiplex System is one of the two multiplex systems currently being used by Labrie Environmental Group, the other being the IFM Multiplex System. Both multiplex systems share many common features and elements, and generally speaking, operate almost the same way. The focus of this section is about the *EnviroLink™ Multiplex System*. If your waste truck is rather equipped with the *IFM Multiplex System*, refer to the *IFM Section* on page 221.

Labrie Environmental Group has equipped your AUTOMIZER™ unit with a CAN bus-based multiplex system, which integrates a monitor, a control panel, a joystick, and a set of electronic modules. This whole system has been tailored to help you operate your unit in an efficient and easy way. The EnviroLink™ Multiplex System is an advanced version of such a system: its architecture has been completely redesigned to better meet your needs. User interactions are clear, precise and natural. Like its predecessor, the EnviroLink™ Multiplex System is reliable, user-friendly and safe, and it requires less wiring harnesses to operate. It can also monitor various function status of the body and display warning and caution messages.

Through its monitor (see Figure 9-18), the EnviroLink™ Multiplex System informs you of any malfunctions that may occur during the operation of the truck. Various caution and warning messages can be displayed on the monitor, depending on the seriousness of the situation. Yellow-highlighted messages indicate that caution should be used while red-highlighted messages indicate a warning situation that must be dealt with quickly.

Figure 9-18 Monitor

NOTE: The EnviroLink™ monitor has touch screen capabilities.

How Is the System Powered

The EnviroLink™ Multiplex System's main controller is powered directly from the truck's batteries. This controller is activated when the ignition key is turned to accessory or start mode. The main controller is powered at all times, even when the engine is off and the ignition key is removed, the controller going into standby mode to limit power consumption. This ensures that the multiplex system can be quickly put back into operation once the truck is restarted. It will shut down completely after X hours of inactivity on the truck to protect the batteries, or when the master switch is turned off by the operator. In the latter case, restarting the multiplex system will take anywhere from a few seconds to a minute, the time it takes for the controllers to restart after the master switch is activated and the ignition key is turned back on.

NOTE: It's good practice to close the master switch when the truck is parked overnight or for longer periods.

As for the Multiplex Monitor's touch screen, it is powered by an output from the main controller and goes into a deep sleep when the truck's key is removed from the ignition. Therefore, it is normal to see some glow or brightness coming from the screen in the dark, even when the truck's engine is turned off. However, when the master switch is closed, the screen goes completely black because the multiplex system is no longer powered by the truck's batteries. The system will restart and the display will turn on when the master switch is turned back to "ON" and the operator turns the ignition key. To limit the amount of power consumed by the batteries, the display backlight is programmed to last a number of hours (enough to last through the night and avoid a complete restart of the display the next morning). After this time, the display will turn off completely.

When the multiplex system starts up, a green LED lights up in the top right-hand corner of the monitor. The Welcome screen with animated ENVIROLINK™ logo (see Figure 9-19) is then displayed during the start-up phase.

Figure 9-19 ENVIROLINK™ logo on monitor screen

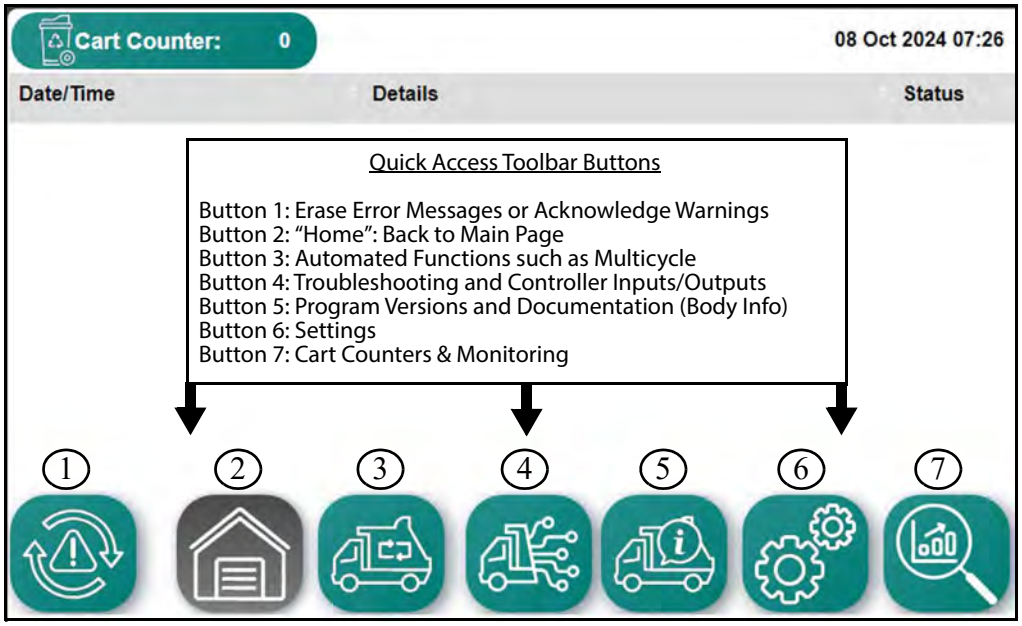
NOTE: If the Welcome Screen with the ENVIROLINK™ logo stays on continuously, there may be a communication problem between the monitor and the master control module. Report this problem to the maintenance personnel.

NOTE: The monitor screen works even if the engine is not running and the key is removed from the ignition. It turns off when the master switch is turned off or when a specific number of inactivity hours have been reached.

Main Page

The next page that comes up after the Welcome Screen is the Main Page (see Figure 9-20). Here you will find the Quick Access Toolbar for links to the sub-menus. This 7-button toolbar is located in the lower portion of the screen. The Main Page also shows any warnings and errors that may occur during the operation of the unit. The Main Page may also have the following optional indicators: Time and Date Indicator, Hydraulic Oil Temperature Indicator and Cart Counter.

Figure 9-20 Main page



Quick Access Toolbar

The Quick Access Toolbar is a collection of 7 shortcuts that lead to specific sub-menus or commands. The following is a short description of those 7 shortcuts:

NOTE: Item numbers refer to Figure 9-20.

Shortcut Button #1: Use this button to erase any error messages or acknowledge warning messages.

Shortcut Button #2: Use this button to go back to the Main Page.

Shortcut Button #3: This button takes you to any automated features provided and their related settings. An example of an automated feature on your truck is the Multicycle.

Shortcut Button #4: This button is used when troubleshooting any technical issues with the truck. It gives you a visual representation of all controller inputs and outputs.

Shortcut Button #5: Use this button if you want to get access to various information about the waste body, including program versions.

Shortcut Button #6: This button allows the user to log in, change language, change time and date, and eventually change settings to fine tune packer and automated arm operation.

Shortcut Button #7: This button gives you access to the Counter and Monitoring Page. This is the page where you can view the Cart Counters and reset them. You can also view the Pump/PTO counter. Furthermore, this page allows monitoring of key components of the system.

NOTE: The Quick Access Toolbar is always displayed regardless of which page you are currently on.

NOTE: When a specific page is loaded on the monitor display screen, the corresponding button in the Quick Access Toolbar becomes gray.

Cart Counter (optional)

This indicator tells you how many carts have been emptied so far. If your vehicle is equipped with 2 arms, you should see 2 counters, one for each arm.

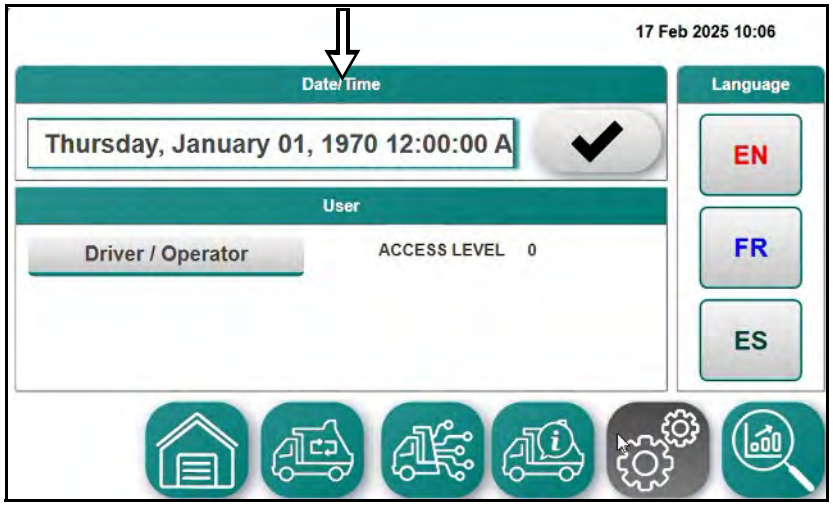
To reset the counter display to zero, select Shortcut Button #7 "Counters and Monitoring". A new page will load and allow you to reset the counter to zero.

Time and Date Indicator

A time and date indicator is found on the upper right-hand side corner of the screen. This feature comes from the multiplex system and is updated on the screen via button #6.

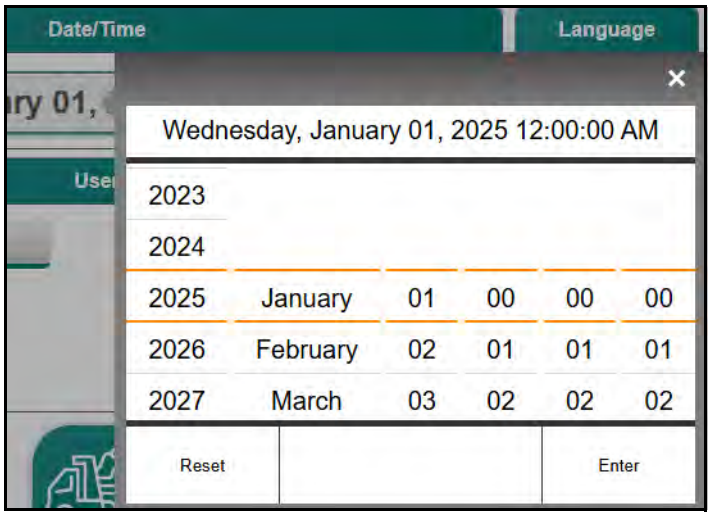
To set the Time and Date indicator, select Shortcut Button #6 "Settings" (see Figure 9-20).

Figure 9-21 Time and date



With your finger, select the Date and Time field next to the check mark. A drop-down menu will appear (see Figure 9-22).

Figure 9-22 Date/time drop-down menu



Using this drop-down menu, you can manually set the correct time and date in the EnviroLink™ Multiplex System. Once done, select Enter then touch the check mark. The Reset button allows you to clear out your selection and start anew.

NOTE: No need to enter a password to change the time and date in the EnviroLink™ Multiplex System.

Changing Interface Language

In the EnviroLink™ Multiplex System, you can change the interface language to either English, French or Spanish. Most of the texts and messages will appear in that language.

To change the interface language, select the Shortcut Button #6 "Settings" from the Quick Access Toolbar (see Figure 9-20). On the right side of the screen, there are 3 buttons marked "EN", "FR", and "ES". To have the texts written in English, choose the "EN" button, in French, choose the "FR" button or in Spanish, choose the "ES" button.

NOTE: No need to enter a password to change the interface language.

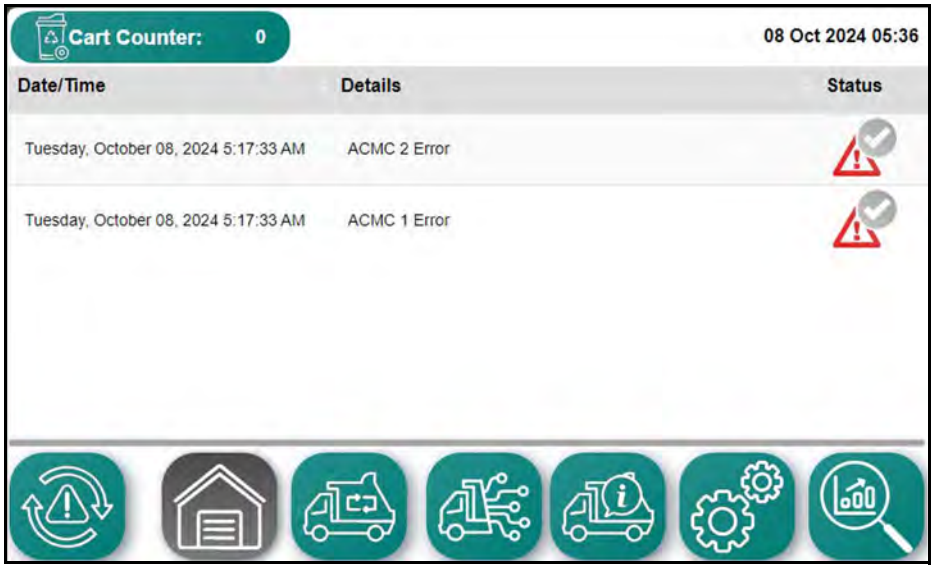
Hydraulic Oil Temperature Indicator (optional)

This optional indicator, when provided, shows you the current hydraulic oil temperature. This indicator is found on the upper left-hand side corner of the screen.

Warning and Caution Messages

Warning and caution messages may appear on the monitor screen, and the types of messages depend on the problems faced while operating the truck. Caution messages indicate situations where caution should be used and warning messages indicate a situation that must be dealt with quickly.

Figure 9-23 Warning and caution messages on monitor



Should the system issue a warning or caution message, it will appear on the Main Page.

For example, an error message could appear on the monitor screen alerting the operator to a problem with the hydraulic pump not being able to run. Faced with such a situation, the operator will have to find the cause of this problem and apply an appropriate solution to resolve it.

If the system detects a problem, a beep will sound and a message will appear on the monitor screen.

NOTE: To choose a specific section from the Quick Access Toolbar, just select the shortcut button corresponding to that section. To go back to the Main Page, select Shortcut Button #2 "Home".

Logging into the EnviroLink™ Multiplex System

The EnviroLink™ Multiplex System has various settings options for different features including packer multicycle and interface language. If one of those settings needs to be changed, the user must log in the system by entering an access level password and proceed with the change. Not everyone can make a change in the EnviroLink™ Multiplex System. Only persons with specific access level can make changes. Those persons are the following:

- Driver/Operator → Access Level 0
- Fleet Manager → Access Level 2
- Chief Mechanic → Access Level 2
- LabriePlus (Service) → Access Level 3
- Labrie (Factory) → Access Level 3

NOTE: To make changes to the multicycle settings, the user must be logged in with minimum Access Level 2.

To make a change to one of the settings in the EnviroLink™ Multiplex System, proceed this way:

1. Select Shortcut Button #6 "Settings" (see Figure 9-20).
   The selected button becomes gray.
2. Touch the Driver/Operator button to open the drop-down menu.
3. Select the required access level depending on your role in the company (see list above).
   The minimum access level is 2 that is as Fleet Manager or as Chief Mechanic.
4. Enter the access level password then touch Enter.
5. Press the Login button.
6. A pop-up that says "Login Successful" appears on the screen. Touch the OK button.
   You are now logged in the EnviroLink™ Multiplex System and therefore able to make changes.
7. Once those changes are made, return to the Settings window and press the Logout button to exit the session.

NOTE: When the system controller restarts or shuts down, an automatic logout will occur.

Changing Passwords

To change your password, log into the EnviroLink™ Multiplex System (see *Logging into the EnviroLink™ Multiplex System* on page 247). Once logged in, simply press the Change Password button and a pop-up window will appear. Enter and confirm new password and press Change Password to save the new password or Cancel to leave this window without saving the new password.

Figure 9-24 Change password window

NOTE: Upon delivery of a truck from factory, the "Fleet Manager" and "Chief Mechanic" passwords are both set to a specific Labrie unit number. This is a 6-digit password that you can change after logging in. This password is based on the order number of the truck. For example, the password that comes from the order number 1000-106725-1 is 106725.

NOTE: Both the Fleet Manager and the Chief Mechanic can change the password after logging into the EnviroLink™ Multiplex System. Then, they should write down their new password and place it in a secure location in case they forget it, otherwise an upload of the basic program will be required. If needed, call LabriePlus.

NOTE: A new password must consist of 4-6 digits. All digits except zero (0) are accepted.

NOTE: If a pop-up that says "Authorization Failed" appears on the screen, touch the OK button and re-enter your password.

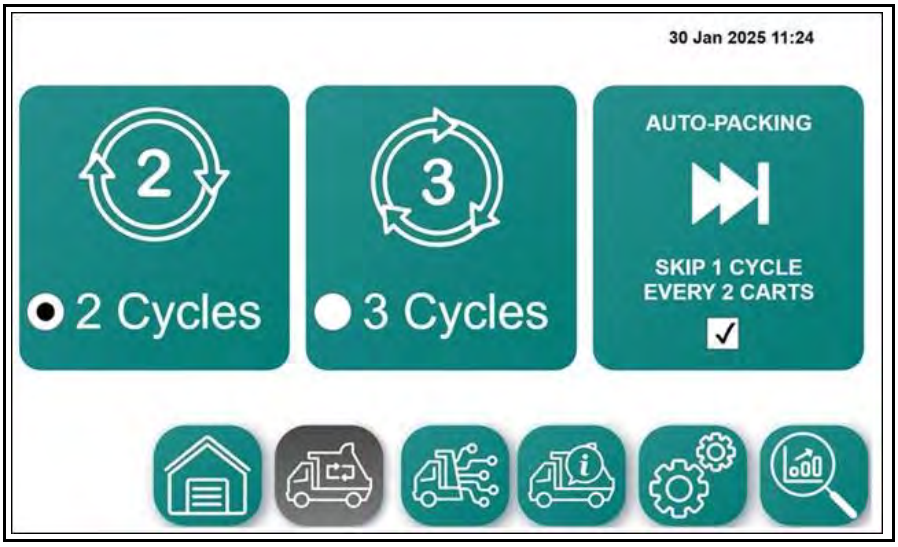
Changing Multicycle Settings

The EnviroLink™ Multiplex System monitor allows you to change the multicycle settings of the packer. But before doing so, make sure the MULTICYCLE switch on the control panel is turned on. Then all you have to do is log into the system using your access level password (see *Logging into the EnviroLink™ Multiplex System* on page 247) and tap on the screen to select Shortcut Button #3 "Automated Features" in the Quick Access Toolbar (see Figure 9-20). Once the corresponding page is loaded, you are presented with 3 options: 1 → 2 packer cycles; 2 → 3 packer cycles; 3 → skip 1 packer cycle every 2 carts (see Figure 9-25). Choose the desired number of packer cycles by tapping on the corresponding radio button. If you want the packer to skip one cycle every 2 carts, tap on the square button. A check mark will appear confirming this option is active. Tap again to make it inactive (check mark will disappear). To disable the multicycle function, just turn off the MULTICYCLE switch on the control panel.

NOTE: All options in the Automated Functions window may be locked if a user with adequate access level has made changing the multicycle settings impossible. In such a case all options in this window will appear gray. Locking those options is done, for example, when a Fleet Manager wants to prevent premature wear and tear on packer wear shoes on all his trucks. Unlocking them is done by any user logged in the system with access level 2 or higher.

NOTE: When a specific page is loaded on the monitor display screen, the corresponding button in the Quick Access Toolbar becomes gray.

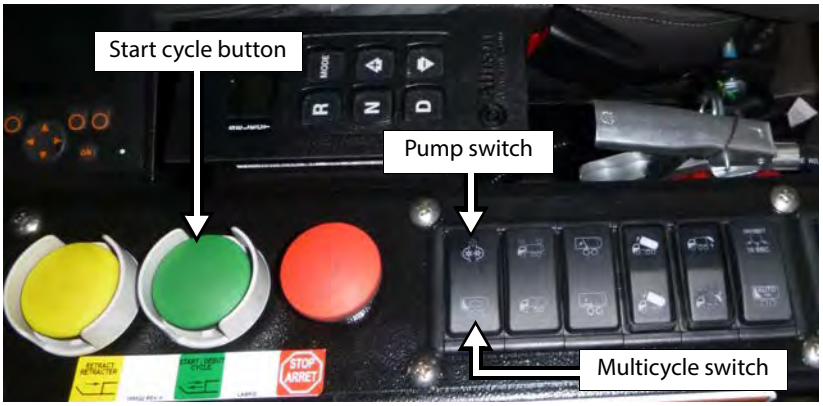
Figure 9-25 Multicycle page



NOTE: The packer multicycle function has been preset at the factory to carry out three cycles.

When the MULTICYCLE switch on the control panel is on and the packer is activated, the packer will move according to the default number of cycles (that is 3) or to the number of cycles you chose.

Figure 9-26 Control panel



To test the new packer settings:

1. On the control panel press the MULTICYCLE switch and the green START CYCLE button (see Figure 9-26).
2. Once the packer has completed its cycles and come to a stop, switch off the hydraulic pump and turn OFF the engine.

The number of cycles needs to be adjusted depending on the type of collection route used by the vehicle. For example, in a residential area, if the houses are numerous and close to one another, it may be required to select the higher number of cycles. This will allow the hopper to be clear for the next house pickup.

Each time the packer completes a full cycle, the packer limit/proximity switch sends a signal to the electronic module. The module then counts the amount of cycles that the packer does, and will stop the packer after the preset amount of cycles has been reached.

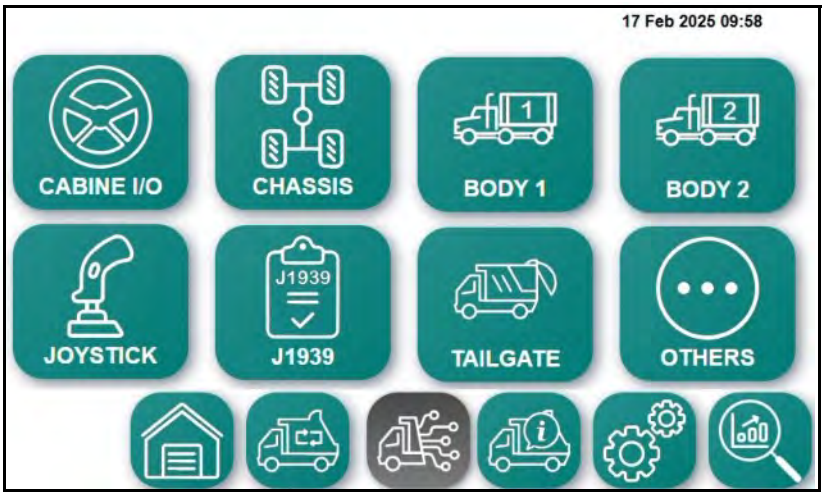
I/O Status Page

In this section, you will find helpful information to troubleshoot body-related problems that you may face during your day-to-day tasks. These problems can be of any nature, from hydraulic to mechanical, electrical or pneumatic.

To access the *I/O Status* Page (see Figure 9-27), log into the EnviroLink™ Multiplex System with your access level password (see *Logging into the EnviroLink™ Multiplex System* on page 247). Only persons with access level 2 or higher can access that page. Then, on the monitor screen, tap Shortcut Button # 4 "Troubleshooting and Controller Inputs/Outputs" in the Quick Access Toolbar (see Figure 9-20), and select the control module corresponding to the part of the truck that needs to be checked. For example, if you want to check all functions that are found in the cab, choose the *Cabine I/O* module. For all functions that pertain to the right hopper, choose the *Body* module 1 or 2, etc.

NOTE: To go back to the Main Page, select Shortcut Button #2 "Home" in the Quick Access Toolbar.

Figure 9-27 I/O Status Page



Cabine I/O Module Page

After you tap the Cabine I/O button, the Cabine I/O Module Page opens up (see Figure 9-28).

Figure 9-28 Cabine I/O Module Page

NOTE: When a specific page is loaded on the monitor display screen, the corresponding button in the Quick Access Toolbar becomes gray.

This module page allows the operator to force a function to be overridden, that is, to make an inactive function active and an active function inactive.

NOTE: All other module pages are similar to the one shown in Figure 9-28.

The layout of each module page is the same with a set of functions represented by single colored rectangles along with a set of buttons. Here's a description of each of those items:

- Red-bordered rectangles mean the related functions are inactive (see Figure 9-28).
- Green-bordered rectangles mean the related functions are active (see Figure 9-29).
- Rectangles with blue background mean the related functions are selected in force-enabled mode (see Figure 9-29).

NOTE: The background takes the blue color for a very short period of time then turns black.

- Rectangles with gray background (see Figure 9-28) mean the related functions are not in force-enabled mode, unlike those with green background which are rather in force-enabled mode (see Figure 9-29).

- Rectangles with yellow background mean the related functions have been forced to be either active or inactive (see Figure 9-29).

NOTE: The yellow background only appears when another function is selected on the same module page. It serves as a reminder that the related function has been forced.

- The ARROWS allow you to go to the next module page (right arrow) or back to the preceding module page (left arrow) [see Figure 9-28].
- The BACK button (see Figure 9-28) allows you to return to the I/O Status Page (see Figure 9-27).
- An indication of which module page you are viewing appears to the right of the right arrow (see Figure 9-28).
- The FORCE POWER ON button (see Figure 9-29) is used to activate the Force mode. Tapping this button will bring up a pop-up message warning you that you are about to override the electronic protection on the unit (see Figure 9-31). After reading the message completely, you will have to answer the question "Do you want to continue" by YES or NO. Permission to use this mode depends on the access level that you have. Once the Force mode activated, this button becomes gray. By tapping it again you will exit this mode.
- The FORCE ENABLE/DISABLE button allows you to change the value of the selected function (see Figure 9-28).
- The ON/OFF button allows you to force an inactive function to become active or an active function to become inactive (see Figure 9-28).

From the I/O Status Page (see Figure 9-27), tap the Cabine I/O icon to display all the functions related to the *Cabine I/O Module* Page.

The *Cabine I/O Module* Page contains a list of functions represented by colored rectangles (see Figure 9-28). Each function is preceded by an "i" for input or by an "o" for output. For example, "i_ServiceBrakePssr" relates to the input element coming from the service brake pressure switch and "o_ServiceBrakePssr" relates to the output element coming from the service brake pressure switch. Other functions are preceded by "ai" or "ao" which respectively mean "analog input" (its value can vary depending on the field conditions - unlike digital signals) and "analog output" (output to extract a signal proportional to the value of the data transmitted - unlike digital signals). "Ai" and "ao" functions can be forced to have different values and their related rectangles can have a green or red underline depending on whether the function is active or not (see Figure 9-28).

NOTE: To select a particular function, just tap the corresponding rectangle.

The colored border of a rectangle will tell you if the corresponding function is active or not (red = inactive; green = active). If the function is active, you can force it to be inactive provided you have the access level password to enter the Force mode. Alternatively, if the function is inactive, you can force it to be active again provided you have the required password to enter the Force mode.

NOTE: Access level password is required if you want to change the value of any function but not required if you just want to see the value of a particular function without making any change.

For example, after logging into the EnviroLink™ Multiplex System using your access level password (see *Logging into the EnviroLink™ Multiplex System* on page 247) and entering the Force mode (see *FORCE POWER ON button* on page 253), let's force the function o_LeftHopperLight to be active (see Figure 9-29). To do so, tap its corresponding rectangle (turns blue momentarily then turns black). Then, tap or swipe the ON/OFF button (toggles to OFF). Tap or swipe the ENABLE/DISABLE button (toggles to ENABLE). Then, tap or swipe the ON/OFF button (toggles to ON and border of rectangle turns green). As soon as you select another function, the background of the preceding rectangle becomes yellow (see Figure 9-29).

Now, let's force the function o_LeftHopperLight to be inactive. To do so, tap its corresponding rectangle (turns blue momentarily then turns black). Then, tap or swipe the ON/OFF button (toggles to ON) and tap or swipe the ENABLE/DISABLE button (toggles to DISABLE). Then, tap or swipe the ON/OFF button (toggles to OFF and border of rectangle turns red). As soon as you select another function, the background of the preceding rectangle becomes dark green. To exit the Force mode, tap the FORCE POWER ON button again. All functions will then get back to their original values.

NOTE: Another way to exit the Force mode and reset the functions that have been modified to their original values is to turn off the multiplex system.

NOTE: The I/O Module Page list of functions is read-only if the user is not logged in or does not have the required access rights.

Figure 9-29 Body 1 Module Page

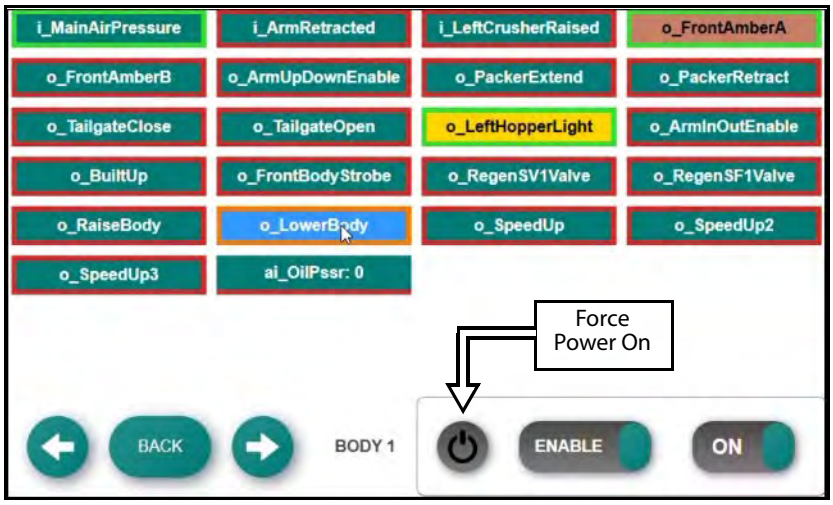
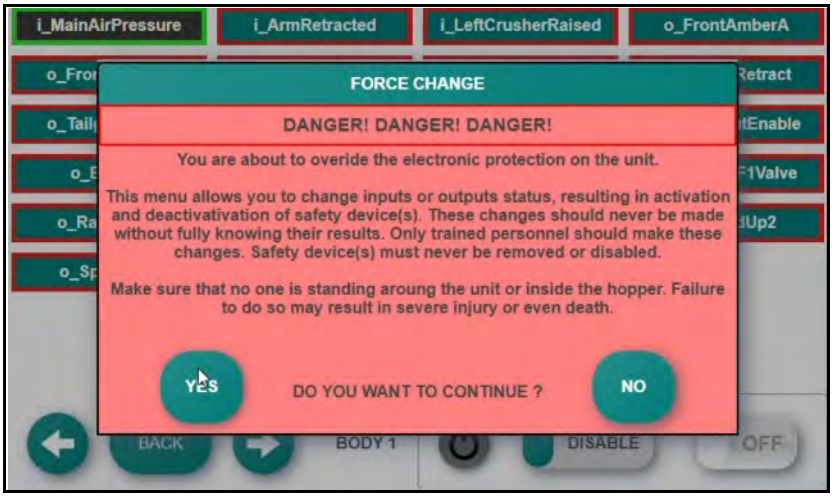


Figure 9-30 Body 2 Module Page

Figure 9-31 Warning message

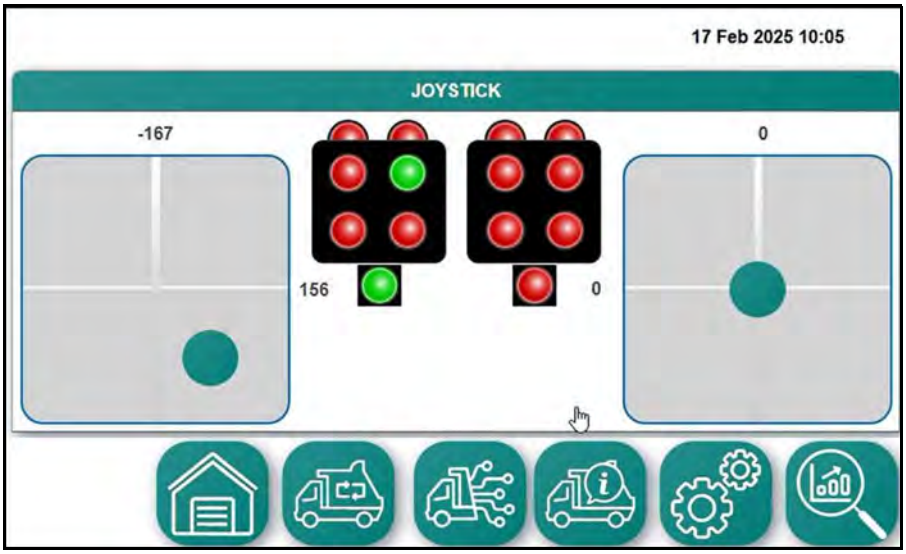


NOTE: To go from one module to another, tap either arrows to navigate through the various module pages or tap the BACK button to go to the I/O Status Page (see Figure 9-27), then select the module you want to access.

Joystick Module Page

The Joystick Module Page is accessible from the I/O Status Page (see Figure 9-27). Tap the screen to select *Joystick*. The Joystick Module Page opens up (see Figure 9-32).

Figure 9-32 Joystick Module Page



The Joystick Module Page allows the operator to check if all functions of the joystick are working correctly.

If you press a joystick button, the corresponding button on the monitor will turn green. If nothing happens, there may be a communication problem between the joystick and the Master Control Module. Refer to the maintenance personnel or Labrie*Plus*.

Also, if you move the joystick backwards, forwards or sideways, you should see the values under the illustration changing. If no change occurs when moving the joystick, a communication problem between the joystick and the Master Control Module may be the cause. Refer to the maintenance personnel or Labrie*Plus*.

NOTE: To go from one module to another, tap on the Quick Access Button #4 to reach the I/O Status Page (see Figure 9-27). Then, select the module you want to access.

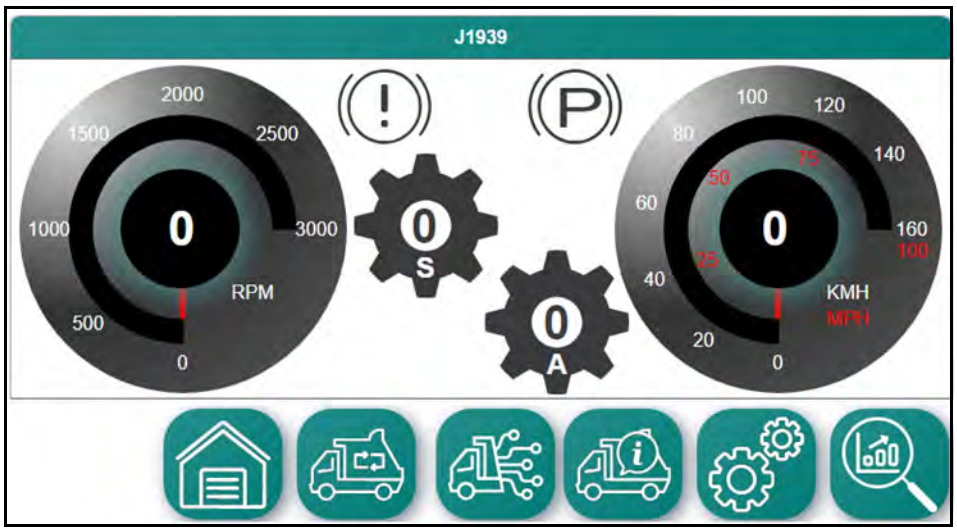
NOTE: To go back to the Main Page, select Shortcut Button #2 "Home" in the Quick Access Toolbar.

J1939 Module Page

The J1939 Module Page is useful when you need some specific information (e.g. current gear, road speed, brake status).

To access this module, simply tap on the module name while the I/O Status Page is displayed on your monitor screen (see Figure 9-27).

Figure 9-33 J1939 Module Page



Your vehicle is equipped with 2 different CAN-based communication buses:

- the **J1939 bus**, which is used for the chassis equipment; and
- the **CANopen bus**, which is used for the body.

These 2 communication buses are completely independent of one another, except for some specific data that are transferred from the chassis J1939 bus to the EnviroLink™ Multiplex System, where they are used. These specific data are the following:

- selected gear
- current gear
- road speed
- engine rpm
- brake
- parking brake

NOTE: To go from one module to another, tap on the Quick Access Button #4 to reach the I/O Status Page (see Figure 9-27). Then, select the module you want to access.

NOTE: To go back to the Main Page, select Shortcut Button #2 "Home" in the Quick Access Toolbar.

Passwords

Data that can be protected by passwords relate to the following features: Output Force, Multicycle and J1939 baudrate.

This feature can also be used to change or remove already saved passwords.

See *Changing Passwords* on page 248 for more information on managing passwords.

NOTE: If you have forgotten your password, please contact the Labrie*Plus* Service Department.

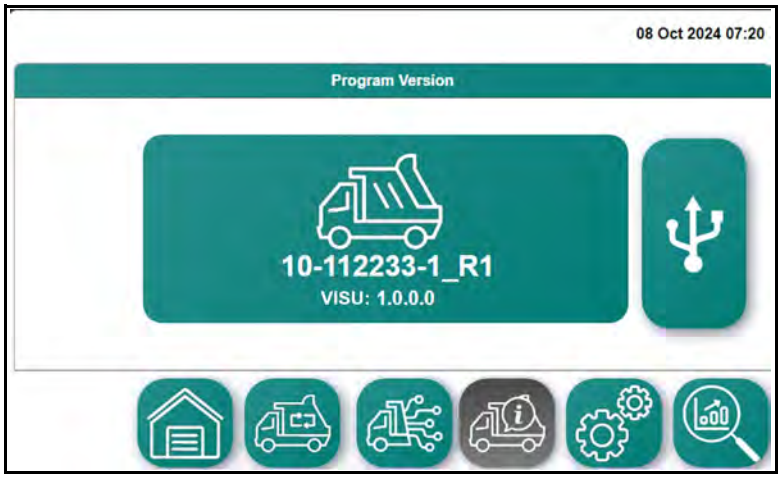
NOTE: To go back to the Main Page, select Shortcut Button #2 "Home" in the Quick Access Toolbar.

Version Page

On the Version Page, you will find the software version currently used by each of the modules installed on the truck and by the Master Control Module.

To access the Version Page (see Figure 9-34), tap on Shortcut Button #5 "Program Versions and Documentation (Body Info)" (see Figure 9-20).

Figure 9-34 Version Page



NOTE: When a specific page is loaded on the monitor display screen, the corresponding button in the Quick Access Toolbar becomes gray.

The Version Page has 2 items:

- 1st item - Upload Software: This feature is locked and cannot be open or changed.
- 2nd item - Software Version: The number indicated is the version number of the software assigned to a specific truck. With this number, it is possible for the operator or maintenance personnel to easily find the electrical schematic for this truck.

  If we break down this number (10-112233-1_R1) into smaller units, we get 10 (the plant where the truck has been manufactured), 112233 (the reference # of the truck or sales order #) -1 (representing the sales order line) and _R1 (review #1). As all Labrie electrical schematics begin with ZS, you simply add the first 8 digits to these letters to get the corresponding electrical schematic for the truck, that is ZS10-112233.

  If you call the Labrie*Plus* Service Department to report an issue with your truck, always mention the reference # of the truck to your technician or FSR to speed up the troubleshooting process.

NOTE: To go back to the Main Page, select Shortcut Button #2 "Home" in the Quick Access Toolbar.

Warning Buzzer

Among the many buttons on the control panel you will find a warning buzzer (see Figure 9-35). This buzzer sounds and a red light in its center flashes to warn the operator of any situation that might be hazardous. When this happens, the operator can look at the monitor screen for more information on the situation. A caution or warning message will be displayed. The buzzer also sounds when the truck is in reverse or when the body and/or tailgate are being raised.

Figure 9-35 Warning buzzer

Plugging a Computer

The in-cab control panel of the AUTOMIZER™ has a computer plug that can be used to connect a laptop computer for reprogramming purposes (see Figure 9-36). Connecting a laptop to this plug requires special hardware and software (included in the service kit). For more information on this, contact the Labrie*Plus* Service Department. In advanced troubleshooting process, a modem may be connected to this plug to help Labrie's technicians to detect and pinpoint the cause of body-related problems.

Figure 9-36 Computer plug

NOTE: Location of the computer plug on the control panel may be different from what is shown in the above picture.

Replacing the CAN Bus-Based Multiplex Joystick

Should the CAN bus-based multiplex joystick need to be replaced for any reason, it will have to be replaced with a new joystick of the same kind and same part number in order to insure continued proper operation of the multiplex system. Do not use other kind of joysticks even if they bear similarities to the CAN bus-based joystick. For more information on CAN bus-based joystick replacement, contact Labrie*Plus*.

Figure 9-37 CAN bus-based multiplex joystick

NOTE: The PTO can only be turned on when the engine speed is lower than 900 rpm and the air pressure higher than 90 psi. It is recommended to raise the engine speed only after the hydraulic system is engaged.

Labrie's multiplex system monitors all safety and operating functions to insure they work at their best. This system transfers data to and from the Allison TCM and the Cummins engine ECU. In order for this to be possible, proper parameters must be put into the TCM and the ECU. In the next section you will find tables that contain such parameters.

Allison Transmission Parameters

In Allison transmissions used on automated vehicles, the Transmission Control Module (TCM) manages several functions:

- It prevents the pump from engaging if the engine speed is higher than 900 rpm.
- It also controls the auto-neutral system (if present).

The TCM is programmed using the Allison DOC software installed on a laptop computer. Allison DOC is also necessary to verify if signals are properly reaching the TCM and to verify the fault code, if any.

Figure 9-38 Allison DOC software

If the TCM of your vehicle needs repair or replacement or if it needs specific programming parameters, see *Programmed Parameters* below.

Programmed Parameters

NOTE: The following tables show parameters that are not necessarily specific to your vehicle. These are general parameters. To obtain the parameters that are closely related to your vehicle, contact Labrie*Plus* and ask for the electrical schematic pertaining to your truck model with all the options installed.

Programming the TCM affects the engine speed, the PTO engagement and operation as well as the (optional) auto-neutral system. If the TCM is replaced, the new TCM must be reprogrammed to reset the vehicle operating parameters. Refer to Table 5 to reprogram the new TCM.

On chassis supplied by Labrie, the programming package for Allison transmissions is package no 142. Some customer chassis may have different programming packages. Refer to your local Allison dealer for original programming packages. For further information regarding TCM programming, contact Labrie*Plus*.

This page and the next page show how Allison TCMs are programmed for Labrie vehicles.

NOTE: The parameters shown in the following tables are typical values and are given for guidance only. Some vehicles may need different parameters based on the options installed. Please call Labrie*Plus* for the values that are specific to your vehicle.

Table 5 Allison transmission programmed parameters

Parameters (PTO Enable)	RPM
PTO Drive Interface 1: Maximum Engine Speed for Engagement	900
PTO Drive Interface 1: Maximum Engine Speed for Operation	4000
PTO Drive Interface 1: Maximum Output Speed for Engagement	5000
PTO Drive Interface 1: Maximum Output Speed for Operation	5000

NOTE: Engine speed (rpm) or road speed (mph) limiters are options.

Table 6 Allison wires to be enabled

Wires	Wire # (WTEC IV)
Pack enable	117
Input PTO enable	143
Output PTO enable	130
Output neutral indicator – PTO	145
Auto-neutral pack enable (if present)	142

To tap into the TCM, Labrie uses the following wires on the Allison connector:

Table 7 Input

Wire #	Description	State
117	Pump pack enable	Active when the brakes are used, and when the PTO and auto-neutral switches are ON (ground signal).
143	PTO enable	Active when the PTO switch is ON (+12-V signal).
142	Auto-neutral pack input	Active when the brakes are used, and when the PTO and auto-neutral switches are ON (ground signal).

Table 8 Output

Wire #	Description	State
130	PTO enable output	Active when the PTO switch is ON and when all engine and vehicle speed criteria are respected (+12-V signal). See *Programmed Parameters* on page 262.
145	Neutral signal output	Active when the transmission is in neutral. This signal (ground signal) is used to allow fast idle engagement. For more details, refer to the electrical schematic provided with the vehicle.

Cummins Engine Parameters

The following table contains the engine programming parameters specific to the AUTOMIZER™ units. Enter those parameters into Cummins engine ECUs. For more information, call Labrie*Plus*.

Table 9 Cummins engine parameters

Menu: Features & Parameters	Parameter Name	Value
Adjustable low idle speed	Low idle speed adjustment switch --- Low idle speed	Disable --- 700 rpm
Switched maximum engine operating speed	Switched maximum engine operating speed --- Maximum operating speed switch setup --- Maximum switched engine speed	Enable --- Active closed --- 900 rpm

A

Annex: Maintenance of the AUTOMIZER™ Pendulum

Your AUTOMIZER™ vehicle is equipped with a pendulum packer instead of the conventional packer panel? Please note that operating a pendulum-equipped AUTOMIZER™ vehicle is the same as operating an AUTOMIZER™ equipped with a conventional packer blade. Processes of loading, packing and unloading are the same regardless of the type of packer installed.

However, the body of the AUTOMIZER™ Pendulum has some differences from the other AUTOMIZER™ bodies. Those differences are the following:

- it has no hopper door;
- no sump boxes;
- no clean-out traps;
- no wear tracks;
- no follower panels;
- no scraper;
- no rollers;
- no floating panel;
- it has a self-cleaning pendulum packer which pushes refuse into the waste body and eliminates trash build-up;
- a fully sealed hopper, and;
- external single stage packing cylinders.

Pendulum Packer

The pendulum packer is a fixed packing system situated between the hopper and the body. It has no rails, no blade and runs quietly as the truck is in operation collecting solid and organic waste directly into the hopper on top of the packing mechanism in action.

The pendulum packer works by simply swinging up and down to receive and pack solid or organic waste. One side of the packer moves under the waste waiting to be packed while the other side pushes the waste into the body.

The pendulum packer is supported by single hinged rods on each side. External hydraulic cylinders, one on each side of the hopper, are utilized to power these rods. And because they are installed outside of the hopper, these cylinders are fully accessible for ease of maintenance. When retracting the cylinders move the pendulum packer upwards; when extending they move the packer downwards, pushing the waste into the body.

Figure A-1 The AUTOMIZER™ Pendulum

Figure A-2 The Pendulum packer

Because the packing system is put to such intensive use (1000 to 3000 cycles a day), Labrie Environmental Group recommends that *operators* perform a visual inspection of the packer and its components every day.

Maintenance personnel *must* perform weekly inspection and maintenance. Greasing all moving parts on a daily basis is very important and proper adjustment of the proximity switches is mandatory, especially on vehicles equipped with a multicycle feature. For more information on the lubrication schedule, see *Lubrication* on page 107.

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 during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 25).

Inspecting the Packer

To inspect the packer:

1. Check out for leaks on hydraulic hoses and tubes.

   Tighten leaking connections and/or replace defective hoses.

2. Verify cylinder rods:

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

   2 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.

3. Verify packer panel adjustment for knocking noises.

   Knocking noises indicate that the Extend proximity switch requires adjustment (see *Adjusting Packer Extend Proximity Switch* on page 77). Proper adjustment is necessary to prevent cylinders from bottoming out under pressure.

4. Make sure that hydraulic cylinders are not leaking internally (resulting in insufficient packing power). For more information, see *Inspecting Hydraulic Cylinders* on page 156.

Preparing Packer for Removal

NOTE: If the truck is fitted with a crusher panel, it must first be removed before uninstalling the pendulum packer (see *Removing the Crusher Panel* on page 277).

Follow these steps before proceeding with the removal of the packer panel:

1. Start the engine and engage the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

Danger!

Secure the area around the path of the automated arm when performing maintenance or repair.

3. Position the packer at an adequate angle to facilitate its removal.

   Figure A-3 shows the packer at the correct angle or inclination, which will ensure a secure and stable removal process.

Figure A-3 Packer at correct angle

NOTE: To move the packer upwards (or downwards) over a short distance, push the green (or yellow) button and then push the red emergency button immediately. Repeat the process until the packer has reached the desired position.

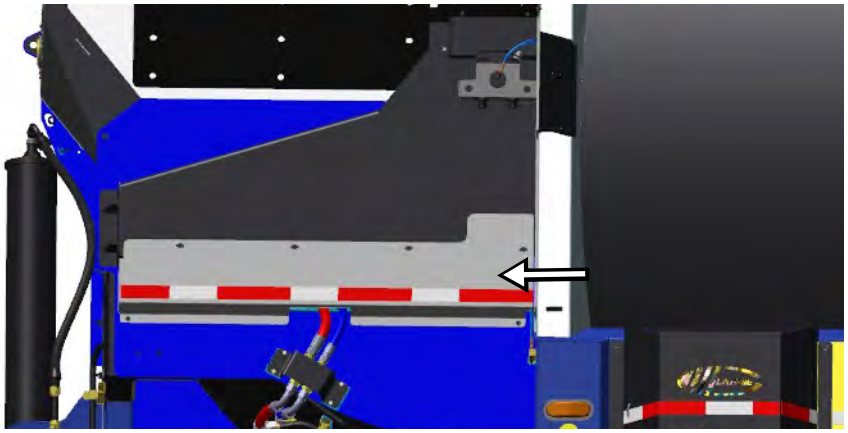
NOTE: To reactivate the hydraulic system after the red button is pushed, you have to pull that button back up then turn ON the PUMP switch on the in-cab control panel (see Figure 2-17).

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

4. Turn off the hydraulic pump and the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
6. If need be, remove the optional hopper roof (see Figure A-4).
7. Remove both side panels to gain access to the cylinders (see Figure A-5).

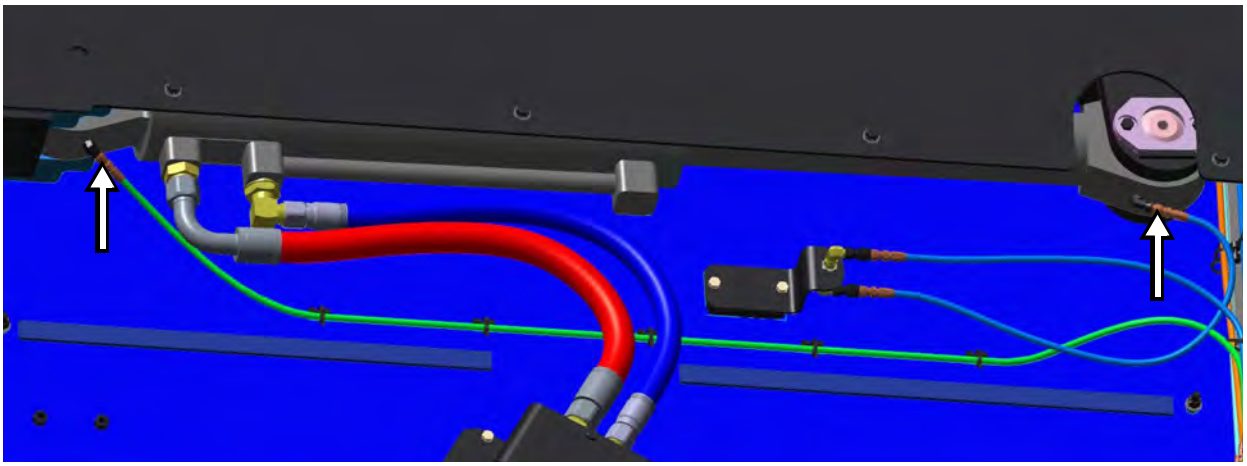
Figure A-4 Hopper roof

Figure A-5 Side panel



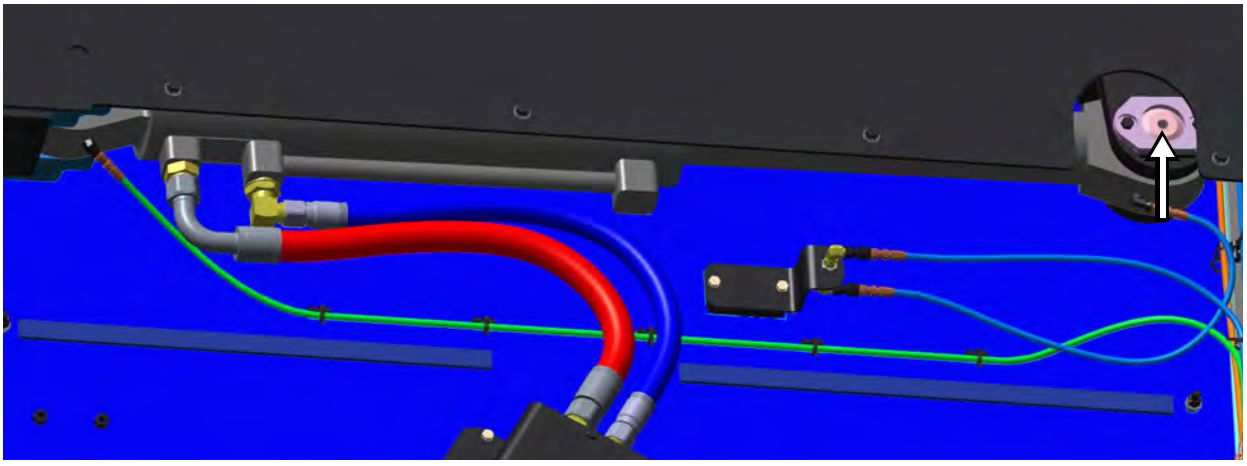
8. Disconnect the greasing hoses from both ends of the cylinder (see Figure A-6).

Figure A-6 Greasing hoses



9. Remove the pin from the rod end of the same cylinder (see Figure A-7).

Figure A-7 Rod end cylinder pin



10. Repeat Steps 6 and 7 for the other cylinder on the opposite side.
11. Remove the crusher panel, if installed (see *Removing the Crusher Panel* on page 277).
12. Re-assemble in reverse order.

Removing the Packer Panel Assembly

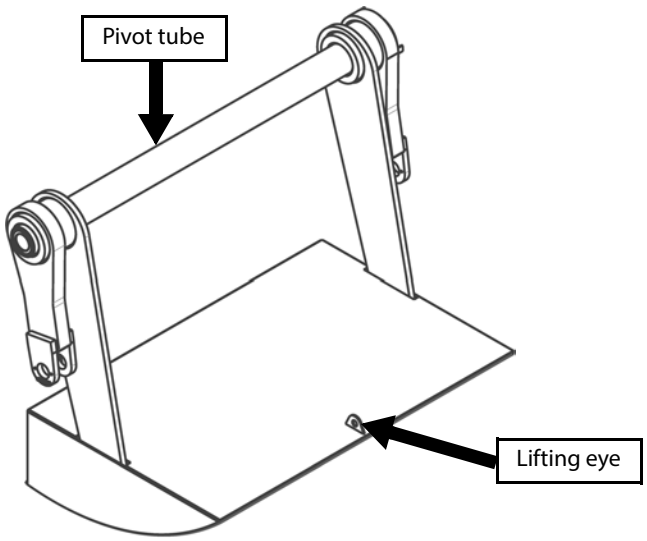
NOTE: When removing the packer panel, you are not just removing the packer itself but all the parts that are attached to it (arm blades, pivot tube, side blades, plate, packer arms).

Once you have prepared the packer panel for removal, you can now proceed with the following removing procedure.

1. Secure suitable chains or cables to the pivot tube of the packer and to the lifting eye of the packer plate (see Figure A-8).

   Be careful not to cause damage to the pivot tube.

Figure A-8 Packer assembly



2. Lift the complete packer assembly out of the hopper and carefully place it on the floor.

Installing a New Packer

To install a new packer:

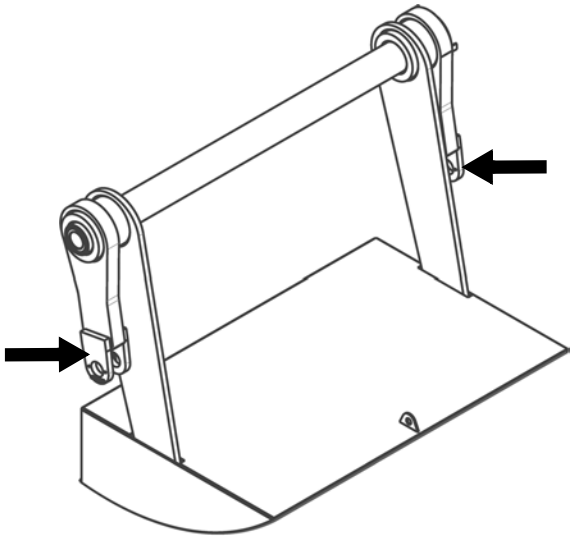
1. Using a lifting device, slowly lower the new packer into the hopper and carefully place it on the hopper floor.

   While lowering it, make sure it is at the correct angle as shown in Figure A-9.

Figure A-9 Packer correctly positioned

2. Reinstall the rod side pin and connect the hydraulic hoses of both packer cylinders.
3. Reinstall the crusher panel if such equipment has been removed (see *Reinstalling the Crusher Panel* on page 279).
4. Start the truck and engage the hydraulic pump.
5. Extend both cylinders.
6. Fix both cylinders to the packer arms.

Figure A-10 Packer arms



7. Connect the greasing hoses to the cylinder pins (see Figure A-6).

8. Grease the cylinder pins and check for proper packer operation.
9. Readjust the proximity switches if need be (for proximity switch readjustment, see *Adjusting Packer Extend Proximity Switch* on page 77).

Packer Cylinders

Packer cylinders that become defective through time need to be replaced. To do so, you first have to access the faulty cylinder, remove it, and then properly proceed with the installation of the replacement cylinder. These steps are explained in the following sections.

Accessing Faulty Packer Cylinder

Caution!

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

To access the faulty packer cylinder:

1. Start the engine and engage the hydraulic pump.
2. If the right-hand packer cylinder needs to be replaced or repaired, extend the automated arm using the joystick to gain better access to the cylinder.

Danger!

Secure the area around the path of the arm when carrying out maintenance or repairs.

3. Fully retract the packer.

Danger!

Do not enter the hopper while the packer is moving.

4. Disengage the pump and stop the engine.
5. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
6. Remove the side panel that gives access to the faulty cylinder (see Figure A-5).
7. Disconnect the greasing hoses from both ends of the cylinder (see Figure A-6).

Removing Faulty Packer Cylinder

Caution!

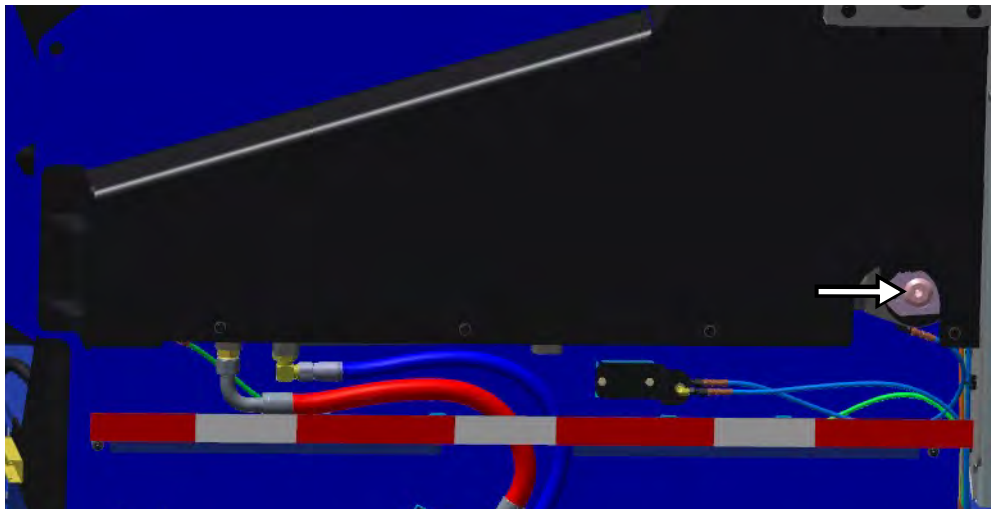
Packer cylinders must be removed with a proper lifting device. This task must be performed by two people.

To remove the faulty packer cylinder:

1. Carry out the preceding procedure (see *Accessing Faulty Packer Cylinder* on page 273).
2. Remove the cylinder rod pin (see Figure A-11). To do so:
   - **2 a.** Remove the 2 bolts that hold the plate in place.
   - **2 b.** Remove the plate.

     By removing the plate the pin will follow.

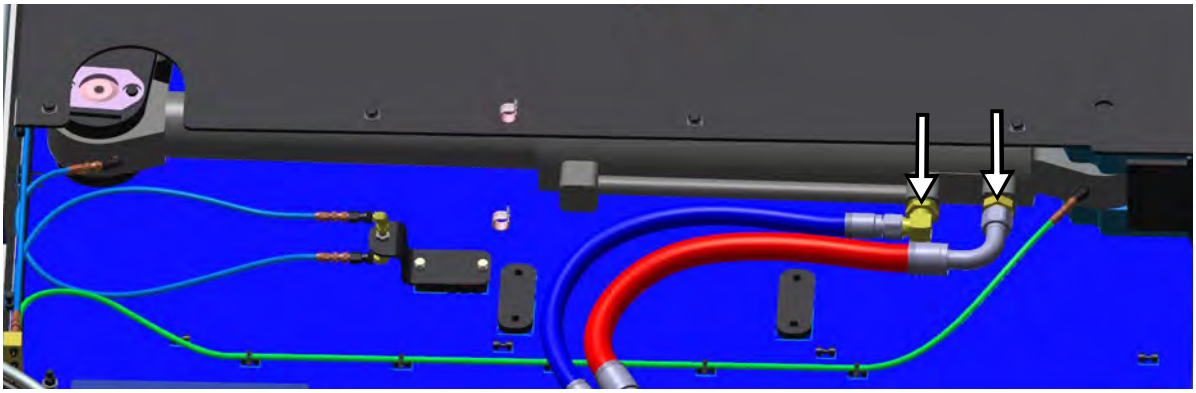
Figure A-11 Rod pin



3. Start the engine and engage the pump.
4. Fully retract the cylinder.
5. Disengage the pump and stop the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
7. Disconnect both hydraulic hoses from the faulty cylinder (see Figure A-12).

   Use absorbent material to catch oil spills

Figure A-12 Hydraulic hoses



8. Place a sturdy support structure under the cylinder. This structure should be capable of maintaining the cylinder in place when all attachments are removed.

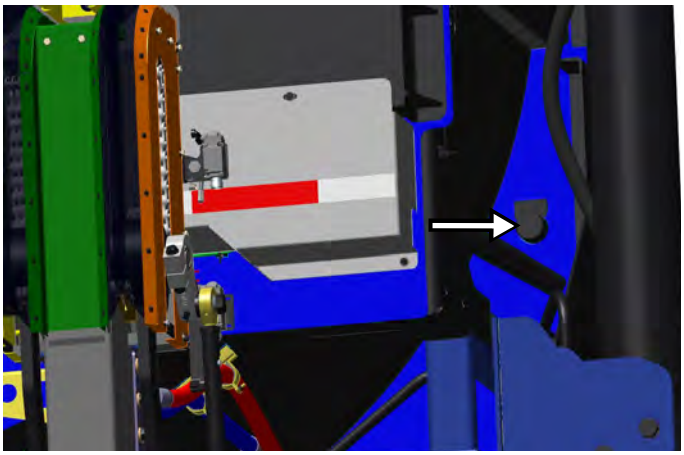
   Support must be able to bear the weight of the cylinder.

IMPORTANT: It is crucial to use a support to prevent the cylinder from falling or swinging unexpectedly, which could cause injury or damage.

9. Remove the base end pin of the cylinder (see Figure A-13). To do so:
   - **9 a.** Remove the 2 bolts that hold the plate in place.
   - **9 b.** Remove the plate.

     By removing the plate the pin will follow.

Figure A-13 Access to base end pin



10. Using the support move the cylinder to an appropriate location for repairs or disposal.
11. If needed, replace the faulty cylinder with a new one. If covered by warranty, contact Labrie*Plus* for replacement.

Finishing Up Packer Cylinder Replacement

To finish up cylinder replacement:

1. Using the support, move the new or repaired cylinder to the installation work area.
2. Reinstall the base end pin and connect the hydraulic hoses.

   Coat the bolts with blue loctite before installing and tightening them.
3. Start the engine and engage the pump.
4. Extend the cylinder rod until it can be fixed to the packer.
5. Reinstall the rod end pin.

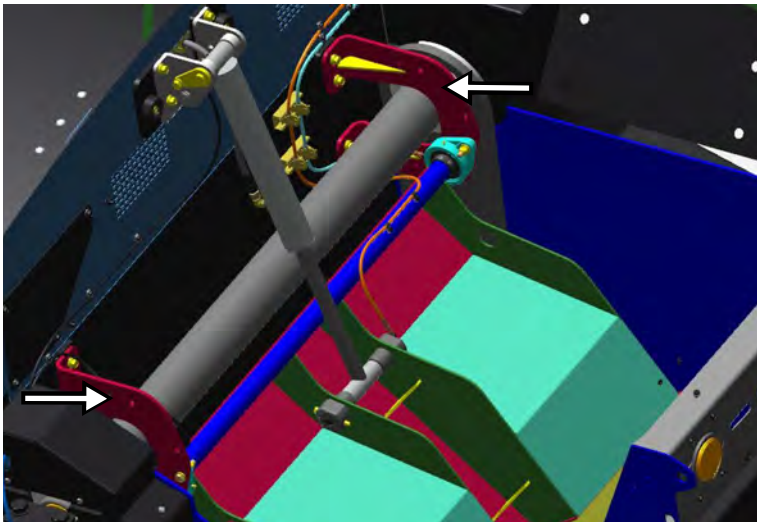
   Coat the bolts with blue loctite before installing and tightening them.
6. Connect the greasing hoses to the cylinder pins.
7. Grease the cylinder pins and check for proper packer operation.

Crusher Panel (optional)

The crusher panel is an option that may be installed on an AUTOMIZER™ vehicle. It helps crush bulky items before the packer pushes them into the body. Occasionally, the crusher panel must be removed for repairs or to allow the pendulum packer to be taken out.

NOTE: To take out the pendulum packer, both brackets holding the crusher panel assembly in place (see Figure A-14) must be removed, creating more space inside the hopper.

Figure A-14 Brackets holding the crusher panel



IMPORTANT: Before removing the brackets, secure the crusher panel with slings, chains or cables connected to an appropriate lifting device.

Warning!

Removing a crusher panel is a technical task that should be done with care. This panel is typically part of the hydraulic system, so improper removal can cause damage or pose safety risks.

Removing the Crusher Panel

To remove the crusher panel, do the following:

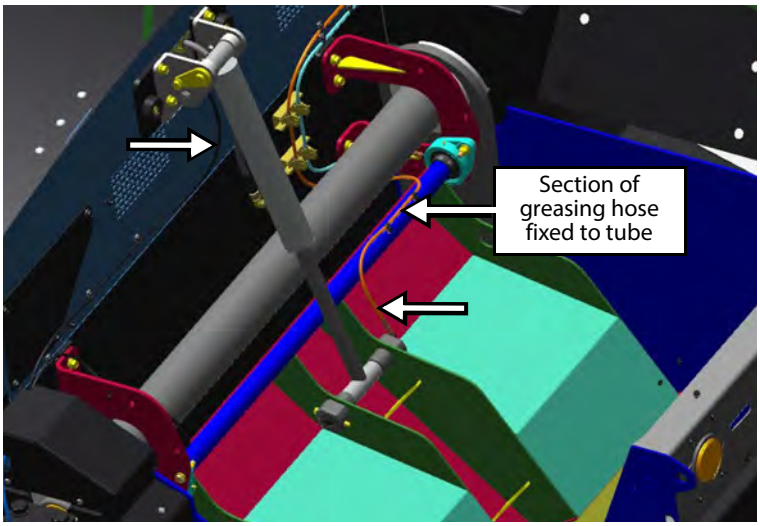
1. Start the engine and engage the hydraulic pump.
2. Fully lower the crusher panel.
3. Disengage the hydraulic pump, then stop the engine.
4. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
5. Secure the crusher panel properly with suitable slings, chains, or cables attached to an appropriate lifting device.

NOTE: Be careful not to cause damage to the pivot tube.

6. Disconnect both greasing hoses from the crusher panel cylinder (see Figure A-15).

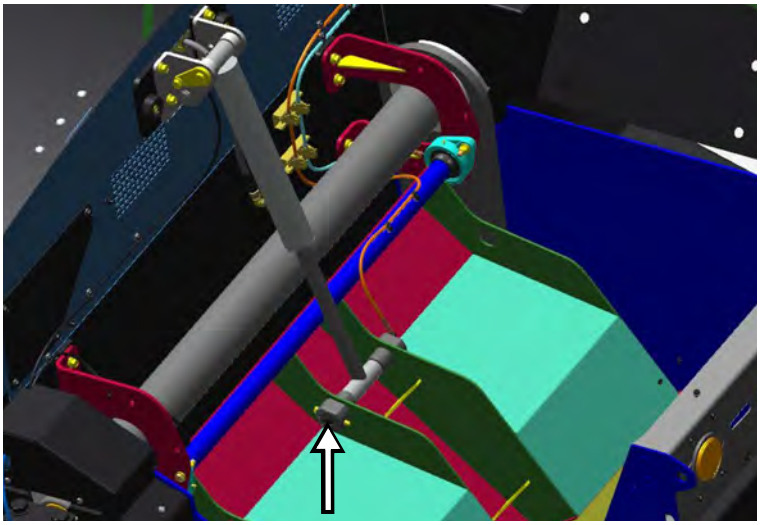
   The section of the greasing hose fixed to the crusher panel's pivot tube by two brackets must also be detached.

Figure A-15 Greasing hoses



7. Remove the rod end pin of the crusher panel cylinder (see Figure A-16).

Figure A-16 Rod end pin

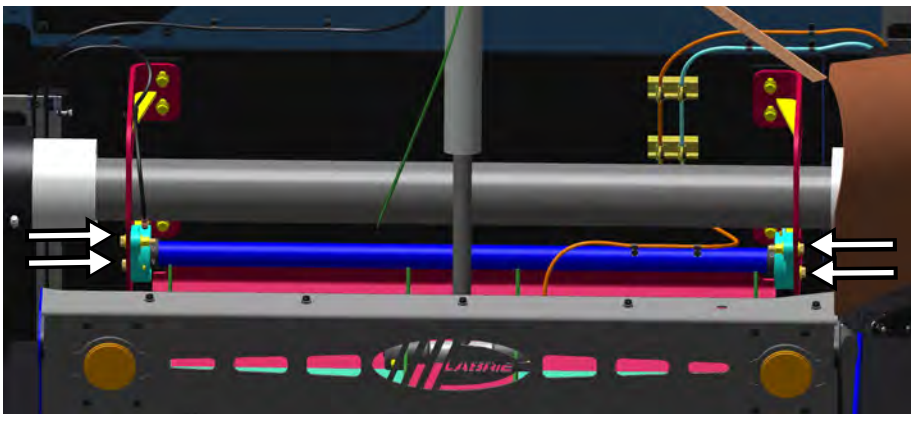


8. Exit the hopper.
9. Start the truck and engage the hydraulic pump.
10. Fully retract the crusher panel cylinder.
11. Disengage the hydraulic pump, then stop the engine.
12. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
13. Disconnect any greasing hoses from the bearings of the crusher panel's pivot tube.
14. *If the pendulum packer is to be taken out*, remove both brackets that hold the crusher panel in place (see Figure A-14).

    Before removing the brackets, ensure that the crusher panel is securely attached to an appropriate lifting device to prevent injury or damage.
15. *If the pendulum packer is not to be taken out*, remove the 4 bolts that secure the crusher panel's pivot tube to the brackets (2 bolts on each side).

    Before removing the pivot tube from the brackets, ensure that the crusher panel is securely attached to an appropriate lifting device to prevent injury or damage.

Figure A-17 Bolts holding pivot tube in place



16. Lift the crusher panel out of the hopper and place it in a secure location for repairs.
17. After the repairs are finished, use an appropriate lifting device to put the crusher panel back inside the hopper.

Warning! Exercise extreme caution when moving the crusher panel to its destination.

Reinstalling the Crusher Panel

To reinstall the crusher panel inside the hopper, follow these steps:

1. Slowly lower the crusher panel inside the hopper using an appropriate lifting device.
2. *If you have removed and reinstalled the pendulum packer*, put back both brackets that hold the crusher panel assembly (see Figure A-14).

   Make sure the crusher panel is firmly fixed to the hopper wall via the brackets before removing any lifting tools used to support it.
3. *If the pendulum packer has not been taken out*, put back the 4 bolts that secure the crusher panel's pivot tube to the brackets (see Figure A-17).
4. Reconnect any greasing hoses to the bearings of the crusher panel's pivot tube.
5. Exit the hopper.
6. Start the truck and engage the hydraulic pump.
7. Extend the crusher panel cylinder sufficiently in order to pin the rod to the panel (see Figure A-16).
8. Disengage the hydraulic pump, then stop the engine.
9. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 25).
10. Install the cylinder rod end pin (see Figure A-16).
11. Reconnect both greasing hoses to the crusher panel cylinder (see Figure A-15).

    A section of the greasing hose going to the rod end of the cylinder must be fixed to the crusher panel's pivot tube by two brackets (see Figure A-15).
12. Remove all lifting tools, such as chains, slings, and cables, from the crusher panel.
13. Exit the hopper.
14. Start the truck and engage the hydraulic pump.
15. Check that the crusher panel is operating properly.

Recommended Cleaning Schedule

Table 1 Cleaning

Description	Schedule
Safety decals	Pre-trip
Mirrors, lights, windows, camera	Pre-trip
Clear debris at tailgate seal	At landfill
Clear contact surfaces of body and chassis	At landfill
Clear debris on lift (if any)	At landfill
Wash complete body and chassis (more often if required)	Weekly
Other	As specified by Federal Motor Carrier Safety Regulations (FMCSRs) and/or owner

Recommended Mechanical Inspection and Schedule

Table 2 Mechanical inspection (performed when truck is at rest or stopped)

Description	Schedule
IMPORTANT: Inspect for distortion, cracks and/or unusual wear. Ensure mounting and pin retainer bolts are intact and tight.	
Body seated flat on chassis	Pre-trip (operator), monthly (maintenance)
Body mounts and related nuts and bolts	Pre-trip (operator), monthly (maintenance)
Body hinge ears, pins, and retaining hardware	Pre-trip (operator), monthly (maintenance)
Body raise cylinder ears, pins, & retaining hardware	Pre-trip (operator), monthly (maintenance)
Body raise cylinder mounting bolts on chassis (quantity varies)	Pre-trip (operator), monthly (maintenance)
Hoist safety prop and prop retainers [inspect prior to using]	Operator (weekly)

Table 2 **Mechanical inspection (performed when truck is at rest or stopped) - cont'd**

Description	Schedule
Pendulum assembly	Monthly (maintenance)
Pack pendulum cylinder pins (4) & retaining nuts/bolts	Daily (operator), monthly (maintenance)
Interior of hopper and main body walls, floor and roof	Pre-trip (operator), monthly (maintenance)
Exterior of hopper and main body walls, floor & roof	Pre-trip (operator), monthly (maintenance)
Hopper cover assembly (optional, if equipped)	Pre-trip (operator), monthly (maintenance)
Hopper cover cylinder pins, ears, and retaining hardware (optional, if equipped)	Pre-trip (operator), monthly (maintenance)
Hopper cover cylinder clamp & related nuts/bolts (optional, if equipped)	Pre-trip (operator), monthly (maintenance)
Tailgate assembly	Pre-trip (operator), monthly (maintenance)
Tailgate cylinder ears, pins & retaining hardware	Pre-trip (operator), monthly (maintenance)
Tailgate latch assembly (2), pivots (2) and pins (2)	Pre-trip (operator), monthly (maintenance)
Tailgate seal & seal retainer	At landfill (operator)
Tailgate hinge ears (2), pins (2) & retaining hardware	Pre-trip (operator), monthly (maintenance)
Tailgate safety prop	Pre-trip (operator), monthly (maintenance)
Safety equipment present (e.g. fire extinguisher, first aid kit)	Pre-trip (operator)
Other	As specified by Federal Motor Carrier Safety Regulations (FMCSRs) and/or owner

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8:00 am - 5:00 pm Eastern Standard Time
email: labriepluswarranty@labriegroup.com

For technical support and parts ordering, the body serial number of your vehicle is required. LabriePlus recommends keeping record of the information found on the body serial number stickers located in the cab doorjamb and street side front corner of the body.

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