



AUTOMIZER™

FULL-EJECT

Maintenance Manual

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Reward!

To the first person to notify us of an error in any of our publications!



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.

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- In the _____ manual | Part No. _____ | Page(s) _____
- It should say: _____
- Name: _____ Address: _____



THANKS FOR YOUR HELP!

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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 in This Manual

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.

About the Illustrations in this Manual

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 LabriePlus 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.

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 multiplexed 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).

Multiplexed System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplexed 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 multiplexed 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 multiplexed 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 Monitor



NOTE: Maintenance personnel as well as in-the-field technicians who encounter any problems with the multiplexed system should refer to the *Multiplex Diagnostic Manual* (part# 153143_01) for troubleshooting information and guidelines.

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/yd³ 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, electric 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 LabriePlus and LabriePlus 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 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 26).

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 damages.

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 26) 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 raising the tailgate or using the arm. If the unit is equipped with a service hoist, carry out this inspection prior to hoisting the body.
- ◆ Use the body safety prop when servicing under the body (units with a service hoist).
- ◆ *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 26.
- ◆ 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 (units equipped with a service hoist).
- ◆ Do not back up the vehicle when the body is raised (units equipped with a service hoist).
- ◆ Do not use the body safety prop to prop a *loaded* body (units equipped with a service hoist).
- ◆ 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 *Operators' 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 (units equipped with a service hoist).
- ◆ 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 26.
- ◆ 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 damages, personal injury or death.

Warning!

Make sure there is enough clearance between 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.

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.

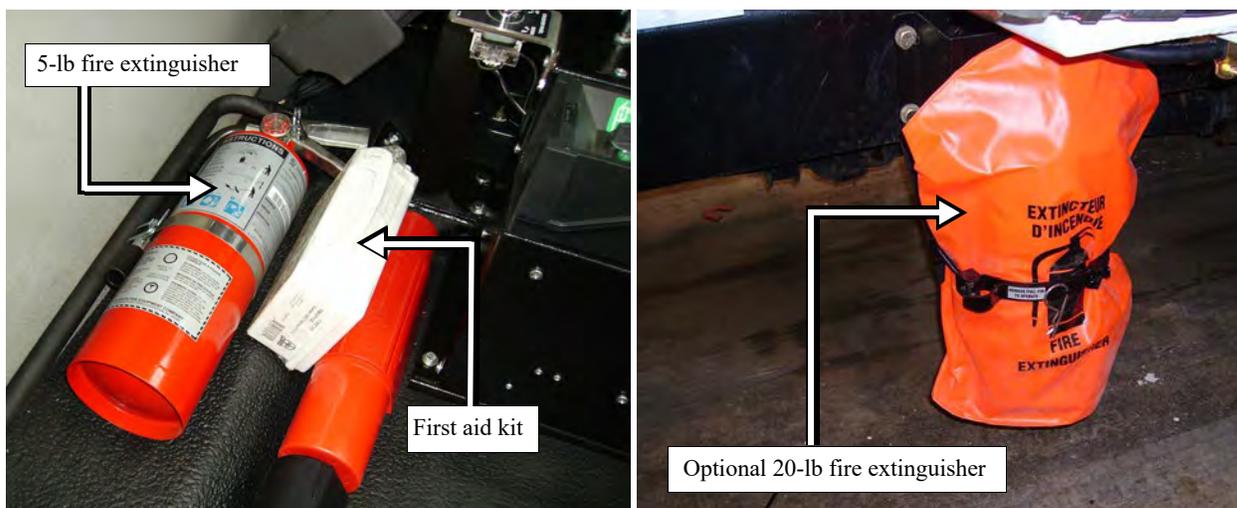


- ◆ The employer must also inform employees of an appropriate place to unload the body near the maintenance facility (preferably away from traffic, surface drains, and ditches).
- ◆ Keep a fire extinguisher accessible at all times.
- ◆ Never use lighted smoking materials, open flame or sparks around 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



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.
- ◆ If you need to clean debris from the edges of the tailgate(s), use a pole while standing to the side.

Safety Features

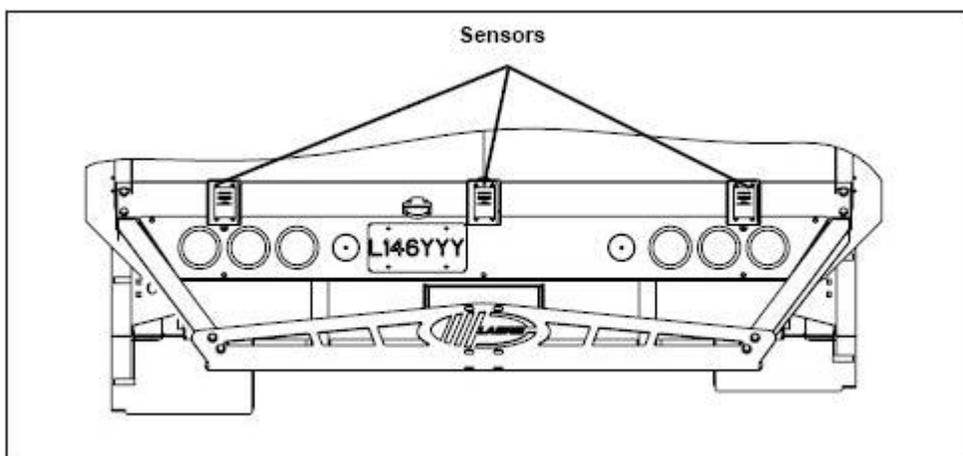
Global Motion Sensors (Optional)

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.

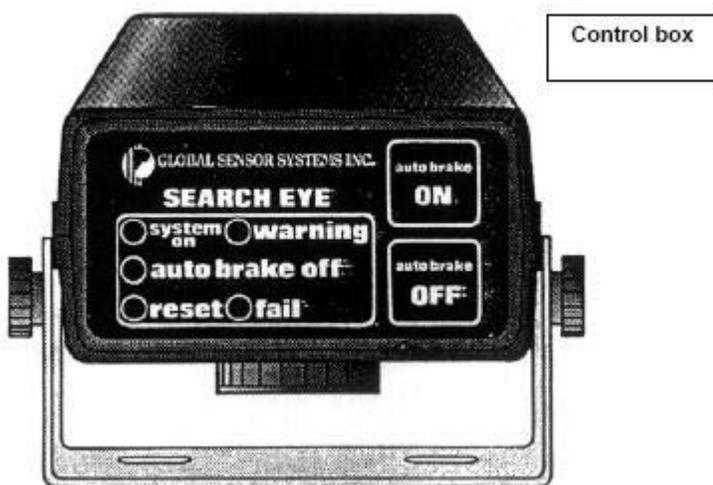


The main components of this system are a control box placed in the cab, a set of sensors fixed on the rear bumper, and a solenoid valve mounted on the chassis.



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!



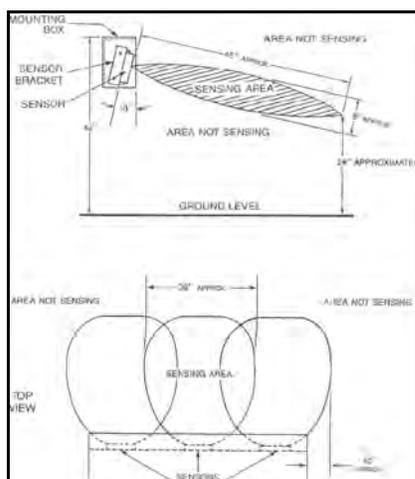
Sensor lenses must be kept clean to ensure proper operation of the system. If the lenses are allowed to become dirty, system range will be decreased.

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.

Service Hoist Safety Prop (Optional)

The service hoist safety prop must be set when any work is performed under a lifted body. This feature comes with the service hoist option.

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

Warning! Always unload the body before setting the hoist safety prop.



Setting the Service Hoist Safety Prop

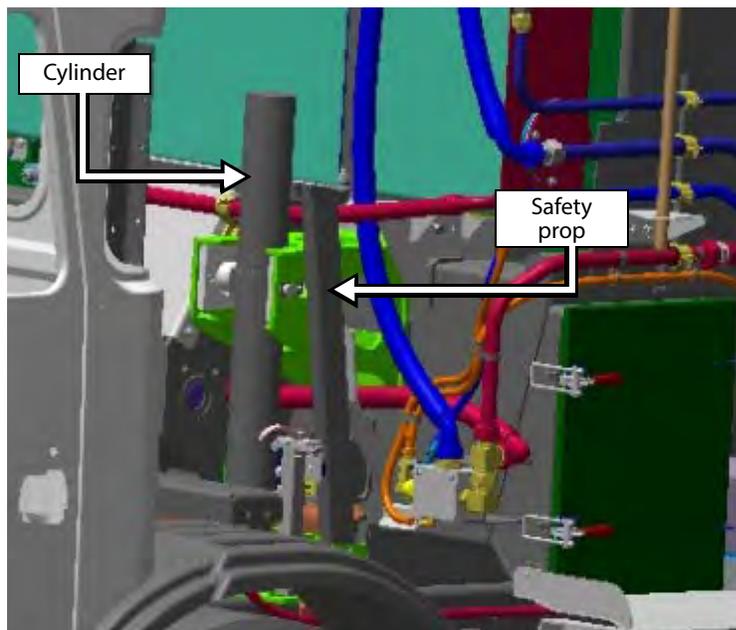
The safety prop ensures that an *empty* body will not lower when you are working underneath it.

Danger!

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



Figure 2-3 Service hoist safety prop and cylinder



To set the service hoist safety prop:

IMPORTANT: Before proceeding with the following procedure, make sure the truck engine is stopped.

1. Ensure that there is enough clearance above the body to raise it safely and that the truck is on safe level ground.
2. Remove both yellow spring-loaded bolts that secure the body front-end to the chassis (Figure 2-4).

Figure 2-4 Spring-loaded bolt

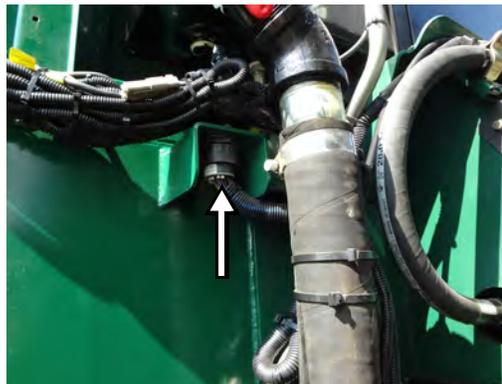


3. Close the shut-off valve on the suction line (Figure 2-5).

Figure 2-5 Shut-off valve on suction line



4. Disconnect the electric harness (Figure 2-6).

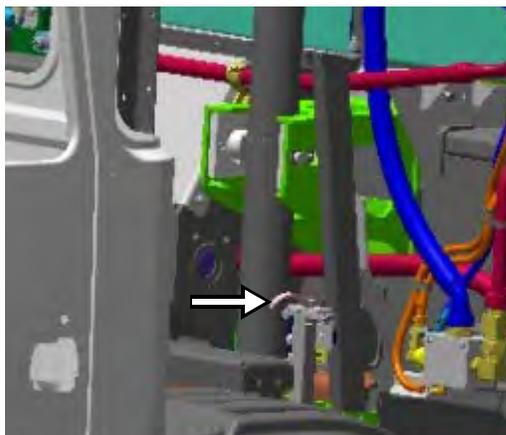
Figure 2-6 Electric harness

5. Raise the body until the safety prop can be moved into position.
The body can be raised by pushing the hoist joystick forward (see Figure 2-7) and holding it until the body reaches the desired height.

IMPORTANT: Do not raise the body higher than is required for the prop.

Figure 2-7 Service hoist joystick

6. Release the safety prop by using the safety prop handle (see Figure 2-8).
7. Fully tilt the prop towards the right.

Figure 2-8 Prop latch


8. Lower the body until it rests on the safety prop.
The body can be lowered by pulling back the hoist joystick (see Figure 2-7) and holding it until the body reaches the desired height.
9. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 26).
You can now work safely underneath the body.

Putting the Service Hoist Safety Prop Back in Place

To put the service hoist safety prop back in place:

1. Make sure that there is enough clearance above the body to raise it safely and that the truck is on safe level ground.
2. Raise the body until the safety prop can move freely.
The body can be raised by pushing the hoist joystick forward (see Figure 2-7) and holding it until the body reaches the desired height.
3. Put the safety prop back in its place. Use its latch to secure it (see Figure 2-8).
4. Lower the body by pulling back the hoist joystick (see Figure 2-7) and holding it until the body rests on the chassis frame.
5. Reconnect the electric harness (see Figure 2-6).
6. Open the shut-off valve on the suction line (see Figure 2-5).

Warning!



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

7. Reinstall both yellow spring-loaded bolts securing the body front-end to the chassis (see Figure 2-4).

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.

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

Figure 2-9 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 2-10).

Figure 2-10 Safety pin (in unlocked position, left; in locked position, right)



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

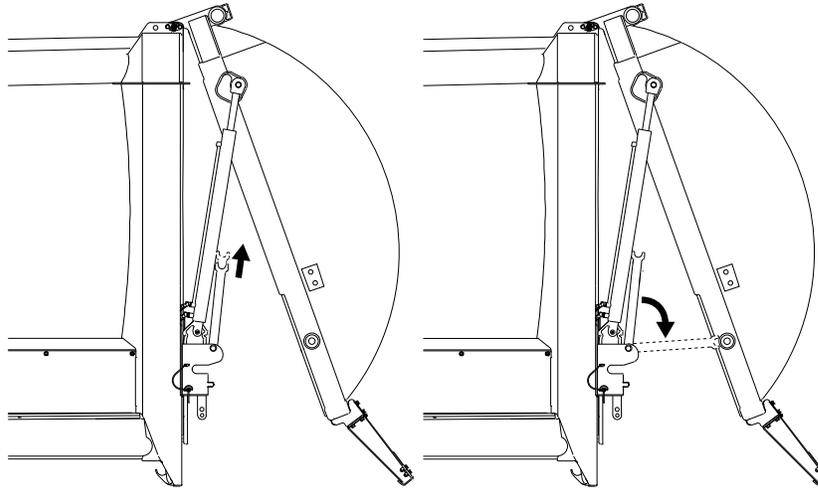
Danger!



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 2-11).

Figure 2-11 Pulling safety prop upward (left) and setting it down (right)

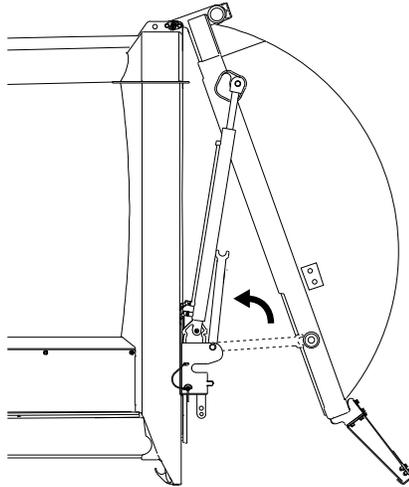


7. Lower the tailgate onto the safety prop using the *Tailgate Down* switch on the in-cab control panel.

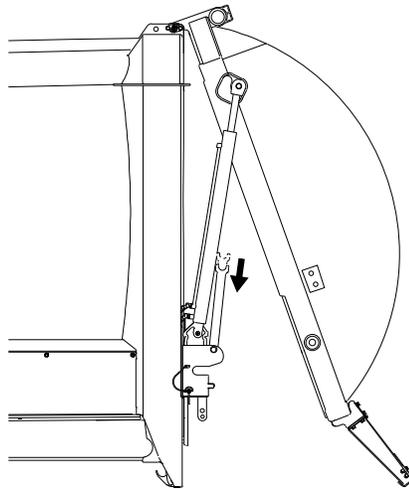
Putting the Tailgate Safety Prop Back in Place

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 2-12 Raising tailgate safety prop

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

Figure 2-13 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 2-14, left), on the central right-hand side post (Figure 2-15), on the tailgate (Figure 2-14, right), and on the left-hand side mirror.

Figure 2-14 Camera inside hopper (left) and on tailgate (right)



Figure 2-15 Camera on central RHS post



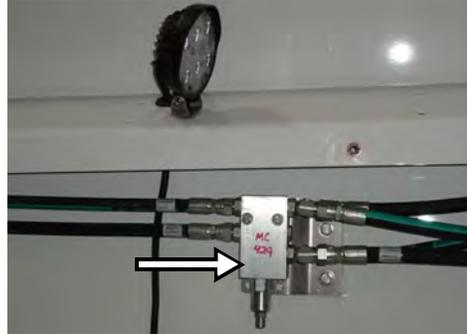
The operator can switch from one camera to the other using a selector switch located on the 7" LCD color monitor installed in the cab.

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 2-16).

Figure 2-16 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 2-17) that must be turned off.

Figure 2-17 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

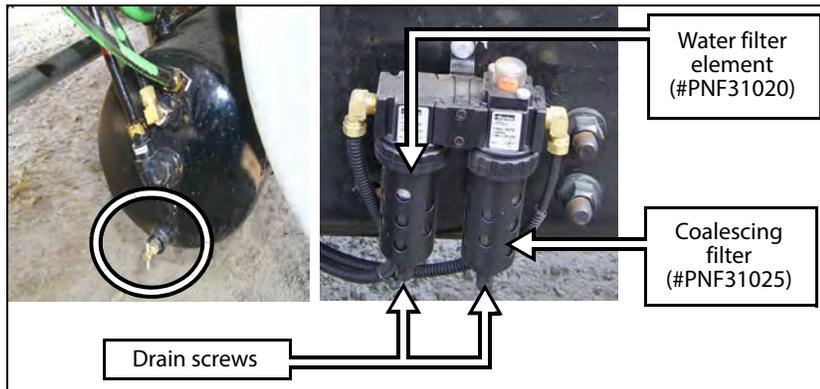
If the vehicle has to be stored for an extended period of time, follow the chassis manufacturer’s shutdown and maintenance requirements.

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.

The water filter and the coalescing filter of the air filter assembly, if installed, must also be drained.

Figure 2-18 Drain valve on air tank (left), air filter assembly (right)



NOTE: Both filters of the air filter assembly (#PNF31000) [see Figure 2-18] 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 suction line is fully open before starting the vehicle (see Figure 2-19).

Figure 2-19 Shut-off valve on suction line



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 2-20 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 2-21).

The PUMP switch turns from blue to green.

Figure 2-21 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 when inspecting or performing maintenance on the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 26).

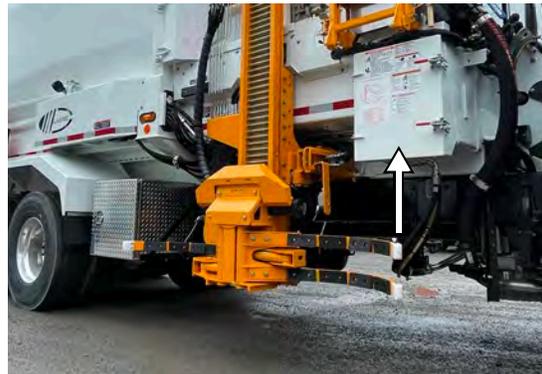
Cleanliness

Cleanliness is part of safety.

As such:

- ◆ Clean all vehicle lights, warning lights and safety decals so that you and the vehicle surroundings are safe at all times.
- ◆ Remove any stacked garbage from the hopper area after each body unloading.
- ◆ Keep the cab floor dry and clean to prevent slipping and falling.
- ◆ Use the provided hoe to rake debris out of the clean-out doors (see Figure 3-1).
- ◆ Make sure that the side step and/or hopper step (if installed) are clean and free of any slippery material.

Figure 3-1 Clean-out door



Preventive Maintenance Chart

Component/System	Verification	Daily	Weekly	Monthly	Yearly	Page
Limit switches	Proper adjustment of the limit switches is imperative		X			See page 73
	Check and clean area around switches	X				
Lubrication	Lubricate the packer and its accessories. See lubrication chart on side of vehicle	X				See page 93
Wiring System	Check for damaged harnesses and/or bad connections				X	See page 143
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	X				See page 159
Air system	Check for leaks		X			See page 159
Safety systems	Check for proper operation (tailgate alarm and special devices)		X			See page 16
Lifting arm	Check hydraulic pressure	X				See <i>Lifting Arm Supplement</i>

Component/System	Verification	Daily	Weekly	Monthly	Yearly	Page
Hydraulic system	Check oil level in tank, and refill if necessary	X				See page 125
	Check if the ball valve on suction line is open	X				See page 28
	Check on ground for overnight leaks	X				
	Check cylinders, pump, control valve and system for leaks. Repair or replace if required		X			See page 133 See page 110 See page 108
	Replace hydraulic filter ^a				Twice a year	See page 131
	Clean strainer and refill				X	See page 128
	Check pressure			X		See page 137
Hopper area	Clean traps on each side	X				See page 31
	Clean dirt around the packer	X				
Visual inspection	Rollers, hydraulic cylinder and cylinder pins, hoses, pipes and connections, wear of floor and hopper sides.	X				See page 34
Body and chassis	Check for corrosion			X		

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

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.

Packer

The packer of the AUTOMIZER™ (see Figure 3-2) is submitted to intensive use during a workday, making 1000 to 3000 pack cycles per route. Therefore, many of its components need to be inspected on a daily or weekly basis. These are:

- ◆ the follower panel and hinges,
- ◆ the follower panel rollers,
- ◆ the floating panel scraper,
- ◆ the packer hydraulic system,
- ◆ the packer front scrapers,
- ◆ the packer wear shoes/plates, and
- ◆ the packer tunnel.

LabriePlus Service recommends that operators perform daily inspection of the packer and its components.

Maintenance personnel *must* perform daily/weekly inspection and maintenance, greasing all moving parts daily. Also, proper adjustment of the limit and proximity switches is mandatory, especially on vehicles equipped with the multicycle feature. For information on lubrication, see *Lubrication* on page 87.

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

Danger!



Always lock out and tag out the vehicle when inspecting it or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 26).

Figure 3-2 Packer

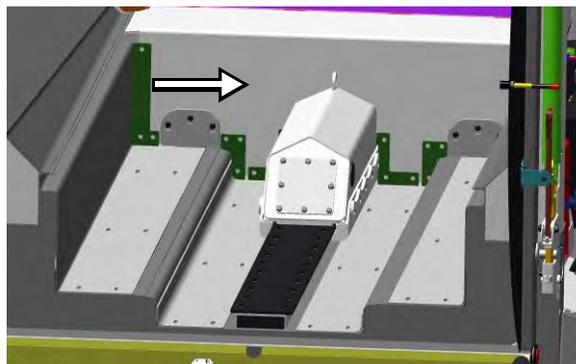
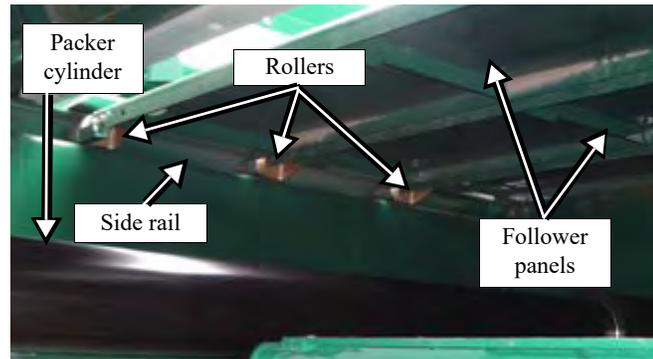


Figure 3-3 Packer components



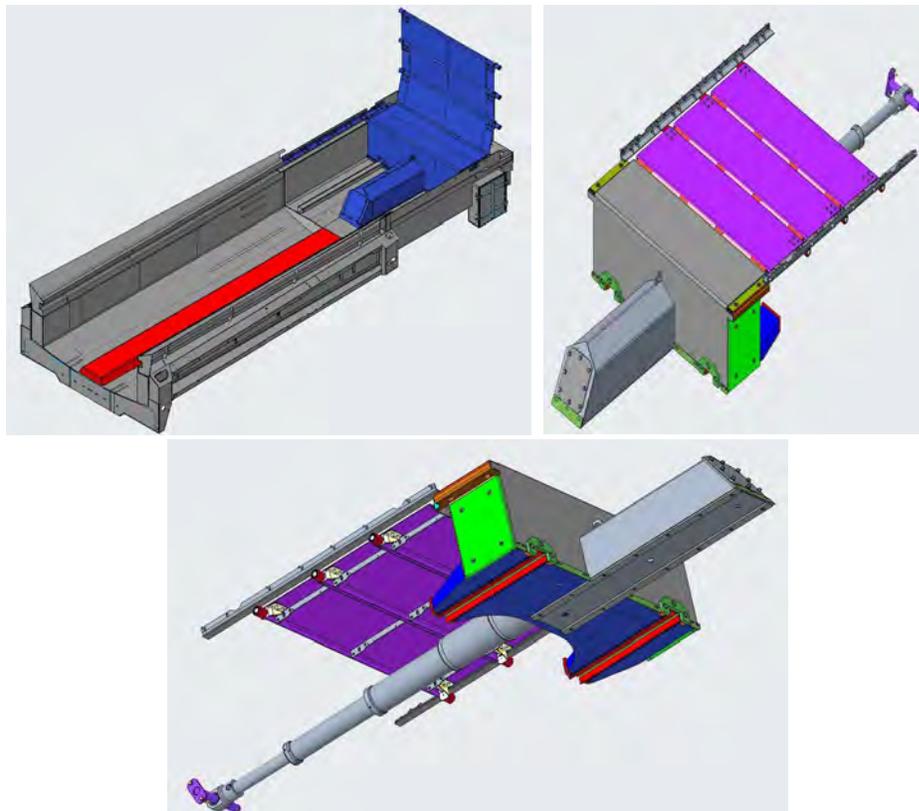
Variations of the Packer Panel

There are three different variations of the AUTOMIZER™ packer panel that have been used since its inception in 2012. Inspection and maintenance procedures are similar for each variation but there are a few key differences that will be explained below.

Variation #1

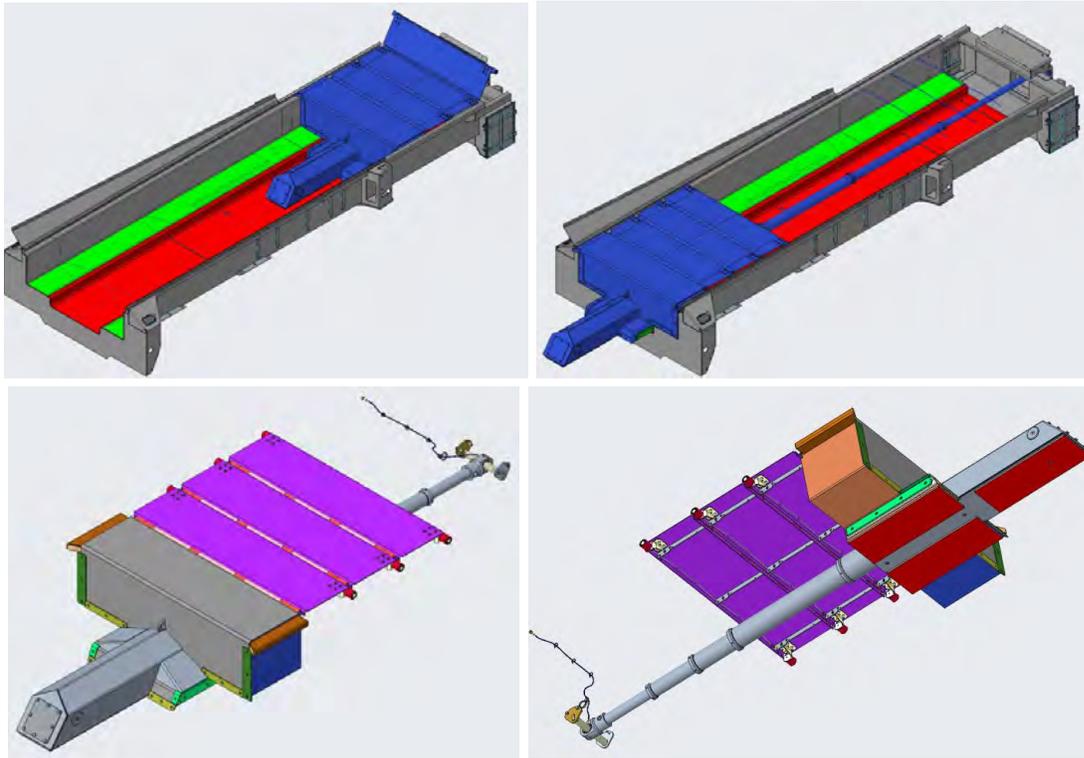
The packer panel and hopper floor are fitted with guide rails and wear shoes. The body floor is curved with a center guide that runs the full length of the body floor to support the packer during the full eject sequence.

Figure 3-4 Packer variation #1



Variation #2

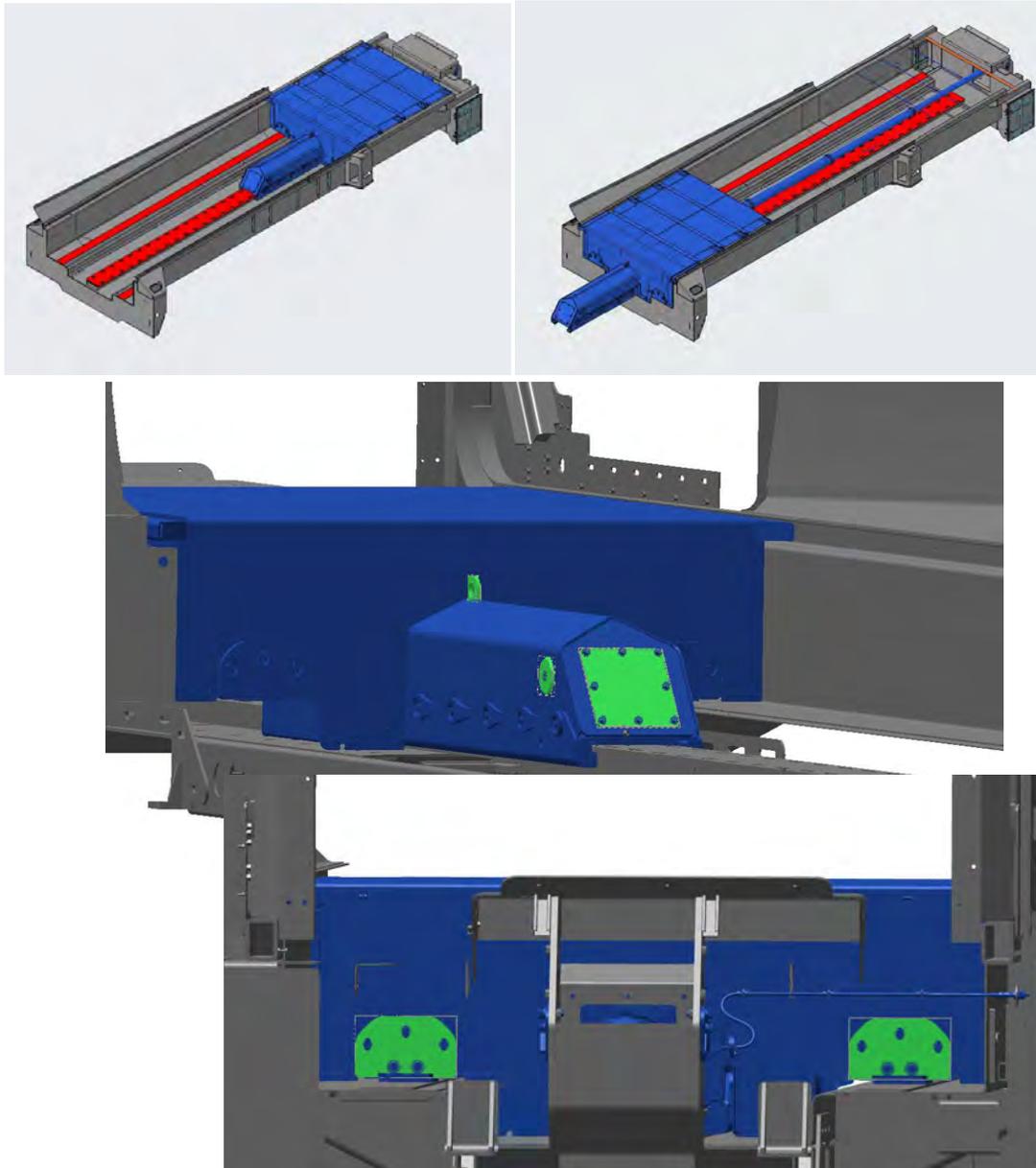
The hopper and body floor incorporate a trough design. The packer panel has wear shoes mounted on the bottom and sides to guide the packer in the trough. The wear shoes ride directly on the trough floor in this variation.

Figure 3-5 Packer variation #2

Variation #3 (current variation)

A T-Track was added to the hopper/body floor to better guide the packer while packing and during the full eject sequence. A trolley assembly is bolted to the bottom of the packer that rides on the T-Track. Additional wear shoes were added to the sides of the packer that ride on wear strips or liner (if equipped) on the upper shelf portions of the floor.

Figure 3-6 Packer variation #3



Preparing for Packer Inspection

To prepare for packer inspection:

1. Park the vehicle on level ground and apply the parking brake.
2. Using the joystick, fully extend the arm.
3. Remove the tailgate safety pins (see Figure 3-21).
4. Fully open the tailgate by pressing the TAILGATE UP switch on the in-cab control panel (see Figure 3-22).
Keep this switch pressed until the tailgate is fully open.
5. Fully extend the packer by pressing the green PACK button on the packer control station (see Figure 3-23).

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



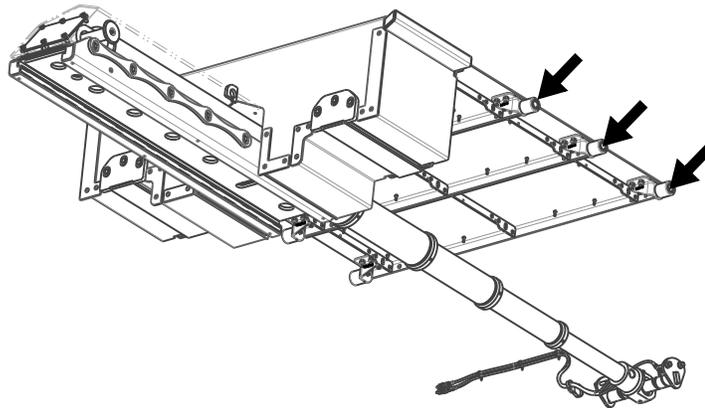
-
6. When the packer has reached its fully extended position, press the red EMERGENCY STOP button on the packer control station (see Figure 3-25).
 7. Place the tailgate safety prop into service position.

Danger! Always use the tailgate safety prop while working under a raised tailgate. The safety prop should be used even if the tailgate is in fully raised position.



-
8. Perform the lockout/tagout procedure (see *Locking Out and Tagging Out the Vehicle* on page 26).

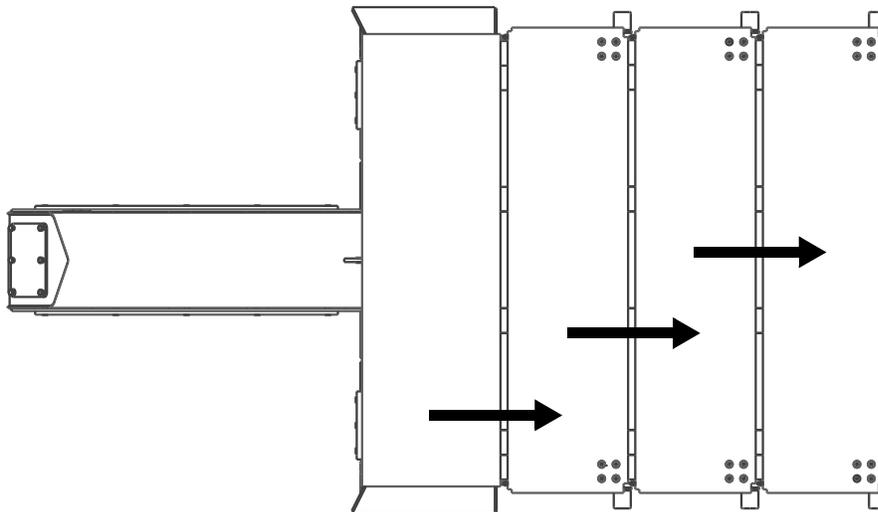
NOTE: Before fully extending the packer, take the time to inspect the follower panel rollers (see Figure 3-7) through the sump box on each side of the body (see Figure 3-34). These rollers cannot be inspected when the packer is fully extended. The rollers need to be replaced when damaged or when showing excessive wear or flat spots. Seized rollers will eventually wear through the side channel radius which leads to costly repairs.

Figure 3-7 Follower panel rollers


Inspecting the Packer

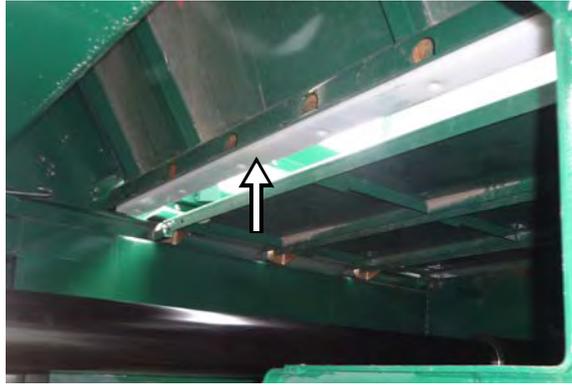
Proceed this way during the packer inspection:

1. Inspect the follower panel hinges and surface in search of any wear or damage.

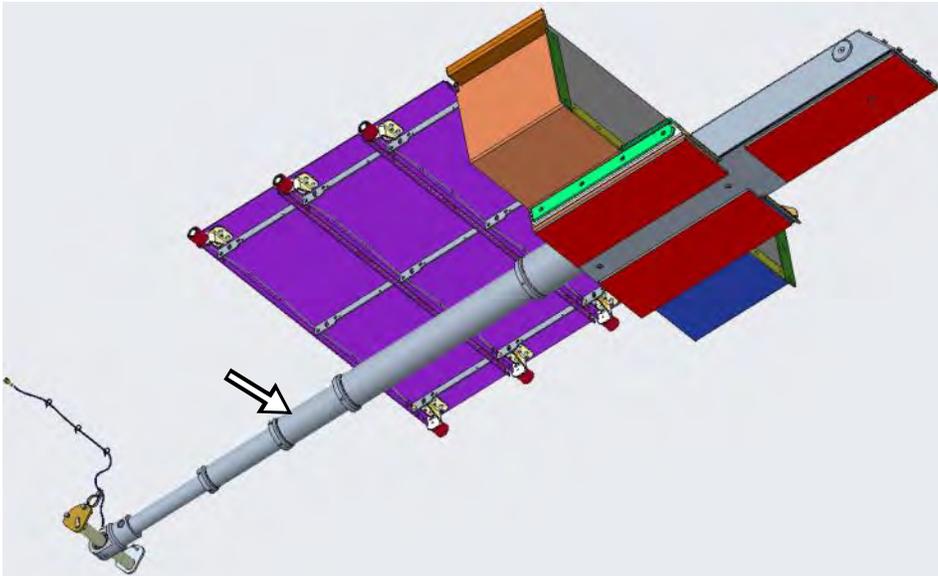
Figure 3-8 Follower panels


2. Inspect the floating panel scraper.

This scraper acts as additional protection against intruding refuse that may get behind the packer where they can damage the cylinder and the limit switches (see Figure 3-9).

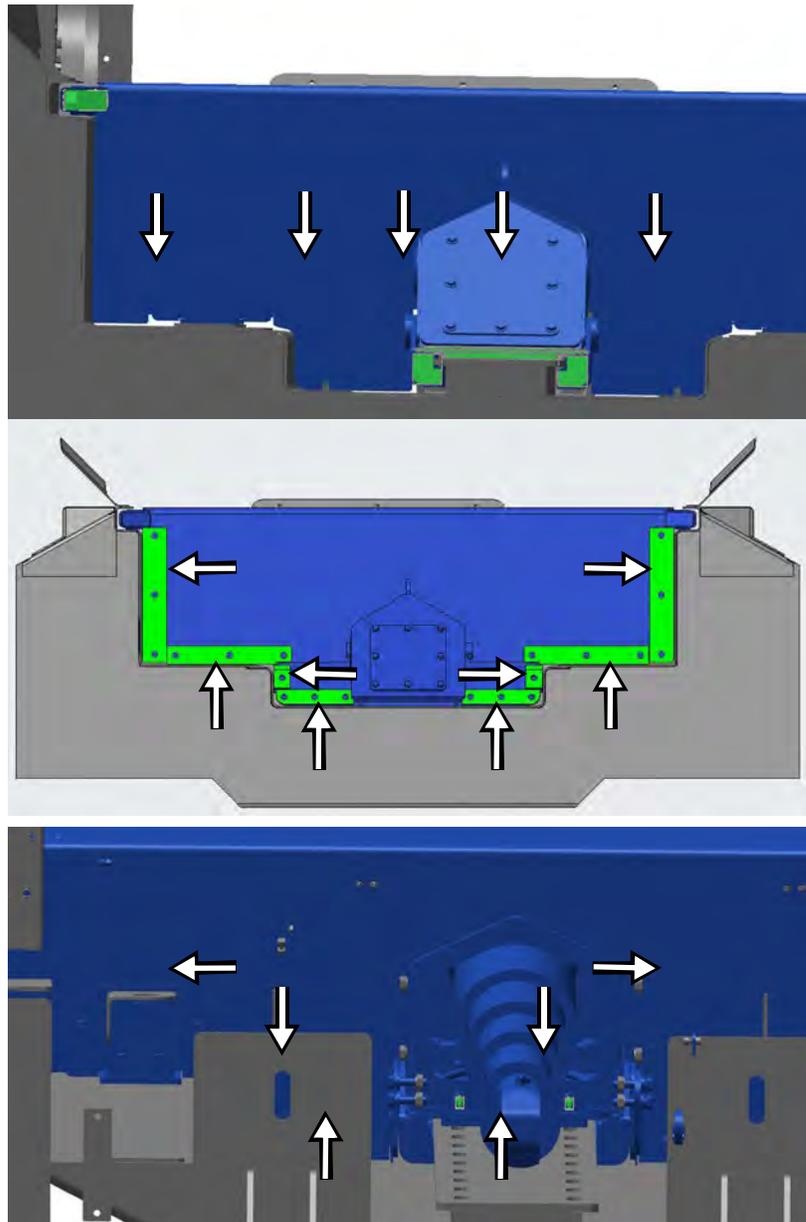
Figure 3-9 Floating panel scraper

3. Inspect the packer hydraulic system, including hoses, pipes, connectors, and the telescopic cylinder (see Figure 3-10).
There should neither be dirt or garbage on the cylinder rod ends nor scratches on the rod itself. There should not be leaks on the hoses and pipes.

Figure 3-10 Telescopic cylinder

4. Inspect packer front scrapers
These scrapers are used to prevent refuse from getting behind the packer where they can damage the cylinder and the limit switches.
The minimum gap between the front scrapers and the hopper should be 1/16". If gap is excessive (over 1/4"), the scrapers should be replaced. Scrapers that are too close to the floor is a sign that lower wear pads are worn.

Figure 3-11 Packer front scrapers



5. Inspect the packer wear shoes and guides (if equipped).

This procedure will vary depending on the variation of the packer.

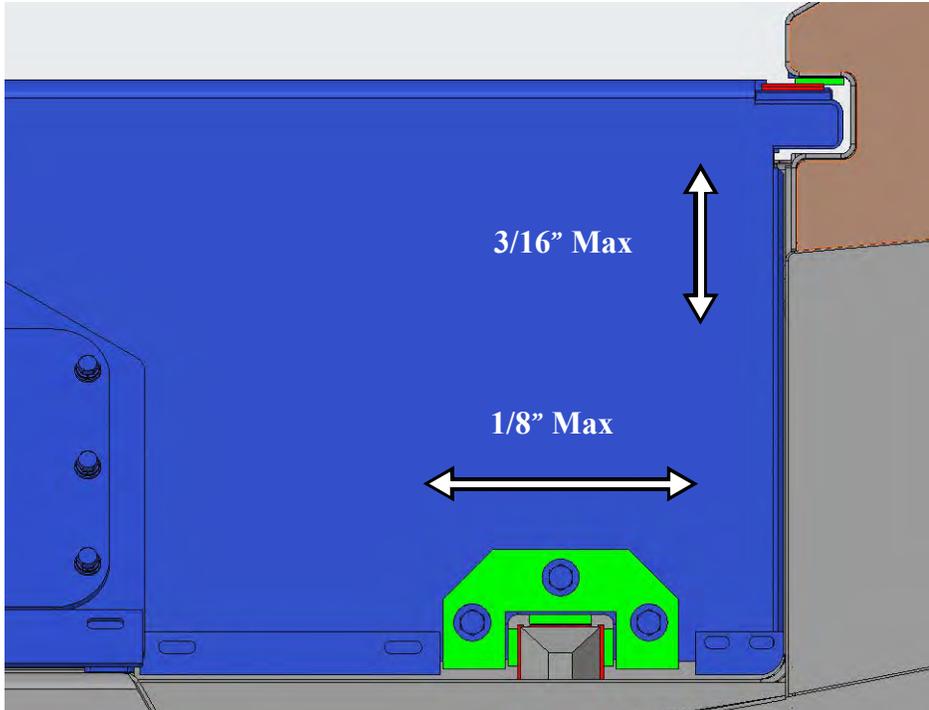
Variation #1

- i. 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.

Replace any worn components immediately to prevent further damage to the packer system.

Figure 3-12 Variations #1



Variation #2

- i. Check gap between bottom of upper packer guides and top of side rails. If gap is less than 3/8" replace the packer bottom wear plates.
- ii. Check gap between side wear plates and side of trough. Minimum gap should be 1/8" per side (1/4" overall) and maximum gap should be 1/4" per side (1/2" overall). If gap is more than 1/4" per side replace or shim the side wear plates.

Figure 3-13 Variation #2 (1)

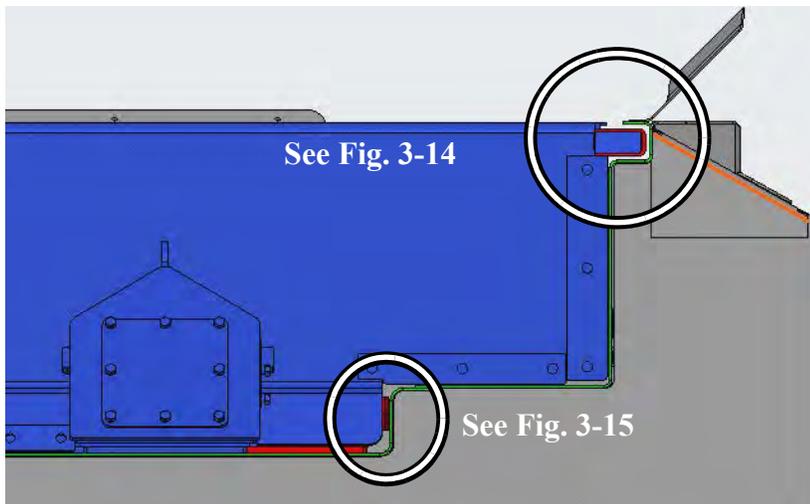


Figure 3-14 Variation #2 (2)

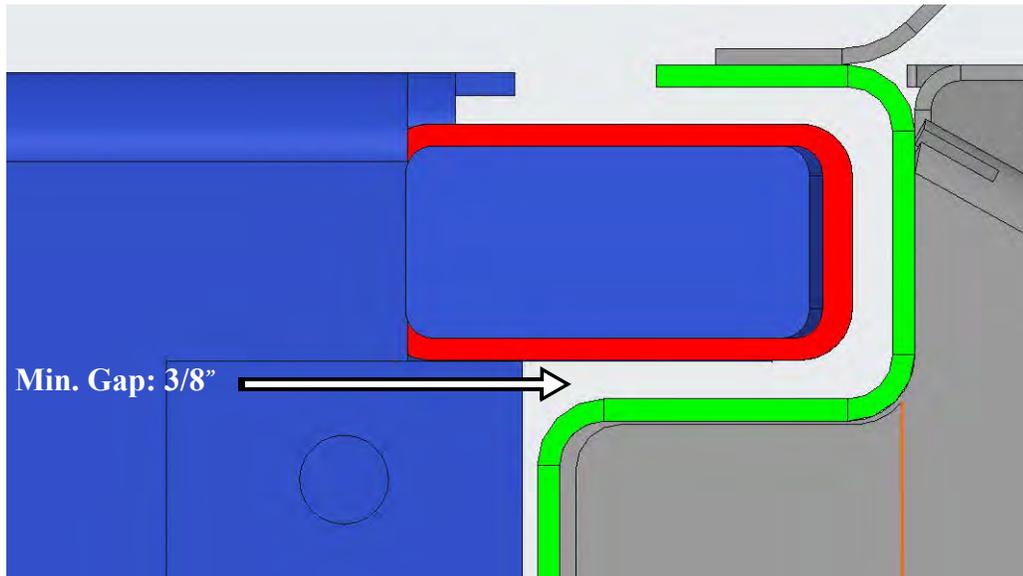
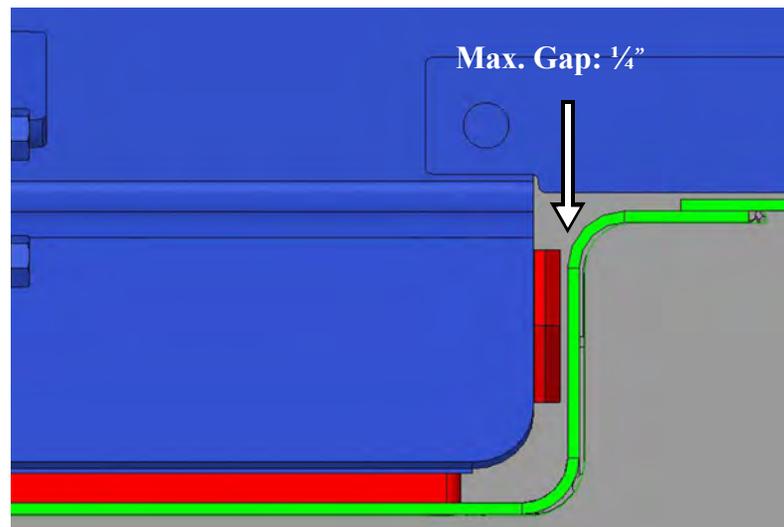


Figure 3-15 Variation #2 (3)



Variation #3

i. Inspect the central trolley and the T-Track. Check for any sideways or up-and-down movement of the packer.

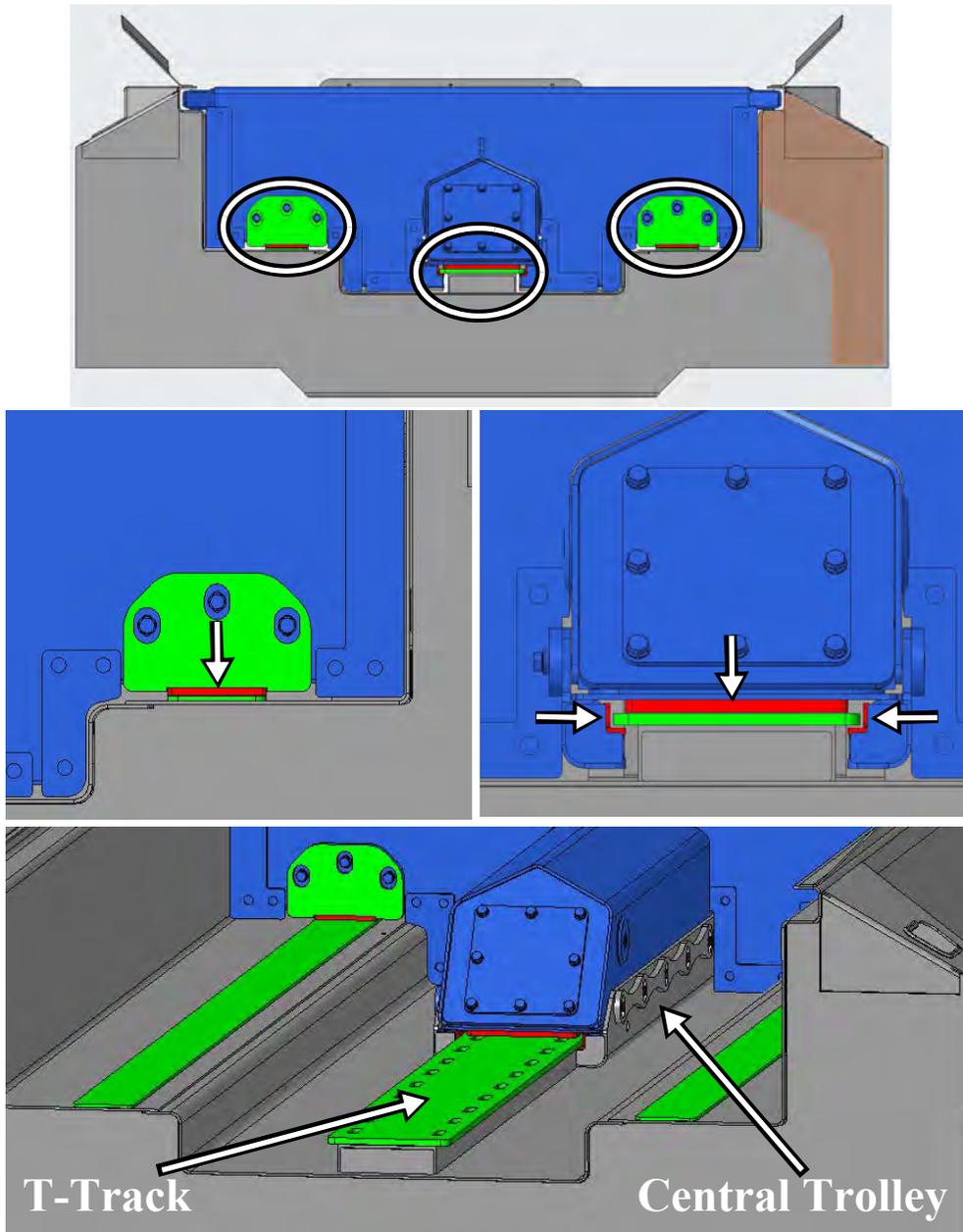
Check gap between bottom of upper packer guides and top of side rails. If gap is less than 3/8" replace the packer bottom wear plates.

If wear plates on central trolley are worn the central trolley assembly should be replaced.

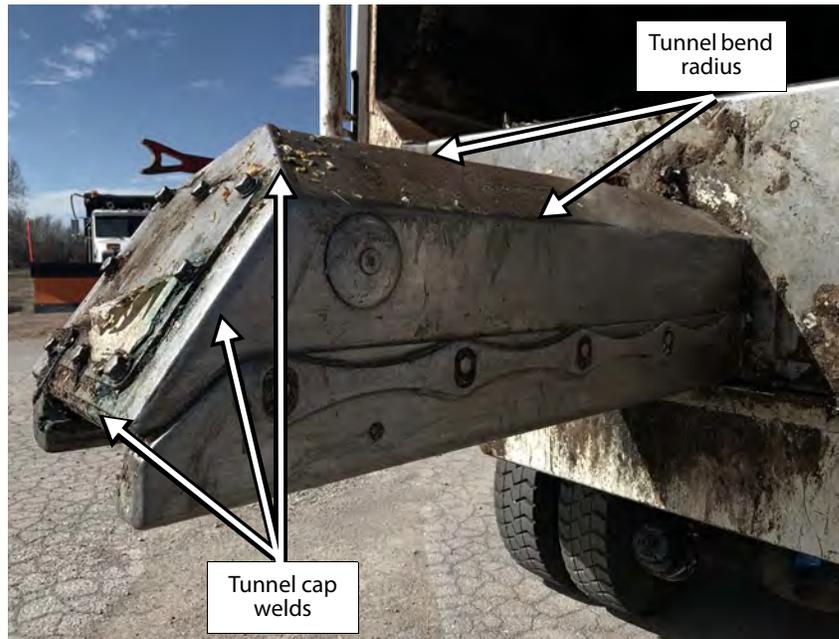
ii. Check the thickness of the two sliding shoes, one on each side of the packer.

If any of the two rear/front bolt-on parts are getting too close to the metal surface of the track, the sliding shoe(s) should be replaced.

Figure 3-16 Variation #3

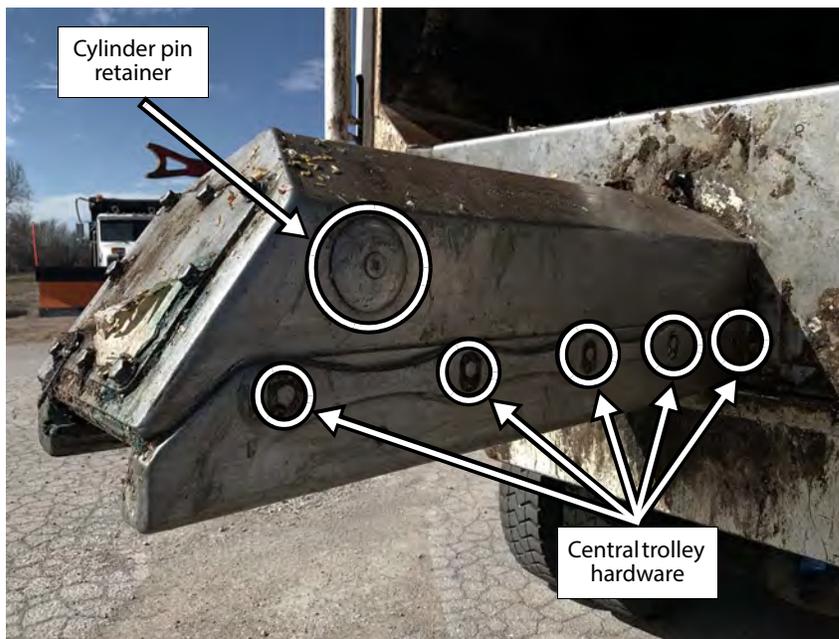


6. Inspect the packer tunnel for wear. The packer tunnel is considered a wear item and will need to be rebuilt and/or reinforced periodically to prevent further damage to the packer.
 - a. Inspect all welds for wear and/or cracks where the cap is attached to the tunnel. If welds are worn or cracked, they should be ground out and re-welded.
 - b. Inspect the bend radius on the top and both sides of the tunnel for wear and/or cracks. If cracked or worn through, the tunnel will need a wear plate overlay installed.

Figure 3-17 Tunnel assembly (1)

c. Check mounting hardware for the central trolley assembly. Replace any loose hardware and torque to 105 ft-lb.

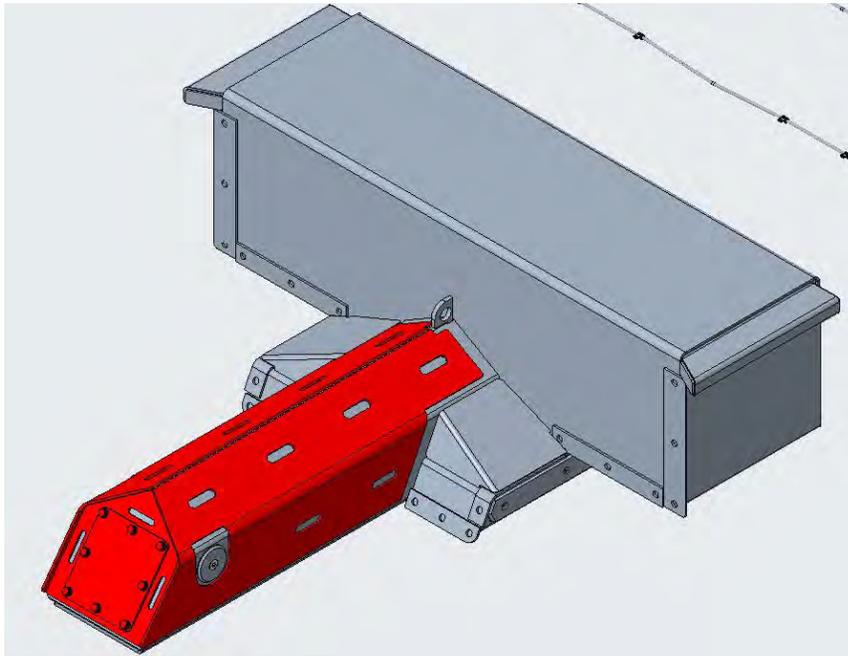
d. Check cylinder pin retainer and hardware for wear.

Figure 3-18 Tunnel assembly (2)

Tunnel wear plate overlay kits have been created for packer variations #2 and #3. These kits were created from Hardox™ 450 to extend the life of the packer tunnel by increasing the wear resistance.

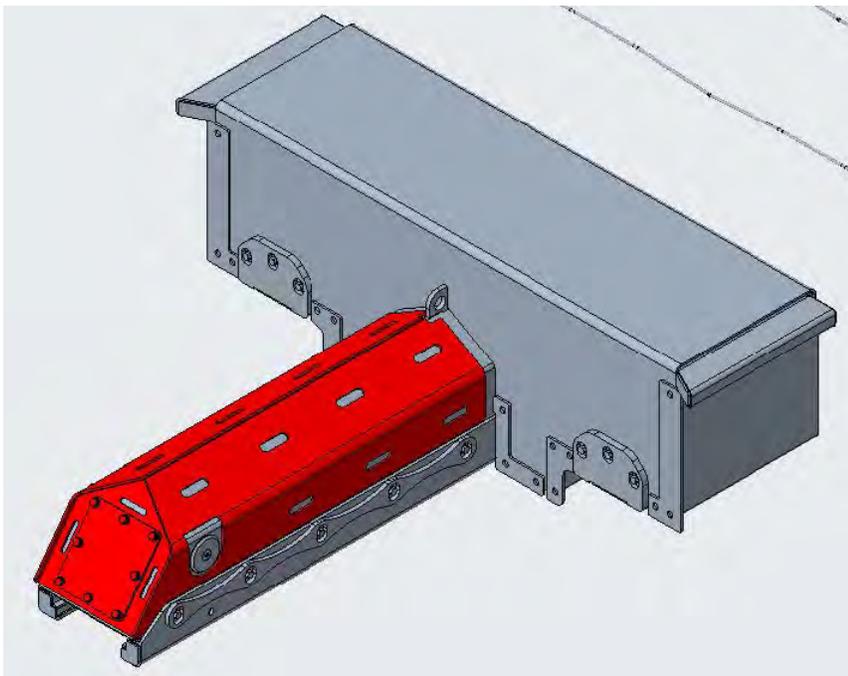
- ◆ **SERV02820** = fits packer variation #2

Figure 3-19 Service kit **SERV02820**



- ◆ **SERV02831** = fits packer variation #3 (T-Track)

Figure 3-20 Service kit **SERV02831**



Contact your LabriePlus Field Service Representative if you have any questions regarding the installation of the tunnel wear plate overlay kits.

Removing the Packer

The following procedure details how to remove the packer for maintenance purposes.

To remove the packer:

1. Ensure the parking brake is applied.
2. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
3. Remove the tailgate safety pins (see Figure 3-21) and fully open the tailgate by pressing the TAILGATE UP switch on the in-cab control panel (see Figure 3-22).
Keep the TAILGATE UP switch pressed until the tailgate is fully open.

Figure 3-21 Safety pin



Figure 3-22 Tailgate Up switch



4. On the packer control station, press the green PACK button to fully extend the packer (see Figure 3-23). When the packer has reached its fully extended position (see Figure 3-24), press the red EMERGENCY STOP button to stop the packer (see Figure 3-25).

Figure 3-23 Pack button



Danger!

Never enter the hopper while the packer is moving.



Figure 3-24 Packer in fully extended position

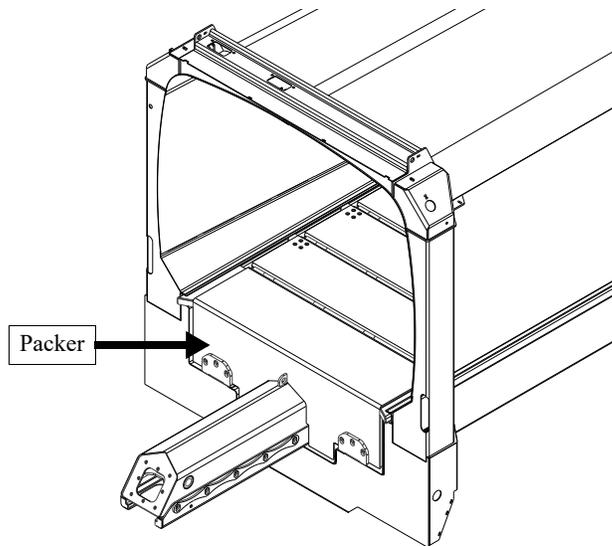
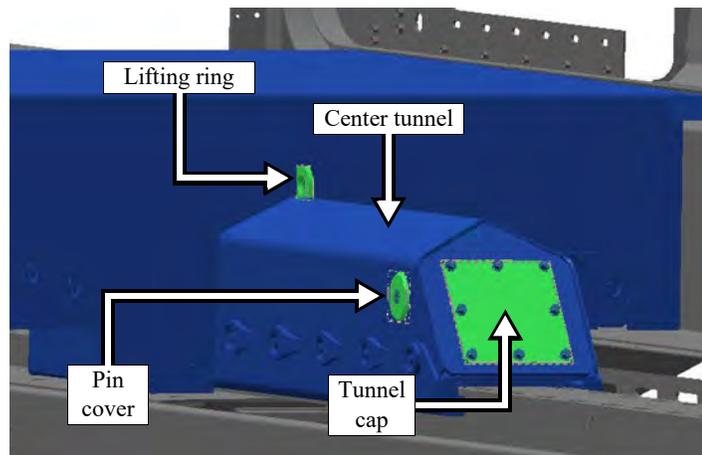
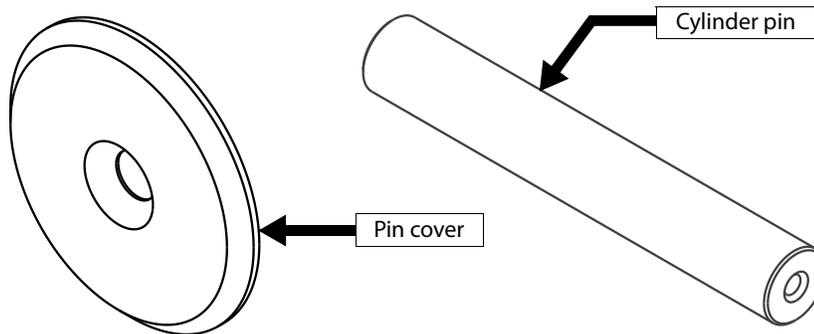


Figure 3-25 Emergency Stop button

5. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
6. Enter the body and, under the follower panels, place a piece of wood under the telescopic cylinder to ensure it does not move once the cylinder pin is removed from the tip of the tunnel (see Figure 3-26).
7. Exit the body.
8. At the rear of the truck remove the tunnel cap (see Figure 3-26) to have access to the front-end of the telescopic cylinder.
9. Remove the bolt securing the pin cover to the center tunnel (see Figure 3-26).

Figure 3-26 Center tunnel

10. Remove the pin cover (see Figure 3-27).
11. Remove the cylinder pin (see Figure 3-27).

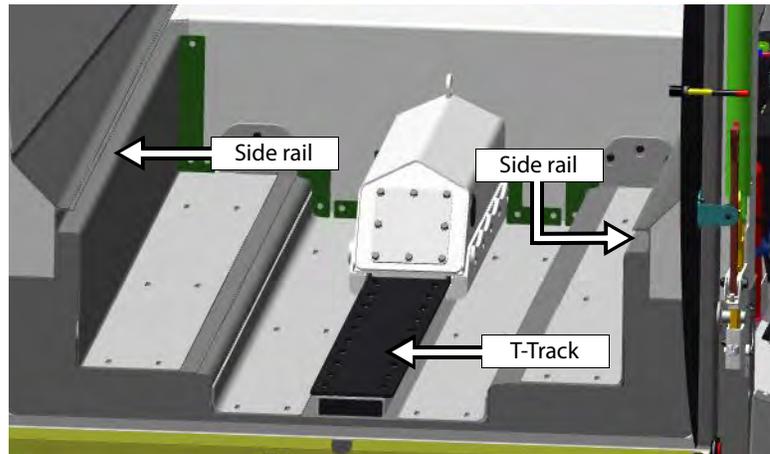
Figure 3-27 Pin cover and cylinder pin

12. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
13. On the packer control station, press the yellow PACKER RETRACT button to retract the cylinder (see Figure 3-28).
14. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
15. Disconnect the follower panels from the packer panel.
16. Install any safe lifting device and hook the packer by the lifting ring (see Figure 3-26).
17. Pull the packer out of the side rails and out of the T-Track (see Figure 3-29), and place it in a safe work area.

NOTE: When pulling out the packer, proceed slowly and with great care.

Figure 3-28 Packer Retract button

Figure 3-29 Side rails and T-Track



Warning! When you pull out the packer, always ensure total clearance until it is placed in a safe area to avoid any accidents.



Replacing the Central Trolley

If the packer seems to move sideways or even up and down, it may be that the central trolley (see Figure 3-30) has too much wear and it should be replaced.

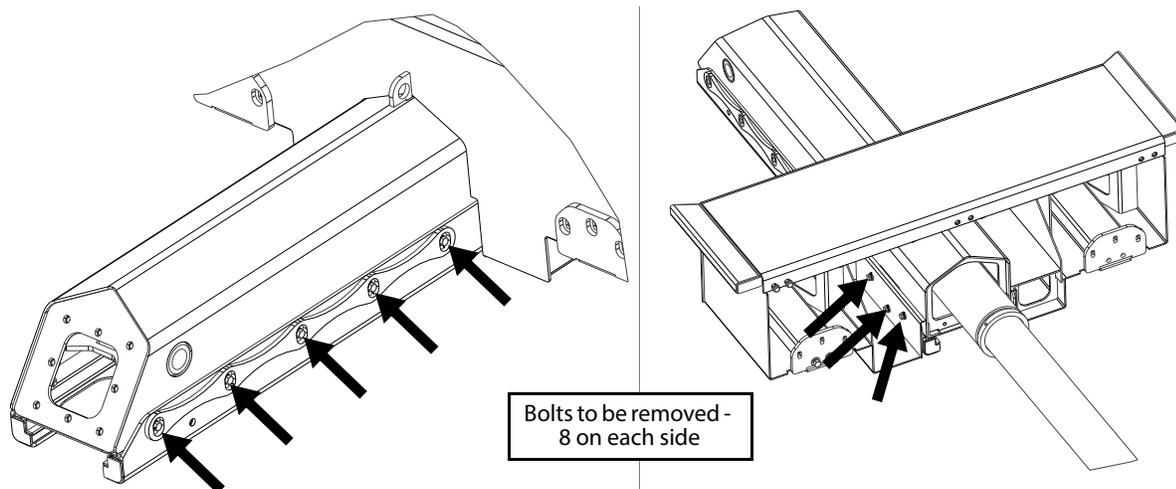
When the central trolley is worn out, you must replace it to achieve packer optimal performance.

To replace a worn or damaged central trolley, proceed this way:

1. Remove the packer from the body. See *Removing the Packer* on page 47.
2. Once the packer is placed in a safe work area, remove the central trolley.

To do so, unscrew all 16 bolts that hold the trolley to the central tunnel.

There are 8 bolts on each side of the trolley (see Figure 3-30).

Figure 3-30 Removing the central trolley

3. Proceed with the replacement of the worn trolley.
4. Screw the new trolley onto the central tunnel using the same bolts.
5. Once the replacement is done, reinstall the packer inside the body using an appropriate lifting device (see *Reinstalling the Packer* on page 57).

Warning! When reinstalling the packer always ensure total clearance to avoid any accidents.



6. Run the packer for a few cycles to make sure the new trolley has been properly installed.

Replacing the T-Track

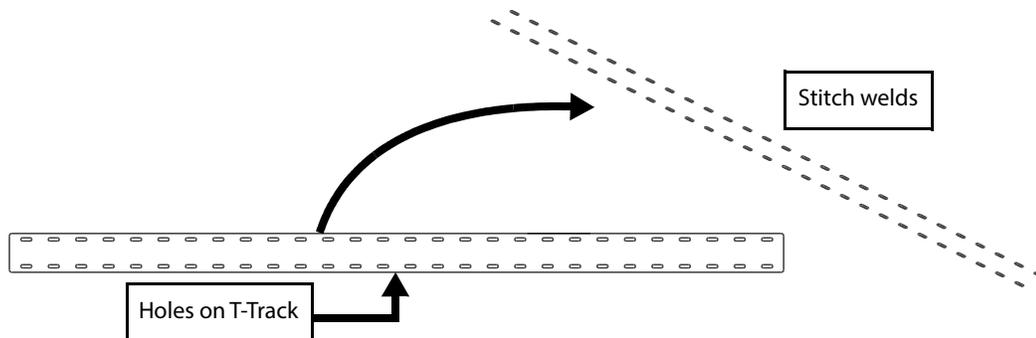
With the packer cycling back and forth more than a thousand times each day, the T-Track may show some signs of excessive wear. These may include but are not limited to bent, torn or scratched. In such a situation, the replacement of the T-Track is required for optimum performance of the packer. It will help the packer to move more smoothly with less sideways and/or up-and-down motions.

To replace the T-Track, do the following:

1. Remove the packer from the body. See *Removing the Packer* on page 47.
2. Remove the T-Track. To do so:
 - 2 a. Using an arc-air cutter, cut all the stitch welds that hold the T-Track to its base.
 - 2 b. Remove the T-Track.
Be careful when handling the T-Track out of the body.
 - 2 c. Clean the hopper floor and wall surfaces.
3. Install the new T-Track on the T-Track base.
4. Make sure the T-Track is well positioned on its base.

5. Stitch weld the T-Track to its base at regular intervals using the holes laid out on the T-Track. Always move out from the center towards the ends. Stitch weld in alternate sequence. Be sure to tack all parts before stitch welding. Stitch welds must cover the entire length of the T-Track (see Figure 3-31).

Figure 3-31 T-Track



6. Once the replacement is done, reinstall the packer inside the body using an appropriate lifting device (see *Reinstalling the Packer* on page 57).

Warning! When reinstalling the packer always ensure total clearance to avoid any accidents.



7. Run the packer for a few cycles to make sure the new T-Track has been properly installed.

Replacing Sliding Shoes

If one or both sliding shoes need to be replaced because they are thinned out so much that there isn't much protective material left on the main contact surface between the packer and the elevated body floor, apply the following procedure.

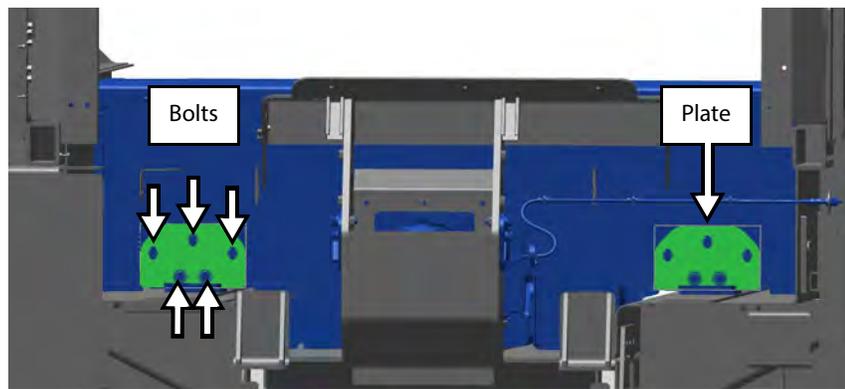
To replace the sliding shoes:

METHOD A - The packer is inside the waste body.

1. Ensure the parking brake is applied.
2. Remove both tailgate safety pins (see Figure 3-21).
3. Start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
4. On the packer control station, press the yellow PACKER RETRACT button to retract the packer (see Figure 3-28).
5. Open the tailgate and set the tailgate safety prop (see *Tailgate Safety Prop* on page 22).

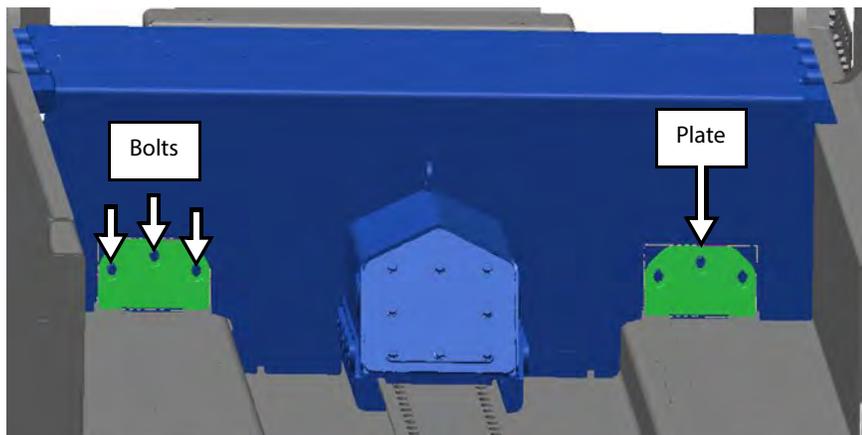
6. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
7. Remove the worn sliding shoe. To do so:
 - 7 a. Through the sump box (see Figure 3-34), remove the tack welds that hold the adjustable plate to the packer (see Figure 3-32).
 - 7 b. Remove all 5 bolts that secure the plate to the sliding shoe (lower bolts) and to the packer (upper bolts) [see Figure 3-32]. Put aside the plate and the bolts.

Figure 3-32 Rear sliding shoe plate



- 7 c. On the front side of the packer, remove the tack welds and the 3 bolts that secure the adjustable plate to the packer (see Figure 3-33).

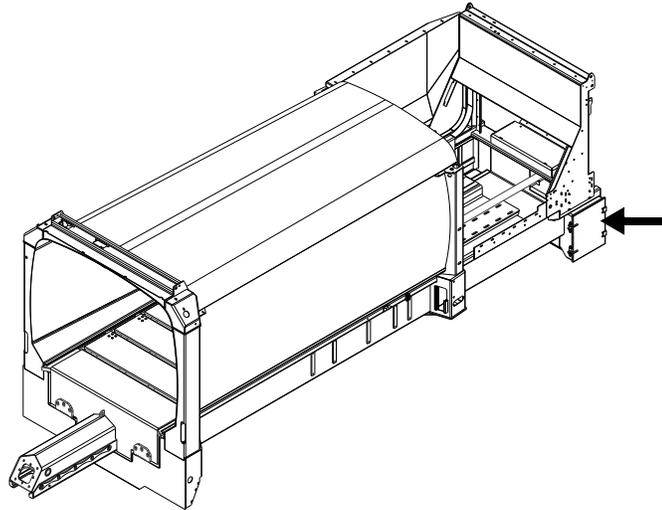
Figure 3-33 Front sliding shoe plate



- 7 d. Through the sump box, push on the sliding shoe using a hammer and a large screwdriver or a similar tool to get it out of the packer.
8. Once the worn sliding shoe has been removed, replace it with a new one. To do so:
 - 8 a. On the front side of the packer, insert the new sliding shoe into the vacant hole using a hammer. Make sure the sliding shoe is well positioned in the track.

- 8 b.** Once the sliding shoe is completely inserted into the packer, put back the 3 bolts to secure the front adjustable plate to the packer.
- 8 c.** Through the sump box (see Figure 3-34), put back the rear adjustable plate and all 5 bolts to secure it to the packer (upper bolts) and to the sliding shoe (lower bolts).

Figure 3-34 Sump box



- 9.** If the other sliding shoe also has to be replaced, repeat steps 7 and 8.
- 10.** Once this task is complete, start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
- 11.** Fully open the tailgate by pressing the TAILGATE UP switch on the in-cab control panel (see Figure 3-22).
Keep the TAILGATE UP switch pressed until the tailgate is fully open.
- 12.** Run the packer for a few cycles to ensure it moves properly.
- 13.** Once done, press the yellow PACKER RETRACT button to retract the packer (see Figure 3-28).
- 14.** Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
- 15.** If need be, adjust the position of the plates for optimum performance of the sliding shoe.
Move up or down the adjustable plates for proper adjustment.
- 16.** Once done, make 3 tack welds to properly secure each plate to the packer.
Rear plates are accessible through the sump box (see Figure 3-34).
- 17.** Once completed, start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
- 18.** Put the tailgate safety prop back to its home position, then close the tailgate completely by pressing and holding down the TAILGATE DOWN switch on the in-cab control panel (see Figure 3-40).
- 19.** Put back both tailgate safety pins.

METHOD B - The packer has been removed.

1. Place the packer in a safe working area
2. Remove the worn sliding shoe. To do so:
 - 2 a. On the rear side of the packer, remove the tack welds that hold the adjustable plate to the packer (see Figure 3-32).
 - 2 b. Remove all 5 bolts that secure the plate to the sliding shoe (lower bolts) and to the packer (upper bolts) [see Figure 3-32].
 - 2 c. Put aside the plate and the bolts.
 - 2 d. On the front side of the packer, remove the tack welds and the 3 bolts that secure the adjustable plate to the packer (see Figure 3-33).
 - 2 e. You can now remove the sliding shoe.
3. Replace the worn sliding shoe with a new one. To do so:
 - 3 a. Place the new sliding shoe where it should be on the packer, making sure its front plate is facing the front part of the packer.
 - 3 b. Put back the 3 bolts to secure the front adjustable plate to the packer.
 - 3 c. Put back the rear adjustable plate and all 5 bolts to secure it to the packer (upper bolts) and to the sliding shoe (lower bolts).
 - 3 d. Make sure all bolts are tight.
4. If the other sliding shoe must also be replaced, repeat steps 2 and 3.
5. Reinstall the packer inside the body (see *Reinstalling the Packer* on page 57).
6. Once this task is complete, start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
7. Run the packer for a few cycles to ensure it moves properly.
8. Once done, press the yellow PACKER RETRACT button to retract the packer (see Figure 3-28).
9. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
10. If need be, adjust the position of the plates for optimum performance of the sliding shoe.
Move up or down the adjustable plates for proper adjustment.
11. Once done, make 3 tack welds to properly secure each plate to the packer.
Rear plates are accessible through the sump box (see Figure 3-34).
12. Once completed, start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
13. Put the tailgate safety prop back to its home position, then close the tailgate completely by pressing and holding down the TAILGATE DOWN switch on the in-cab control panel (see Figure 3-40).
14. Put back both tailgate safety pins.

Reinstalling the Packer

The following procedure details how to reinstall the packer inside the body of the AUTOMIZER™.

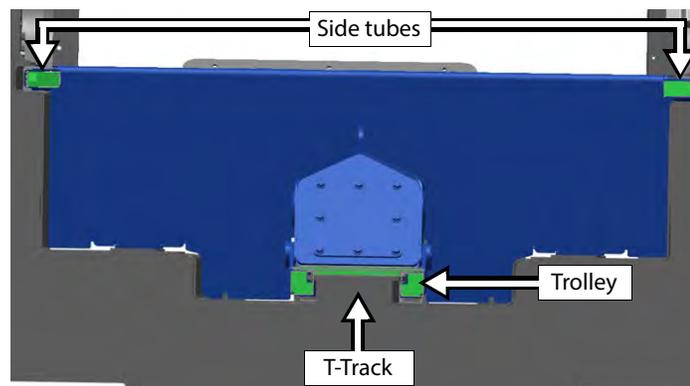
To reinstall the packer proceed this way:

1. Make sure the tailgate is properly open, and all packer components are properly assembled.
2. Ensure the truck is properly logged out and tagged out. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
3. Use a safe lifting device and hook the packer by the lifting ring (see Figure 3-26).

NOTE: When reinstalling the packer into the body, proceed slowly and with great care.

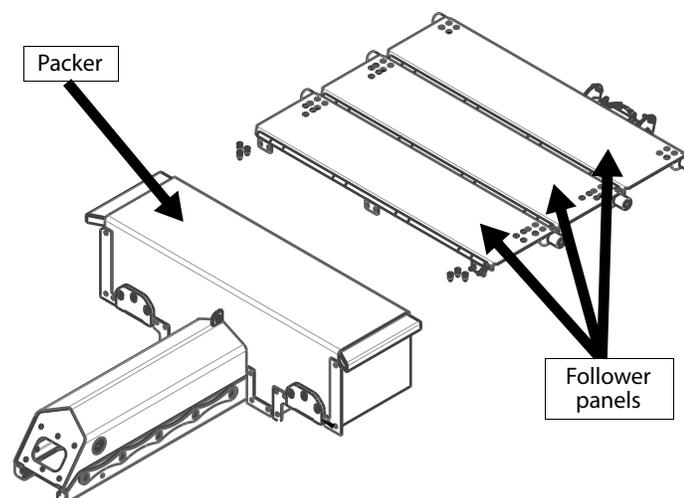
4. Lift the packer carefully and push it inside the body while making sure the two packer side tubes (see Figure 3-35) are well inserted in both side rails and the central trolley is aligned with the T-Track (see Figure 3-35).

Figure 3-35 Side tubes and trolley



5. Connect the packer to the follower panels.

Figure 3-36 Packer and follower panels



6. Before extending the telescopic cylinder, be sure to place the same piece of wood that was used during the packer removal procedure to help support the cylinder during extension.
7. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.

Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



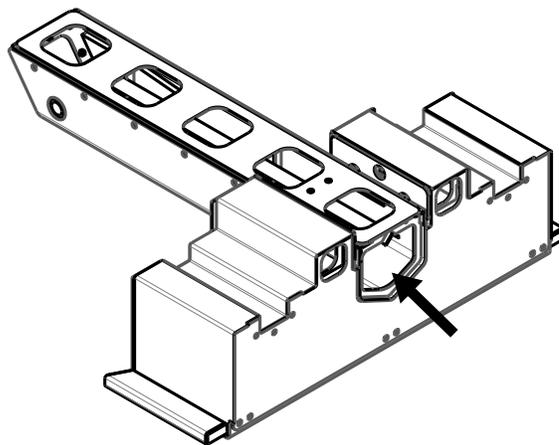
8. On the packer control station, press the green PACK button (see Figure 3-23) to fully extend the packer cylinder.
Be careful when the cylinder reaches the packer; its front-end must go inside the packer through the tunnel hole (see Figure 3-37) up to the tip of the packer tunnel.

Warning! Slowly extend the cylinder to avoid any impact that could cause damage to the equipment.



9. When the cylinder eye-end is aligned with the side holes of the tunnel tip, press the red EMERGENCY STOP button (see Figure 3-25).
10. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
11. Secure the cylinder front-end with the pin (see Figure 3-27).

Figure 3-37 Packer tunnel hole (packer turned upside down)



12. Put the bolt back in to secure the pin cover to the tunnel tip.
13. Reinstall the tunnel cap (see Figure 3-26) using the same bolts.
14. Be sure to remove the piece of wood used to support the telescopic cylinder during extension.

- Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the pump.

Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



- On the packer control station, press the yellow PACKER RETRACT button to retract the packer to its home position (see Figure 3-38).

Figure 3-38 Packer Retract button



- Extend and retract the packer in EJECT mode for a full cycle to make sure the packer has been properly installed.
To activate this mode, press and hold the AUTO-EJECT switch on the in-cab control panel (see Figure 3-39).

Figure 3-39 Auto-eject switch



18. Put the tailgate safety prop back to its home position.
19. Close the tailgate completely by pressing and holding down the TAILGATE DOWN switch on the in-cab control panel (see Figure 3-40).

Figure 3-40 Tailgate Down switch



Packer Telescopic Cylinder

A packer cylinder that becomes defective through time needs 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.

Removing the Packer Telescopic Cylinder

The procedure below details how to remove the telescopic cylinder for replacement purposes.

To remove the cylinder:

1. Ensure the parking brake is applied.
2. Remove the tailgate safety pins (see Figure 3-21).
3. Start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
4. Fully open the tailgate by pressing the TAILGATE UP switch on the in-cab control panel (see Figure 3-22).
Keep the TAILGATE UP switch pressed until the tailgate is fully open.
5. Put the tailgate safety prop (see Figure 2-9) in service position.
The tailgate safety prop must be set even if the tailgate is completely raised.

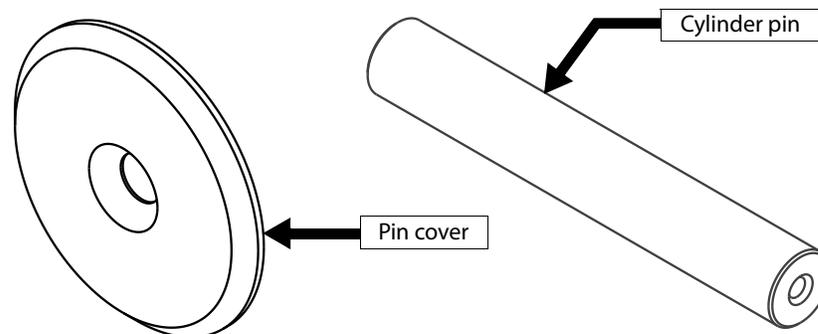
6. On the packer control station, press the green PACK button to fully extend the packer (see Figure 3-23). When the packer has reached its fully extended position (see Figure 3-24), press the red EMERGENCY STOP button to stop the packer (see Figure 3-25).

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

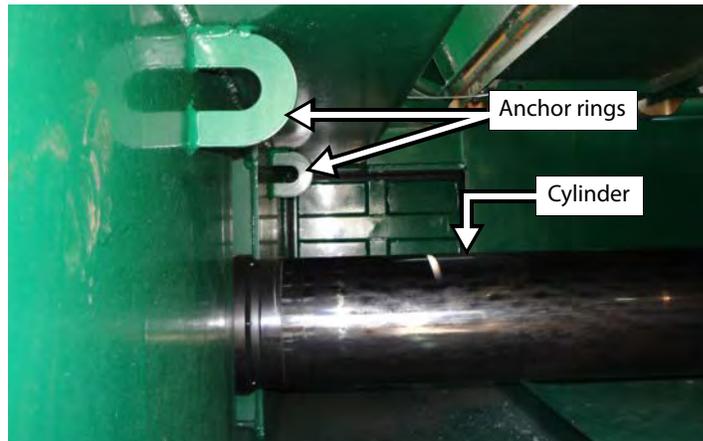


7. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
8. Enter the body and, under the follower panels, place a piece of wood under the telescopic cylinder to ensure it does not move once the cylinder pin is removed from the tip of the tunnel (see Figure 3-26).
9. Exit the body.
10. At the rear of the truck remove the tunnel cap (see Figure 3-26) to have access to the front-end of the telescopic cylinder.
11. Remove the bolt securing the pin cover to the center tunnel (see Figure 3-26).
12. Remove the pin cover (see Figure 3-41).
13. Remove the cylinder pin (see Figure 3-41).

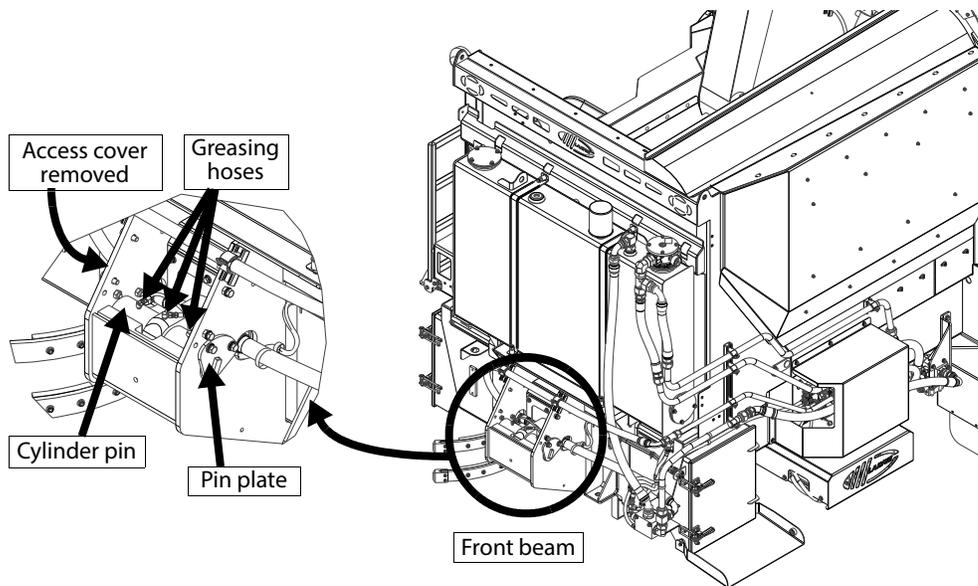
Figure 3-41 Pin cover and cylinder pin



14. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
15. On the packer control station, press the yellow PACKER RETRACT button to retract the cylinder (see Figure 3-28).
16. Once the cylinder is completely retracted, proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
17. Through one of the sump box (see Figure 3-34), place a piece of material (wood or metal) under the cylinder rod to help with the removal of the other cylinder pin.
18. Attach both ends of a sling to the anchor rings above the cylinder rod (see Figure 3-42) to secure it firmly.

Figure 3-42 View of the telescopic cylinder through the sump box

19. Get to the front beam located on the lower front wall of the body (see Figure 3-43).

Figure 3-43 Front beam (1)

20. Remove the access cover to access the parts inside (see Figure 3-44).

21. Disconnect both hydraulic hoses from the cylinder

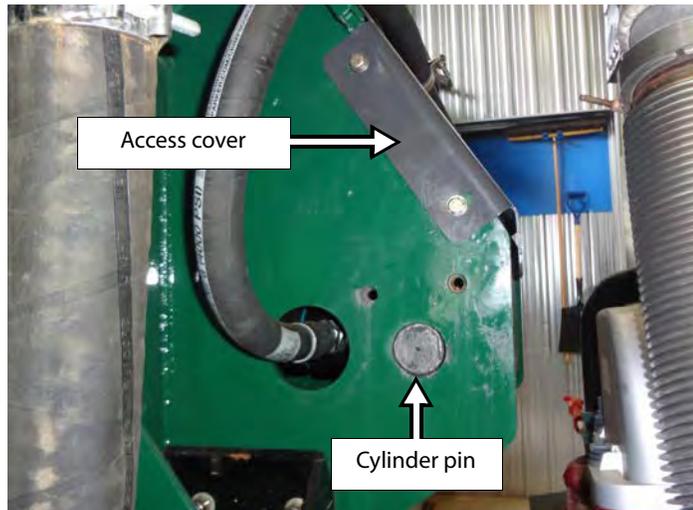
Use absorbent material to catch oil spills.

22. Disconnect the greasing hose from the cylinder.

23. Disconnect both greasing hoses from the cylinder pin.

24. Remove both pin plates, one on each side of the beam (see Figure 3-43).

25. Remove the pin that holds the telescopic cylinder in place (see Figure 3-44).

Figure 3-44 Front beam (2)

The telescopic cylinder can now be removed from its position.

26. With an appropriate lifting device lift the cylinder out of the hopper.

Warning!

Use caution when lifting the cylinder out of the body to avoid accidents and injuries.



Installing a New/Repaired Packer Telescopic Cylinder

After having removed a faulty telescopic cylinder out of the body, proceed with the installation of a new or repaired cylinder.

To install a new/repared telescopic cylinder apply the following procedure:

1. Make sure the truck is properly locked out and tagged out (see *Locking Out and Tagging Out the Vehicle* on page 26).
2. With an appropriate lifting device carefully lower the cylinder rear-end first into the body through the hopper.
3. Move the cylinder towards the front of the body.

Be sure to position the rear end of the cylinder towards the front end of the body.

The rear end of the cylinder must be installed inside the front beam. Use a piece of wood to support the weight of the cylinder and to facilitate the installation.

You may also secure the cylinder with slings attached to the anchor rings above the cylinder (see Figure 3-42).

Warning!


Use caution when lowering /moving the cylinder inside the body to avoid accidents and injuries.

-
4. After having correctly positioned the cylinder rear-end into the front beam and aligned its bushing with the bracket holes, insert the pin (see Figure 3-44) through the holes to hold the cylinder in place.
 5. Connect one greasing hose to the cylinder port and the two others to the cylinder pin.
 6. Connect both hydraulic hoses to the cylinder.
 7. Put back both pin plates and secure them to the bracket with the same bolts (see Figure 3-43).
 8. Reinstall the access cover (see Figure 3-44).
 9. Through one of the sump boxes (see Figure 3-42), remove the piece of wood and/or slings that were used to support the weight of the cylinder.
 10. Under the follower panels, place a piece of wood that will support the cylinder front-end during the extension step of the cylinder.
 11. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.

Caution


Make sure the ball valve on the suction line is fully open before starting the vehicle.

-
12. On the packer control station, press the green PACK button (see Figure 3-23) to fully extend the packer cylinder.
Be careful when the cylinder reaches the packer; its front-end must go inside the packer through the tunnel hole (see Figure 3-37) up to the tip of the packer tunnel.

Warning!


Slowly extend the cylinder to avoid any impact that could cause damage to the equipment.

-
13. When the cylinder eye-end is aligned with the side holes of the tunnel tip, press the red EMERGENCY STOP button (see Figure 3-25).
 14. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
 15. Secure the cylinder front-end with the pin (see Figure 3-27).
 16. Put the bolt back in to secure the pin cover to the tunnel tip.

17. Reinstall the tunnel cap (see Figure 3-26) using the same bolts.
18. Be sure to remove the piece of wood used to support the telescopic cylinder during extension.
19. Start the engine and engage the hydraulic system (PUMP switch set to “ON”).
Wait for the air pressure to reach 70 psi before engaging the pump.

Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



-
20. On the packer control station, press the yellow PACKER RETRACT button to retract the packer to its home position (see Figure 3-38).
 21. Extend and retract the packer in EJECT mode for a full cycle to make sure the telescopic cylinder has been properly installed.
To activate this mode, press and hold the AUTO-EJECT switch on the in-cab control panel (see Figure 3-39).
 22. Put the tailgate safety prop back to its home position.
 23. Close the tailgate completely by pressing and holding down the TAILGATE DOWN switch on the in-cab control panel (see Figure 3-40).

Panel Scraper

Danger! Always lock out and tag out the vehicle during inspection and maintenance (see *Locking Out and Tagging Out the Vehicle* on page 26).



Replacing the Panel Scraper

To replace the panel scraper on an AUTOMIZER™ unit, apply the following procedure:

1. Start the engine and engage the hydraulic pump.
Wait for the air pressure to reach 70 psi before engaging the hydraulic pump.
2. Using the joystick, extend the automated arm to get better access to the hopper area.

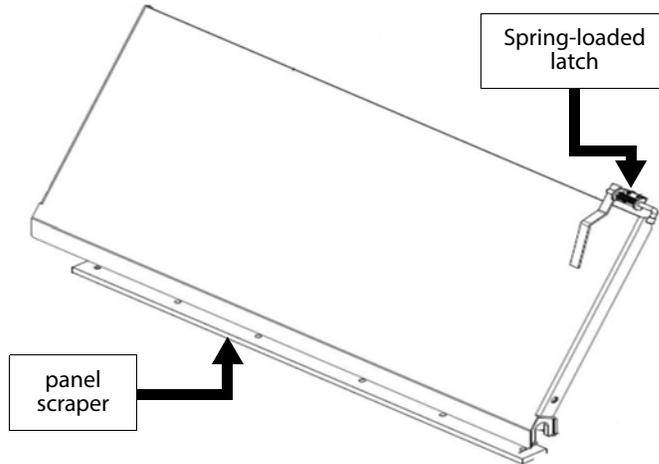
Danger! Secure the area around the path of the arm when performing maintenance or repair.



-
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 26).
6. Open the floating panel completely.
To do so, pull the panel spring-loaded latch to the right then pull the floating panel wide open.

Figure 3-45 Floating panel



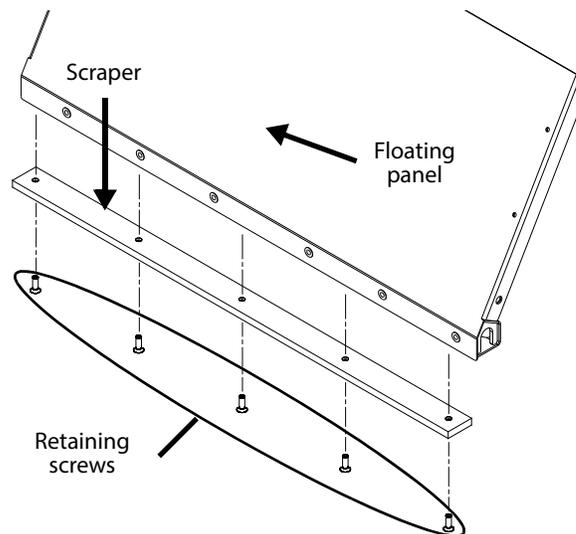
Warning!

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



-
7. Remove the retaining screws holding the panel scraper in place (see Figure 3-46).

Figure 3-46 Retaining screws holding panel scraper



8. Replace the old scraper with a new one and put back all the retaining screws.
9. Once the replacement is done, close the floating panel correctly.

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



-
10. Check for even contact between the scraper, packer panel and follower panels.

Packer Roller Assemblies

Packer rollers need to be replaced when damaged or when showing excessive wear or flat spots. The procedure outlined below will show you how to remove the first, second and third sets of rollers and how to replace them.

NOTE: If the packer and the follower panels have been removed from the body for repair or replacement, you can take advantage of it to check all packer rollers and replace those that are damaged or worn out.

Replacing Packer Roller Assemblies

NOTE: This task must be performed by 2 people.

To replace the packer roller assemblies:

1. Ensure the parking brake is applied.
2. Start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
3. Remove the tailgate safety pins (see Figure 3-21) and fully open the tailgate by pressing the TAILGATE UP switch on the multiplexed control panel (see Figure 3-22).
Keep the TAILGATE UP switch pressed until the tailgate is fully open.
4. On the packer control station, press the green PACK button to fully extend the packer (see Figure 3-23). When the packer has reached its fully extended position (see Figure 3-24), press the red EMERGENCY STOP button to stop the packer (see Figure 3-25).

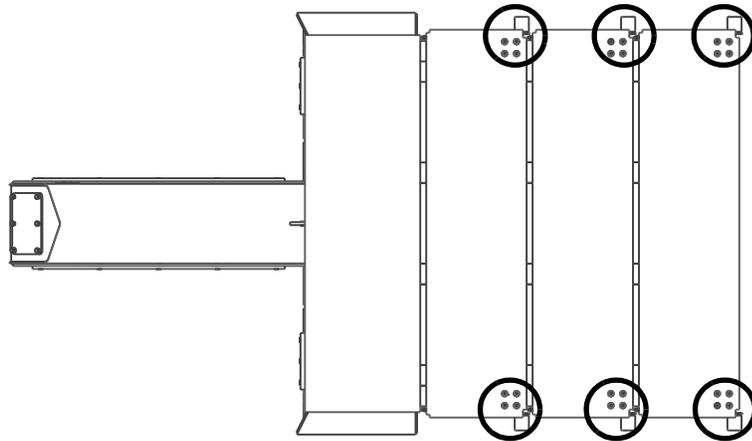
Danger! Never enter the hopper or body while the packer is moving.



-
5. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.

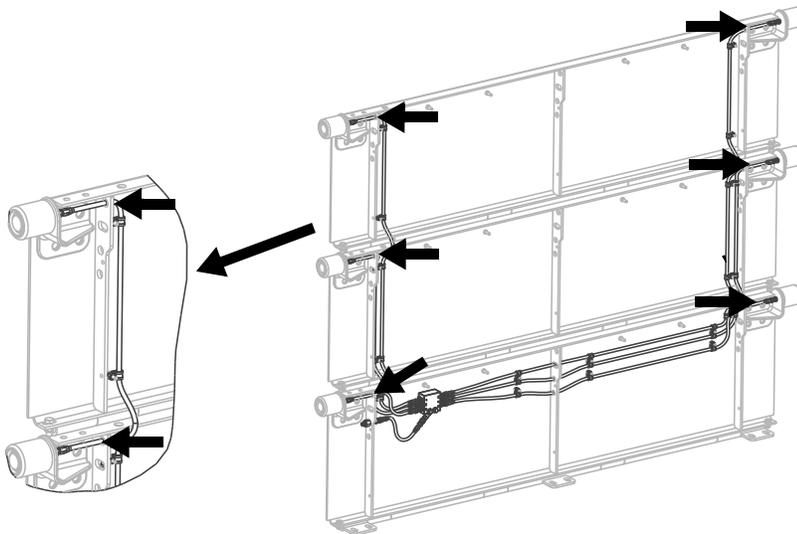
6. Set the tailgate safety prop (see *Tailgate Safety Prop* on page 22).

Figure 3-47 Packer rollers assemblies (3 on each side)



7. Place a 2-by-4 woodblock under the first panel, long enough to hold the panel in place once the roller is removed.
8. Remove the left-hand side roller assembly of the first panel and replace it:
 - 8 a. Disconnect the greasing hose from the roller assembly.

Figure 3-48 Greasing hoses



- 8 b. 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 3-49).

Figure 3-49 Bolts to be removed



- 8 c.** Remove the roller assembly and replace it with a new one.
- 8 d.** Put back all 4 bolts in their respective holes before tightening them.
- 8 e.** Reconnect the greasing hose.
- 9.** Remove the right-hand side roller of the first panel and replace it by repeating Step 8.
Move the woodblock to the other side under the panel.
- 10.** Place the 2-by-4 woodblock under the second panel, long enough to hold the panel in place once the roller is removed.
- 11.** Repeat Steps 8 and 9 to remove both rollers of the second panel.
- 12.** Place the 2-by-4 woodblock under the third panel, long enough to hold the panel in place once the roller is removed.
- 13.** Repeat Steps 8 and 9 to remove both rollers of the third panel.
- 14.** Once all worn-out rollers have been replaced, exit the body.
- 15.** Start the engine and engage the hydraulic system.
Wait for the air pressure to reach 70 psi before engaging the hydraulic system.
- 16.** Run a full cycle to check for proper operation.

Replacing Rollers

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 *Packer Roller Assemblies* on page 67), remove the external snap ring.

Figure 3-50 Removing external snap ring



2. Remove the washer.

Figure 3-51 Removing washer

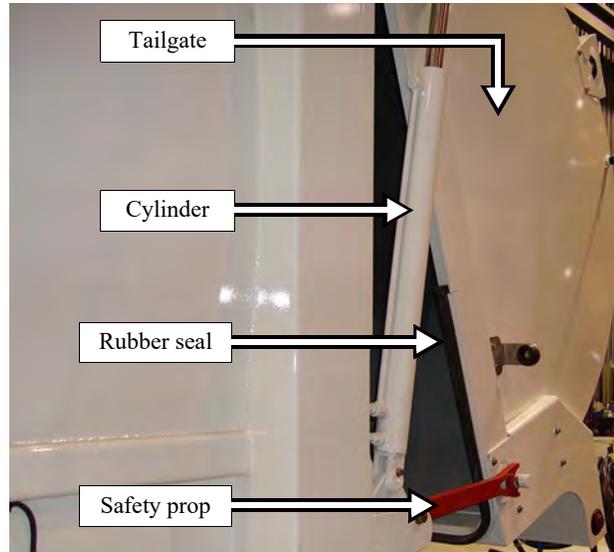


3. Slide out the roller.
4. Reverse the previous steps to reinstall the roller.

Tailgate

The tailgate of the AUTOMIZER™ is subject to frequent movements, and therefore, must be frequently inspected and maintained to keep its high level of performance. The hinges and pins are parts of the tailgate that should particularly be looked at in search of any type of wear or metal fatigue. Tailgate rubber seal should also be looked at for signs of wear or damage that may hinder its effectiveness. Always replace the parts that are faulty.

Figure 3-52 Tailgate



NOTE: The image shown above is indicative only and may differ from actual truck appearance.

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.

Figures 4-52 and 4-53 show where the proximity and limit switches are located on the truck.

Figure 3-53 Switches on curbside of truck

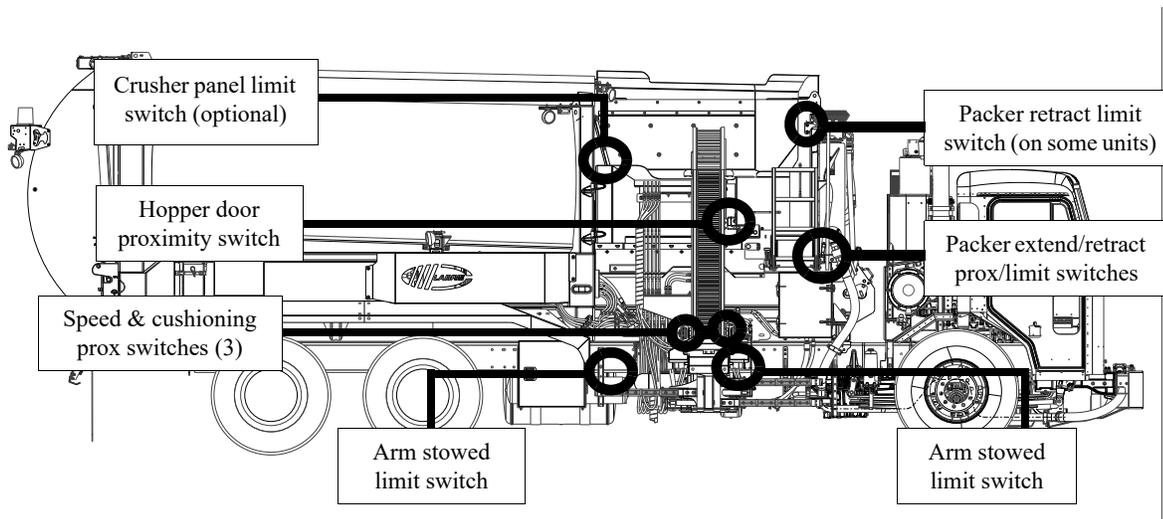
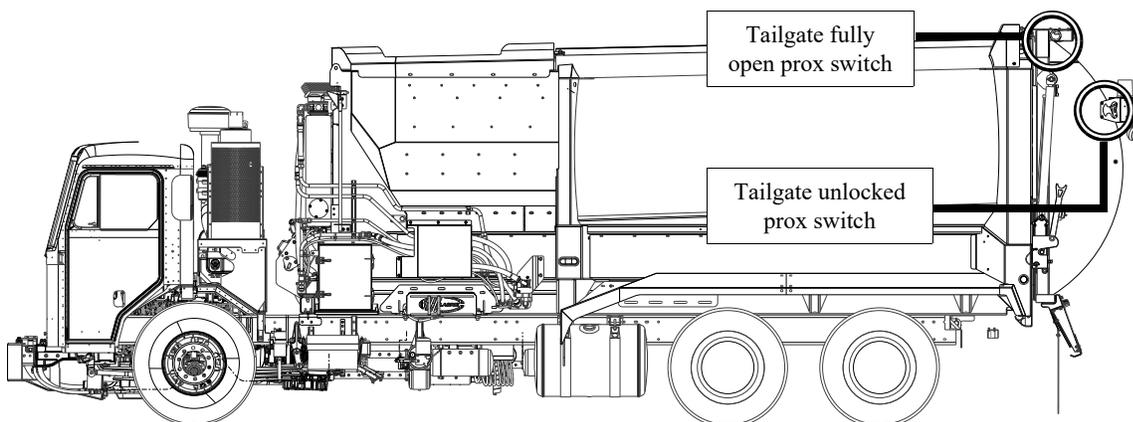


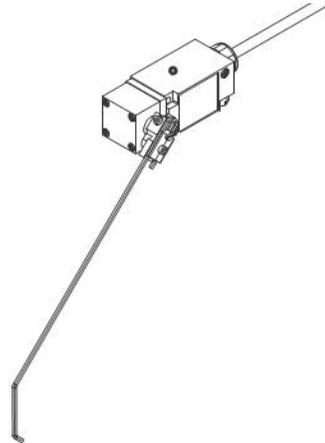
Figure 3-54 Switches on streetside of truck



Limit Switch Adjustment

The following is the general procedure for adjusting all the limit switches used on the AUTOMIZER™.

IMPORTANT: 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 an accident, injuries or property damage.

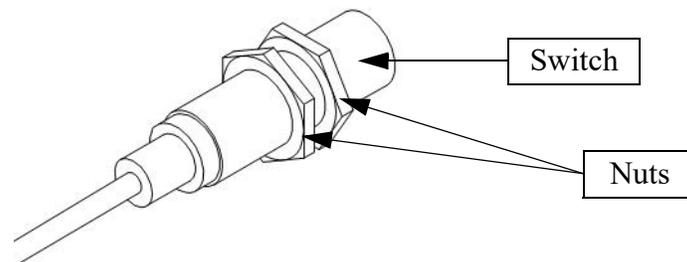


To adjust a limit switch:

1. Loosen the limit switch nut.
2. Move the rod 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

The following is the general procedure for adjusting all the proximity switches used on the AUTOMIZER™.



To adjust a proximity switch:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximately 3/16 of an 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.

In the following sections, you will learn how to adjust limit/proximity switches based on the function for which they are used.

Packer Limit/Proximity Switches

Danger!



Always lock out and tag out the vehicle when inspecting it or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 26).

Packer limit/proximity switches were adjusted at the factory for optimal packer operation. If the area behind the packer is not properly cleaned *daily*, limit/proximity switches may no longer stop the packer or may prevent automatic cycles from working properly.

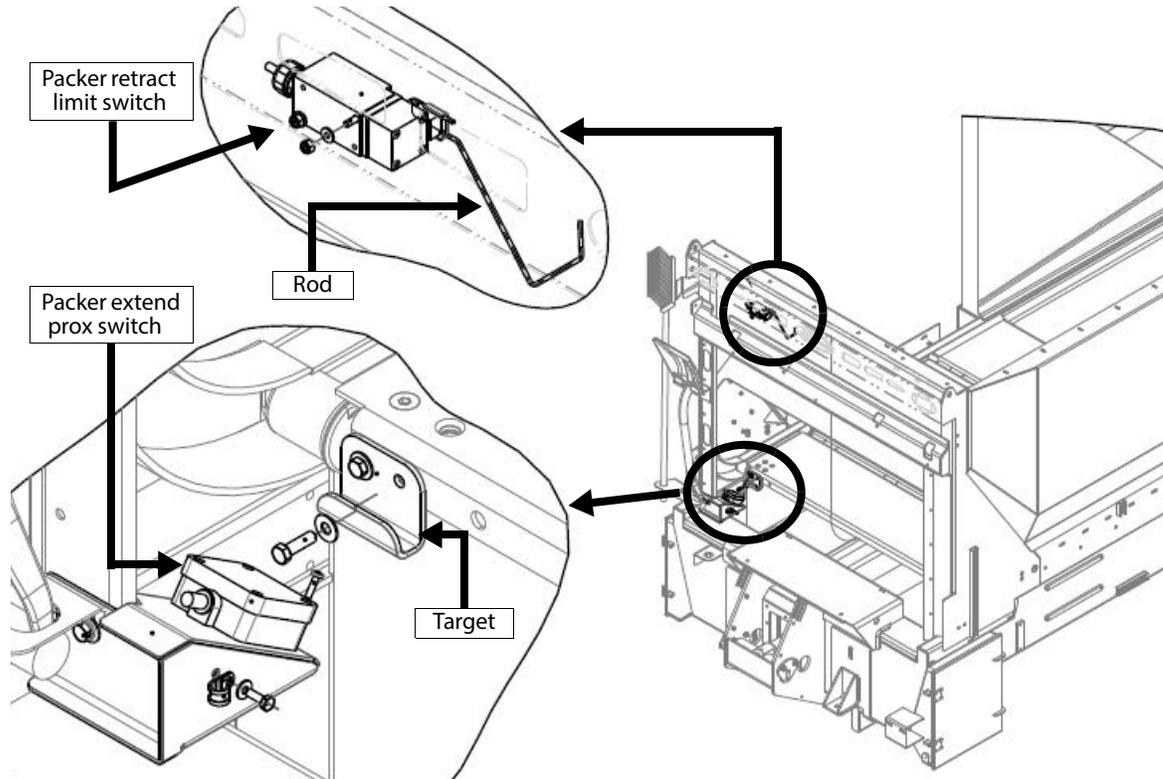
Furthermore, over time, misalignment of the components may occur due to the frequent back and forth motion of the packer. An adjustment might be necessary to prevent cylinders from completely extending and retracting at the end of their strokes.

The packer range of motion is controlled by a set of one limit switch and one proximity switch. The proximity switch that stops the packer during extension (packer extend) is located on the curbside front lower section of the body (Figure 3-55). The limit switch that stops the packer during retraction (packer retract) is located on the curbside front upper section of the body (Figure 3-55).

The Packer Extend proximity switch sends a signal to the ECU multiplex module that the packer panel has reached its extended packing position. Once the signal from the proximity switch is received, the module prompts the packer to retract to complete its packing cycle.

The Packer Retract limit switch sends a signal to the ECU multiplex module that the packer has reached its fully retracted position.

Figure 3-55 Standard 1-limit/proximity switch set-up



Adjusting Packer Extend Proximity Switch

When this proximity switch needs adjustment, the following procedure is recommended.

To adjust the packer extend proximity switch:

1. Set the parking brake.
2. Start the engine and engage the hydraulic system (PUMP switch activated).
Usually, the packer extend proximity switch needs adjustment when the last follower panel moves past the switch without triggering any signal. In such a case, the packer continues its forward motion inside the body as in Eject mode.
3. Press and hold the Auto-Eject switch on the multiplexed control panel (see Figure 3-39). Keep this switch down until the tailgate is fully open and the last follower panel clears the proximity switch in the hopper.

As soon as you release the Auto-Eject switch, the packer will stop moving.

Caution! Make sure no one is standing behind the truck when you operate the tailgate.



4. Turn OFF the engine.

5. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.

Danger! Never get on the hopper area while the engine is running.



-
6. Get on the hopper area.
 7. Free the proximity switch from any dirt or debris that may cause the switch to malfunction.
 8. Exit the hopper.
 9. Start the engine and engage the hydraulic system (PUMP switch activated).

Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



-
10. Press the yellow PACKER RETRACT button (see Figure 3-28) to retract the packer and bring it back to the position where the target (see Figure 3-55), which is located at the tail of the last follower panel, must make contact with the Packer Extend proximity switch. Use the red EMERGENCY STOP button (see Figure 3-25) to stop retraction at such position.
 11. Turn OFF the engine.
 12. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.

Danger! Never get on the hopper area while the engine is running.



-
13. Adjust the Packer Extend proximity switch. To do so:
 - 13 a. Loosen the nuts of the proximity switch bracket.
 - 13 b. Move the bracket so that a gap of 1” is reached between the switch and the target.
 - 13 c. Once you have determined the contact point where the triggering should occur, retighten the nuts.
 14. Start the engine and engage the hydraulic system (PUMP switch activated).

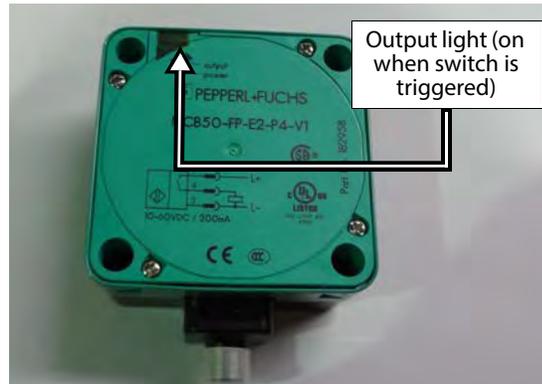
Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



15. Fully retract the packer and press the green PACK button to start a complete cycle and test the efficiency of the proximity switch.

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

Figure 3-56 Packer proximity switch



Adjusting Packer Retract Limit Switch

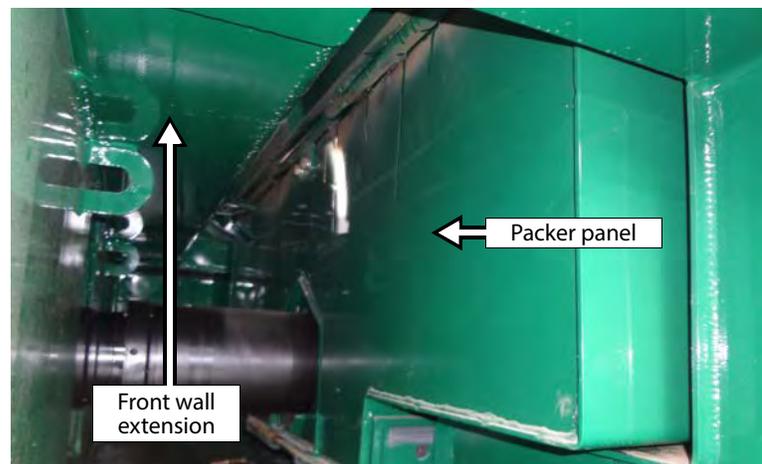
When the Packer Retract limit switch (Figure 3-55) needs adjustment, it is usually because it no longer stops the packer (bottoming out) or prevents automatic cycles from working properly. A well adjusted Packer Retract limit switch should prevent the packer from making a knocking noise when it stops during retraction in speed-up mode.

When this limit switch needs adjustment, the following procedure is recommended.

To adjust the Packer Retract limit switch:

1. Set the parking brake.
2. Start the engine and engage the hydraulic system (PUMP switch activated).
3. Press the yellow button to retract the packer to (+/-) 1/16" before the fully retracted position (this is the measurement between the packer panel and the body front wall extension).

Figure 3-57 Packer panel and front wall extension (seen through sump box)



NOTE: When in stowed position the packer panel must always make contact with the front wall extension.

4. When the packer reaches the correct position, push the red emergency STOP button (see Figure 3-25).
 5. Disengage the hydraulic pump and turn OFF the engine.
 6. Proceed with the tagout/lockout procedure. Refer to “Locking Out and Tagging Out the Vehicle” on page 26.
-

Danger! Never get on the hopper area while the engine is running.



-
7. Locate the Packer Retract limit switch rod (Figure 3-55).
 8. Use an Allen key to loosen the locknut on the limit switch and determine the contact point where the triggering should occur by moving the rod.
 9. Once you have determined the contact point where the triggering should occur, retighten the locknut.
 10. Start the engine and engage the hydraulic system (PUMP switch activated).
-

Caution Make sure the ball valve on the suction line is fully open before starting the vehicle.



-
11. Fully retract the packer and press the green PACK button to start a complete cycle and test the efficiency of the limit switch.

The packer must be tested with the engine running at 1500 rpm and must stop before it makes a knocking noise at the end of its stroke. Then, repeat the test with the engine running at idle speed.

NOTE: Repeat this procedure until you achieve the proper settings for the limit switch.

Adjusting Tailgate Unlocked Proximity Switch

Warning!

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



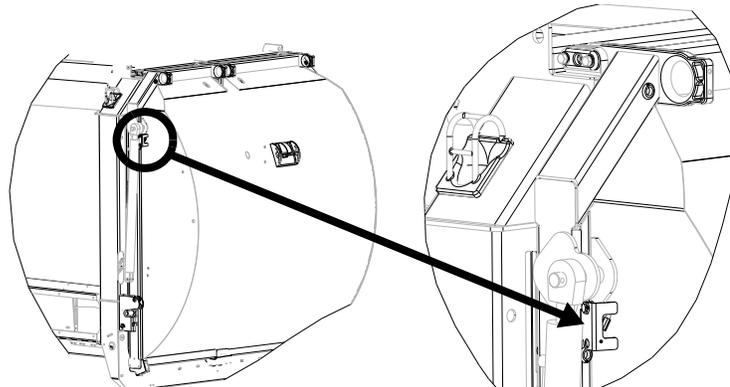
AUTOMIZER™ vehicles are equipped with a tailgate unlocked proximity switch on the tailgate left side near the upper end of the tailgate cylinder (see Figure 3-58). This switch gets triggered (amber light lights up) when the cylinder casing is sufficiently near the switch head. This occurs when the cylinder 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 switch¹. 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.

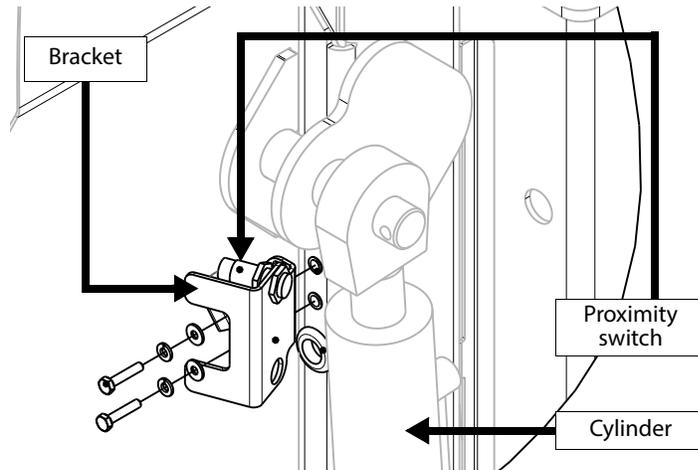
When the tailgate is closed/locked, the tailgate cylinder is fully retracted and triggering of the proximity switch occurs; the cylinder having moved upward toward the switch². When the switch is triggered, the warning buzzer and backup alarm stop sounding, the TAILGATE UNLOCKED warning light turns off 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.

Figure 3-58 Location of tailgate unlocked proximity switch

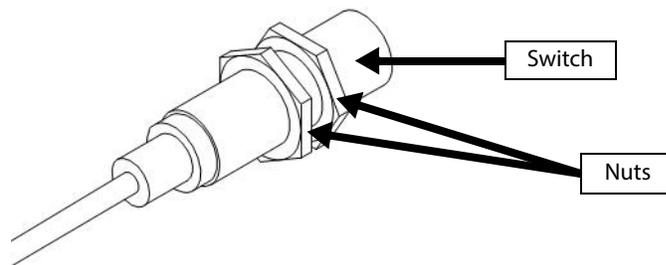


1. The first thing the tailgate cylinder does when the operator presses and holds the TAILGATE UP switch is to unlock the tailgate, resulting in the cylinder head moving away from the proximity switch, thus making triggering no more possible.
2. The last thing the tailgate cylinder does when the operator 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 3-59 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 3-59).

Figure 3-60 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 $3/16$ " between the cylinder casing and the switch.
3. Retighten 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

The AUTOMIZER™ has a feature that allows the operator to unload all the refuse collected during his run with the press of a single switch. This feature is called “Auto-Eject mode”. And for this feature to work correctly, the tailgate fully open proximity switch must be adjusted properly (see Figure 3-61). Otherwise, the Auto-Eject mode will be inoperative.

In Auto-Eject mode as well as in Manual Eject mode, the packer panel moves only when the tailgate is fully open. If it does not, the tailgate fully open proximity switch may need adjustment.

Figure 3-61 Tailgate fully open proximity switch



This switch is on the body streetside near the tailgate hinge.

To adjust the tailgate fully open proximity switch:

1. Fully open the tailgate (see Figure 3-62).

Warning!



Ensure that no one is standing behind or near the tailgate when the adjustment procedure is carried out.

Figure 3-62 Tailgate fully open

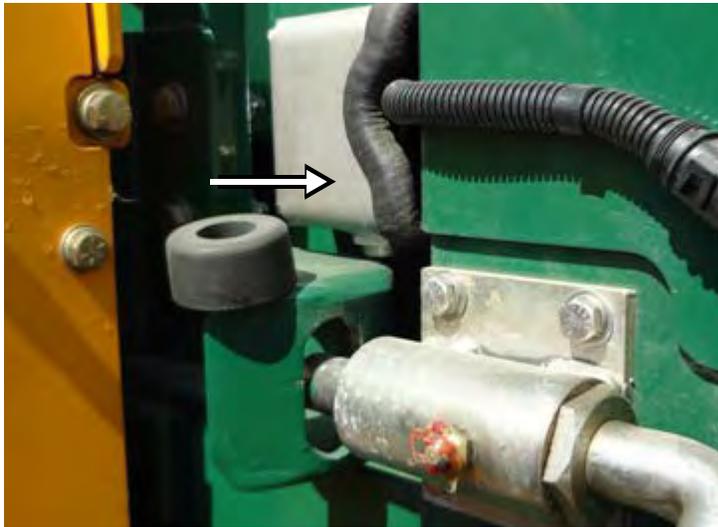


2. Adjust the switch so that it can detect the target.
The proximity switch light should turn on when the target is detected.
3. Slightly close the tailgate a couple of inches.
As the target should not be detected by the proximity switch at such a position, the switch light should be off.
4. Repeat the procedure until the proximity switch is properly adjusted.

Adjusting Hopper Door Proximity Switch

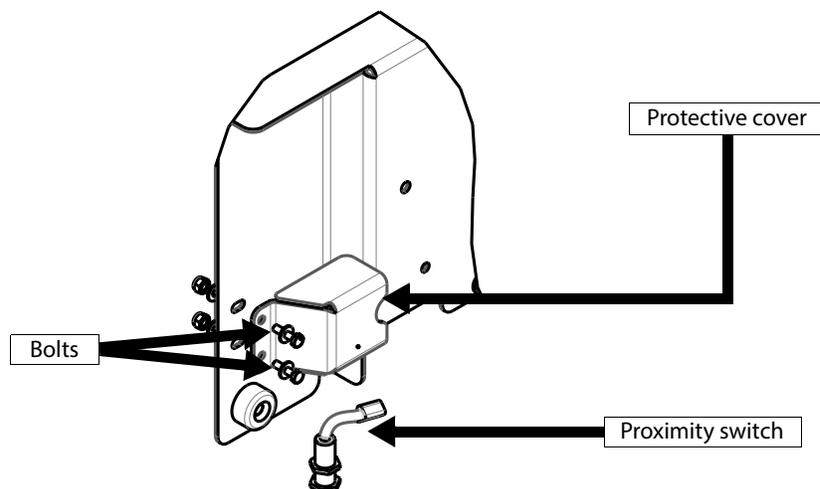
This proximity switch (see Figure 3-63) turns off all hydraulic power when the hopper door is not closed.

Figure 3-63 Hopper door proximity switch (under protective cover)



This switch is located on the lower side door frame behind a protective cover.

Figure 3-64 Hopper door prox switch assembly



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. Remove the two bolts that secure the protective cover (see Figure 3-64) to the hopper door.
2. Remove the protective cover.
3. Loosen the proximity switch nuts.
4. Adjust the proximity switch so that there is a gap of approximately 3/16" (5 mm) between the plate and the switch.
5. Retighten the proximity switch nuts.
6. Test the operation.

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

7. Once the proper adjustment is achieved, reinstall the protective cover and secure it using the two remaining bolts.

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

Adjusting Arm Stowed Limit Switches

The Arm Stowed limit switches illuminate the ARM OUT warning lights on the dashboard (see Figure 3-67) 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 3-65 Arm Stowed limit switches



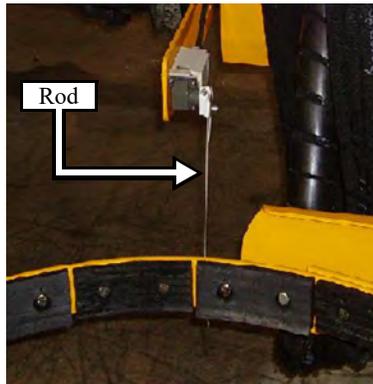
These limit switches are located behind the grabber: one on the left side, the other on the right side of the grabber.

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.

Figure 3-66 Limit switch



- 3 c. Retighten 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 not fully open. This may cause accidents, injuries and/or property damage.

Caution!



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

Figure 3-67 Arm Out warning light



Adjusting Crusher Panel Up Limit Switch (Standard w/ the Crusher Panel)

The crusher panel up limit switch (see Figure 3-68) 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 deadman switch on the arm joystick is activated. This forces the crusher panel to rise to the up position in order to let the arm work.

Figure 3-68 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 26).
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 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.

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.
- ◆ It must also meet MIL-H-5606 or SAE IOW “MS” standards.
- ◆ 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

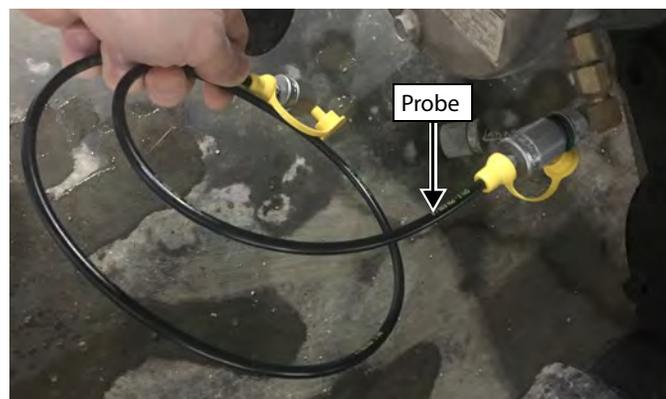
Once you have released the residual pressure, you can take the sample.

NOTE: Sample taking procedures may vary from one oil analysis lab to another. Use the procedure that 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.

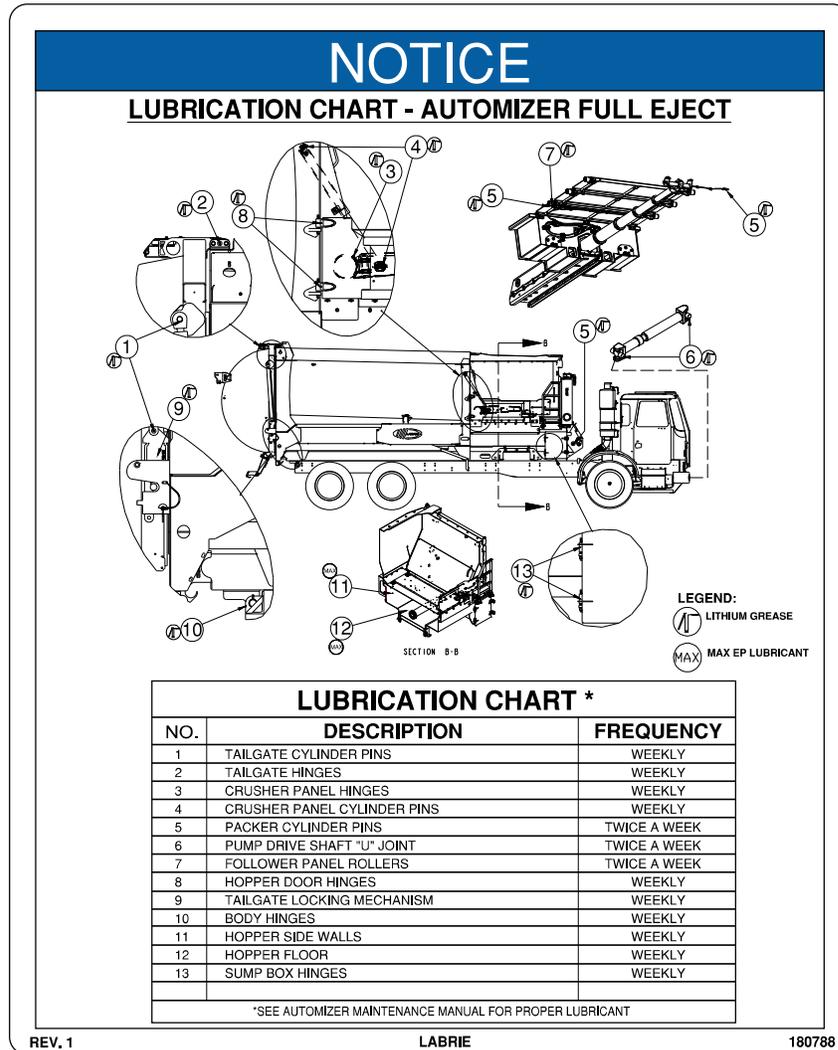
Lubrication Chart

The lubrication chart in this manual (Figure 4-7) may differ from the ones displayed on your vehicle. For lubrication specifications, always refer to the charts on your vehicle.

Figure 4-6 Lube charts on right hand side of vehicle



Figure 4-7 AUTOMIZER™ lubrication chart



Caution!



Never grease the side rails and the outside of rollers. Sand and other abrasives stick to grease, which may cause premature component wear.

Caution!



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

Greasing Crusher Panel (optional)

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 4-9).

Figure 4-8 Grease areas

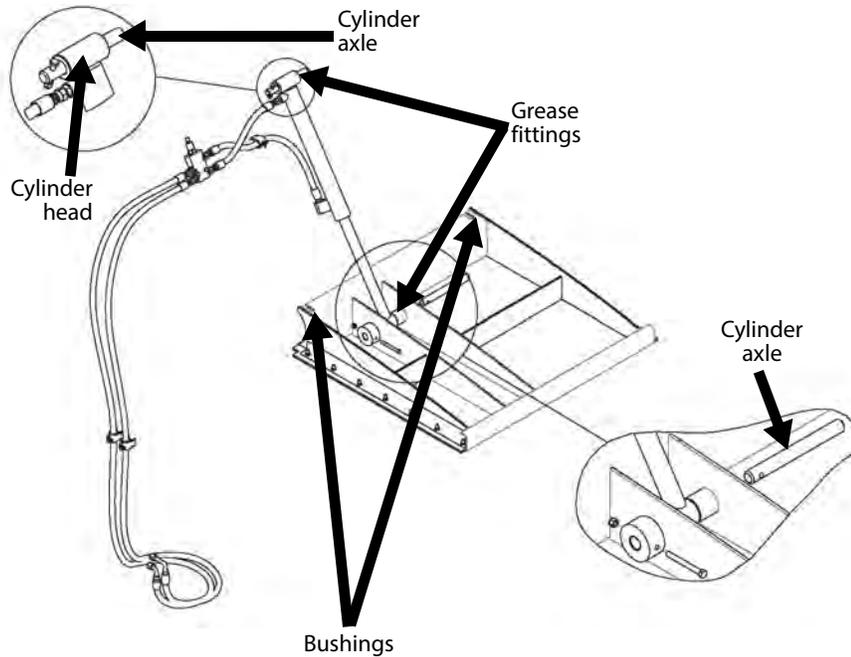
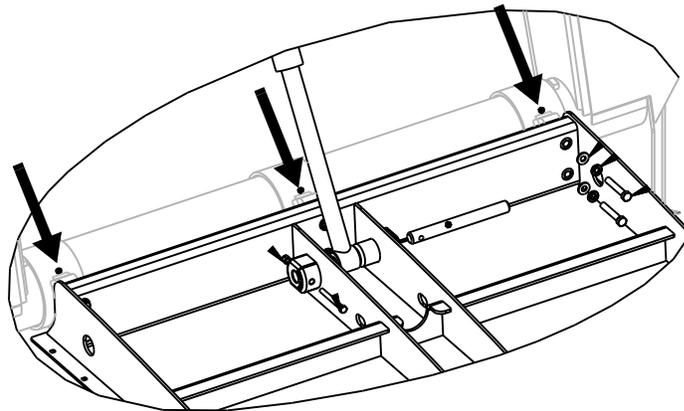


Figure 4-9 Grease fittings on lower tube rings



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 LabriePlus for technical support.

Danger!

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



Figure 4-10 Body hinge



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 87), 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 4-11 Tailgate-locking mechanism

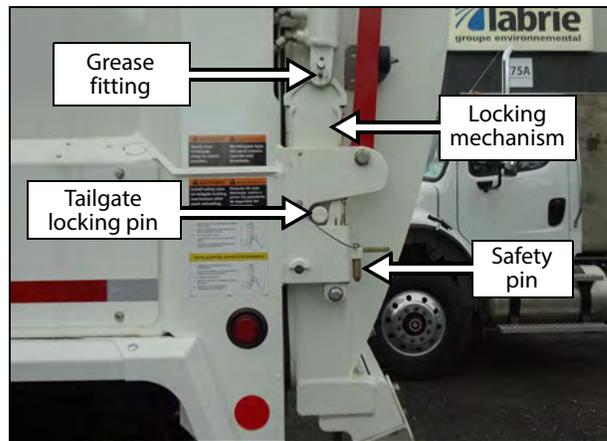


Figure 4-12 Cylinder head

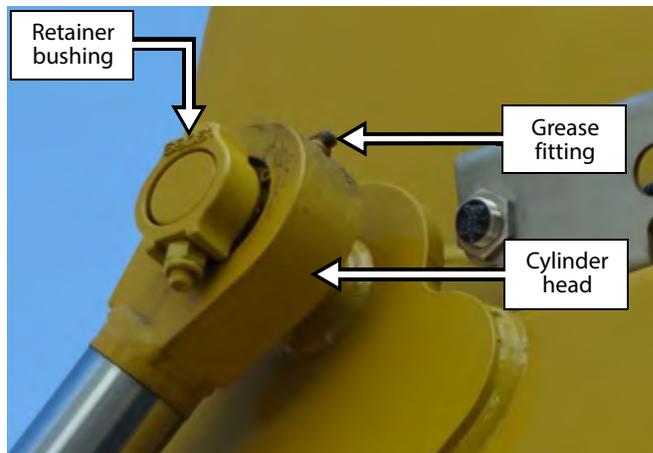
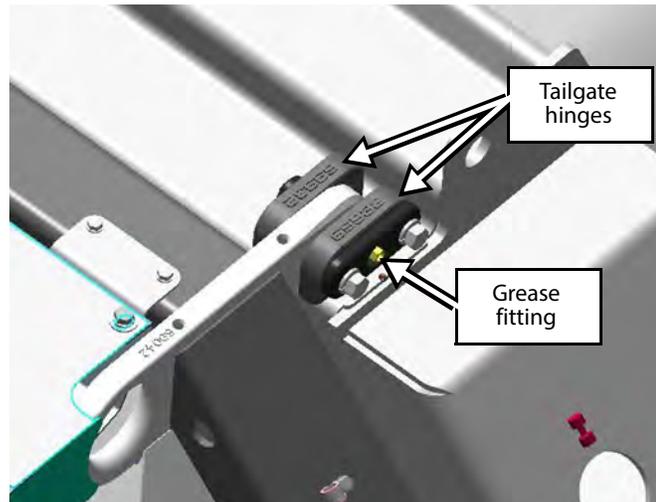


Figure 4-13 Tailgate hinges

Hopper Door Hinges

To protect and reduce wear on the hopper door hinges, lubricate them every week with multipurpose grease (see *Recommended Lubricants* on page 87).

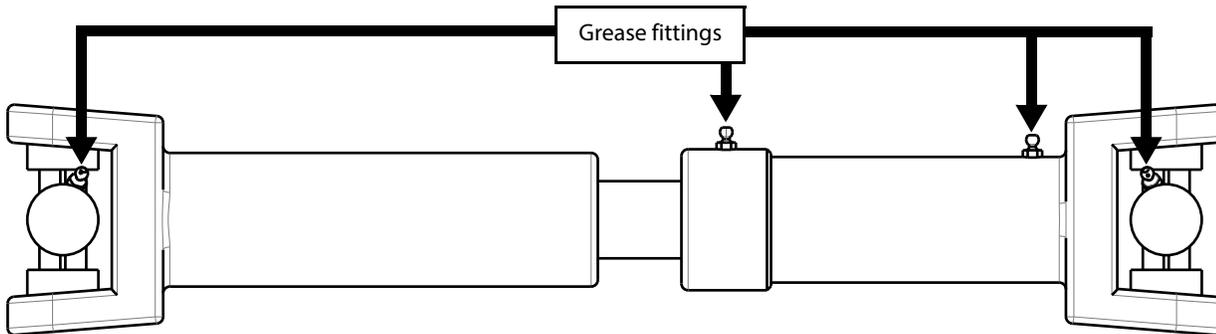
To lubricate the hopper door hinges:

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 26.
3. Locate the grease fitting on each door hinge (see Figure 4-14).
The AUTOMIZER™ hopper door has two (2) hinges.
4. Apply lubricant with a grease gun.

Figure 4-14 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 26).



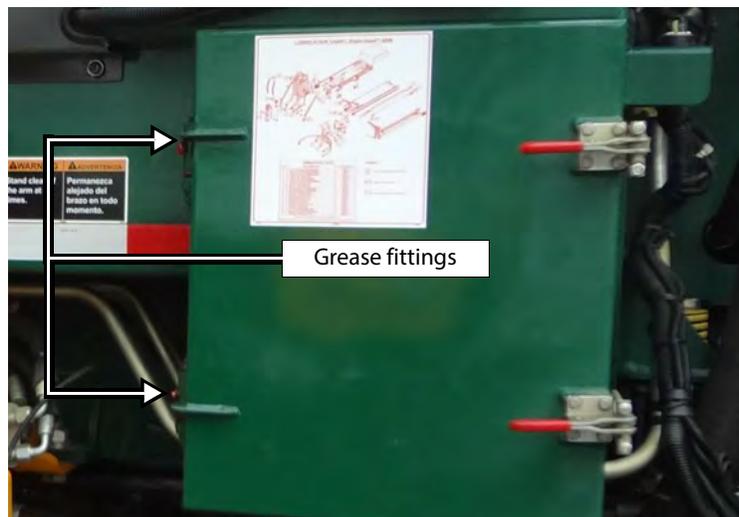
Sump Box Hinges

To protect and reduce wear on the sump box hinges, lubricate them every week with multipurpose grease (see *Recommended Lubricants* on page 87).

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 26.
3. Locate the grease fitting on each sump box hinge (Figure 4-15).
4. Apply lubricant with a grease gun.

Figure 4-15 Sump box hinges



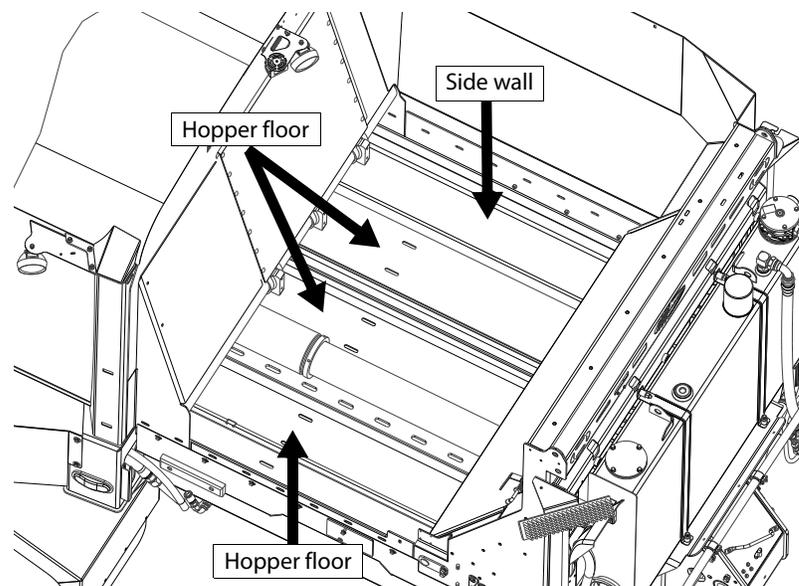
Hopper Side Walls/Floor

The hopper side walls and the hopper floor must also be lubricated every week to protect and reduce wear and tear on these components. You may use the grease gun to apply multipurpose grease on both side walls as well as on the floor (see *Recommended Lubricants* on page 87).

To lubricate the hopper side walls and the hopper floor:

1. Fully retract the packer.
2. Disengage the hydraulic pump and turn OFF the engine.
3. Proceed with the LOTO procedure. See *Locking Out and Tagging Out the Vehicle* on page 26.
4. With a grease gun apply grease on the hopper side walls and the hopper floor (see Figure 4-16).

Figure 4-16 Hopper side wall/floor



NOTE: Avoid putting grease inside both side rails.

Packer

Packer components that need to be lubricated include the follower panel rollers, the cylinder base/head pins and the T-track. Use multipurpose grease (see *Recommended Lubricants* on page 87) twice a week to lubricate these components.

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



Cylinder Head Pin & T-Track

Both components are greased using the same lube circuit and remote grease fitting (see Figure 4-17).

To lubricate the cylinder *head* pin and the T-track, proceed as follows:

1. Fully retract the packer.
2. Disengage the hydraulic pump and turn OFF the engine.
3. Proceed with the LOTO procedure. See “Locking Out and Tagging Out the Vehicle” on page 26.
4. On the curb side hopper front wall behind the cab, locate the head pin/T-track remote grease fitting (see Figure 4-17).

It is attached to the bottom follower panel (next to the roller remote grease fitting).

5. Apply lubricant to the remote grease fitting with a grease gun.

Figure 4-17 Packer lube circuits

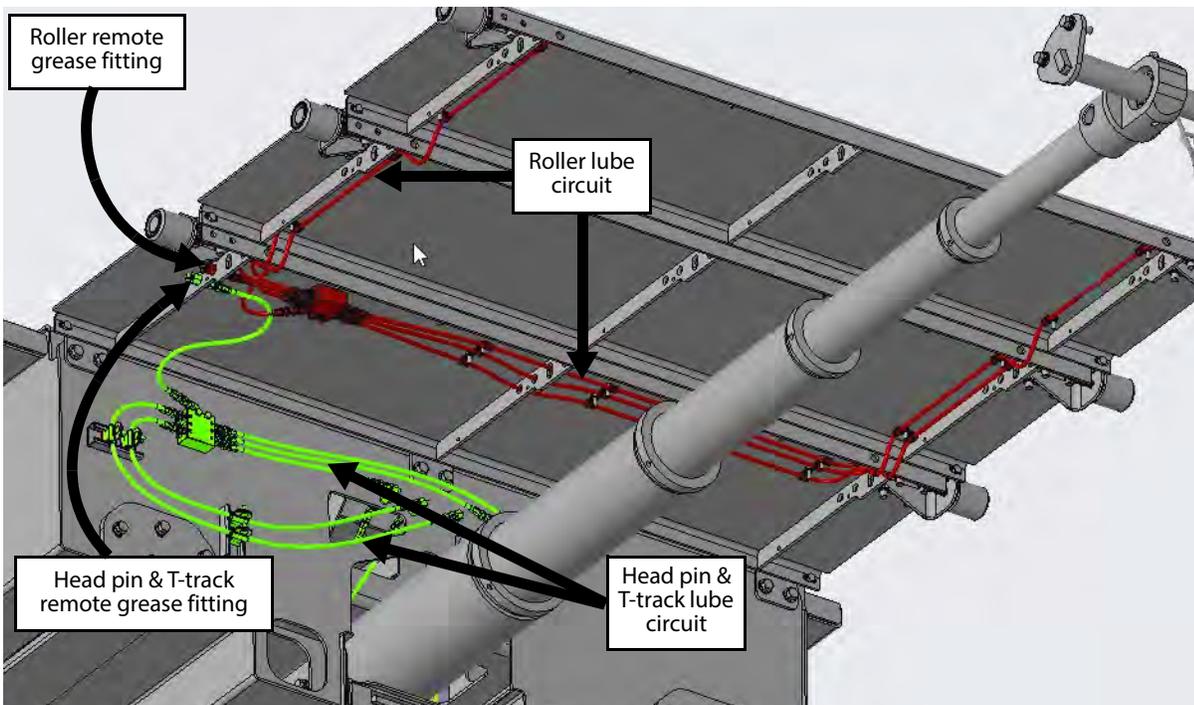
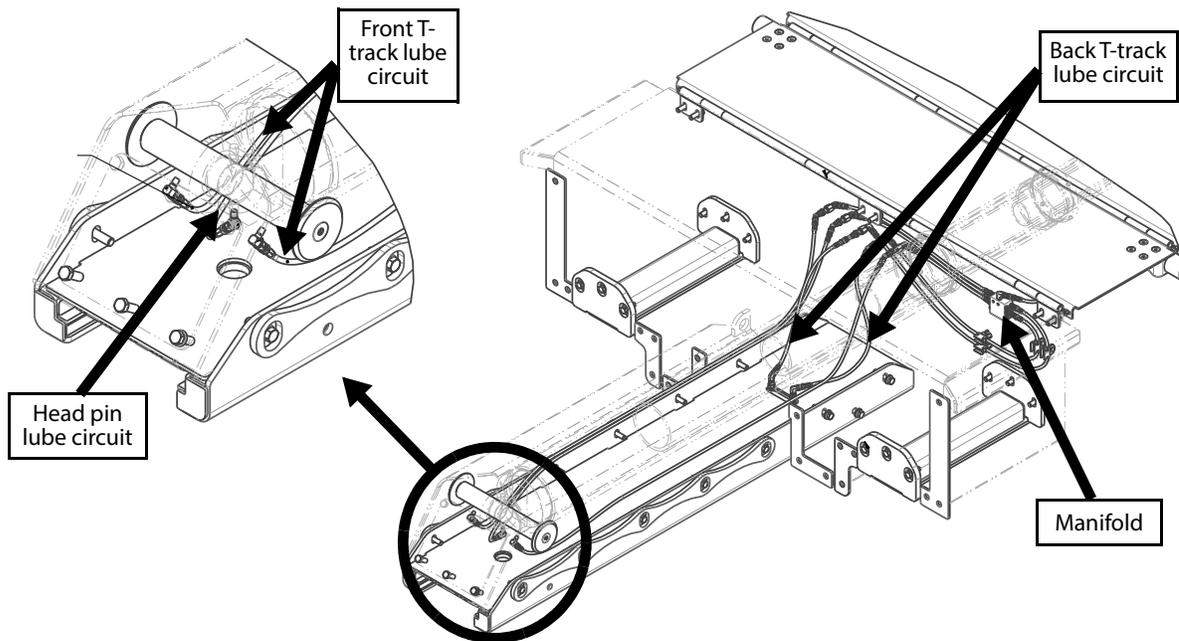


Figure 4-18 Head pin & T-track lube circuits

Cylinder Base Pin

To lubricate the packer cylinder *base* pin:

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 26.
3. Locate all 3 remote grease fittings going directly into the cylinder base pin (see Figure 4-19).
They are located on the street side of the truck, just next to the sump box.
4. Apply lubricant with a grease gun.

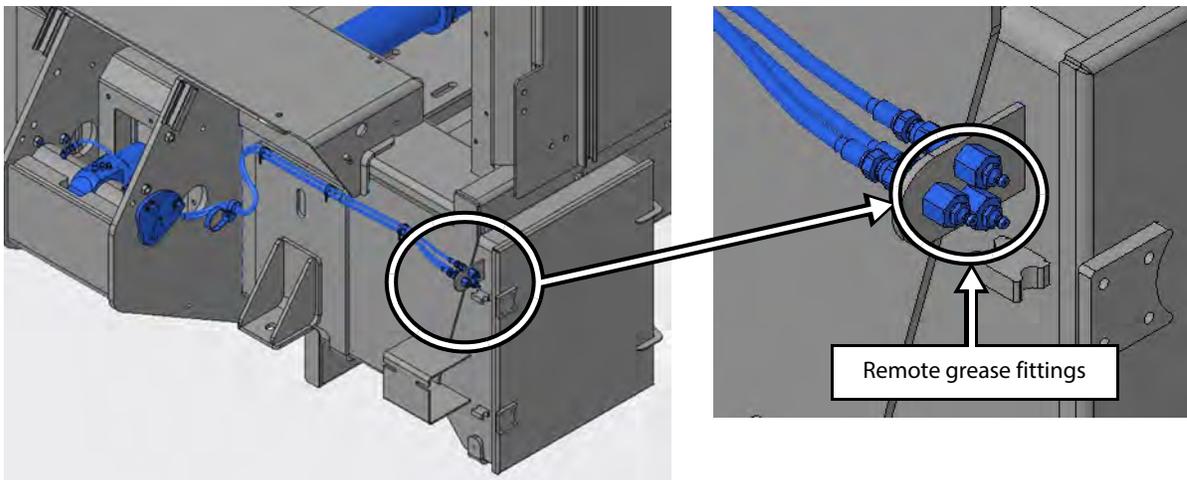
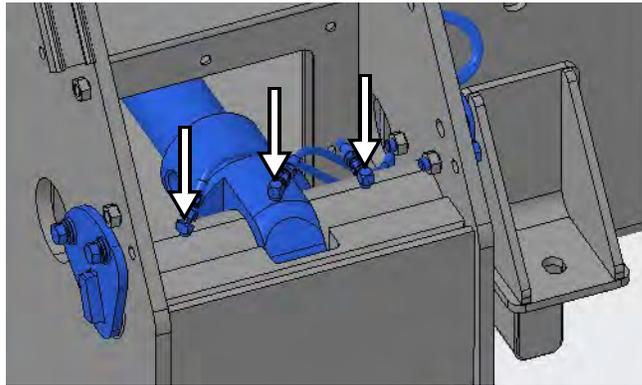
Figure 4-19 Greasing cylinder base pin

Figure 4-20 Lubricating points

Followers Panel Rollers

To lubricate all 6 follower panel rollers:

1. Fully retract the packer.
2. Disengage the hydraulic pump and turn OFF the engine.
3. Proceed with the LOTO procedure. See “Locking Out and Tagging Out the Vehicle” on page 26.
4. On the curb side hopper front wall behind the cab, locate the roller remote grease fitting (see Figure 4-17).

It is attached to the bottom follower panel (next to the head pin & T-track remote grease fitting).

5. Apply lubricant to the remote grease fitting with a grease gun.

All 6 follower panel rollers are greased using this single remote fitting.

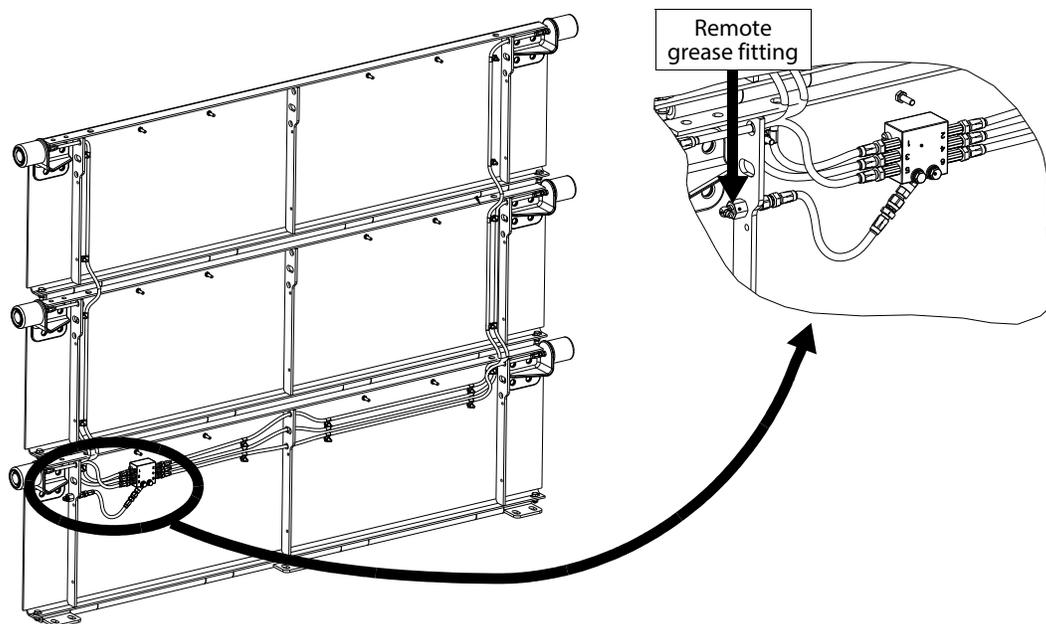
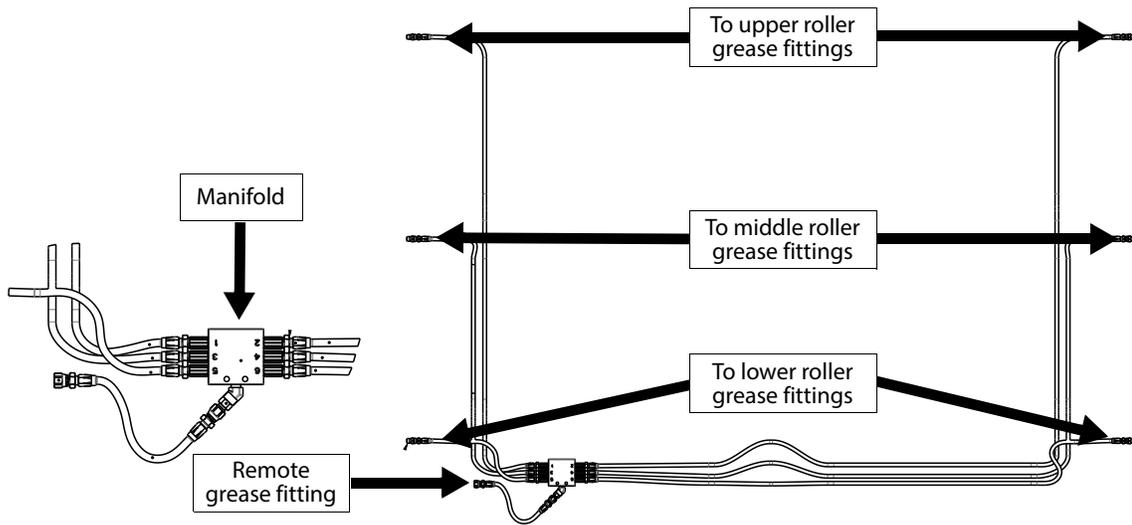
Figure 4-21 Roller lubrication system

Figure 4-22 Grease fittings



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 the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 26)

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 noise.
- ◆ 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 137).
- ◆ 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 5-22), whichever comes first (see *Replacing Filter Elements* on page 131).
- ◆ Clean the strainer inside the hydraulic tank after the first 50 hours of use, and once a year afterwards while replacing the hydraulic oil (see *Cleaning the Strainer* on page 128).
- ◆ Hydraulic oil must be replaced at least once a year, or when contaminated (see *Emptying the Hydraulic Tank* on page 127).

NOTE: The ball valve (or shut-off valve) on the hydraulic tank (see Figure 2-19) 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.

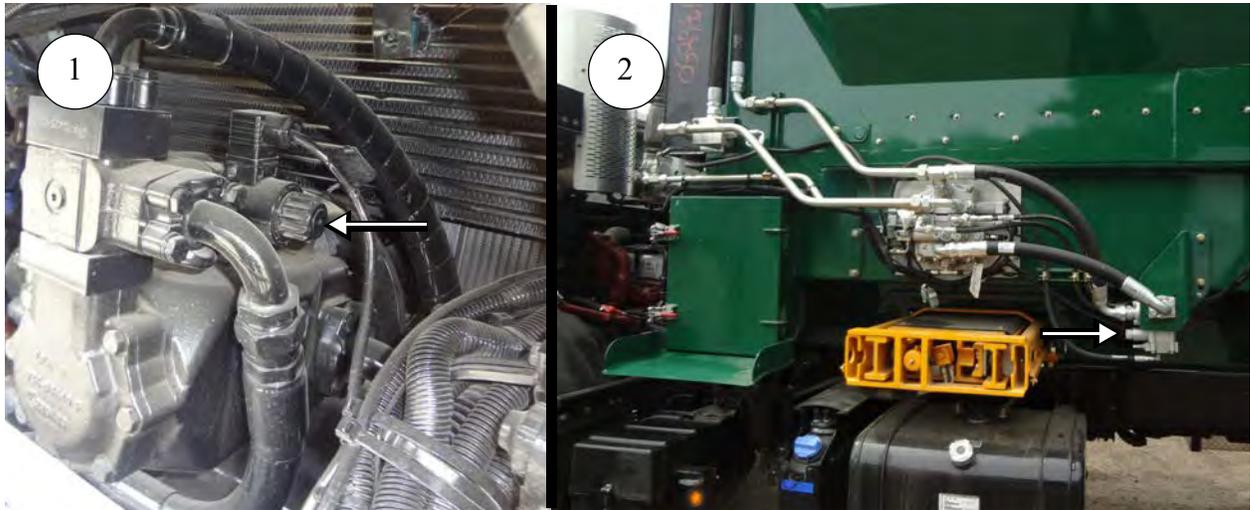
It is recommended to have the hydraulic fluid tested and analyzed by a lab to prevent hydraulic system or pump breakdown. This will also optimize the frequency of hydraulic fluid changes. Labrie vehicles are now equipped with an "oil sampler coupler." For more information, see *Testing Hydraulic Oil* on page 89.

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 (except when a hot-shift PTO is used). One is mounted on the arm vane pump at the front of the truck, the other on the bottom center of the body near the main valve (see Figure 5-1). The electric signal that activates the solenoid is sent by the pump switch on the in-cab control panel.

Figure 5-1 Solenoid valve on the arm vane pump (1), on the body streetside (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 and packer) through the directional control valve (see next page). It is capable of delivering a flow of 24.5 gallons per minute (gpm) at 700 rpm. A dump valve located on the bottom center of the body near the main valve (see Figure 5-1) limits the flow to the valve to 60 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.

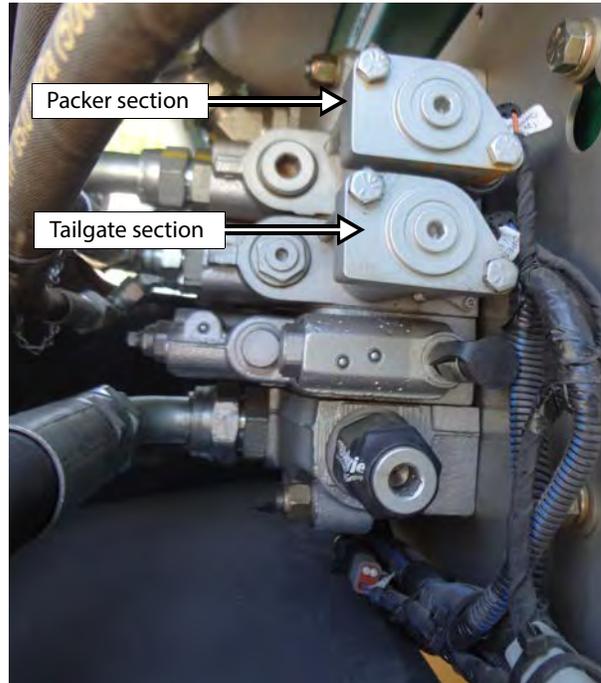
The second section of the vane pump, known as the *arm* vane pump, powers lifting arm functions and other options through the proportional valve (see *Proportional Valve* on page 109). It is capable of delivering a flow of 16 gpm at 700 rpm. A dump valve located at the pump outlet limits the flow (see 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 body functions (tailgate and packer).

Figure 5-2 Directional control valve



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

NOTE: All sections are electro-hydraulically actuated.

To learn how to adjust hydraulic pressures, see *Hydraulic Pressures* on page 137.

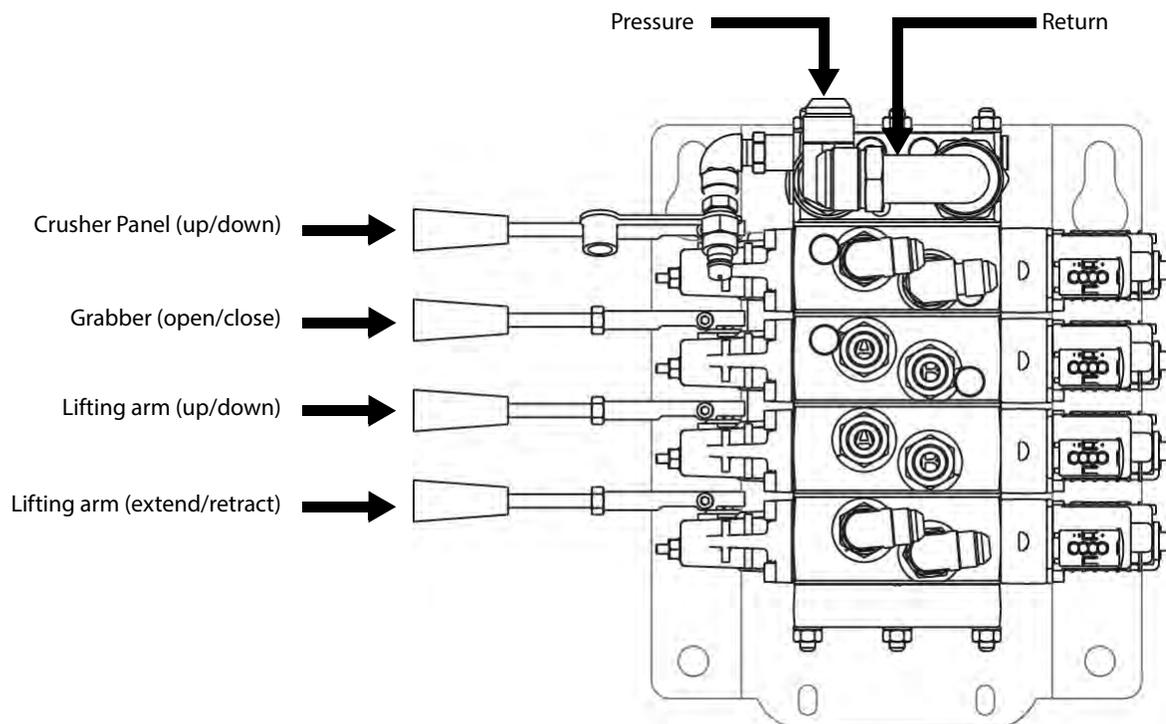
Proportional Valve

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]). It can also power an optional crusher panel with the addition of another valve section.

As such, the amount of flow coming out of this valve will be according to the position of the spool¹. 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 electric coil located on the side of the valve.

Figure 5-3 Proportional valve



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

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.

1. Except for the gripper section of the valve which does not modulate the hydraulic flow into the gripper cylinder.

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 26).
- If electrical problems occurred with the pump, see *Troubleshooting* on page 161.

Caution!



If the unit has to be driven away for repairs on the hydraulic system (e.g. following detection of an oil leakage), turn the Pump switch to the "OFF" position.

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.

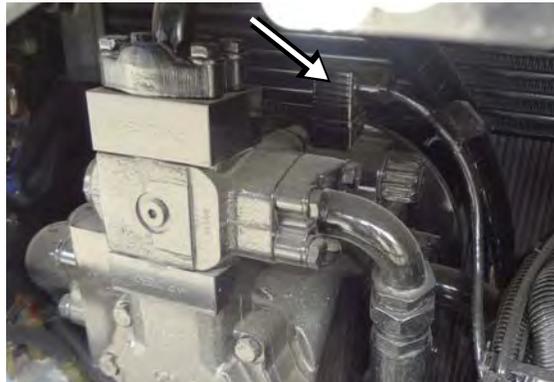
- A. To replace a **front-mounted hydraulic pump**, perform the following procedure:
1. Disengage the pump and turn OFF the engine.
 2. Make sure the parking brake is applied and the vehicle is tagged out for maintenance purposes (refer to “Locking Out and Tagging Out the Vehicle” on page 26).
 3. Close the shut-off valve (see Figure 2-19).
 4. Remove the cab grill.

Figure 5-5 Cab grill



5. Disconnect the electric coil on the dump valve (see Figure 5-6).

Figure 5-6 Electric coil



6. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (3) 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.

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

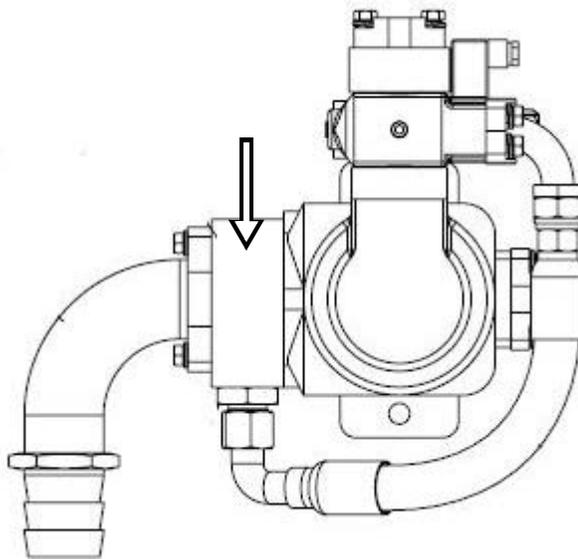
NOTE: Always reinstall the dump valve and its components (shims, block assembly) as they were before uninstallation. Make sure you do not invert them.

Figure 5-7 Dump valve



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 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.

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.

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

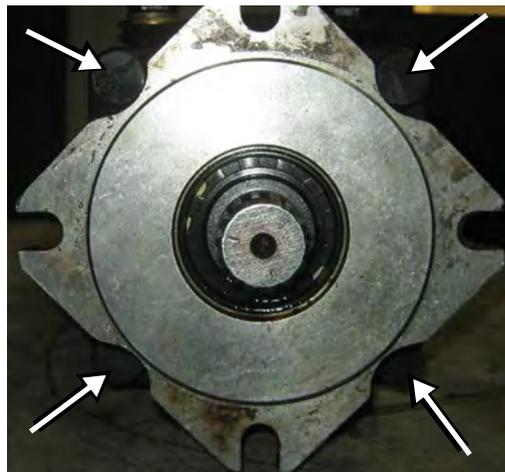
To index the new pump, proceed this way:

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



BODY SECTION

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



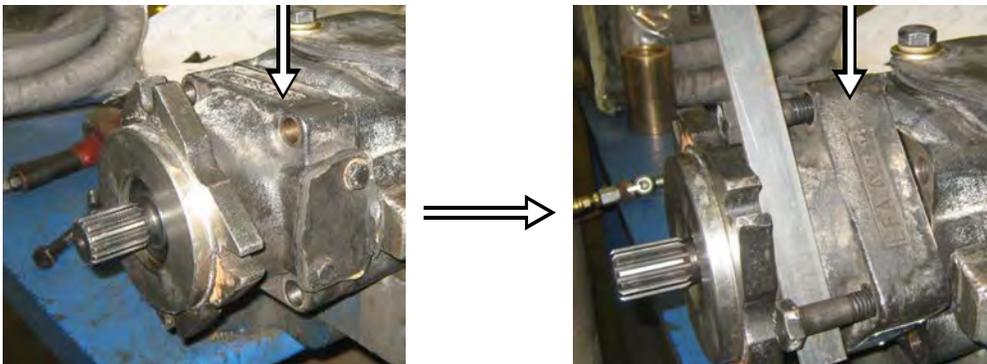
NOTE: You may leave two retaining bolts partially unscrewed to facilitate rotation with a metallic bar.



12 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 preceding picture.

NOTE: Make sure pump sections do not separate.

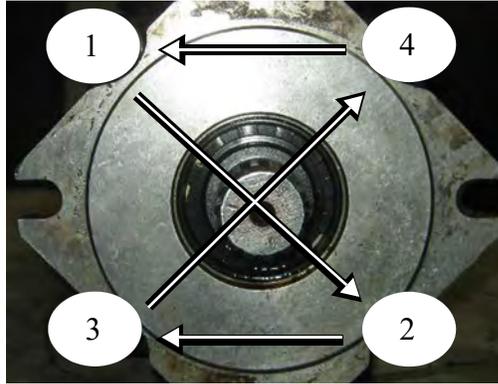


NOTE: The cartridge will rotate with the housing.

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



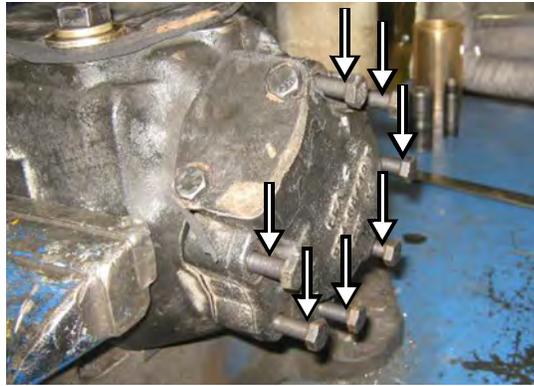
- 12 d.** Put all 4 bolts back in place and hand tighten.
- 12 e.** Check if the shaft rotates freely.
- 12 f.** Tighten all bolts to the torque of 138-140 ft-lb.
When tightening bolts, be sure to respect the following number sequence to avoid damaging the seals:



ARM SECTION

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

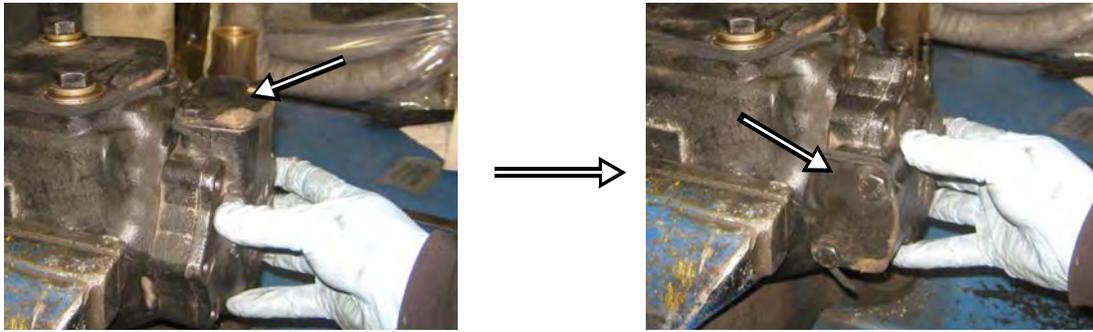
- 12 g.** Remove all 7 retaining bolts that hold the front cap in place.



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

- 12 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.

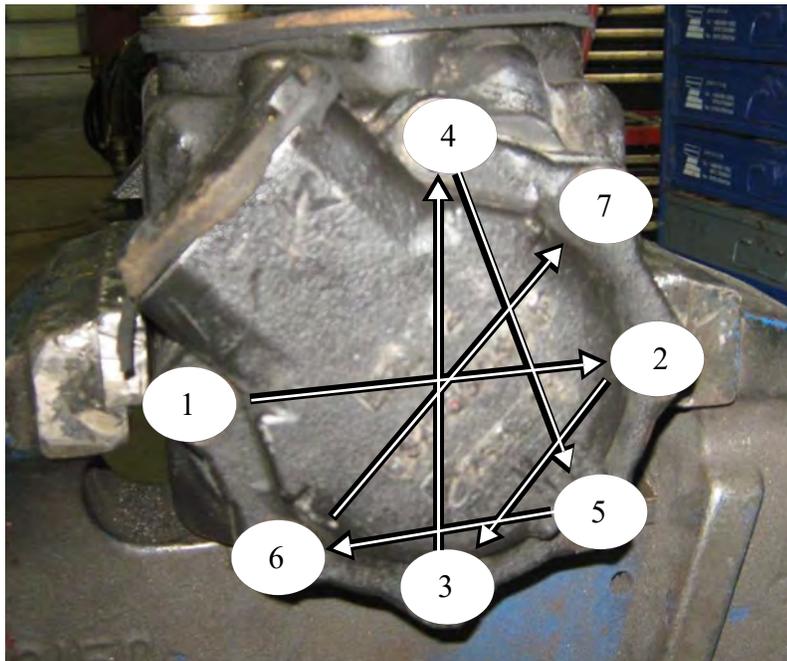
NOTE: The cartridge will rotate with the housing.

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

12 j. Check if the shaft rotates freely.

12 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.

13. 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.

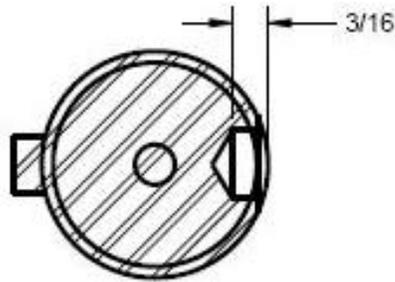
13 a. On the drive shaft mark the location where a hole must be drilled.

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

Figure 5-9 Depth of detent to be drilled



13 c. Reinstall the drive shaft, placing the yoke on the shaft as illustrated on page 123.

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 5-14].

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 9 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 2-19).

20. Prime the new pump (see *Priming a New Pump* on page 124).

21. Put the cab grill back on (see Figure 5-5).

Caution! Check level of hydraulic oil in 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 131 and *Replacing Hydraulic Oil* on page 132).

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 26).
3. Close the shut-off valve (see Figure 2-19).
4. Disconnect the electric coil on the dump valve (see Figure 5-6).
5. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (3) 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.



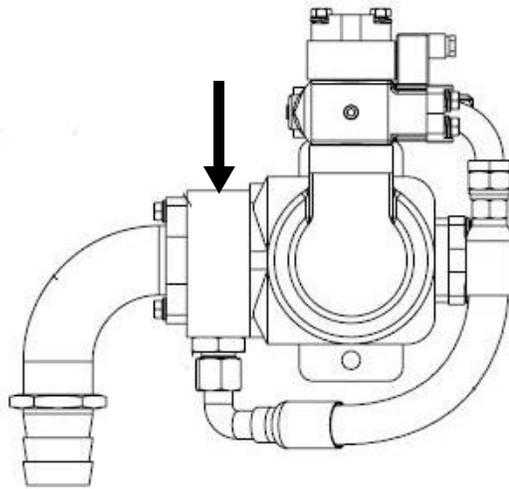
-
6. Remove the dump valve.

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.

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

Figure 5-10 Suction block



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

10. Remove the pump.

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

11. 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 113** to know how to index the new pump; procedure begins with Step 12 a.

12. 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.

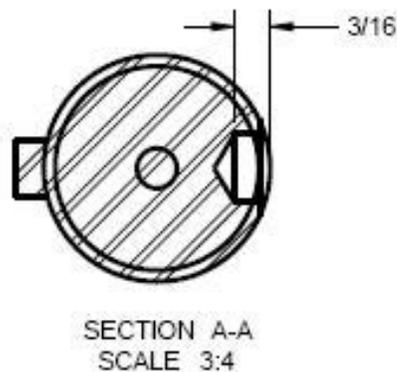
12 a. On the drive shaft mark the location where a hole must be drilled.

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.

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

Figure 5-11 Depth of detent to be drilled

**12 c.** Reinstall the drive shaft, placing the yoke on the shaft as illustrated on page 123.

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

12 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.**12 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 5-14].**13.** Using a suitable lifting device, install the new pump on the pump support.**14.** Put both $5/8$ " bolts back in to secure the pump to the plate.

15. Go through Steps 5 to 8 in reverse order to reinstall the various components of the pump assembly.
16. Fill the pump housing with new oil.
17. Tighten the breather cap (if applicable).
18. Open the shut-off valve (see Figure 2-19).
19. Prime the new pump (see *Priming a New Pump* on page 124).

Caution! Check level of hydraulic oil in 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 131 and *Replacing Hydraulic Oil* on page 132).

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 26).
3. Close the shut-off valve (see Figure 2-19).
4. Disconnect the electric coil on the dump valve (see Figure 5-6).
5. Place a pan under the pump to catch dripping oil and unscrew all hydraulic hoses (3) 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.

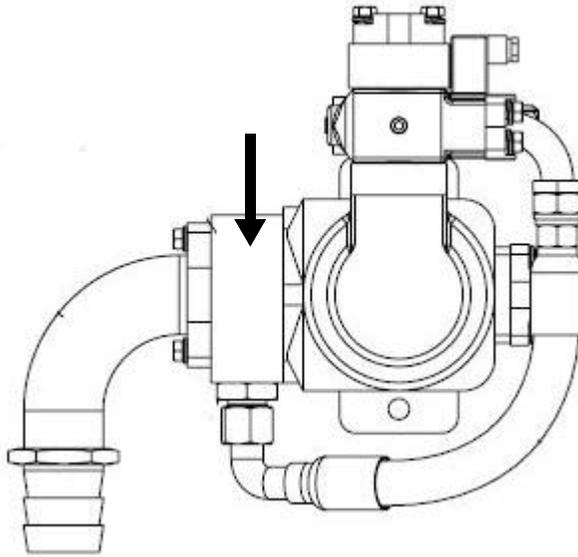


-
6. Remove the dump valve.

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.

7. Remove the suction block (see Figure 5-12) and save it for the new pump.

Figure 5-12 Suction block


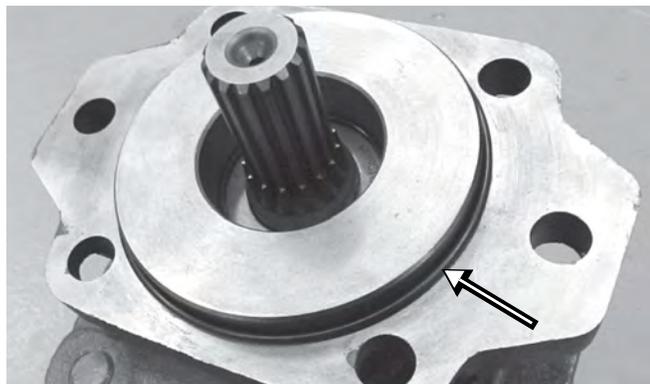
8. Attach the pump to a suitable lifting device and remove all 5/8" bolts that hold the pump to the PTO extension shaft.
9. Remove the pump.
10. Install the new pump using a suitable lifting device.

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.

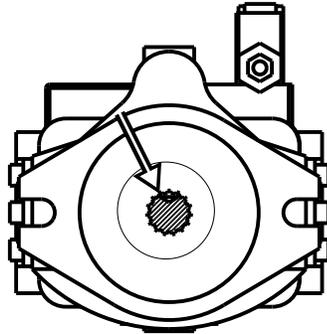
Go to **page 113** to know how to index the new pump; procedure begins with Step 12 a.

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.



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

Figure 5-13 Splines on pump



12. Put all 5/8" bolts back in to secure the pump to the shaft.
13. Go through Steps 5 to 8 in reverse order to reinstall the various components of the pump assembly.
14. Fill the pump housing with new oil.
15. Tighten the breather cap (if applicable).
16. Open the shut-off valve (see Figure 2-19).
17. Prime the new pump (see *Priming a New Pump* on page 124).

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



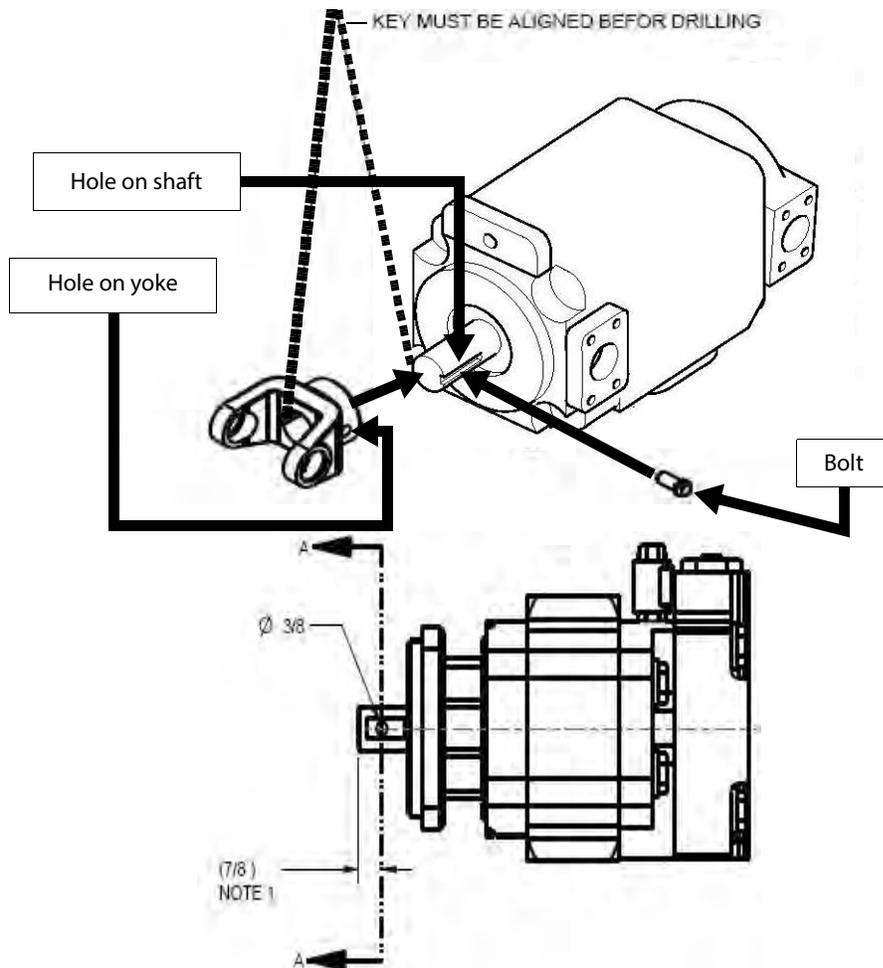
NOTE: Labrie Environmental Group strongly recommends you change the filter element and the hydraulic oil as well as clean the hydraulic tank before starting a new pump (see *Replacing Filter Elements* on page 131 and *Replacing Hydraulic Oil* on page 132).

Installing a Yoke-Locking Bolt

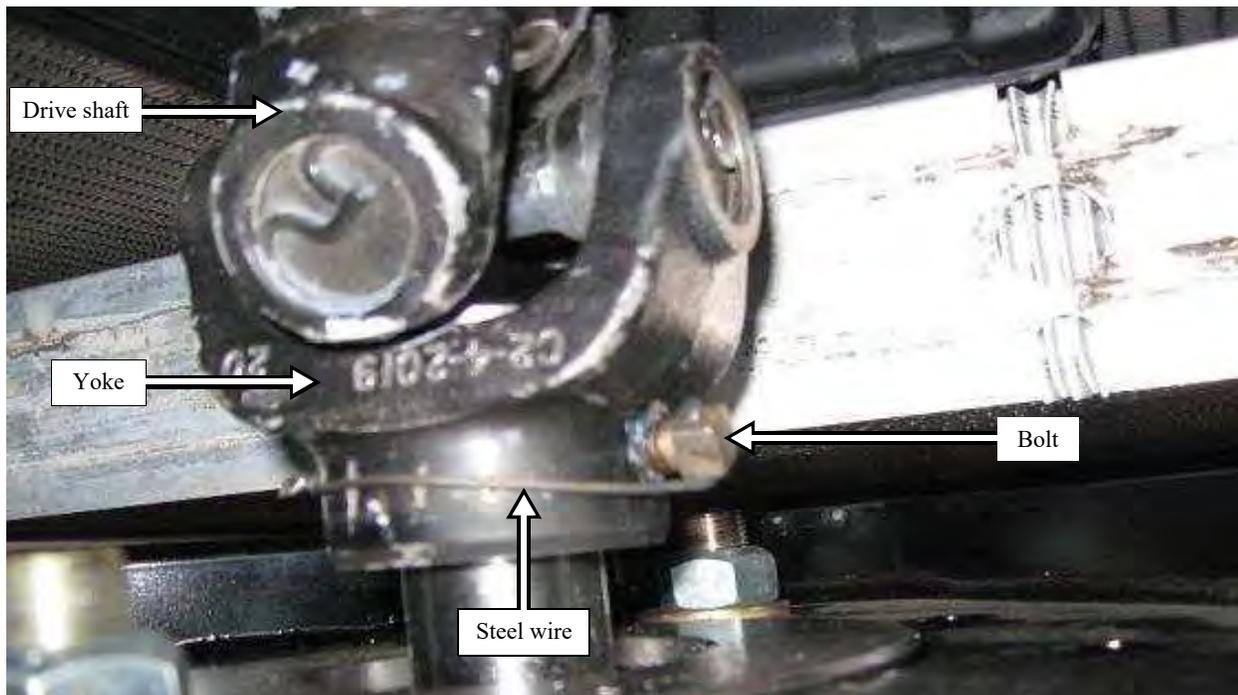
NOTE: It is important to perform this procedure after a pump replacement or a pump drive shaft replacement.

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 5-14].

Figure 5-14 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 26).

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 2-19), 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 26).
2. Clean the strainer and replace the filter element inside the tank after the first 50 hours of service (see *Cleaning the Strainer* on page 128 and *Replacing Filter Elements* on page 131).

Figure 5-15 Filter housing element



For more information on maintenance schedule, see *Preventive Maintenance Chart* on page 32.

3. Make sure that the filler cap (see Figure 5-16) 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 $\frac{3}{4}$ full on the oil level gauge (see Figure 5-17).

All cylinders must be retracted.

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

Figure 5-16 Filler cap

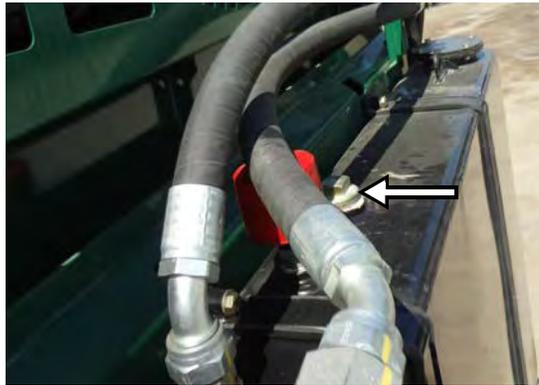


Figure 5-17 Oil temp/level gauge



Figure 5-18 Steel hydraulic tank



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. Use a folding stepladder to gain visual access to the oil gauge located on the hydraulic tank.
6. Inspect the oil through the gauge.

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, 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 26).
3. Close the shut-off valve on the suction line (see Figure 2-19).
4. Disconnect the suction line from the pump.
5. Place a clean container (minimum capacity: 60 gallons) under the disconnected end of the suction line to empty the hydraulic tank.

6. Open the shut-off valve to let the oil flow into the container.
7. When the bulk of the oil has been emptied from the tank, remove the drain plug (see Figure 5-19) to allow the rest of the oil drain from the tank.
Place a small container under the plug.
8. Once the tank has been completely emptied, replace the drain plug and reconnect the suction line to the pump.

Figure 5-19 Drain plug



Cleaning the Strainer

To clean the strainer:

1. Empty the hydraulic tank (see *Emptying the Hydraulic Tank* on page 127).
2. Remove the hose clamp from the suction hose.
3. Slide the hose over the pipe until it clears the nipple (slide towards the frame of the vehicle).
4. Remove the strainer from the tank port (see Figure 5-20 and Figure 5-21).
5. Clean the strainer using solvent, and check for damage; replace if necessary.
6. Replace the seal, if necessary.
7. Reinstall the strainer inside the tank.
8. Using a filtering screen, refill the tank with high-quality oil until it reaches the $\frac{3}{4}$ mark on the oil gauge (see *Recommended Lubricants* on page 87 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.



Figure 5-20 Hydraulic tank

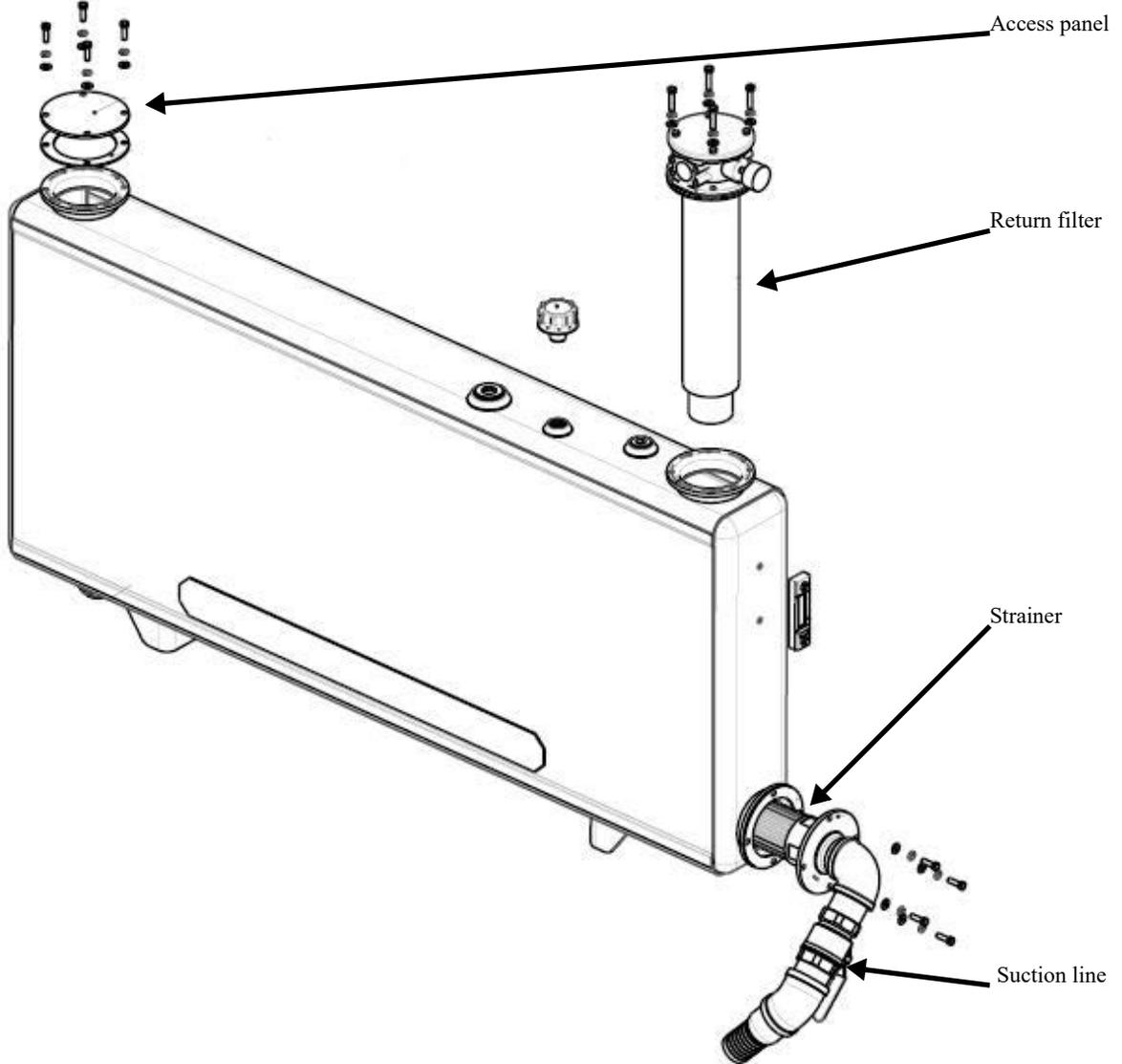
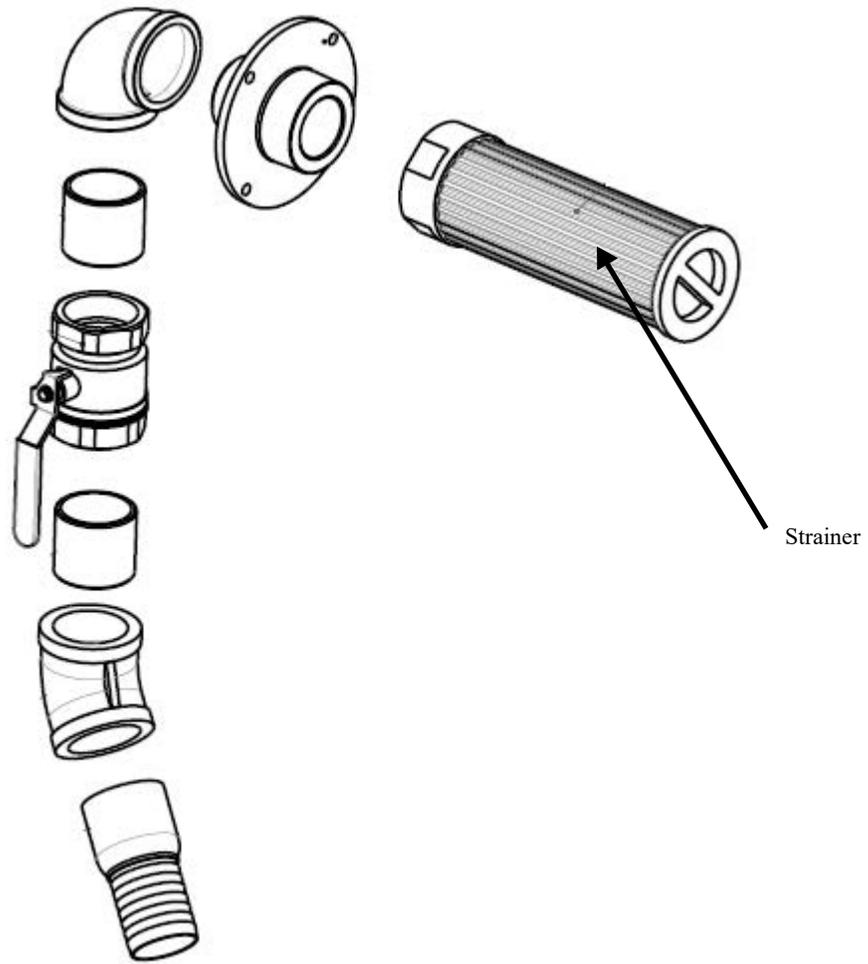


Figure 5-21 Strainer assembly



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 *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.

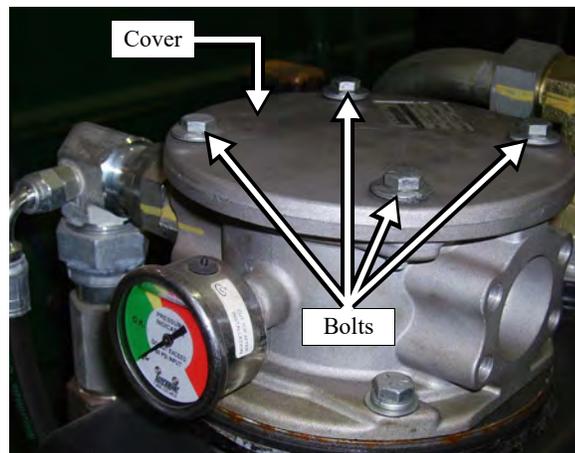
Figure 5-22 Filter restriction indicator



To replace the hydraulic filter:

1. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle on page 26*).
2. Remove all 4 bolts that hold the filter head cover in place (see Figure 5-23).

Figure 5-23 Filter head cover and retaining bolts



3. Take off the cover and remove the filter element from the hydraulic tank.
4. Replace the filter element just removed with a new one.

Figure 5-24 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 127).
2. With a clean dry cloth attached to a stick, remove all metal particles and debris accumulated at the bottom of the hydraulic tank:
 - 2 a. Remove the access panel (see Figure 5-20).
 - 2 b. Remove the strainer. See *Cleaning the Strainer* on page 128.
 - 2 c. Clean or replace the strainer if necessary.
 - 2 d. Remove the return filter housing (see Figure 5-20).
 - 2 e. Insert your hand inside and clean the interior of the tank with a dry clean cloth.
 - 2 f. Clean the return filter housing with a dry clean cloth.
3. Change the return filter element (see *Replacing Filter Elements* on page 131).
4. Using a filtering screen, refill the tank with high quality oil until it reaches the $\frac{3}{4}$ mark on the oil gauge (see *Recommended Lubricants* on page 87 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.



5. If the suction line has been replaced, fill the line until oil reaches the pump (see *Pump Cavitation* on page 167).
6. Reinstall the access panel, the strainer and the return filter housing.
7. Reinstall the filler cap and fully open the shut-off valve (see Figure 2-19).

Caution! Failure to open the shut-off valve may seriously damage the pump and the hydraulic system.



8. Prime the pump (see *Priming a New Pump* on page 124).
9. Start the engine.

Inspecting Hydraulic Cylinders

Danger! Always lock out and tag out the vehicle when inspecting it or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 26).



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 2-19] 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 in Figure 5-25). 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.

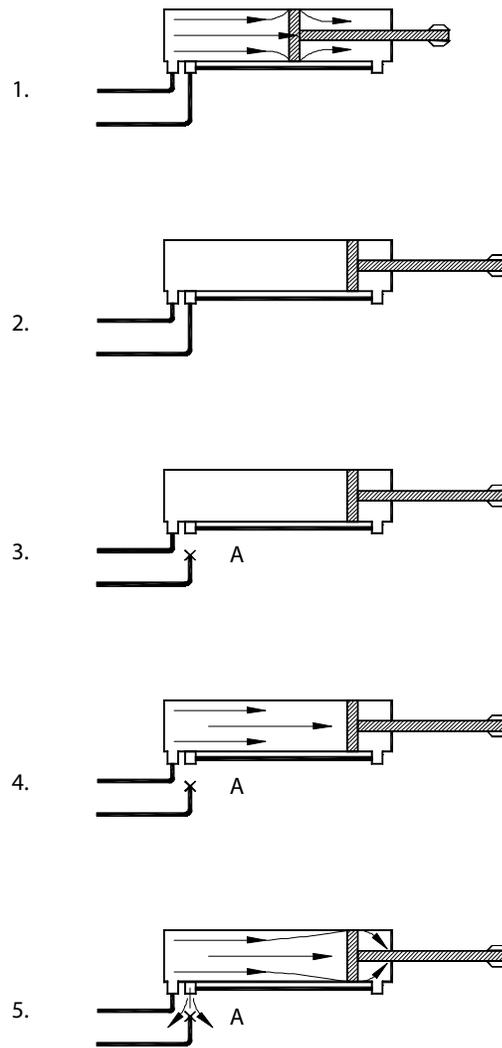
If the packer cylinder is bypassing, the seal inside the cylinder may need to be replaced.

To detect internal leaks in the packer cylinder:

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 open the tailgate until the switch turns green.
5. Press and hold the packer green button until the packer is fully extended.
6. Turn off the hydraulic pump.
7. Disconnect and plug hose "A".
8. Re-engage the hydraulic pump.
9. 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 5-25 Detecting cylinder internal leaks



Hydraulic Cooler

Periodic maintenance is recommended for the hydraulic oil cooler which comes standard on all AUTOMIZER™ side-loaders. 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 5-26 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 5-27).

Figure 5-27 Pressure gauge and ball-end hex keys



The pressures of the various hydraulic functions of the AUTOMIZER™ are set up at the factory for optimal performance. However, when you perform maintenance work on the hydraulic system of the truck, you may need to adjust the hydraulic pressure for a number of reasons. For more information, see *Troubleshooting Guide* on page 163 or *Preventive Maintenance Chart* on page 32.

Adjusting the UTILITY Section of the Directional Control Valve

NOTE: Two people are required for this procedure: one in the cab and one at the control valve.

NOTE: This procedure requires 2 digital 0-5000 psi gauges.

NOTE: Try to perform this adjustment at normal hydraulic oil temperature (around 140 °F or 60 °C).

To adjust the UTILITY section:

1. Connect one 0–5000 psi pressure gauge to the INLET COVER test port (see Figure 5-28) and the second gauge to the MAXIMUM PILOT PRESSURE test port (see Figure 5-28).
2. Disconnect the TAILGATE CLOSE solenoid electrical connector (see Figure 5-29).
3. Start the engine and turn ON the pump. Then, actuate the TAILGATE CLOSE function with the engine at idle.

4. Using the pressure gauge on the INLET COVER test port, adjust the MINIMUM PILOT PRESSURE to 420 ± 20 psi (see Figure 5-28). Then, release the TAILGATE CLOSE actuator.
5. Reconnect the TAILGATE CLOSE solenoid connector (see Figure 5-29).
6. Actuate the TAILGATE CLOSE function with the engine at maximum rpm.
7. Using the pressure gauge on the MAXIMUM PILOT PRESSURE test port, adjust the MAXIMUM PILOT PRESSURE to 550 ± 20 psi (see Figure 5-28). Then, release the TAILGATE CLOSE actuator.
8. Actuate the TAILGATE CLOSE function with the engine at idle.
9. Using the gauge on the INLET COVER test port, adjust the Main Relief Valve to 2500 ± 50 psi (see Figure 5-28). Then, release the TAILGATE CLOSE actuator.

Adjusting PACKER EXTEND Relief Valve

NOTE: Trucks built from 2020 onwards have a new PACKER EXTEND relief valve and it is found on the directional control valve (see Figure 5-28). This new relief also needs to be adjusted correctly.

To adjust the pressure of the PACKER EXTEND relief valve (see Figure 5-28):

1. Perform a complete packer cycle and confirm the packer cycle time is 19-23 seconds at idle and 13.5-16.5 seconds at 1500 rpm.
2. Fully raise the tailgate and fully extend the packer to the rear of the body; continue holding the PACKER EXTEND actuator (green button).
3. Using the gauge on the INLET COVER test port, adjust the PACKER EXTEND relief valve to 2000 ± 50 psi.

Figure 5-28 AUFE control valve - location of components (1)

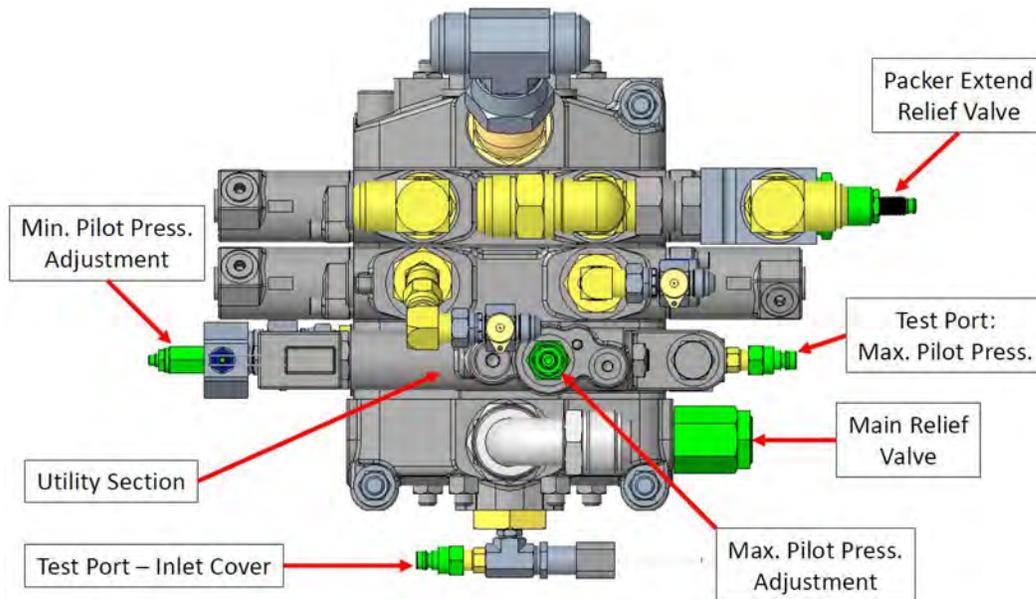
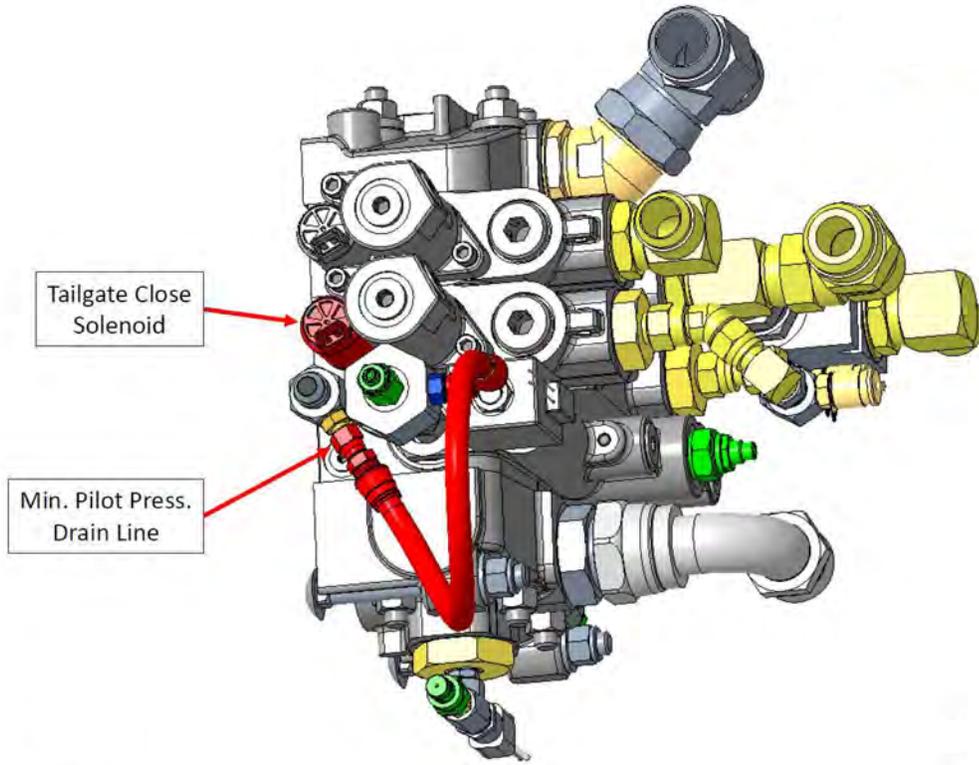


Figure 5-29 AUFE control valve - location of components (2)



Pressure and Cycle Time Charts

Table 1 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 w/ tag or 6x4 chassis)	2500 ± 50 psi	700	n/a	n/a
Dump valve RSP (if adjustable) - 4x2 chassis w/ tag or 6x4 chassis	2750 ± 50 psi	700	n/a	n/a
Packer extend	2000 ± 50 psi	700		
Packer retract	system pressure	700		
Complete packer cycle	system pressure	700	19	23
Complete packer cycle	system pressure	1500	13.5	16.5
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
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 multiplexed 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 LabriePlus.



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

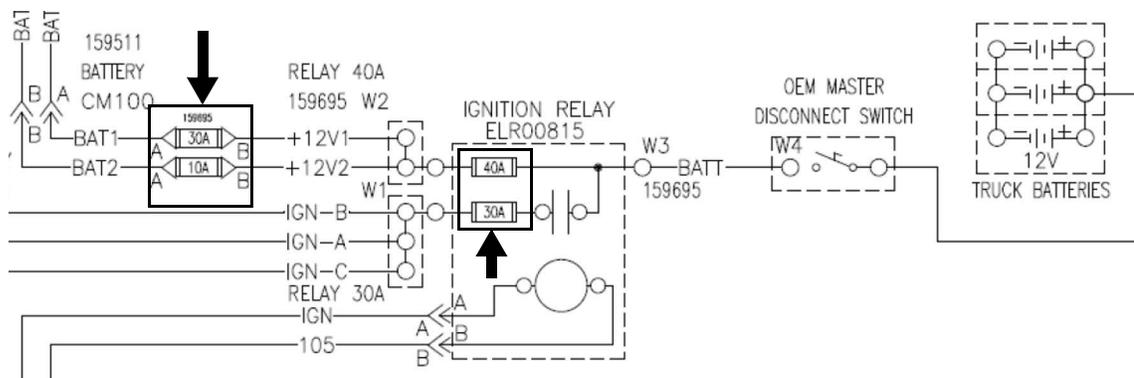


Figure 6-2 Ignition relay box (with/without cover)



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 electric ON/OFF switches.

The following is a list of limit and proximity switches that are installed on an AUTOMIZER™ unit:

- ◆ Packer extend limit/proximity switch
- ◆ Packer retract limit switch
- ◆ Tailgate unlocked proximity switch
- ◆ Tailgate fully open proximity switch
- ◆ Hopper door proximity switch
- ◆ Crusher panel up limit switch (optional)
- ◆ Speed and cushioning control proximity switches (3)
- ◆ rm stowed limit switches (2)

For information on the limit and proximity switch adjustment, go to page 72 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.

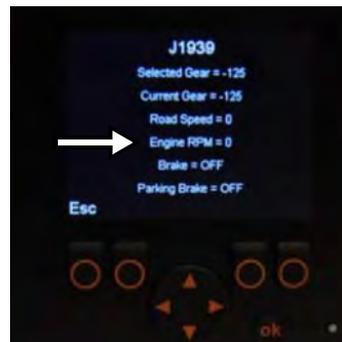
To ensure the baud rate setting is correct and the chassis is communicating with the Labrie multiplex system, it may be checked and adjusted using the Labrie multiplex display screen. With the engine running, depress the menu button to access the main menu. Use the directional pad to highlight **I/O STATUS**, and press **OK**.



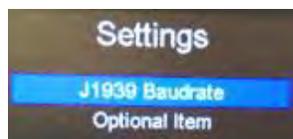
In the Module I/O Status menu, use the directional pad to highlight **J1939**, and press **OK**.



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:

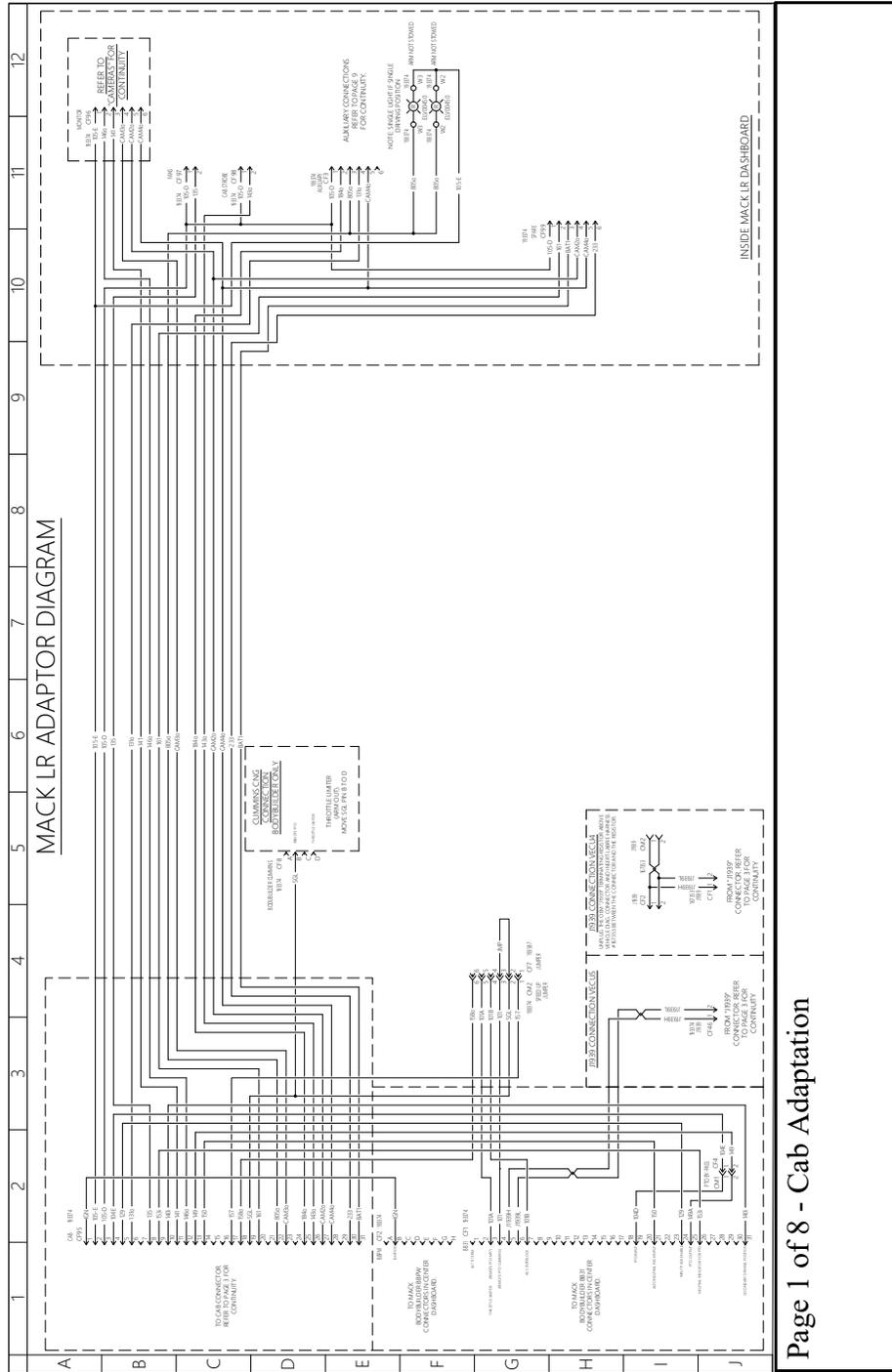
Module	10	11	20	50	60
Voltage	12.0	12.0	12.3	12.4	12.4

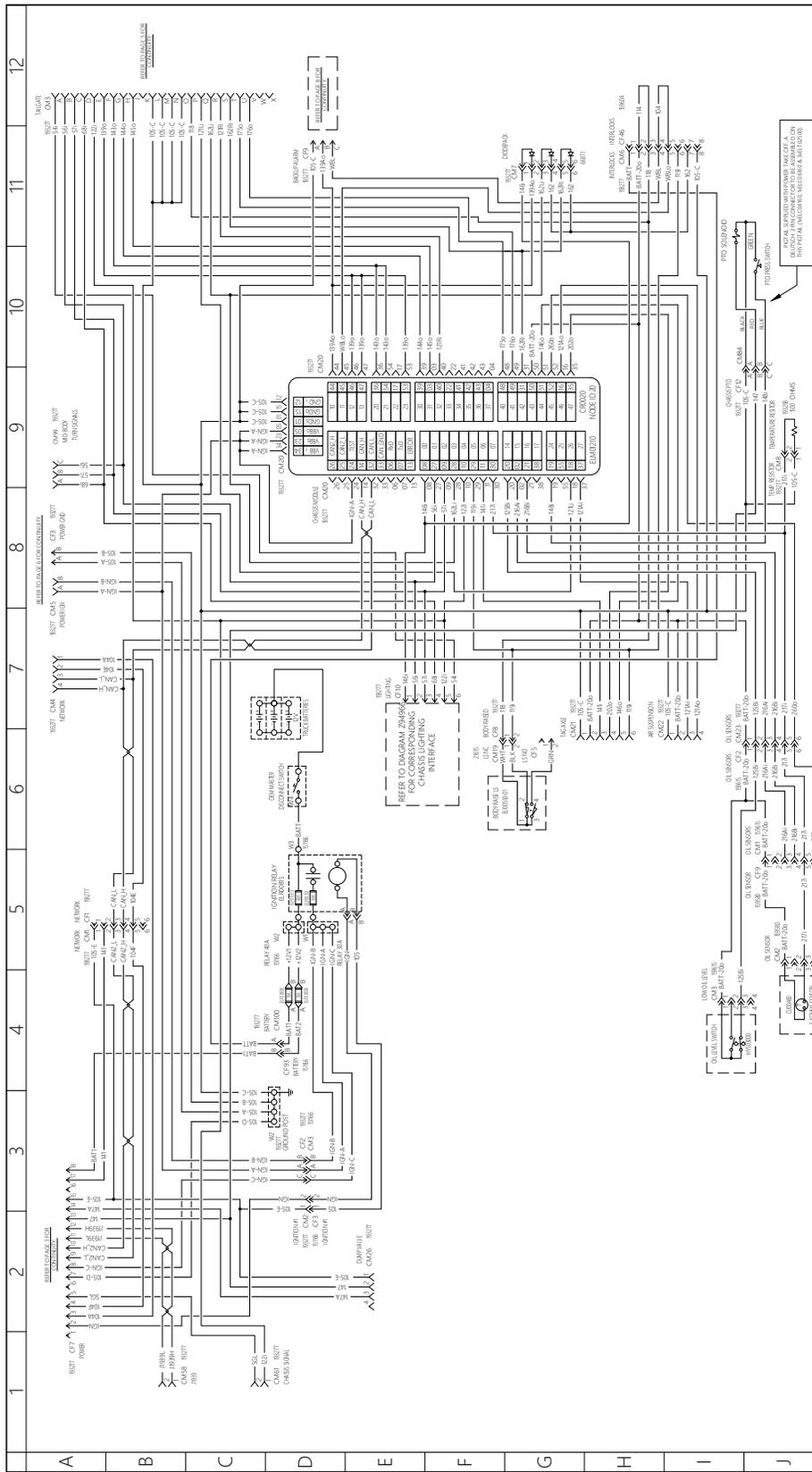
If voltage(s) are below 12 volts, check the supply power to the module; if all voltages are below 12 volts, check the chassis battery voltage.

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.

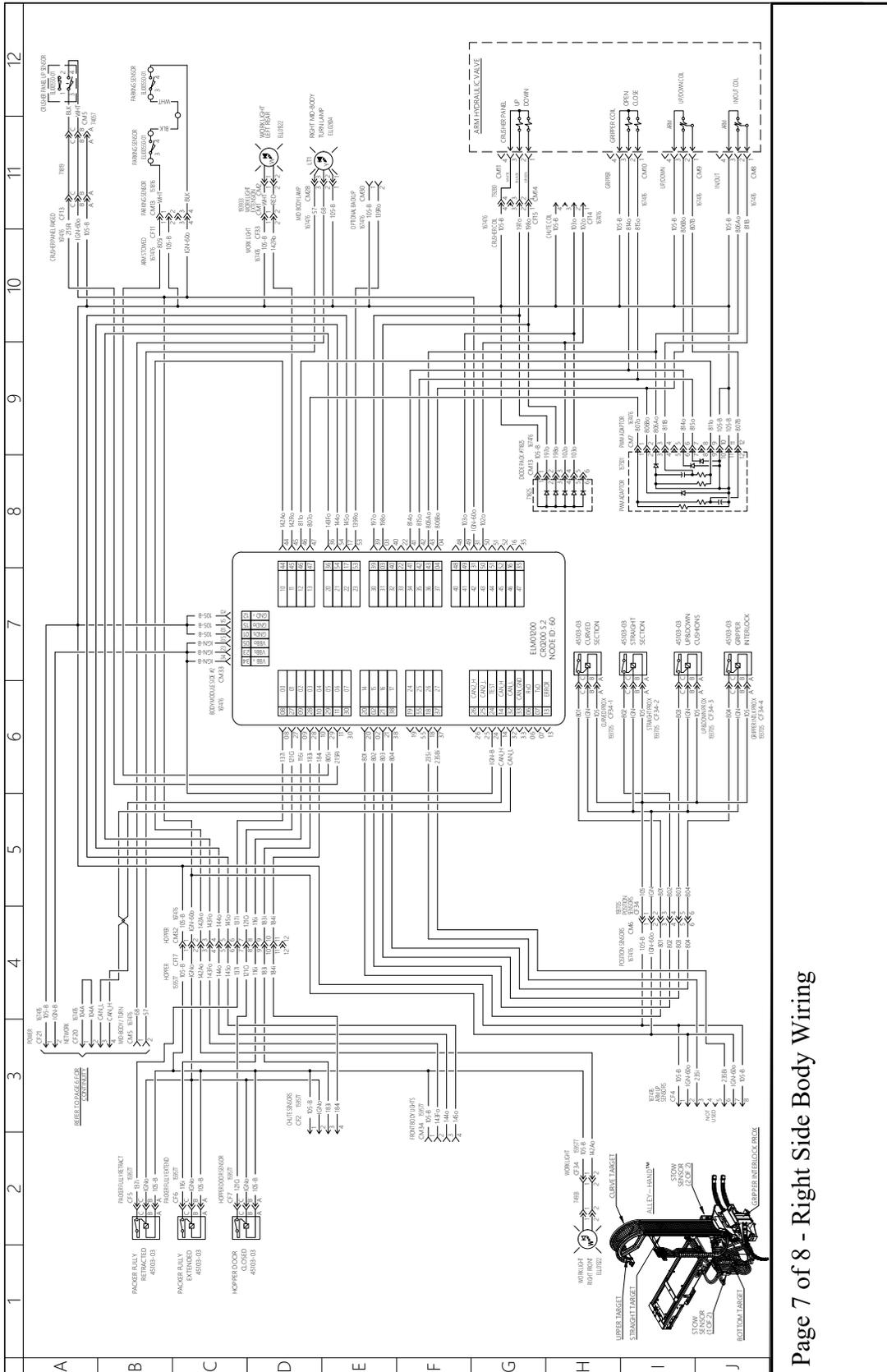
Electrical Schematics

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.

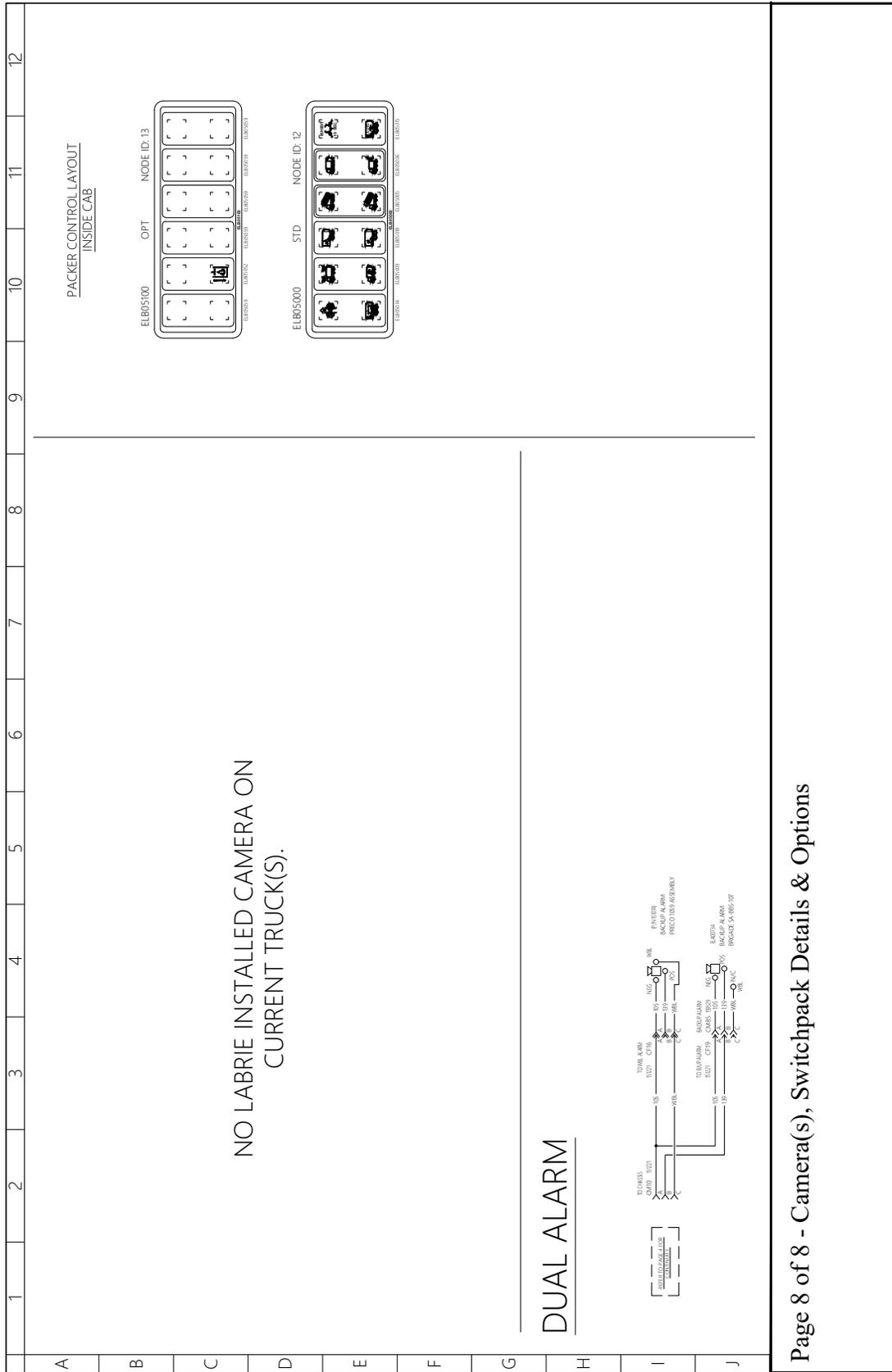




Page 4 of 8 - Chassis



Page 7 of 8 - Right Side Body Wiring



Page 8 of 8 - Camera(s), Switchpack Details & Options



Pneumatic System

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

NOTE: Before searching for parts, identify the type of cab your unit is equipped with (cab over or conventional). The mounting of some components for the body depends on the type of cab configuration.

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 working day 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 7-1).

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 7-1 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* below.

Air Dryer

Some units are equipped with an air dryer (see Figure 7-2) and/or an alcohol evaporator.

These devices are utilized 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 the alcohol evaporator is covered in the chassis manufacturer's maintenance manual.

Figure 7-2 Air dryer



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 26 is mandatory.

See *Troubleshooting Guide* on page 163 to resolve commonly seen problems, or contact LabriePlus 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

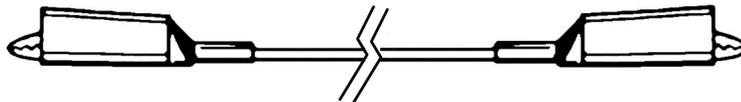
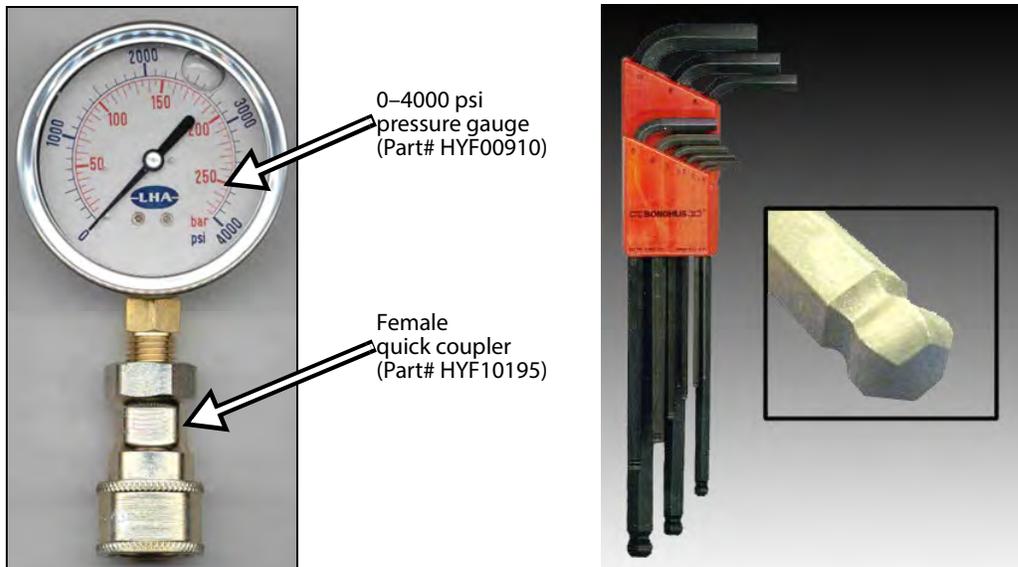


Figure 8-3 0-4000 psi oil pressure gauge (left), ball-end hex wrench (metric and SAE) [right]



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 LabriePlus.

Problem	Possible causes	Solution
Insufficient packing ratio	Low oil pressure	See <i>Hydraulic Pressures</i> on page 137.
	Packer hydraulic cylinders internally bypassing	See <i>Detecting Cylinder Internal Leaks</i> on page 134.
	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 <i>Replacing Hydraulic Oil</i> on page 132.
	Hydraulic pressure too low or too high	See <i>Hydraulic Pressures</i> on page 137.
	Not the proper grade of oil (that is too thin in hot temperatures or too thick in cold temperatures)	Change for oil indicated in <i>Recommended Lubricants</i> on page 87 (see <i>Emptying the Hydraulic Tank</i> on page 127).
	Contaminated oil	Clean the strainer and change the return filter element. Fill with clean oil. See <i>Cleaning the Strainer</i> on page 128, <i>Replacing Filter Elements</i> on page 131, and <i>Replacing Hydraulic Oil</i> on page 132.
	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 <i>Replacing Hydraulic Oil</i> on page 132.
	Air entering the system	Tighten all hose and pipe connections between the pump and the hydraulic tank.
	Not the proper grade of oil	Empty oil and refill with anti-foaming oil. See <i>Recommended Lubricants</i> on page 87 and <i>Emptying the Hydraulic Tank</i> on page 127.

Problem	Possible causes	Solution
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 <i>Starting Up the Vehicle</i> on page 28.
	Low oil level	Add oil to the required level. See <i>Replacing Hydraulic Oil</i> on page 132.
	Oil too thick	See <i>Recommended Lubricants</i> on page 87 for proper type of oil to use. See also <i>Emptying the Hydraulic Tank</i> on page 127.
	Air in the system	See <i>Pump Cavitation</i> on page 167. 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 <i>Cleaning the Strainer</i> on page 128, <i>Replacing Filter Elements</i> on page 131, and <i>Replacing Hydraulic Oil</i> on page 132. Take an oil sample for further analysis (see <i>Testing Hydraulic Oil</i> on page 89).
The pump (PTO) does not engage	Blocked suction hose	Unblock or replace hose.
	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 <i>Adjusting and Repairing Electrical Components</i> on page 143.
No hydraulic pressure	Faulty electric dump valve	Replace the electric dump valve.
	Pump not engaged	Turn on the PTO switch.
	Low oil pressure	See <i>Hydraulic Pressures</i> on page 137.
	Hydraulic pressure not properly adjusted	Properly adjust pressure. See <i>Hydraulic Pressures</i> on page 137.

Problem	Possible causes	Solution
	Faulty hydraulic line	Perform a circuit analysis using the main hydraulic schematics.
	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 moves irregularly or sideways	Worn out T-Track	Replace T-Track as indicated in <i>Replacing the T-Track</i> on page 52.
Tailgate is unlocking or lowering by itself	Dirty or defective velocity fuse	Clean or replace the velocity fuse. See <i>Tailgate-Locking Mechanism</i> on page 171.
	Inverted hydraulic hoses on main hydraulic valve	Test the power bleed on the tailgate section of the valve. See <i>Tailgate-Locking Mechanism</i> on page 171.
Packer does not complete a full cycle	Body is full	Empty the body as explained in the <i>AUTOMIZER™ Operator's Manual</i> .
	Garbage behind the packer	Clean behind the packer (see the <i>End-of-the Day Cleaning and Inspection Section</i> of the <i>AUTOMIZER™ Operator's Manual</i>).
	Misaligned packer proximity/limit switches or presence of debris	Clean the area around proximity/limit switches, or readjust switches (see <i>Proximity and Limit Switches</i> on page 72).
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.
	Red emergency STOP button is engaged	Make sure all emergency stop buttons are pulled out.
	Hydraulic pressure not properly adjusted	See <i>Hydraulic Pressures</i> on page 137.
	Faulty harness between packer module and control station	

Problem	Possible causes	Solution
	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 <i>Multicycle</i> on page 192).
Packer moves forward but stops at the end of stroke	Packer sliding shoes are worn out	Replace sliding shoes. See <i>Replacing Sliding Shoes</i> on page 53.
	Packer extend limit/proximity switch is misaligned	Adjust switch. See <i>Adjusting Packer Extend Proximity Switch</i> on page 75.
Backup alarm and warning buzzer inside the cab work all the time	Misaligned tailgate unlocked proximity switch	Adjust proximity switch (see <i>Adjusting Tailgate Unlocked Proximity Switch</i> on page 79).
	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 <i>Adjusting Arm Speed</i> in the Lifting Arm Supplement that came with your truck).
Flashing lights on dashboard always blinking	Misaligned arm stowed limit switches	Adjust limit switches (see <i>Adjusting Arm Stowed Limit Switches</i> on page 83).
	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 LabriePlus.

Pump

The pump is operated by a control switch located on the control panel (see Figure 2-21). 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 124). 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.
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

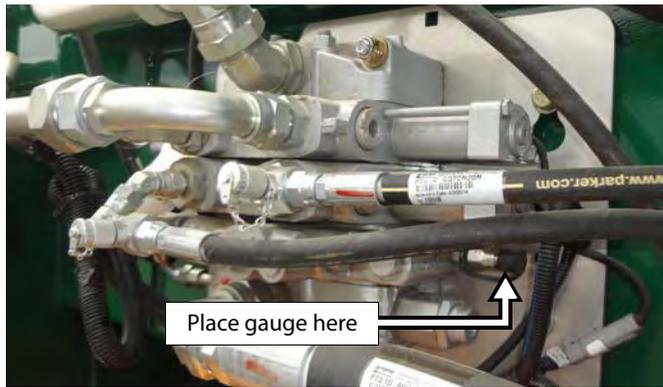


Figure 8-5 Adapter to be loosened



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.

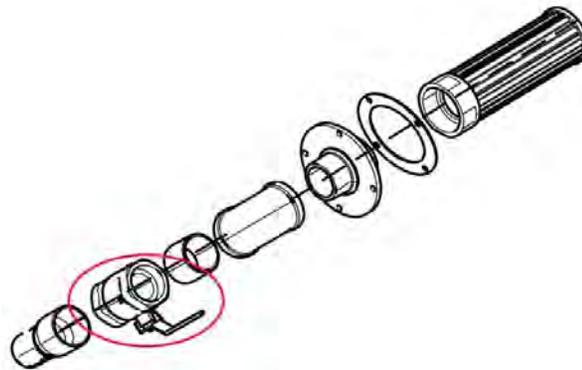
Next step is to remove the dump valve all together and verify operation. If the arm operates with the correct cycle times and pressures, then we can conclude that the dump valve is faulty and needs to be replaced.

However, should the arm continue to have slow cycle times and low pressures, then the fault more than likely is with the pump.

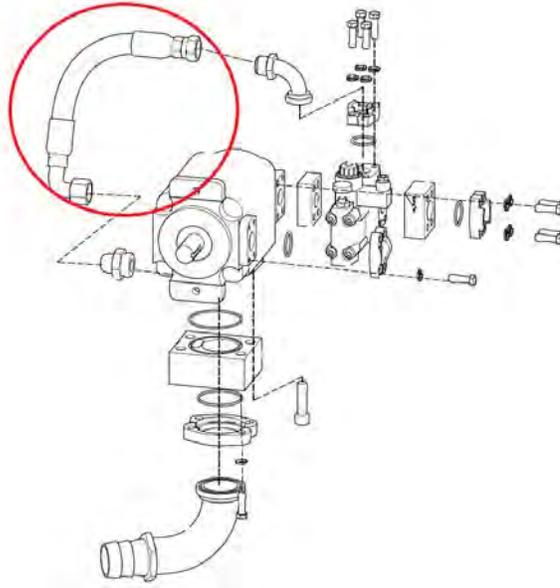
To bypass the arm pump dump valve on a front-mounted pump, apply this procedure:

1. The truck should be off and locked out/tagged out following all required procedures.
2. Relieve the air pressure from the hydraulic tank.
If tank is of the pressurized type.
3. Close the ball valve (or shut-off valve) on the suction line.

Figure 8-6 Ball valve

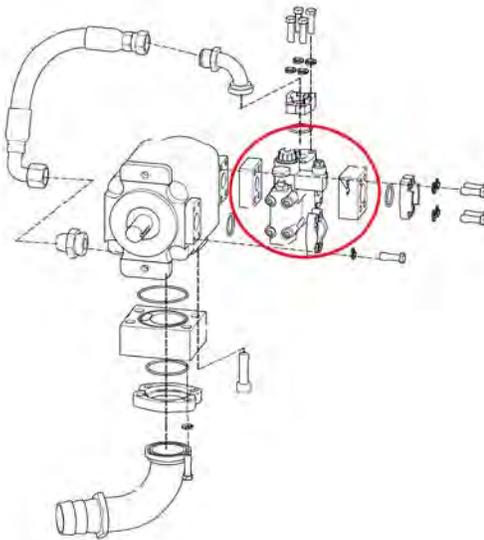


4. Unplug the arm pump dump valve electrical connector and stow the harness safely out of the way.
5. Remove the recirculation hose from the arm dump valve to the body pump and cap off the port at the body pump.

Figure 8-7 Recirculation hose

6. Remove the arm dump valve and orifice block and reinstall the pressure line.

The pressure line was connected to the arm dump valve, directly to the arm pump. You will need shorter bolts to tighten it down.

Figure 8-8 Dump valve and orifice block

7. Open the ball valve (or shut-off valve) that was closed in step 3.
8. Start the truck.

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.

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.

9. Assembly in the opposite of disassembly.

Tailgate-Locking Mechanism

NOTE: See the main hydraulic schematic specific to your truck.

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 8-10) with a *power bleed* feature, the other is the holding valve (see Figure 8-9).

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 8-9). 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 8-9 Tailgate holding valve

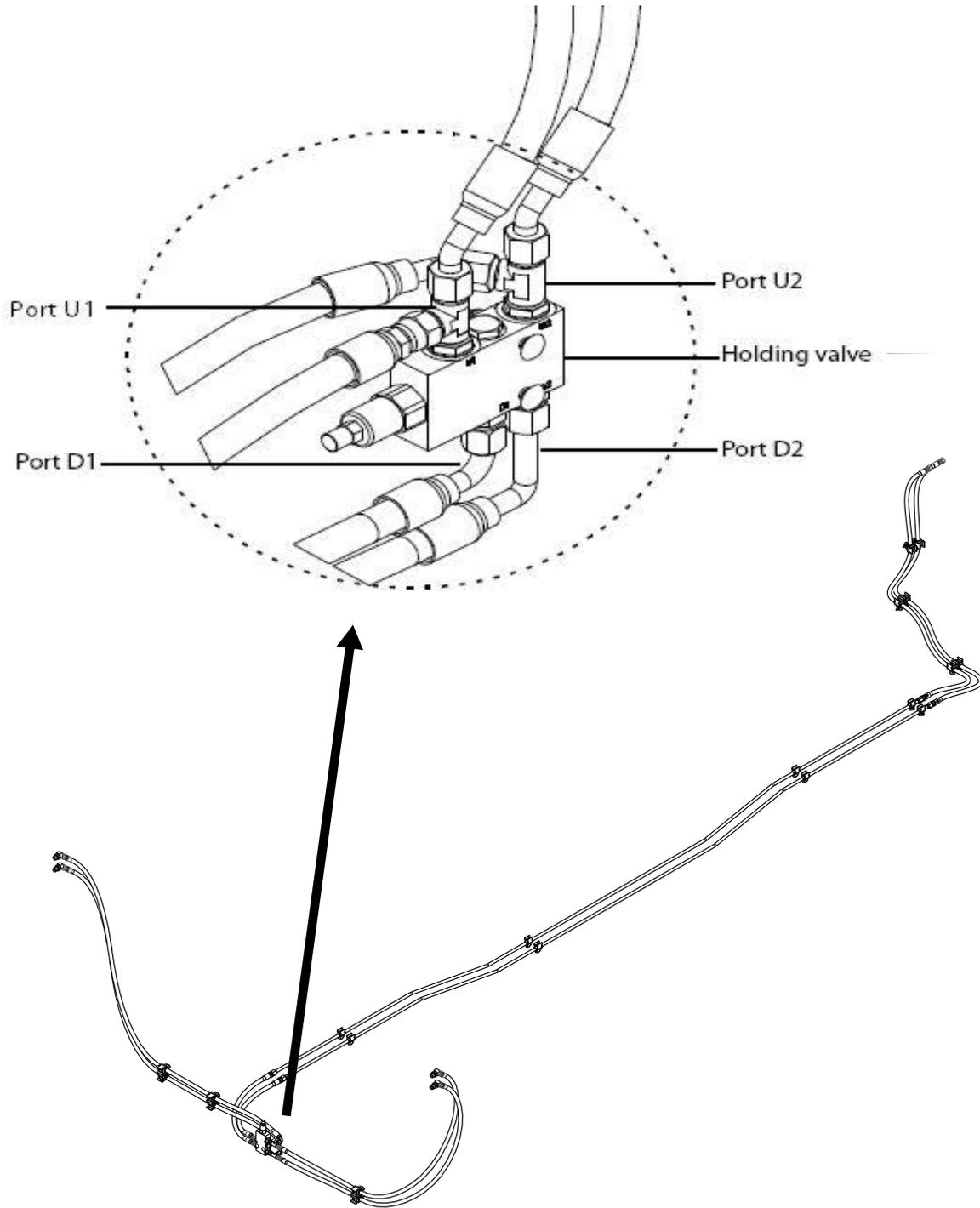
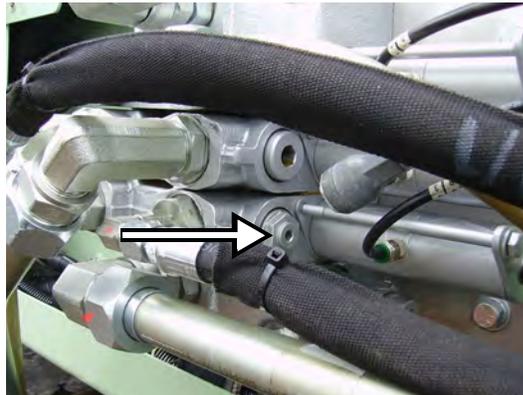


Figure 8-10 Velocity fuse



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 tailgate section of the main valve (see Figure 8-11).
An adapter fitting may be required for connecting the gauge to the port (see Figure 8-12).

Figure 8-11 Ports #1 and #2

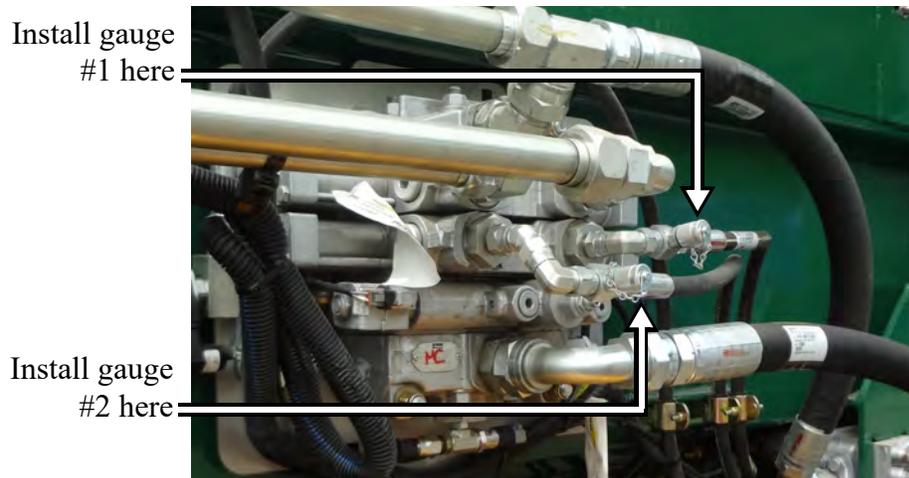


Figure 8-12 Adapter fitting

5. Disconnect the packer retract limit switch.
6. Start the engine and engage the hydraulic pump.
7. Push the yellow button to move 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. See the hydraulic schematic specific to your truck for proper connection.

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 8-10).

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”

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 26) 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.



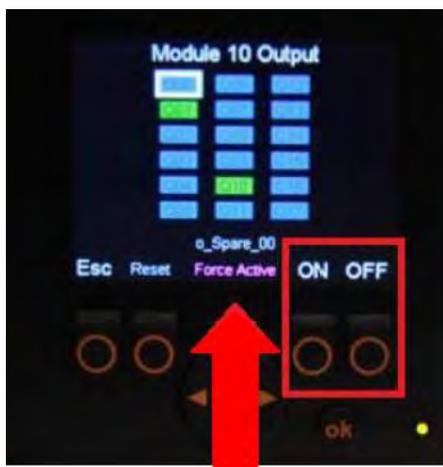
- After entering the output screen, select the “Force” button.



- After selecting “Force” a countdown will begin. At the end of the countdown, press the “OK” button to enter force mode.



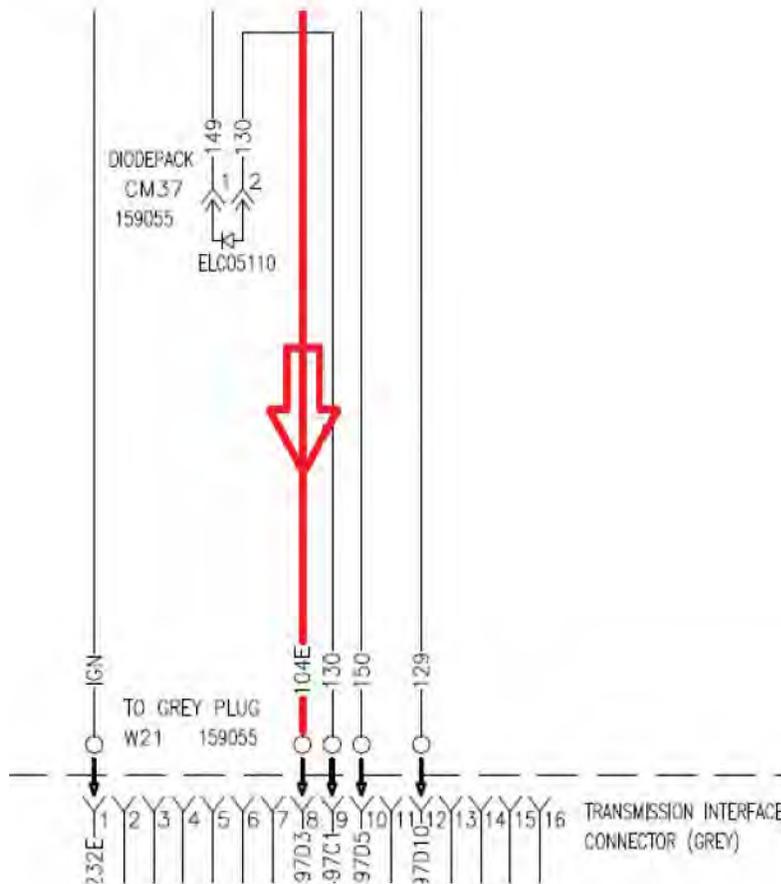
Note the addition of “Force Active” in the center of the screen. This is to alert the technician that force mode has been entered successfully. Also note the buttons on the far right have become an “ON” and “OFF” toggle.



Step #3)

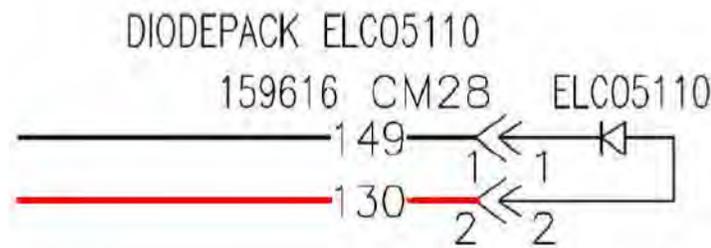
A) Locate output “OUT 12” and force it “ON”. With this output forced move to the appropriate Labrie/chassis interface connector (see body serial number specific drawings for exact connector number). Measure voltage on the pump trans request wire (104E). **If voltage is present** proceed to step #4.

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.

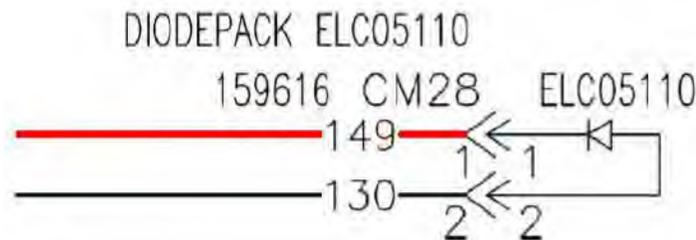


Step #4) Locate wire 130 on the same chassis interface connector and check for voltage. **If no voltage** is present, the transmissions parameters for pump engagement are not met (service transmission and/or TCM). **If voltage** is present on wire 130 then locate the diode pack; this is located between 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 multi-meter. With the multi-meter 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.

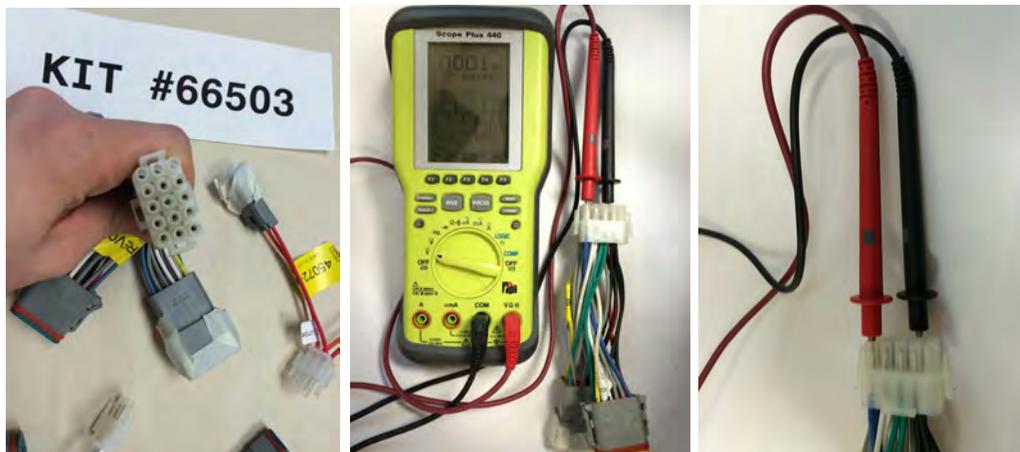
- ◆ **If voltage is not present**, then the diode continuity check was performed incorrectly. Replace the diode.
- ◆ **If voltage is present** on wire 149 then proceed to step #7.

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).

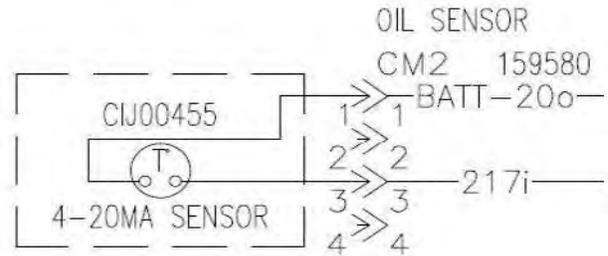


NOTE: Two (2) harnesses in this kit have a reference chart to work with:

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



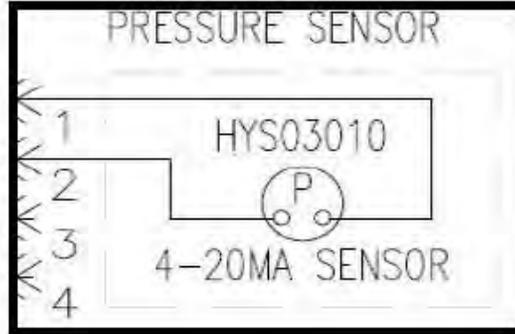
HARNES TOOL

#151202

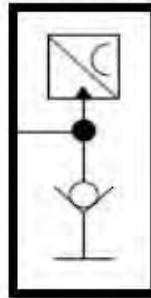
HARNESS TOOL #151199

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

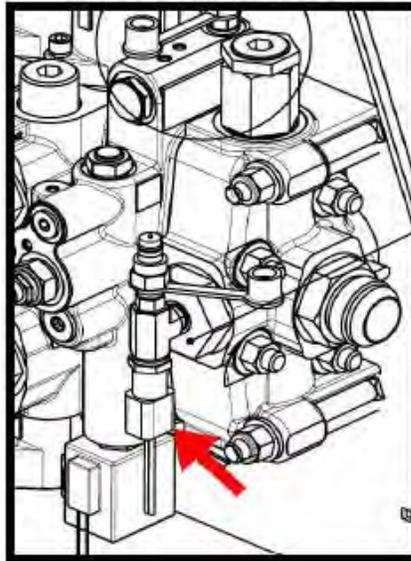
Electrical schematic view



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 multiplexed system
- ◆ the Allison transmission parameters, and
- ◆ the Cummins engine parameters

The following pages provide the necessary information for these tasks.

Labrie's Multiplex System

Labrie has equipped your AUTOMIZER™ unit with a CAN bus-based multiplexed 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 multiplexed 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), Labrie's multiplexed 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 *LabriePlus* for support.

The logo of Labrie Environmental Group appears momentarily on the monitor screen at the start of the system (see Figure 9-2).

Figure 9-2 Labrie logo on the 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 a link to the Main Menu (see *Main Menu* on page 191) as well as warnings or error messages should the unit encounter operating problems. The following optional indicators, when provided, are also found on the Main Page : Cart Counter, Time and Date Indicator and Hydraulic Oil Temperature Indicator.

Cart Counter (optional)

This indicator tells you how many carts have been emptied so far.

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 Up:Crusher Not Raised	Raise Crusher Panel
Arm:Auxiliary Deadman ON	Release Auxiliary Deadman
Arm:Hopper Door Not Close	Close Hopper Door
Arm:Pump Not Started	Engage Pump
Arm:Tailgate Unlocked	Lock Tailgate
AutoDump:Cab EStop	Pull Out Cab EStop Button
AutoDump:Pump Not Started	Engage Pump
Body:Pump Not Started	Engage Pump
Buzzer:Arm Not Stow	Retract Arm to Stowed Position
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 Emergency Stop	Pull Out Cab EStop Button
FullEject:Cab EStop	Pull Out Cab EStop Button

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
FullEject:Packer Not Retracted	Retract Packer
FullEject:Pump Not Started	Engage Pump
Gripper Open:Arm Too High	Lower Arm
High Hydraulic Oil Temp.	Turn Off Engine and Refer to your Maintenance Personnel
Low Hydraulic Oil	Add Hydraulic Oil
Miss 1 Scan with Master	Refer to Maintenance Personnel or LabriePlus
Packer Extend:Air Weigh Signal	Unload Body
Packer:Already Extended	Refer to Maintenance Personnel or LabriePlus
Packer:Already Retracted	Refer to Maintenance Personnel or LabriePlus
Packer:Extend Too Long	Check Extend Prox
Packer:Pump Not Started	Engage Pump
Packer: Tailgate Not Open	Open Tailgate
Packer:Retract Too Long	Check Retract Prox
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 Too High	Lower Engine Speed Below 900 RPM
Pump Stop:Main Air Pressure	Let Air Build Up to Req'd Pressure
Pump:Aux. AutoDump Switch ON	Release Aux. AutoDump Switch prior to Engaging Pump
Pump:Aux. CloseGripper Switch ON	Release Aux. CloseGripper Switch prior to Engaging Pump

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
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:CrusherDown Switch ON	Release CrusherDown Switch prior to Engaging Pump
Pump:CrusherUp Switch ON	Release CrusherUp Switch prior to Engaging Pump
Pump:Hopper Door Not Close	Close Open Door
Pump:J1 AutoDump Switch ON	Release J1 AutoDump 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 AutoDump Switch ON	Release J2 AutoDump 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 Not OK	Refer to Maintenance Personnel or <i>LabriePlus</i>
Pump:RPM Too High	Lower Engine Speed Below 900 RPM

Table 1 Warning messages (cont'd)

Warning and Caution Messages	Solution
Pump:TailgateDown Switch ON	Release TailgateDown Switch prior to Engaging Pump
Pump:TailgateUp Switch ON	Release TailgateUp Switch prior to Engaging Pump
Pump:Trans. Not OK	Refer to Maintenance Personnel or LabriePlus
Service Oil Filter #1	Replace Oil Filter #1
Service Oil Filter #2	Replace Oil Filter #2
Tag:Move Tag switch to Tag Up	Raise Tag
Tailgate Up:Truck Moving	Bring Truck to a Standstill
Tailgate: Packer Not Retracted	Retract Packer
Tailgate:Pump Not Started	Engage Pump
Wrong Driver Position	Change Driver Position Switch to Correct Position

Table 2 Error messages

Error Messages	Solution
Button Pack 12 is disconnected	Refer to Maintenance Personnel or LabriePlus
Button Pack 13 is disconnected	Refer to Maintenance Personnel or LabriePlus
Button Pack 14 is disconnected	Refer to Maintenance Personnel or LabriePlus
Button Pack 15 is disconnected	Refer to Maintenance Personnel or LabriePlus
CAN Error Level 1	Refer to LabriePlus
CAN Error Level 2	Refer to LabriePlus
CAN Error Level 3	Refer to LabriePlus
Comm. Lost with Master	Refer to Maintenance Personnel or LabriePlus

Table 2 Error messages (cont'd)

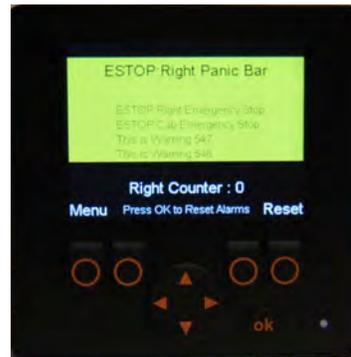
Error Messages	Solution
Module 11 is disconnected	Refer to Maintenance Personnel or LabriePlus
Module 11 not Connected	Refer to Maintenance Personnel or LabriePlus
Module 20 is disconnected	Refer to Maintenance Personnel or LabriePlus
Module 20 not Connected	Refer to Maintenance Personnel or LabriePlus
Module 30 is disconnected	Refer to Maintenance Personnel or LabriePlus
Module 30 not Connected	Refer to Maintenance Personnel or LabriePlus
Module 50 is disconnected	Refer to Maintenance Personnel or LabriePlus
Module 50 not Connected	Refer to Maintenance Personnel or LabriePlus
Module 60 is disconnected	Refer to Maintenance Personnel or LabriePlus
Module 60 not Connected	Refer to Maintenance Personnel or LabriePlus

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 multiplexed 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

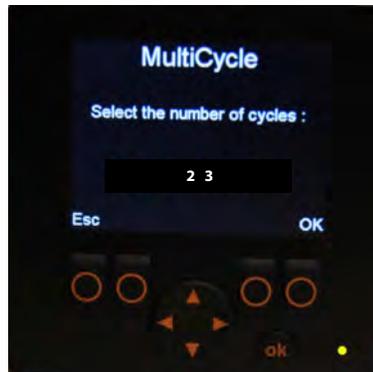
Displayed in the lower center of the screen is an indicator that monitors traffic on the network. This indicator is called Network Load, and it shows values that reflect such traffic.

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 that section using the up/down arrows and press the “OK” button.

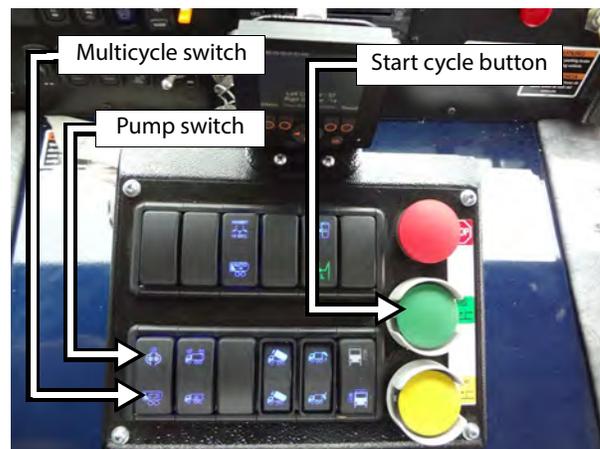
Multicycle

The monitor used in Labrie's Multiplexed System is user-friendly. 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 settings of the packer:

1. On the control panel press the MULTICYCLE switch and the green START CYCLE button (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 proximity/limit switch located on the right-hand side behind the packer sends a signal to the electronic controller. The controller 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.

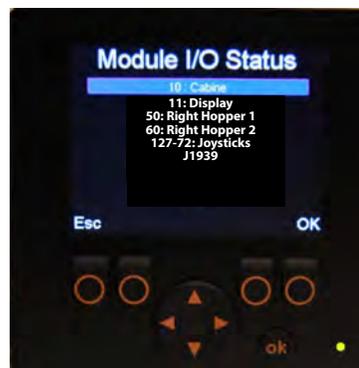
For example, if you want to check all functions that are found in the cab, choose module #10. For all functions that pertain to the right hopper, choose module #50 or #60, etc.

To choose a particular module, use the up/down arrows to select it and press “OK”.

NOTE: Entering “OK” can be done two ways: press either 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 (see 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.

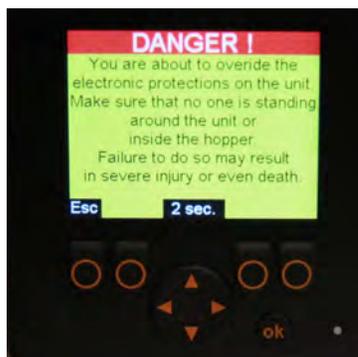
NOTE: To go back to the Main Page or Main Menu, press “Esc” as needed until the desired page is displayed.

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).

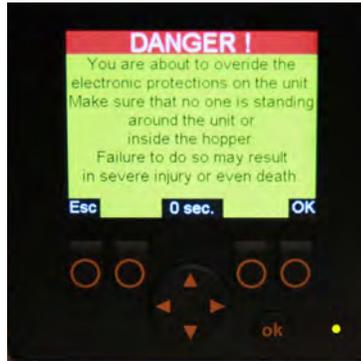
Figure 9-11 Warning message



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 relates 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, simply cut power to the multiplexed system by turning the ignition key off.

NOTE: To go from a 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 (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. Call *LabriePlus* for support.

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. Call *LabriePlus* for support.

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 J1939 bus to Labrie’s Multiplex System. 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 Multiplexed 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.

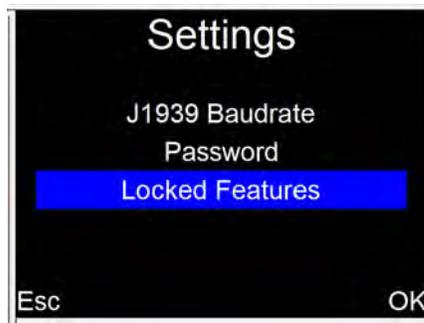


6. Enter a new password using the arrow keys.
Press "Esc" to quit or OK to create a new password.

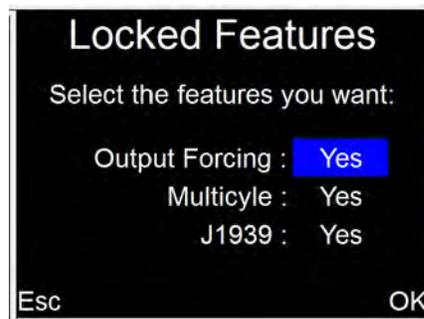


NOTE: Entering a new password with only zeros as the number, such as "000000", will result in deactivating the password function.

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.

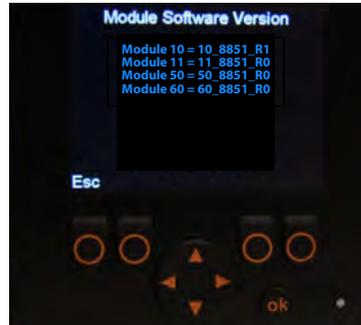


NOTE: If you have forgotten your password, please contact the LabriePlus Service Department.

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)

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.

Warning Buzzer

Among the many buttons on the control panel you will find a warning buzzer (see Figure 9-18). 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.

NOTE: The body of a full-eject unit cannot be raised unless it is equipped with an optional service hoist system.

Figure 9-18 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 9-19). Connecting a laptop to this plug requires special hardware and software (included in the service kit). For more information on this, contact the LabriePlus 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 9-19 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 LabriePlus.

Figure 9-20 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 9-21 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 LabriePlus 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 LabriePlus.

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 LabriePlus 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 <i>Programmed Parameters</i> on page 205.
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 LabriePlus.

Table 9 Cummins engine parameters

Menu: Features & Parameters	Parameter Name	Value
Adjustable low idle speed	Low idle speed adjustment switch	Disable
	Low idle speed	700 rpm
Switched maximum engine operating speed	Switched maximum engine operating speed	Enable
	Maximum operating speed switch setup	Active closed
	Maximum switched engine speed	900 rpm



USA

TECHNICAL SUPPORT SERVICE

Toll Free: 1-800-231-2771
(24-hour Emergency Support)
email: labriepplusservice@labriegrup.com
www.labriegrup.com/fsr

PARTS

email: partscenter@labriegrup.com
usa.labriepplus.com

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email: labrieppluswarranty@labriegrup.com

OFFICES

1198 Shattuck Industrial Blvd.
LaFayette, GA 30728
Toll Free: 1-800-231-2771
Telephone: 1-706-591-8764

MAILING ADDRESS

P.O. Box 530
LaFayette, GA 30728

Part # 200272 (rev.00.12.2023)

CANADA

TECHNICAL SUPPORT SERVICE

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email: labriepplusQC@labriegrup.com
canada.labriepplus.com

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8:00 am - 5:00 pm Eastern Standard Time
email: labrieppluswarranty@labriegrup.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.

OFFICES & MAILING ADDRESS

455 1st Avenue
Levis, QC G6W 5M6
Toll Free: 1-877-452-2743
Customer Service: 1-877-452-2743

