



ALLEY-HAND™ LIFTING ARM

Supplement

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If you find what you believe to be an error in any of our publications please complete the requested information and return the form to us by email.

If you are the first, you will receive a hat by return mail.

-
-
-

I believe I found an error:

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

It should say: _____

Name: _____ Address: _____



THANKS FOR YOUR HELP!

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Introduction

About This Supplement

This supplement contains information regarding the correct maintenance of your ALLEY-HAND™ lifting arm. Maintenance personnel should read and understand this information before doing repairs and maintenance on the arm. For information on how to safely and efficiently operate your Labrie garbage truck, please refer to the *Operator's Manual* that is provided with your unit.

Topics Not Included in This Supplement

Maintenance of the chassis

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

Maintenance of the body

For information related to electric, mechanical, hydraulic and air systems as well as maintenance and pressure adjustment procedures, refer to the *Maintenance Manual* specific to your truck, with either tip-to-dump or full-eject configuration.

Cameras and backing-accident prevention systems

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

Operating your refuse truck

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

Parts and assemblies

For parts and assemblies that make up your garbage truck, and for their respective part number for ordering purposes, please refer to the *Parts Manual* specific to your unit. Also, for parts related to the ALLEY-HAND™ lifting arm, refer to the *ALLEY-HAND™ ARM Parts Manual*.

About the Illustrations in this Supplement

Because Labrie Environmental Group is constantly updating its products, illustrations used in this supplement 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 *Parts Manual* specific to your refuse truck;

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

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

NOTE: A number of schematics are included in this supplement.

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 ALLEY-HAND™ Arm

Thanks to carefully engineered hydraulics, the ALLEY-HAND™ arm maneuvers smoothly and is easy to operate in tight areas, like alleys and narrow streets. Also, this zero kick-out arm is strongly built for working in hard conditions and intensive use as well as for longevity and low maintenance.

Figure 1-1 ALLEY-HAND™ arm



Key Features

Key features of the ALLEY-HAND™ arm:

- ♦ Zero kick-out capability
- ♦ Ideal in tight areas like alleys
- ♦ Can extend up to 12 feet and lift up to 550 lb when fully extended
- ♦ In-line arm design combined with a large 6.5-yd³ hopper for smooth, low dumping and effortless maneuverability

Service and Maintenance on the ALLEY-HAND™ Arm

Maintenance on the ALLEY-HAND™ lifting arm 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 ALLEY-HAND™ arm, 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 supplement you will find the most common maintenance and inspection procedures required for the ALLEY-HAND™ lifting arm.

Parts

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

Warning

The ALLEY-HAND™ lifting arm **MUST BE COMPLETELY LUBRICATED** before its first use. Refer to the arm lube chart on the curbside of the truck to know where the lubrication points are located on the arm 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, electric, 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 side loader.

ALLEY-HAND™ Arm Basic Maintenance

ALLEY-HAND™ arms 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**

The ALLEY-HAND™ arm 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) **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.

3) **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.

4) **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.



Safety

Safety comes first and Labrie Environmental Group is committed to your safety. Ultimately, safety is everyone's responsibility when operating or maintaining the ALLEY-HAND™ lifting arm. Make it your first priority! Be aware and apply the safety practices and features detailed in this supplement.

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, refer to the *Parts Manual* included in the accompanying USB key (look for it in the documentation pouch inside the cab).

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

Conventions

Throughout this supplement “**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 supplement. 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 a Labrie side loader. 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 supplement 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 unit.

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 14).

Warning!



With your safety in mind, Labrie Environmental Group would like to remind you that ONLY qualified personnel should service the hydraulic, electric 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 truck.

Responsibilities

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

Employer Responsibilities

It is the responsibility of the employer:

- ♦ To ensure that the vehicle 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 14) 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 vehicle 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 side loader only after having received instructions and training.
- ♦ To always utilize the vehicle's safety features, such as tailgate props.
- ♦ To wear all safety equipment prescribed by your employer.
- ♦ To immediately report any damage or malfunction to the vehicle or equipment to the employer or supervisor.
- ♦ To make sure that no one is near the vehicle before activating any of the controls, and to be prepared to stop at any indication of possible danger.

Do's

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

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

- ♦ Wear safety glasses and footwear, gloves, and any other safety equipment when servicing the unit.
- ♦ Make sure that mirrors, windows, lights, and monitor equipment are clean and properly adjusted.
- ♦ Check for explosive trash (e.g. televisions, paint cans, fluorescent light tubes, etc.).
- ♦ Drive carefully when carrying an unevenly distributed load.
- ♦ Inspect for overhead hazards (e.g. power lines) prior to hoisting the body or using the arm (units with tip-to-dump configuration).
- ♦ Inspect for overhead hazards (e.g. power lines) prior to raising the tailgate. If the unit is equipped with a service hoist, carry out this inspection prior to hoisting the body (units with full-eject configuration).
- ♦ Use the body safety prop when servicing under the body (units with tip-to-dump configuration or units with full-eject configuration equipped 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 14.
- ♦ 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 with tip-to-dump configuration or units with full-eject configuration equipped with a service hoist).
- ♦ Do not back up the vehicle when the body is raised (units with tip-to-dump configuration or units with full-eject configuration equipped with a service hoist).
- ♦ Do not use the body safety prop to prop a *loaded* body (units with tip-to-dump configuration or units with full-eject configuration 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 side loader *must be completely lubricated*, as shown on the Lube Chart sticker located on the body curbside, near the hopper.

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

General Precautions

Danger!

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

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

- ♦ Read and make sure you fully understand this manual and all safety decals before performing maintenance on the vehicle.
- ♦ Read and make sure you understand the *Operator's Manual* for this vehicle. In case of doubt, ask a supervisor for clarifications.
- ♦ When driving the vehicle, keep both hands on the steering wheel at all times.
- ♦ Stop the vehicle completely and put on the parking brake before leaving the driving position.
- ♦ When the vehicle is parked, the parking brake *must* be applied.
- ♦ Before activating the lifting arm, mechanics shall make sure that people and obstructions are far away from the vehicle.
- ♦ Do not operate this vehicle if there are any signs of damage or incomplete repairs.
- ♦ Never place head, body, fingers or any limbs into a scissors point or pinch point on the equipment.
- ♦ Start the engine following the manufacturer's recommended procedure.
- ♦ When driving, wear your seat belt.
- ♦ *Never* drive this vehicle with the tailgate unlocked.
- ♦ Ensure all co-workers are in view before operating or moving the unit or any of its controls.
- ♦ Make sure the backup alarm is working properly.
- ♦ When removing nylon lock nuts, *always* replace them by new ones.
- ♦ For any work (including cleaning and inspection) that has to be done between the body and the chassis, *always* use the body safety prop. Also, the vehicle *must* be on level ground (units with tip-to-dump configuration or units with full-eject configuration 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 14.
- ♦ 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 ALLEY-HAND™ 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 ALLEY-HAND™ arm before moving it. Failure to do so may result in unit and/or property damage, personal injury or death.

Warning!


Make sure there is enough clearance between a raised container and any overhead power lines. The ALLEY-HAND™ 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 ALLEY-HAND™ 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 ALLEY-HAND™ 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.

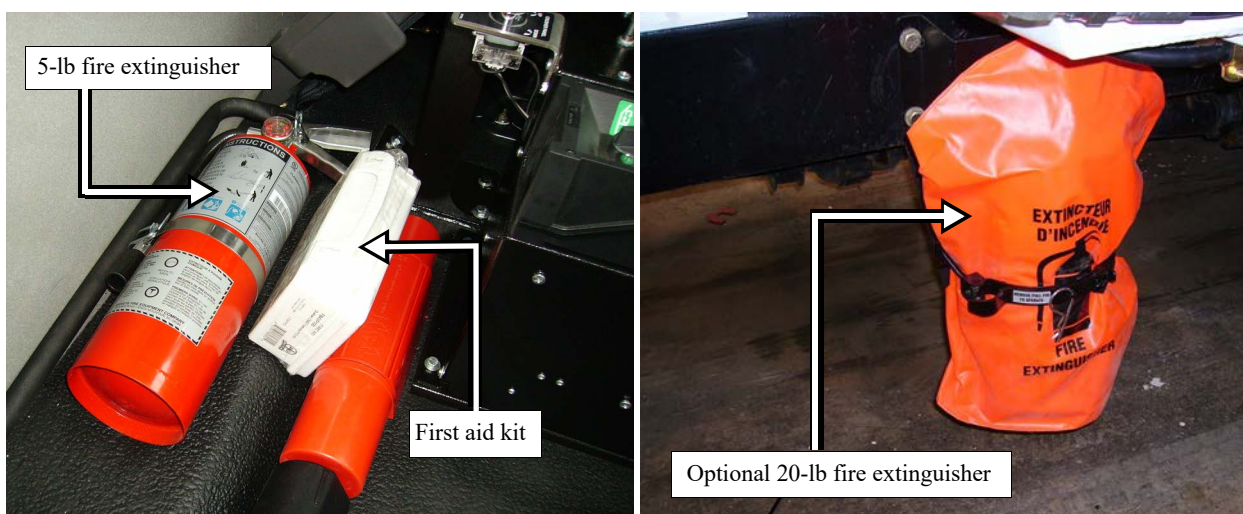


- ♦ The employer must also inform employees of an appropriate place to unload the body near the maintenance facility (preferably away from traffic, surface drains, and ditches).
- ♦ Keep a fire extinguisher accessible at all times.
- ♦ Never use lighted smoking materials, open flame or sparks around 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: Labrie side loader 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 5-lb fire extinguisher (left); optional 20-lb fire extinguisher (right)



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.

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 side loader:

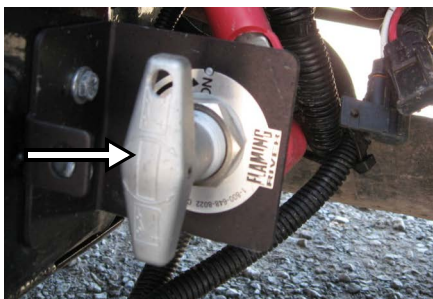
1. Park the vehicle on safe, level ground and apply the parking brake (see Figure 2-3).

Figure 2-3 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 your unit may be equipped with a master switch (see Figure 2-4) that must be turned off.

Figure 2-4 Master switch

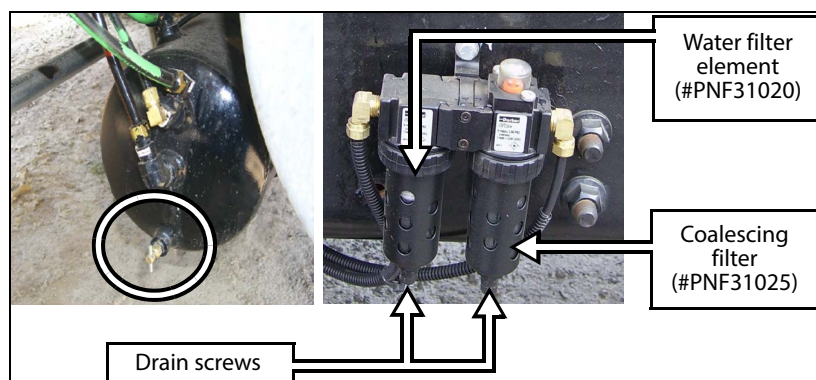
7. Put an “OFF SERVICE” tag on the driver’s wheel and on the front windshield.
8. Use safety props to block any system that could move by gravity (open tailgate, raised body, etc.).
9. Drain all air tanks.
10. Verify and inspect any security device and/or mechanism to make sure that there is no bypass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

Shutting Down the Vehicle

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

Also:

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

Figure 2-5 Drain valve on air tank (left), air filter assembly (right)

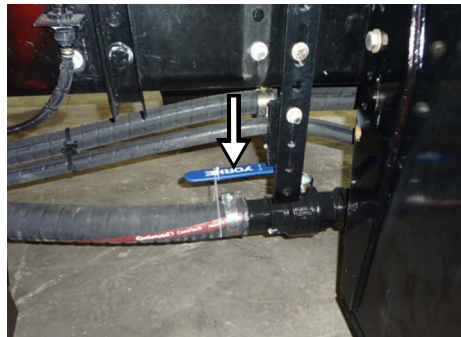
NOTE: Both filters of the air filter assembly (#PNF31000) [see Figure 2-5] must be changed twice a year.

Starting Up the Vehicle

Apply this procedure to start up your vehicle:

1. Make sure no system will engage and/or start to operate as you start the engine.
2. Make sure the shut-off valve on the hydraulic tank is fully open before starting the vehicle (see Figure 2-6).

Figure 2-6 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 2-7 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 2-8).
The PUMP switch turns from blue to green.

Figure 2-8 Pump switch



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

3

Lifting Arm

To keep the arm in good working order and to reduce the amount of down time and the risk of accidents, a preventive maintenance program must be implemented and followed thoroughly.

Maintenance personnel must be familiar with the operation of the arm, the safety around it and the maintenance procedures described in this chapter.

Important Notes about the ALLEY-HAND™ Arm

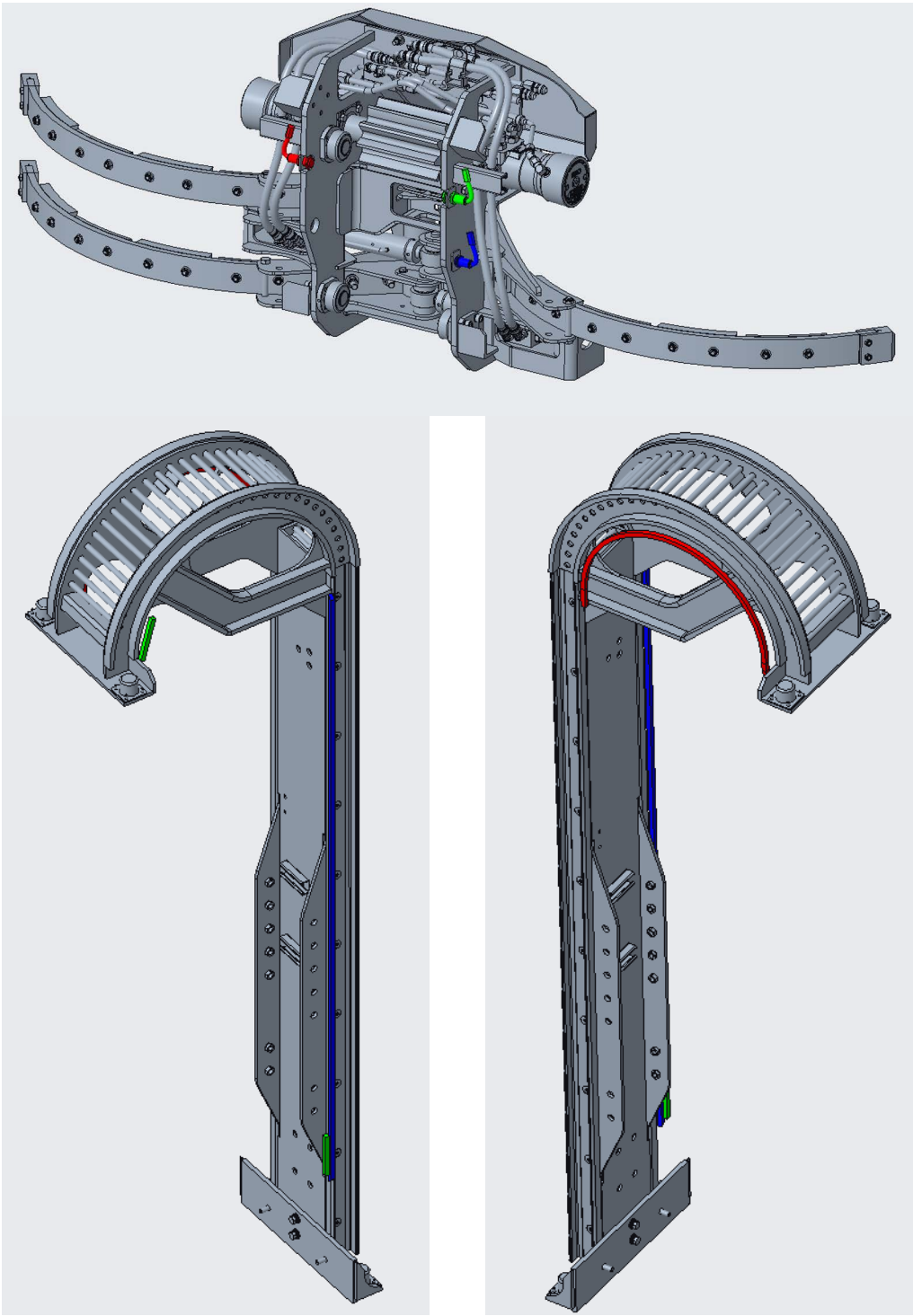
- ♦ There is no mechanical cushioning to slow down the grabber at the top of the arm mast, neither at the bottom. Through the spool of the proportional valve, oil flow to the hydraulic motors is limited. So, even if the arm controls command full speed, the electric signal sent to the valve's coil is modulated according to the location of the grabber along the arm mast and the direction the grabber is traveling.

When raising the grabber from the stowed position, full speed into the straight section of the arm mast is allowed. Then, as the grabber transitions to the curved section, the maximum spool travel is reduced. Finally, at the very end of the curved section (about 4" before contacting the upper rubber bumpers) spool travel is limited even more to result in a soft stop.

When lowering the grabber from the fully raised position, roughly $\frac{3}{4}$ of spool travel can be commanded in the first few inches. This is allowed to rapidly increase to 100% in the second half of the curved section and into the straight section of the arm mast. At the very bottom of the arm, spool travel is again limited to about $\frac{1}{4}$ to avoid slamming the grabber into the rubber bumpers at the bottom of the mast or the container into the ground.

- ♦ To affect this electronic cushioning the arm mast is subdivided in zones. For the system to know which zone the grabber is in the combined signals of 3 proximity switches are used (see Figure 3-1).

Figure 3-1 Arm mast zones



- ◆ If one of the proximity switches is defective or out of adjustment and system is unable to read the respective target at the proper time it will result in the grabber being between zones. If the grabber is ever in this “between zone” state certain interlocks are put into place. If the grabber is moving, spool travel will be limited to the same maximum as the previously detected zone. Once the grabber is allowed to stop or changes directions, 50% of the maximum spool travel will be allowed to keep the grabber from slamming at either the fully raised or lowered positions. If the grabber is stopped in a “between zone” state, the system will wait 3 seconds before allowing it to move, and after that pause, allow 50% of spool travel regardless of joystick command to prevent the grabber from being damaged in the event a proximity switch is damaged or out of adjustment. As soon as the combination of the signals from the proximity switches puts the grabber back into a known zone the system will restore all the usual values (and the grabber will move at the normal speed allowed for the respective zone). If another “between zone” state is detected, the same interlocks are activated without the necessity for intervention from the operator.
- ◆ Holding valve cartridges are utilized on the up-down section to hold the load of the grabber when stopped in mid stroke prior to full pressure being applied to the motor brakes. These holding valve cartridges also keep the grabber from accelerating by itself when it passes over the center of the arm mast. The holding valve cartridges are not utilized to adjust the speed of the grabber when the joystick is activated.
- ◆ The following picture (see Figure 3-2) shows the opening width the grabber can reach when the proximity switch is activated by the target on the double finger pivot.

Figure 3-2 Grabber opening width



If the grabber fingers are opened wider than in Figure 3-2, arm raise is limited at approximately 16" from the lowered position to avoid contacting components on the side of the hopper or body. To raise the grabber higher than this zone, the grabber fingers must be closed to at least the point shown in Figure 3-2. While there is no traditional auto-closing function on the AUTOMIZER ALLEY-HAND™, the grabber cylinders are automatically pressured when the grabber reaches the curved section of the arm mast to prevent the nuisance dropping of containers into the hopper. In this zone, grabber open is also locked out. Note that a grabber-open inhibit switch is standard in the event that an operator desires to release a container within this zone.

- ◆ If the unit is equipped with a crusher panel, an interlock will prevent the activation of the panel when the grabber is within interference zones so that they do not collide.

- ♦ When driving, the ALLEY-HAND™ arm must be fully retracted with the grabber at its lowest position and fingers fully open.
- ♦ On units equipped with multiple cameras, the trigger to display the hopper view on the monitor occurs when the grabber reaches the beginning of the curved section of the arm mast.

Daily Inspection

Danger!



Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 14)

On a daily basis, perform a visual inspection of the arm, looking for leaks, cracks or premature wear of the moving parts. For detailed information on greasing points, see Figure 3-9.

To perform the daily inspection:

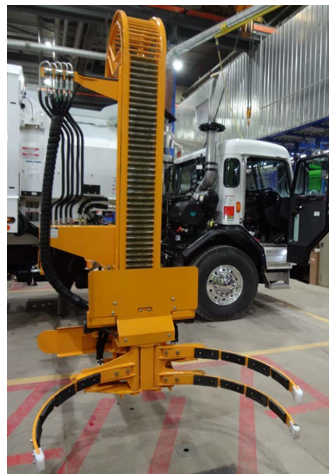
1. Start the engine and engage the hydraulic pump (Pump switch ON).
2. Fully extend the arm.

Danger!



Do not stand directly in the path of the arm while performing the inspection.

Figure 3-3 ALLEY-HAND™ arm



3. Turn OFF the hydraulic pump and the engine.
4. Perform a visual inspection of the following items:
 - mounting bolts
 - rollers and bearings

- bolt locks
- grabber
- hoses and connections - make sure they are tightly fixed
- nuts and bolts - ensure they are fully tightened
- both arm stowed limit switches. For more information, see *Adjusting Arm Stowed Limit Switches (2)* on page 31.

IMPORTANT: Be sure to lubricate all greasing points on the ALLEY-HAND™ arm as per the lubrication chart on page 27.

Weekly Inspection

The ALLEY-HAND™ arm must be inspected weekly for the condition of the arm mast, the arm stop bumper pads, the motor brakes, the UHMW gear, and the structural integrity.

Danger!



Be careful when operating the arm. Make sure that there is no one in the path of the arm before extending it.

NOTE: This inspection should be done every week to make sure the arm is working properly.

Arm Mast

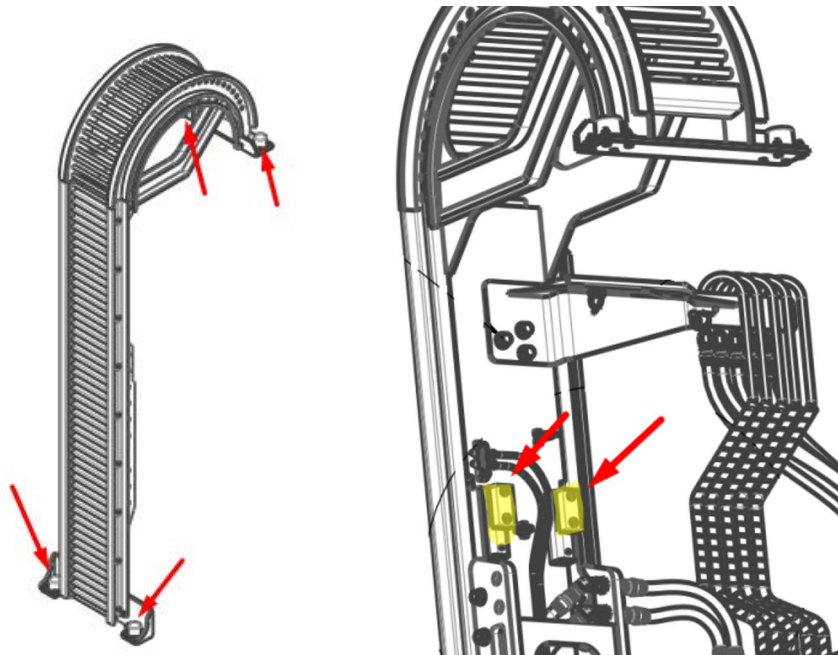
Inspect this section of the arm assembly on a weekly basis. If the UHMW gear makes too much noise when going up and down on the mast, spray a layer of silicone-based lubricant on the arm mast for a smoother operation and an extended life of the mast and gear. Also, the arm mast should be cleaned every three (3) weeks.

Figure 3-4 Arm mast

Arm Stop Bumper Pads

Check both the upper and lower arm stop bumper pads for wear, cracking or damage; replace as necessary. These pads serve as cushions for the arm grabber, whether at the upper end or lower end of the arm mast.

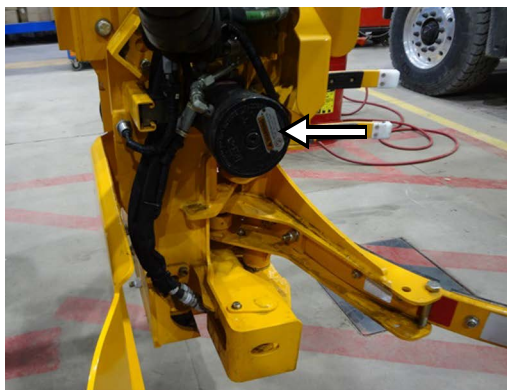
With the arm fully retracted, both rear arm stop bumper pads must be compressed at least one-quarter inch ($1/4"$); the pads may be adjusted by shimming.

Figure 3-5 Bumper pads

Motor Brakes

The motor brakes are fixed to the grabber and are utilized to maintain the grabber in position when it is not in motion.

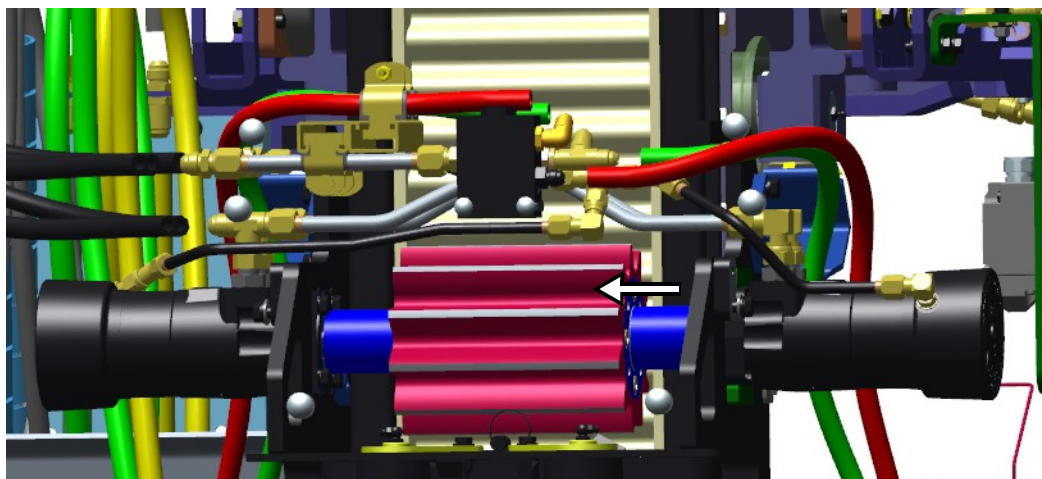
Figure 3-6 Motor brake



UHMW Gear

The UHMW gear is utilized to move the grabber upwards and downwards along the arm mast. It is driven by two (2) hydraulic motors, one on each side of the grabber. This gear should be checked every week for signs of wear and tear and as how well it moves along the mast in order to make sure it runs properly.

Figure 3-7 UHMW gear



Structural Integrity

Check all metal surfaces and welds on the arm slide/mast weldment for damage or cracking. Also check all metal surfaces and welds on the outer slide tube/base frame weldment; repair as necessary.

Lubrication

To help the ALLEY-HAND™ lifting arm of your truck run smoothly and extend its life time and to avoid unplanned downtime and emergency repairs, there is one thing that you must do and that is to proceed with sufficient lubrication of all grease fittings on your lifting arm.

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

Refer to the arm lubrication chart located on the side of the vehicle (see Figure 3-8) for a complete list of lube locations and the frequency with which they should be greased.

Lubrication Chart

The ALLEY-HAND™ Arm Lubrication Chart in this supplement (see Figure 3-9) may differ from the one displayed on your vehicle. For lubrication specifications, always refer to the chart on your vehicle.

Figure 3-8 Arm lube chart on right hand side of vehicle

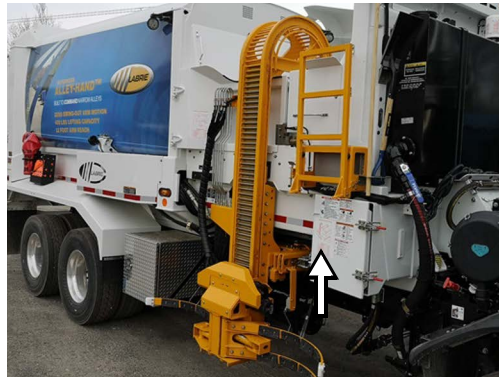
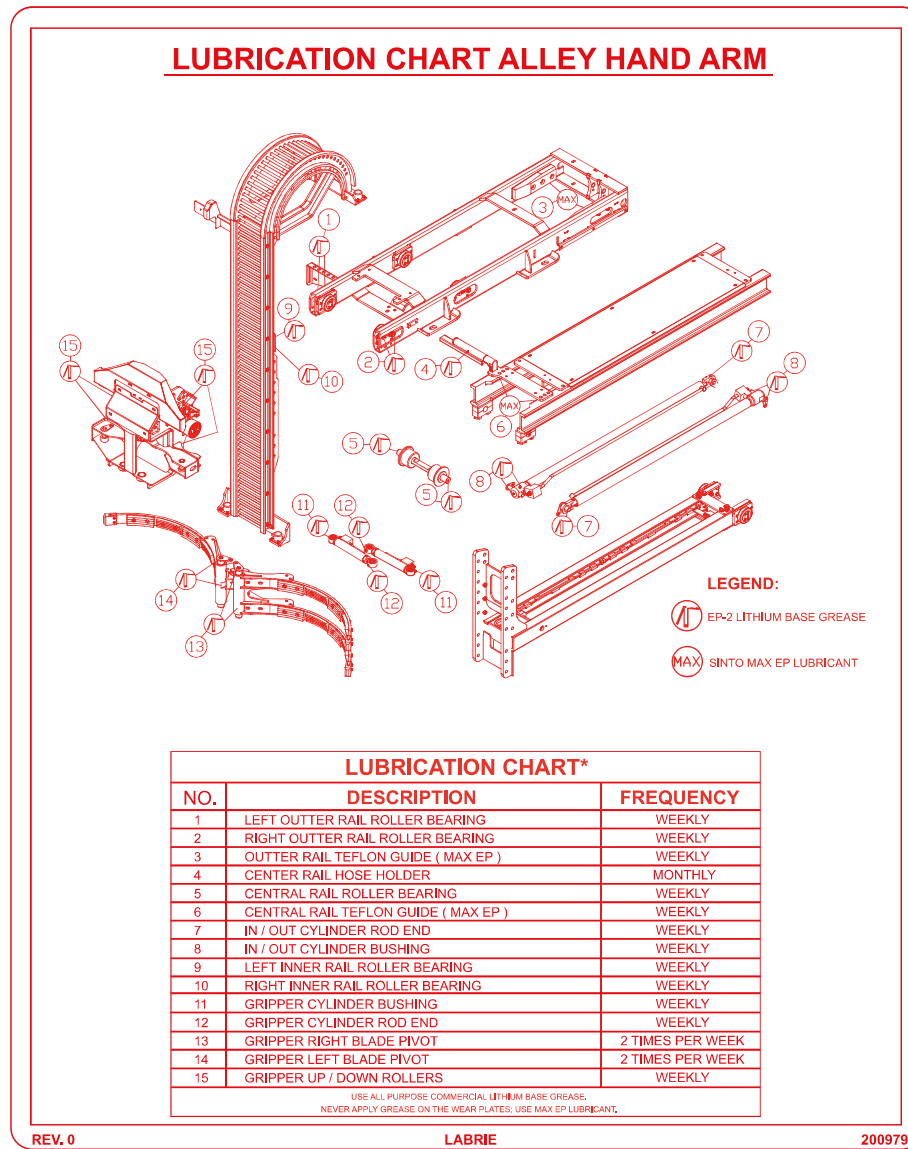


Figure 3-9 ALLEY-HAND™ arm lubrication chart

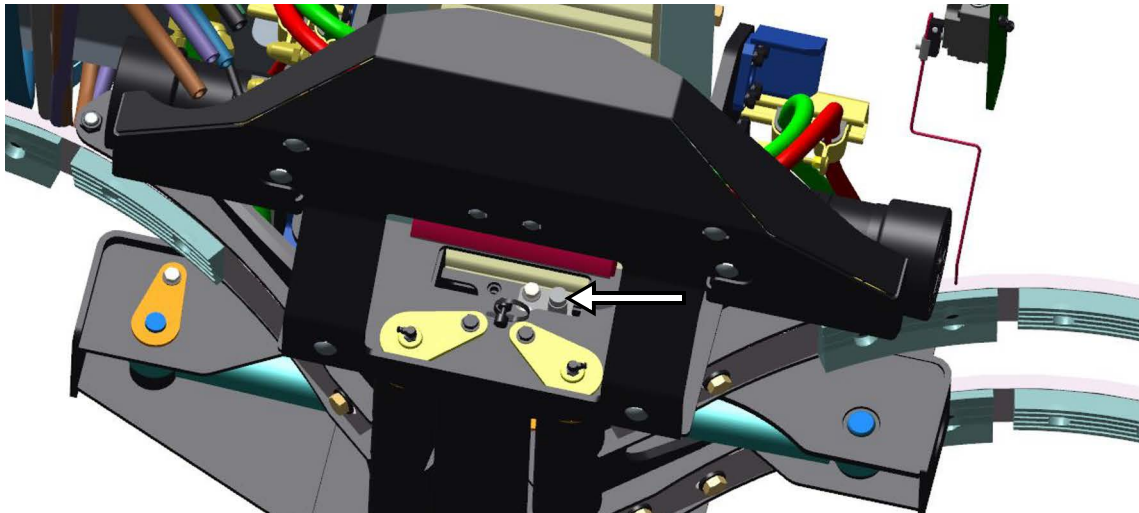


Proximity and Limit Switches

Grabber Up Proximity Switch

ALLEY-HAND™ arms are equipped with a grabber up proximity switch (see Figure 3-10) that tells the system if the grabber is sufficiently closed to be lifted safely so that it will not collide with the hopper wall. If the system detects that the grabber is not sufficiently closed, the latter will not go up. The grabber up proximity switch, which is located inside the cradle of the grabber, only restricts the upward movement of the grabber. It does not restrict the downward movement.

Figure 3-10 Grabber up proximity switch



Inspecting Effectiveness of Grabber Up Proximity Switch

Danger!



Always lock out and tag out the vehicle when inspecting or performing maintenance on it (see *Locking Out and Tagging Out the Vehicle* on page 14).

To inspect the effectiveness of the grabber up proximity switch:

1. Make sure that the vehicle is parked on safe, level ground.
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Start the engine and engage the hydraulic pump.
4. If it is not already done, lower and fully open the grabber.

Danger!



Do not stand directly in the path of the arm while carrying out this inspection.

5. Slowly close the grabber until it reaches at least a quarter distance from the complete open position and try to raise the grabber.

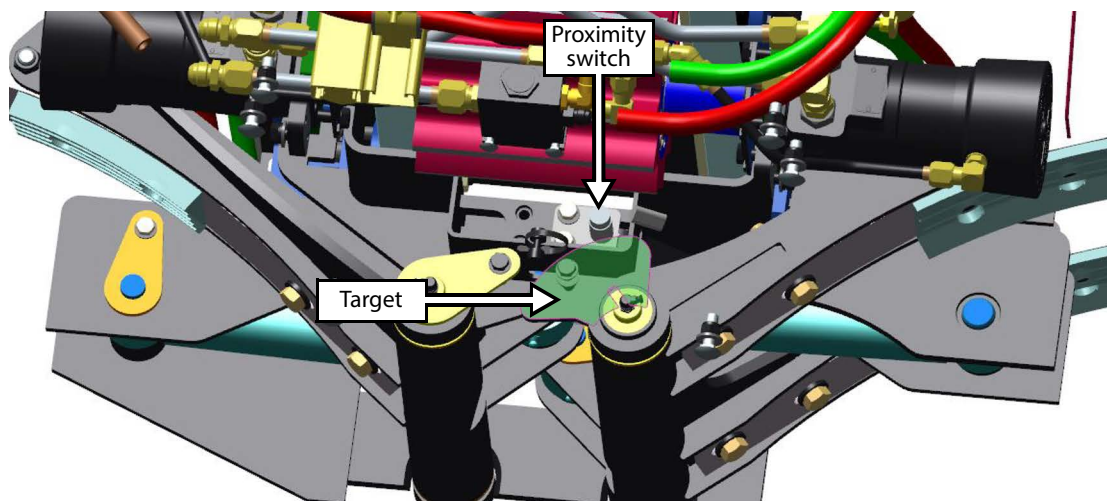
If the grabber does not move upward, refer to the following section.

The grabber should not move up if its fingers are closed by less than a quarter distance from the complete open position. If it does, refer to the following section.

Adjusting Grabber Up Proximity Switch

The system that allows the gripper to move up is controlled by a proximity switch located in the cradle of the grabber (see Figure 3-11).

Figure 3-11 Grabber up proximity switch and target



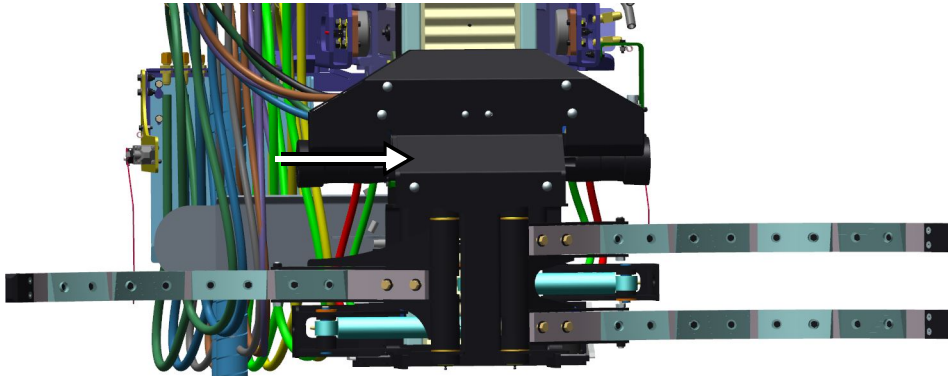
To adjust the grabber up proximity switch:

1. Make sure that the vehicle is parked on safe, level ground.
2. Secure the area around the path of the arm with barrier tape or barricades.
3. Start the engine and engage the hydraulic pump.
4. Lower and fully open the grabber (if it is not already done).

Danger! Do not stand directly in the path of the arm while carrying out these adjustments.



5. Turn OFF both the hydraulic pump and the engine.
6. Lock out and tag out the vehicle (see *Locking Out and Tagging Out the Vehicle* on page 14).
7. Remove the protector panel on the cradle (see Figure 3-12).

Figure 3-12 Protector panel

8. Locate the grabber up proximity switch inside the cradle (see Figure 3-11).
9. Adjust the grabber up proximity switch so that it can be triggered by the target just below it. To do so:
 - 9 a. Loosen the proximity switch nuts.
 - 9 b. 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.
 - 9 c. Tighten the nuts.
 - 9 d. Test the operation.

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

If properly adjusted, the grabber up proximity switch should not allow the grabber to move up unless the grabber is sufficiently closed, that is about a quarter distance from the complete open position.
10. Perform a few up-and-down cycles of the grabber.

IMPORTANT: If the system still does not work properly, it may be necessary to replace the proximity switch.

Adjusting Arm Stowed Limit Switches (2)

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

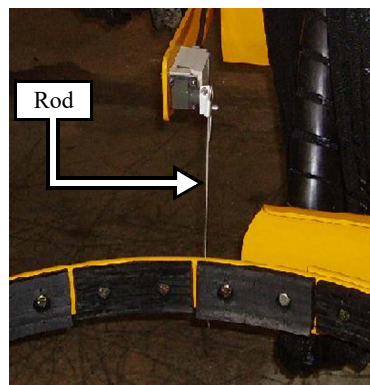


These limit switches are located behind each of the grabber fingers (one for each finger).

To adjust the arm stowed limit switches:

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

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



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

Danger!

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

Speed and Cushioning Control Proximity Switches (3)

The ALLEY-HAND™ arm grabber is equipped with three (3) proximity switches (2 on one side and 1 on the other). These sensors are used to control the speed by which the grabber travels along the loader frame and the cushioning effect that is needed to sufficiently reduce the impact of the grabber against the rubber stops at the end of its upward stroke.

The speed and cushioning control proximity switches should detect their own target arranged at different positions along the loader frame. Detection of the targets by these proximity switches helps determine the exact position of the grabber along the loader frame and the speed by which the grabber travels.

The next two illustrations show you where the proximity switches and their related targets are located. Colors red, green and blue help you easily determine which target goes with which proximity switch.

Figure 3-13 Grabber assembly (each proximity switch is marked with a different color)

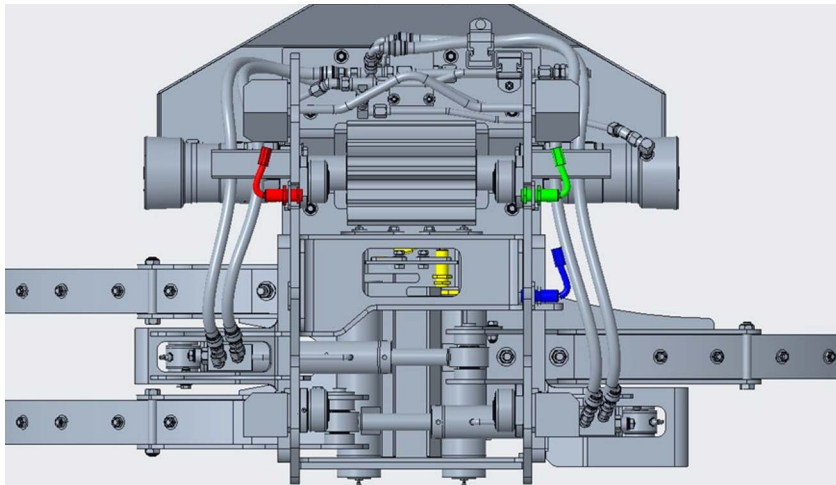
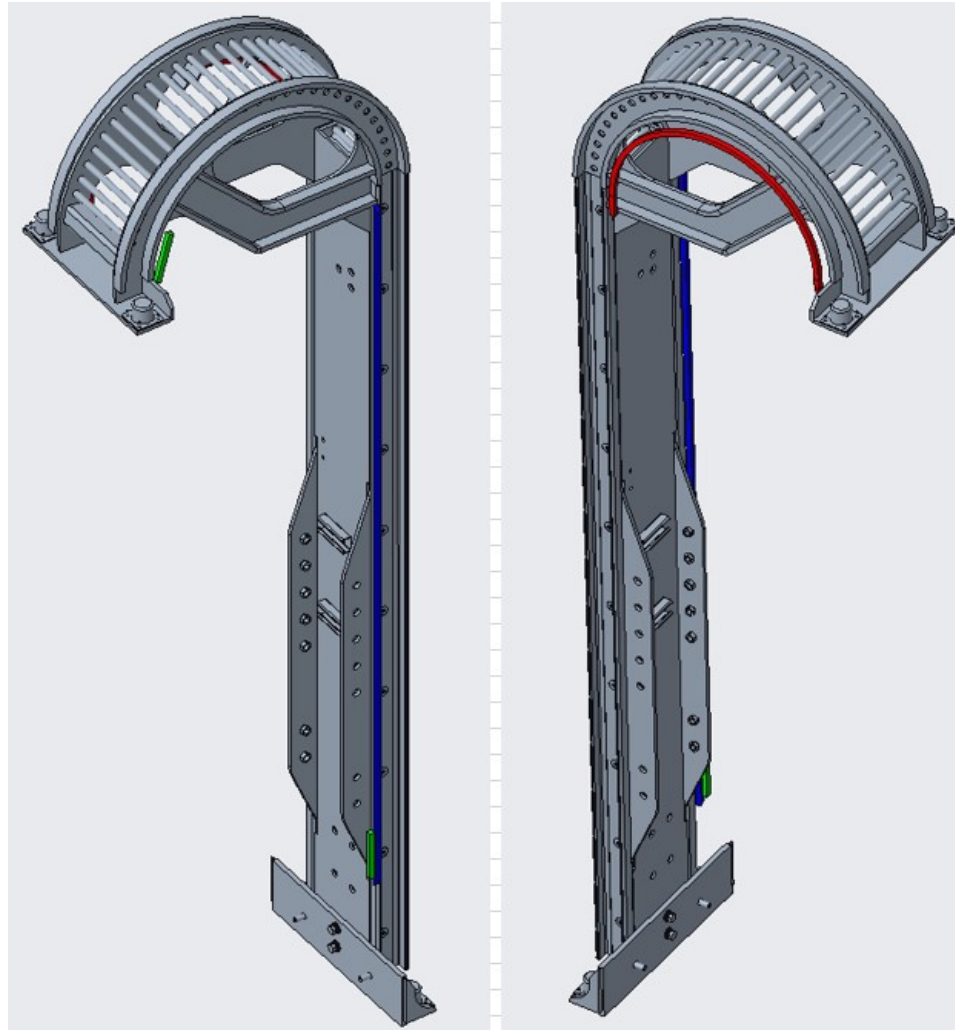


Figure 3-14 Loader frame of the ALLEY-HAND™ (each target is marked with a different color)



Referring to the illustrations above, a proximity switch of a specific color should detect the target of the same color.

An adjustment of any of those three (3) proximity switches may be required if the grabber hits hard against the rubber stops on its way up towards the hopper. If such a situation occurs, proceed with the following adjustment procedure.

To adjust any of the 3 speed and cushioning control proximity switches:

1. Loosen the proximity switch nuts.
2. Adjust the proximity switch so that there is a gap of approximately $\frac{3}{16}$ inch (5 mm) between the 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.

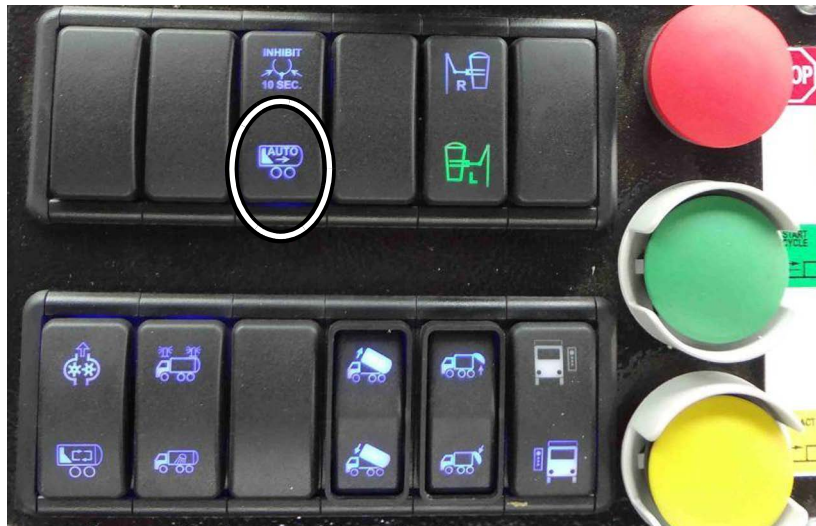
NOTE: An adjustment of all 3 proximity switches may be needed to correctly adjust the speed and cushioning effect of the grabber.

NOTE: The automated arm must be extended in order to proceed with this adjustment.

Auto-Packing

The Auto-Packing switch (see Figure 3-15) enables the packer to automatically start cycling when the grabber reaches the start of the arm curve on its way up. If the packer is performing a cycle while the lifting arm carries a rolling cart towards the hopper, the packer will immediately stop and return to its home position, no matter where it was in the hopper. This is to prevent refuse from falling directly on the packer. However, there is one exception to this: if, after 3 consecutive packing cycles, the packer fully extend proximity/limit switch has not been activated, the packer will not return to its home position.

Figure 3-15 Auto-Packing switch



When the Auto-Packing feature is used simultaneously with the multicycle feature, the packer will then perform a preset number of cycles unless a new rolling cart is carried towards the hopper by the automated arm. In such a case, the multicycle feature will then be reset to zero.

When a packing cycle has been interrupted and the packer has returned to its home position, a new cycle will begin when the grabber reaches the start of the arm curve on its way up.

Interrupting a packing cycle prevents cart contents from falling directly over the packer. Piled material over the packer could reduce its efficiency.

- ◆ A blue-lighted Auto-Packing switch means this feature is disabled.
- ◆ A green-lighted Auto-Packing switch means this feature is enabled.

Bleeding Air Out of the Lifting Arm Hydraulic Circuit

When replacing a hydraulic cylinder, a holding valve, or when opening the ALLEY-HAND™ hydraulic circuit, air may enter the hoses located between the proportional valve and the arm cylinder. Because air cannot be completely removed by the normal use of the arm, the system must be bled.

The ALLEY-HAND™ arm is composed of two hydraulic subcircuits, which must be bled individually depending on the modifications done. Those subcircuits are the following:

Grabber hydraulic circuit

This subcircuit controls the open/close motion of the grabber in order to grip containers. It includes a flow divider valve and two cylinders each with a holding valve.

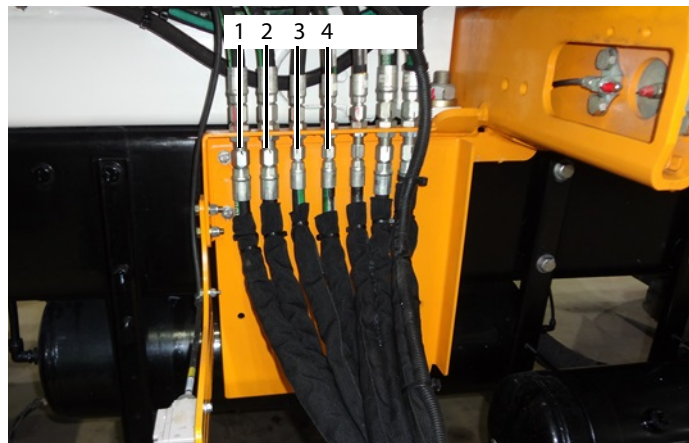
In/Out hydraulic circuit

This subcircuit controls the extend/retract motion of the arm in order to reach containers and come back close to the truck for traveling. It includes two cylinders each with a holding valve.

To bleed the grabber circuit:

1. Apply all safety measures to ensure safety around the vehicle at all times and make sure to have enough room to fully operate the arm and grabber.
2. Make sure that the parking brake is applied.
3. Park the arm against the hopper wall, move the grabber to lower position and fully open the grabber.
4. Loosen (*do not disconnect*) fitting number 2 (see Figure 3-16).

Figure 3-16 Fittings to loosen



5. Using the joystick or the lever on the proportional valve, fully extend the grabber cylinders in order to close the fingers.
6. As soon as a constant and uniform oil flow (without air bubbles) is leaking out, tighten the fitting. Keep the hydraulic function engaged until the fitting is tightened.
7. Loosen (*do not disconnect*) fitting number 1.
8. Fully retract the grabber cylinders in order to open the fingers.
9. Repeat step number 6.

To bleed the In/Out circuit:

1. Repeat steps 1 through 3 of the grabber circuit bleeding procedure on page 35.
2. Loosen (*do not disconnect*) fitting number 3 (see Figure 3-16).
3. Using the joystick or the lever on the proportional valve, fully extend the rail cylinders of the arm.
4. As soon as a constant and uniform oil flow (without air bubbles) is leaking out, tighten the fitting. Keep the hydraulic function engaged until the fitting is tightened.
5. Loosen (*do not disconnect*) fitting number 4.
6. Fully retract the rail cylinders of the arm.
7. Repeat step number 4.

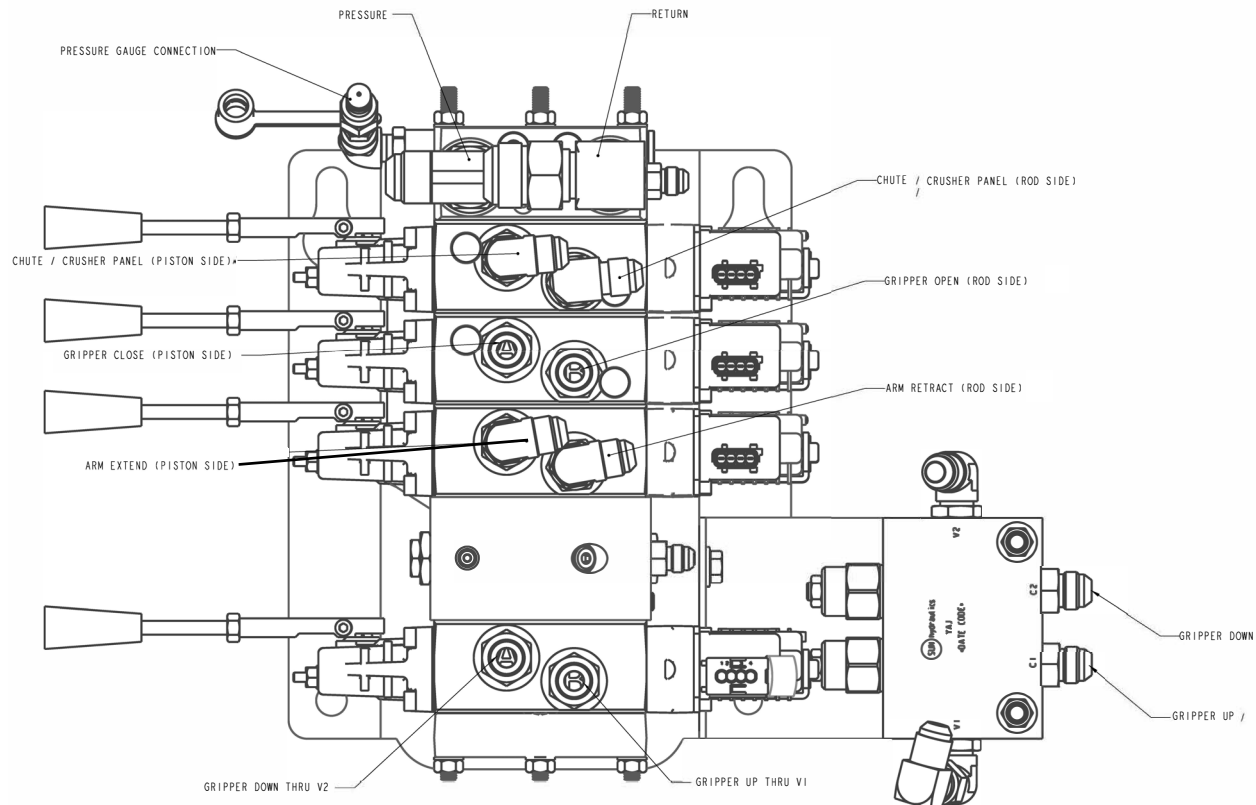
Proportional Valve

Your refuse vehicle is equipped with a proportional valve (see Figure 3-17), as part of the *arm* vane pump, that powers all arm functions (grabber [open/close], lifting arm [extend/retract, up/down], chute [left/right], crusher panel [up/down], etc.) and other options.

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

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

Figure 3-17 Proportional valve



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

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.

Lifting Arm Holding Valves

The ALLEY-HAND™ lifting arm is equipped with cylinder-mounted holding valves. See the table below for the characteristics of the lifting arm holding valves.

Movement	Type of Movement Prevented
In/Out	Cylinder Opening (boom Extension)
Grabber	Cylinder Opening (grabber closure)

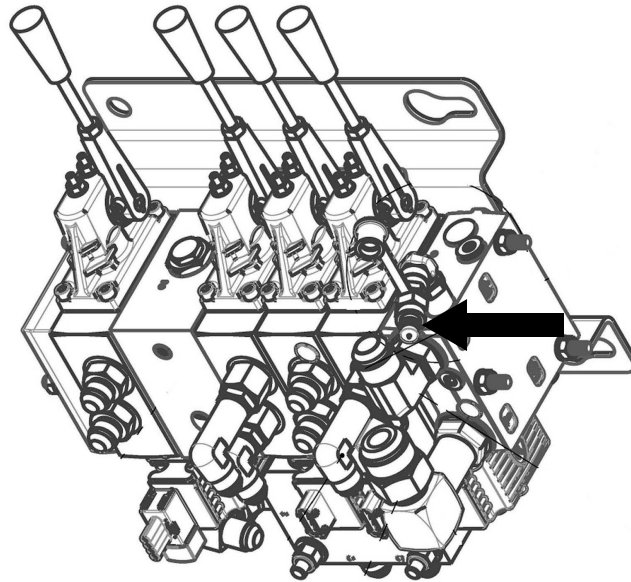
Adjusting Grabber Holding Valve Pressure

NOTE: The flow divider on an ALLEY-HAND™ arm is not adjustable. Pressure adjustment can be done using both grabber cylinder mounted holding valves (see Figure 3-19).

To adjust the grabber holding valve pressure:

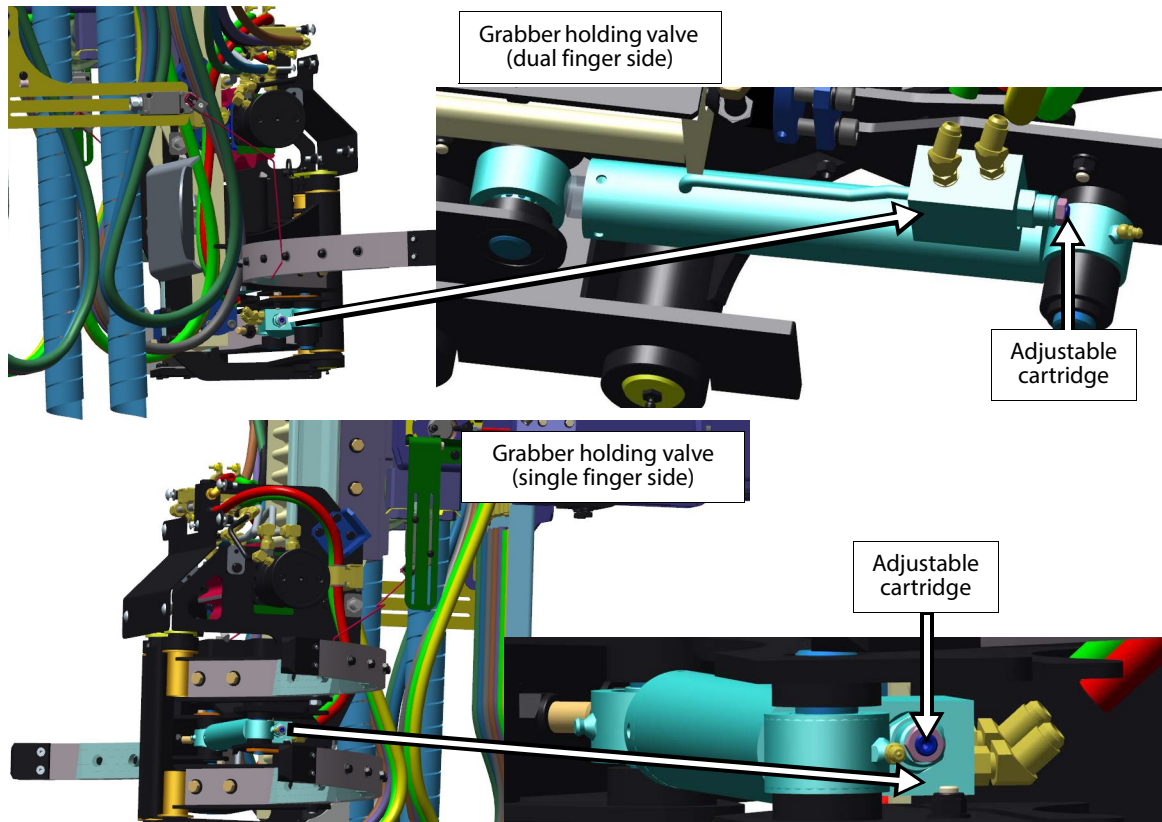
1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Make sure that the parking brake is applied.
3. Locate the grabber holding valves and cartridges (see Figure 3-19).
4. Connect a pressure gauge to the quick connect coupler (see Figure 3-18).

Figure 3-18 Quick connect coupler



5. Start the engine and engage the hydraulic pump.
6. Using the pressure gauge on the automated arm valve, adjust the opening pressure of each of the grabber closing movement cartridges to 550 psi.

Figure 3-19 Location of cylinder mounted holding valves and cartridges



Adjusting In/Out Holding Valve Pressure

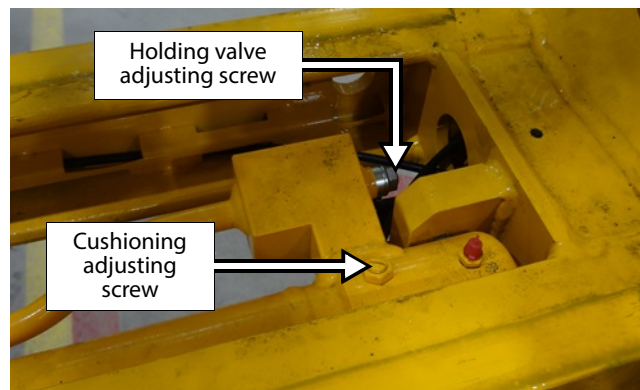
NOTE: There is a holding valve mounted on the in/out cylinder.

To adjust the in/out holding valve pressure:

1. Apply all safety measures to ensure safety around the vehicle at all times.
2. Make sure that the parking brake is applied.
3. Locate the holding valve on the in/out cylinder (see Figure 3-20).
4. Connect a pressure gauge to the automated arm valve (see Figure 3-18).
5. Start the engine and engage the hydraulic pump.
6. Using a lever on the valve, manually extend the ALLEY-HAND™ arm gradually.
7. If the gauge does not indicate a pressure of about 650 psi when the automated arm starts extending, adjust the in/out holding valve adjusting screw to set the pressure properly.

NOTE: Turn the screw counter-clockwise to increase pressure or clockwise to reduce pressure.

Figure 3-20 Holding valve adjusting screw (in/out cylinder)



NOTE: If the cushioning effect on the retraction stroke needs to be adjusted, simply turn the cushioning adjusting screw accordingly: clockwise to increase the cushioning effect; counter-clockwise to reduce it. The cushioning effect on the extension stroke cannot be adjusted.

Adjusting the Arm Vane Pump Relief Valve

Usually, there is no arm vane pump relief valve on an AUTOMIZER ALLEY-HAND™. However, if your unit is equipped with such a valve, it would be located on the top of the pump.

Tighten the relief valve completely on the pump.

The arm retract/extend operating pressure is the same as the main relief. Table 1 lists the operating pressure for each arm function. No adjustments are required for these functions. Only “grabber close” requires proper adjustment to prevent crushing roller carts. See *Adjusting Arm Speed* on page 41 to adjust the grabber load sense relief valve.

See *Pressure and Cycle Time Chart - PVG-32 Circuit* on page 45 for a complete list of pressure settings and cycle times for various proportional valve functions.

Table 1 Arm operating pressure and cycle times

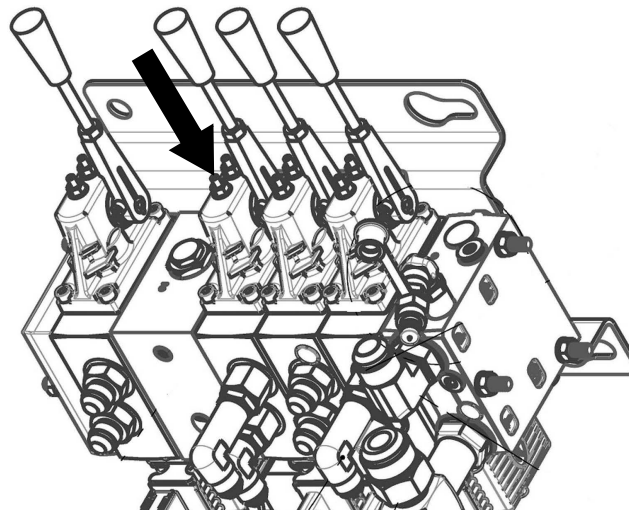
Arm function	Pressure setting (psi)	Cycle time (sec.)
Extension/retraction	2250	3.3-3.8 / 3.0-3.5
Arm up	System pressure	4.0-5.0
Arm down	System pressure	3.5-4.5
Grabber close	1200	1.5-2.0
Grabber open	1200	1.5-2.0

Adjusting Arm Speed

NOTE: No arm speed adjustment is required unless replacing the valve or one of its sections.

Arm speed is controlled by the amount of hydraulic fluid (flow) that is being sent to the arm cylinder. The arm control valve spools can limit the flow of hydraulic oil, depending on the section of the valve¹. Flow is limited by two movement restrictors located on each section.

Figure 3-21 Movement restrictor



Danger!

Do not stand in the path of the arm while carrying out these adjustments.



To adjust arm speed:

1. Secure the area around the path of the arm with barrier tape or barricades.
2. Put the transmission in Neutral, start the engine and engage the hydraulic pump.
3. Clearly identify the stopper screw on the valve that relates to the proper function (boom extension/retraction, grabber open/close).
4. Move the lever to evaluate the arm speed, then release it.
5. Loosen the locknut.
6. Turn the restrictor adjusting screw only one eighth (1/8th) of a turn at a time to clearly feel a significant change in the arm speed.
7. Move the lever again to evaluate the arm speed. Repeat until cycle times are properly set (see *Arm operating pressure and cycle times* on page 40).
8. Once the proper speed is achieved, tighten the locknut.

1. Limiting spool strokes limits the quantity of oil (flow) going through them. Controlling the flow of oil means controlling the arm speed.

Other Pressure Adjustment Procedures

Adjusting Arm Up Holding Valve Pressure

NOTE: This is the pressure at which the grabber starts to move up.

NOTE: This adjustment is highly affected by the arm mechanism and therefore not very precise.

To adjust the arm up holding valve pressure:

1. Secure the area around the path of the arm with barrier tape or barricades.
2. Make sure that all hoses are tight and not leaking.
3. Connect a pressure gauge (0–4000 psi) to the quick-connect coupler on the proportional valve (see Figure 3-18).
4. Install a lever on the proportional valve section corresponding to the grabber up/down function.
5. Move the lever very slowly until the grabber begins to move upwards, and read the pressure value on the gauge.

Pressure should be 900 psi $\pm$ 50 psi.

6. If pressure is too high, turn the adjusting screw (see Figure 3-22) clockwise to decrease. If too low, turn it counter-clockwise.

Each $\frac{1}{4}$ turn of the screw varies the pressure by approximately 400 psi.

Adjusting Arm Up Holding Valve Pressure (Cartridge Set Value)

NOTE: This pressure adjustment is more precise.

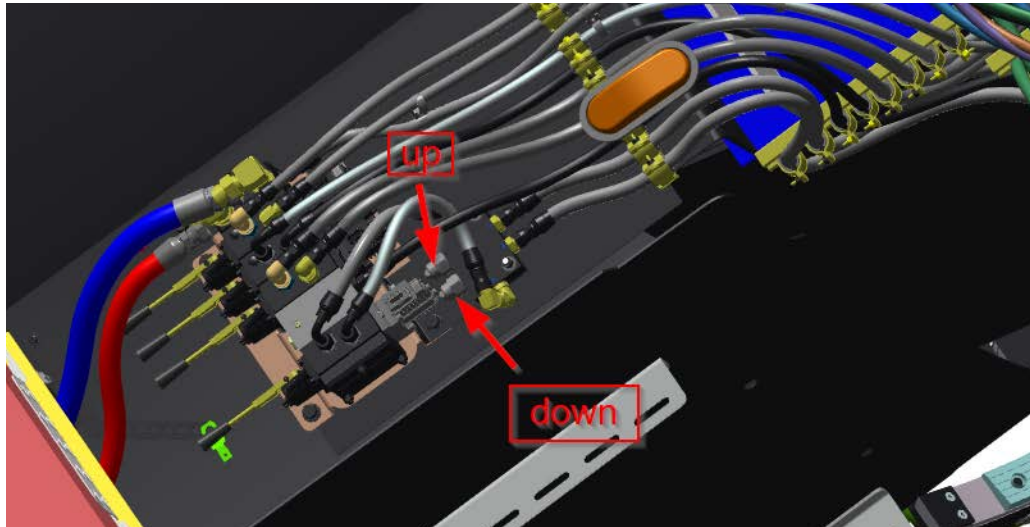
NOTE: This pressure cannot be read directly on a truck. Use a hydraulic hand pump and a test block in order to be able to read it.

To adjust the arm up holding valve pressure (cartridge set value):

1. Secure the area around the path of the arm with barrier tape or barricades.
2. Make sure that all hoses are tight and not leaking.
3. Connect a pressure gauge (0–4000 psi).
4. Install a lever on the grabber up/down section of the valve.
5. On the grabber up/down section of the valve, unscrew the locknut on the adjusting screw (see Figure 3-22).
6. Unscrew the adjusting screw completely.
7. Screw the adjusting screw clockwise by giving it 2.5 turns.
8. Tighten the locknut.

9. Move the lever very slowly until the grabber begins to move upwards, and read the pressure value on the gauge.
Pressure should be $900 \text{ psi} \pm 50 \text{ psi}$.

Figure 3-22 Adjusting screws



Adjusting Arm Down Holding Valve Pressure

NOTE: This is the pressure at which the grabber starts to move down.

NOTE: This adjustment is highly affected by the arm mechanism and therefore not very precise.

To adjust the arm down holding valve pressure:

1. Secure the area around the path of the arm with barrier tape or barricades.
2. Make sure that all hoses are tight and not leaking.
3. Connect a pressure gauge (0–4000 psi) to the quick-connect coupler on the proportional valve (see Figure 3-18).
4. Install a lever on the proportional valve section corresponding to the grabber up/down function.
5. Move the lever very slowly until the grabber begins to move downwards, and read the pressure value on the gauge.

Pressure should be $650 \text{ psi} \pm 50 \text{ psi}$.

6. If pressure is too high, turn the adjusting screw (see Figure 3-22) clockwise to decrease. If too low, turn it counter-clockwise.

Each $\frac{1}{4}$ turn of the screw varies the pressure by approximately 400 psi.

Adjusting Arm Down Holding Valve Pressure (Cartridge Set Value)

NOTE: This pressure adjustment is more precise.

NOTE: This pressure cannot be read directly on a truck. Use a hydraulic hand pump and a test block in order to be able to read it.

To adjust the arm down holding valve pressure (cartridge set value):

1. Secure the area around the path of the arm with barrier tape or barricades.
2. Make sure that all hoses are tight and not leaking.
3. Connect a pressure gauge (0–4000 psi).
4. Install a lever on the grabber up/down section of the valve.
5. On the grabber up/down section of the valve, unscrew the locknut on the adjusting screw (see Figure 3-22).
6. Unscrew the adjusting screw completely.
7. Screw the adjusting screw clockwise by giving it 3 turns.
8. Tighten the locknut.
9. Move the lever very slowly until the grabber begins to move downwards, and read the pressure value on the gauge.

Pressure should be 650 psi $\pm$ 50 psi.

Brake Release Pressure

No adjustment is required. The value given on page 45 (350 psi $\pm$ 25 psi) is a fixed value and provided for reference only.

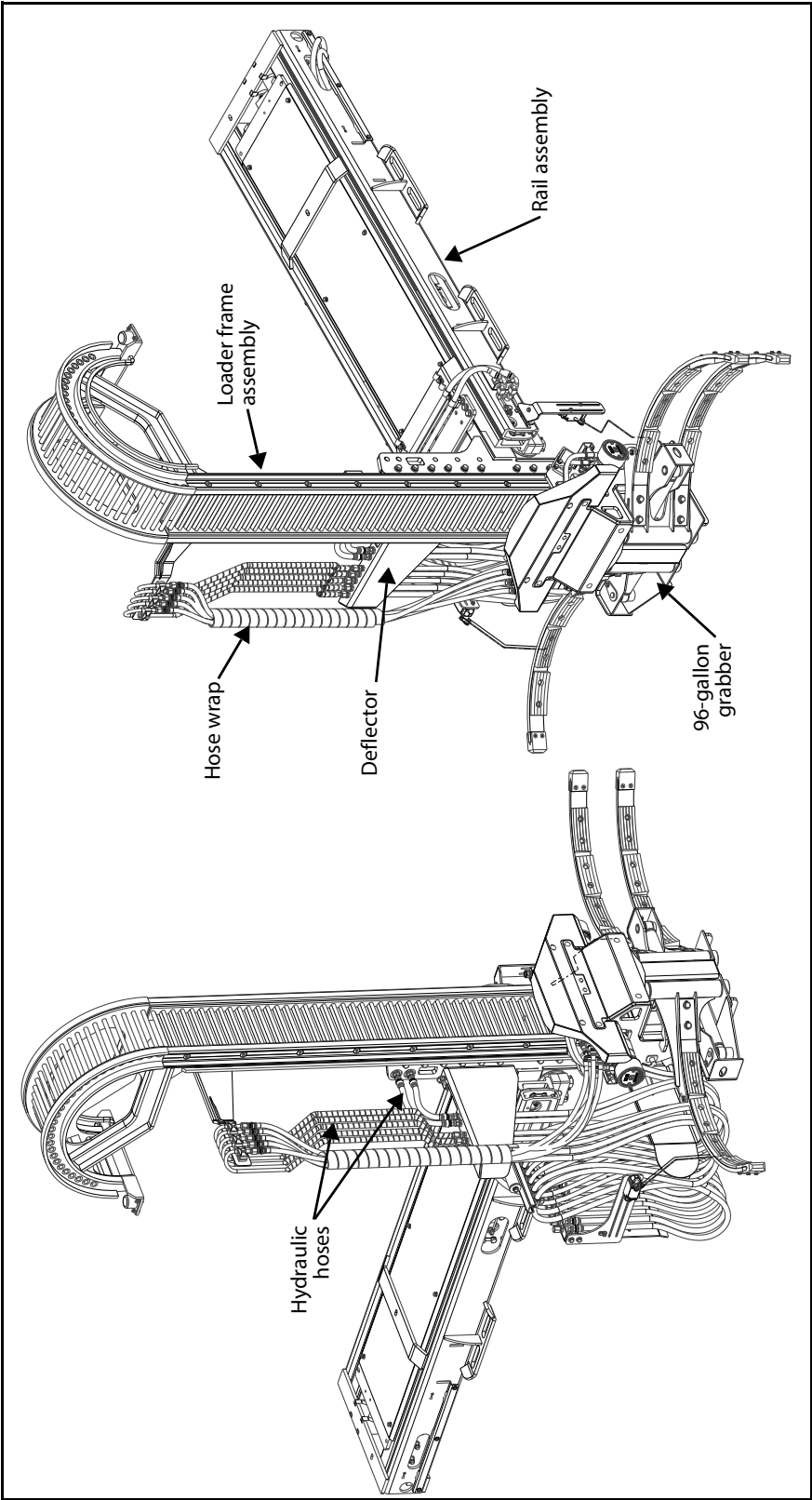
Pressure and Cycle Time Chart

Table 2 Pressure and Cycle Time Chart - PVG-32 Circuit

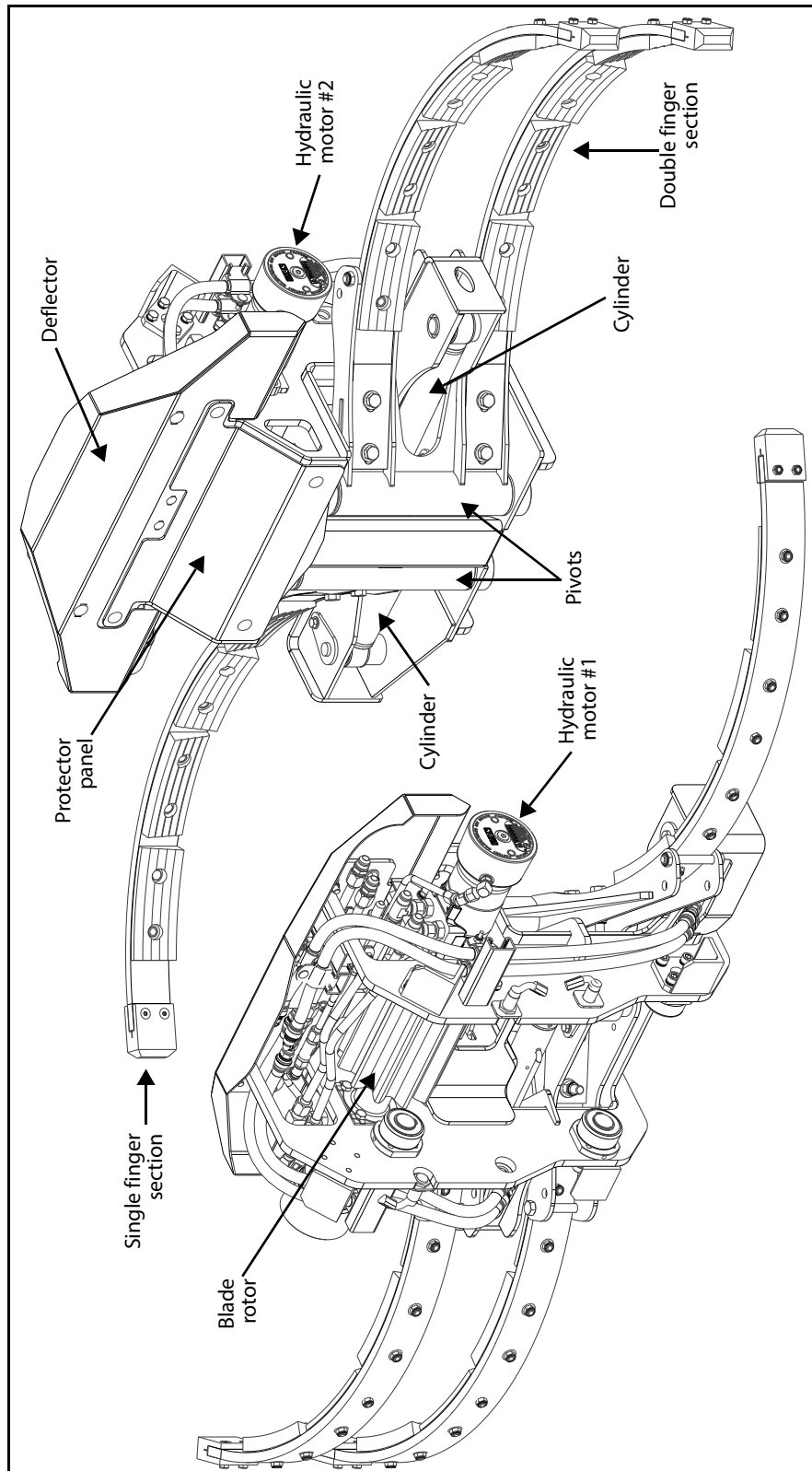
Function	Pressure Setting	Engine RPM	Minimum Cycle Time (sec.)	Maximum Cycle Time (sec.)
Main relief valve ALLEY-HAND™	2250 ± 50 psi	700 ¹	n/a	n/a
Dump valve R5P (if adjustable)	2450 ± 50 psi	700 ¹	n/a	n/a
Grabber close, std.	1200 ± 50 psi	700 ¹	1.5	2.0
Grabber open, std.	1200 ± 50 psi	700 ¹	n/a	n/a
Grabber close cylinder holding valve	550 ± 50 psi	700 ¹	2.5	3.0
Arm up	system pressure	700 ¹	4.0	5.0
Arm down	system pressure	700 ¹	3.5	4.5
Arm up holding valve (pressure when arm starts to move up)	900 ± 50 psi	700 ¹	n/a	n/a
Arm up holding valve - Cartridge set value	3000 ± 50 psi	700 ¹	n/a	n/a
Arm down holding valve (pressure when arm starts to move down)	650 ± 50 psi	700 ¹	n/a	n/a
Arm down holding valve - Cartridge set value	2600 ± 50 psi	700 ¹	n/a	n/a
Brake release pressure	350 ± 25 psi	700 ¹	n/a	n/a
Arm extend	system pressure	700 ¹	3.3	3.8
Arm retract	system pressure	700 ¹	3.0	3.5
Arm extend, cylinder holding valve (to keep arm retracted)	650 ± 50 psi	700 ¹	n/a	n/a
Crusher panel up	2000 ± 50 psi		3.0	5.0
Crusher panel down	2000 ± 50 psi		2.0	4.0
Crusher panel down holding valve (to keep panel up)	600 ± 50 psi		n/a	n/a

¹The speed of an E-PTO is 1900 rpm.

Schematic — ALLEY-HAND™ Arm



Schematic — 96-Gallon Grabber





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For technical support and parts ordering, the body serial number of your vehicle is required. LabriePlus recommends keeping record of the information found on the body serial number stickers located in the cab doorjamb and street side front corner of the body.

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