

**PENBPAC** WITTKE RETRO FL™

## MAINTENANCE MANUAL



 **labrie**  
Labrie Enviroquip Group



**WITTKE**

**PENBPAC**





**WITTKE RETRO FL™**  
**MAINTENANCE MANUAL**



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# Introduction

The purpose of this manual is to introduce maintenance personnel to the procedures for repairing and servicing the WITTKE RETRO™. For information regarding operational procedures, refer to the Operator's Manual for the WITTKE RETRO™.

## Important Notes for Maintenance Personnel

It is imperative that you carefully review this manual prior to operating and/or performing any service to your new WITTKE RETRO™ front loader.

Upon receipt of your new WITTKE RETRO™, perform a complete lubrication of the equipment based on the lubrication guide found on page 49 and on the decal applied to the side of the body. Factory lubrication is adequate for production and transport purposes only. In addition, the return filter element must be replaced after 50 hours of use, as per instructions shown on page 57.

With your safety in mind, we would like to remind you that **ONLY QUALIFIED PERSONNEL** should service the hydraulic, electrical, and pneumatic systems on your refuse vehicle. In addition, these mechanics should be fully versed in the operation of this unit.

## Mission Statement

Labrie Enviroquip Group is dedicated to providing innovative designs, customized quality equipment and elite customer service.

## Vision Statement

The Labrie Enviroquip Group Team will successfully lead the way the world views waste management. We will excel at enhancing our community and protecting the global environment. We are committed to being a profitable company for our customers, shareholders and employees.

## NHTSA Warning

Defects found with your WITTKE RETRO™ Front Loader that are believed to cause injury or death or cause a crash should be immediately reported to the National Highway Traffic Safety Administration.

In addition, these defects should be immediately reported to Labrie Enviroquip Group by notifying our service department.

**To contact NHTSA, you may call:**

1( 800) 424 9393 *or* 1 (202) 366 0123

**Written communications may be directed to:**

NHTSA, U.S. Department of Transportation, Washington, D.C. 20590

Additional motor vehicle safety information is available from the above noted toll-free hotline.

# To Contact Labrie Plus

## In the U.S.

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

## In Canada

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

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

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# Safety

Safety is always of prime importance when operating or servicing any type of equipment. All employees working on the WITTKE RETRO FL™ must be aware of the safety practices and features detailed in this section.

Personnel in charge of maintenance should not do any maintenance on the equipment if they are not well acquainted with the operations of the equipment as well as all safety precautions of such operations. Carefully read the SAFETY, CONTROLS, and OPERATION sections of the WITTKE RETRO FL™ Operator's Manual, prior to attempting any maintenance of your WITTKE RETRO FL™ unit.

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## 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.

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Labrie Enviroquip Group cannot accept any responsibility for failures and/or injuries caused by repairs done by the user.

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**NOTE:** Before doing any maintenance work on the unit, all safety regulations must be respected.

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## Safety Precautions for the Owner

Labrie Enviroquip Group strongly believes that safety is a team effort. Bearing this in mind, we encourage the employer to follow these guidelines:

- ♦ Provide all employees – both operators and maintenance personnel – with proper training that includes safe vehicle operation procedures and ensure that those procedures are monitored on a continual basis.
- ♦ Ensure that all employees have read this manual.

- ◆ Provide operators with the necessary route rules and regulations. Instruct operators on awareness to road hazards such as other people, obstructions and dimensional constraints which includes familiarity with the vehicle width and height, both while at rest and during operation.
- ◆ Ensure that all vehicle safety features, such as body and tailgate props are properly used by all personnel when operating or servicing the vehicle.
- ◆ Provide necessary safety equipment and apparel.
- ◆ Ensure that a daily vehicle inspection is performed. Document the inspections, including all maintenance, repair and malfunction items.

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**IMPORTANT: Do not allow operation of the WITTKE RETRO FL™ if damaged or malfunctioning. Have all repairs performed immediately.**

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## Safety Precautions for the Employee

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

- ◆ Ensure that you have been provided with safe operating and/or maintenance service training and procedures by your employer prior to operating the vehicle or performing maintenance service.
- ◆ Carefully read this manual.
- ◆ Obey proper operating procedures, safety guidelines and warning decals.
- ◆ Use the vehicle only as intended.
- ◆ Perform a daily vehicle inspection that includes all operating systems, all vehicle safety equipment and safety decals. Ensure that the inspection is documented and bring any defects to the attention of your supervisor.
- ◆ Prior to operating the vehicle, ensure that all mirrors, windows and lights are clean and properly adjusted. Ensure that all cameras and monitors are properly adjusted and function correctly.
- ◆ On your daily route, or during your service duties, stay safe; obey all safety decals and safe operating procedures. Watch for other people, obstructions and overhead hazards.
- ◆ Always utilize the vehicle's safety features, such as tailgate props and body prop.
- ◆ Remember to wear all safety equipment prescribed by your employer.

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

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## WITTKE RETRO FL™ Road Rules

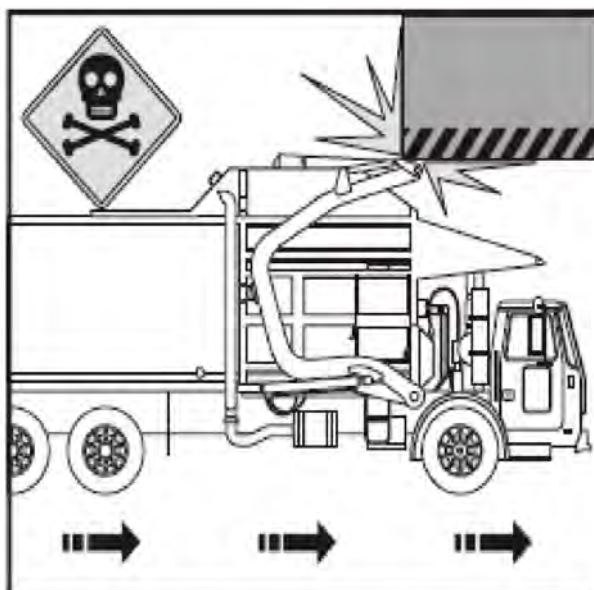
Rule the road with safety. Stay safe and help keep those around you safe. Prior to performing your daily route, know and obey the route rules and regulations provided by your employer and follow these important guidelines. As an operator you should never do the following:

1. Drive with the body raised.
2. Drive without the tailgate latch blocks in place or the tailgate ajar.
3. Exit the cab without engaging the chassis parking brake.



4. Back up the truck while unloading refuse.
5. Hoist the body while on uneven ground.
6. Prop a loaded body with the hoist safety prop.
7. Drive with arms in overheight condition.
8. 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 “Lockout/Tagout Procedure” on page 37.

## Overheight Caution



In some locations the front loader may be overheight when the arms are in the full up travel position. Consult local regulations or confer with your supervisor if unsure.

## Safety Controls

Safety should be your number one priority. Before operating the Front Loader, the operator must be completely familiar with the location, operation and function of all controls and indicators related to the operation of the unit. Refer to “In-Cab Control Console” on page 39 in the Wittke Retro Operator’s Manual.

## Safety Decal Categories

Recognizing and understanding the safety decals affixed to your vehicle can prevent damage and could prevent injury or even death. Decals fall into the following four categories:

Figure 2-1 Safety decal categories



**DANGER:** White letters on red background. Extreme hazard of severe injury or death



**WARNING:** Black letters on orange background. Danger of death or severe injury



**CAUTION:** Black letters on yellow background. Danger of injury or equipment damage



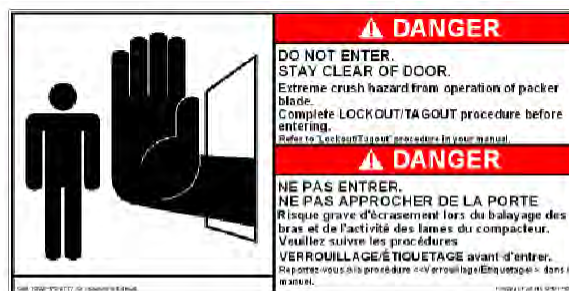
**NOTICE:** Black letters on purple background. Instructions only.

## Safety Decals and Locations

### Do not Enter! Stay Clear of Door



English/Spanish Part No. 0401-553



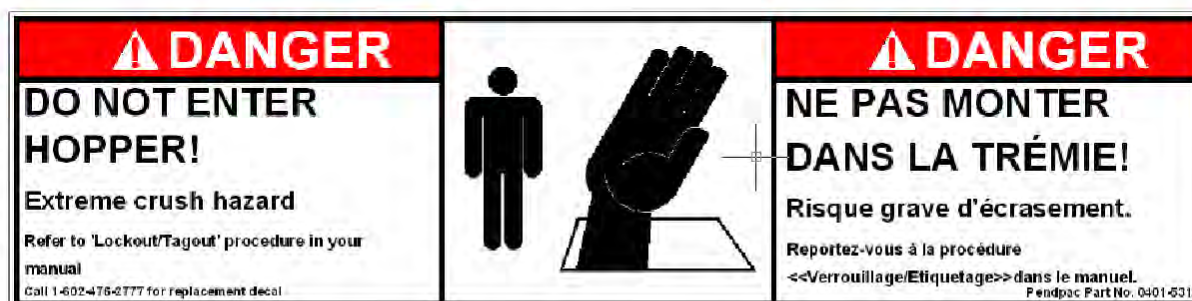
English/French Part No. 0401-467

Location: lower, forward half of hopper access door.

## Do not Enter Hopper! Extreme Crush Hazard



English/Spanish Part No. 0401-554



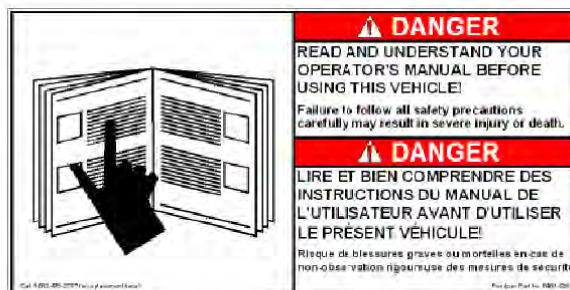
English/French Part No. 0401-531

Location: curb side hopper wind wing, at the top of the roof access ladder and on leading edge of canopy extension near chassis cab guard.

## Read and Understand Your Operating Manual Before Using This Vehicle



English/Spanish Part No. 0401-525



English/French Part No. 0401-526

Location: in chassis cab, attached to inside of driver's (street side) door.

## Keep Hands and Body Clear



English/Spanish Part No. 0401-530



English/French Part No. 0401-528

Location: front bulkhead vertical post, just above arm pivot tube



## Stand Clear of Tailgate! Extreme Crush Hazard



English/Spanish Part No. 0605-794

English/French Part No. 0401-532

Location: ahead of the tailgate latch box, affixed to the body side wall

## Service Hoist Handle



English/Spanish Part No. 0400-978



English/French Part No. 0401-533

Location: on cover of Service Hoist pump

## Do Not Climb on Canopy

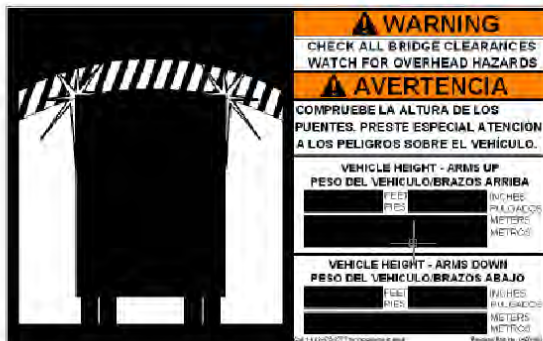


English/Spanish Part No. 0400-981

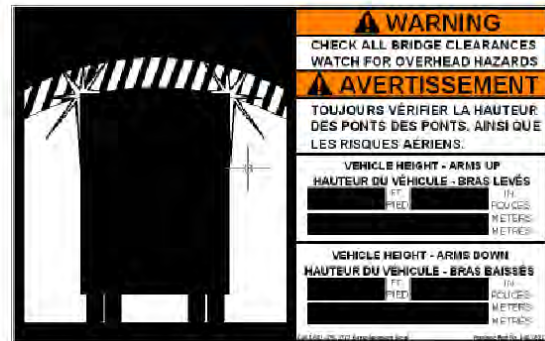


English/French Part No. 0401-466

## Check All Bridge Clearances



English/Spanish Part No. 0400-982



English/French Part No. 0401-527

Location: in cab on sun visors, readable when sun visor is stowed.

## Do Not Drive When Overheight Warning Lamp is Illuminated



English/Spanish Part No. 0401-555



English/French Part No. 0401-534

Location: in cab on sun visors, readable when sun visor is stowed.

## Tailgate Locks Must Be In Place



English/Spanish Part No. 0605-788



English/French Part No. 0401-535

Location: sides of tailgate, just behind the latch.



## Crush Hazard. Body May Fall



English/Spanish Part No. 0605-835



English/French Part No. 0401-536

Location: on chassis frame, both sides, near body prop location.

## The Top of This Vehicle is High Enough



English/Spanish Part No. 0605-856



English/French Part No. 0401-537

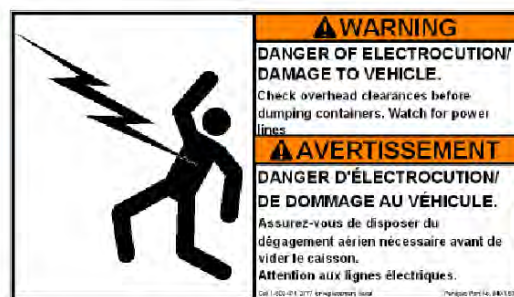
Location: beside the roof access ladder, half-way up, affixed to the body side wall.



## Danger of Electrocution/Damage to Vehicle



English/Spanish Part No. 0605-809



English/Spanish Part No. 0401-538

Location: in cab on sun visors, readable when sun visor is stowed.

## Frame is Heat Treated



English/Spanish Part No. 0401-557



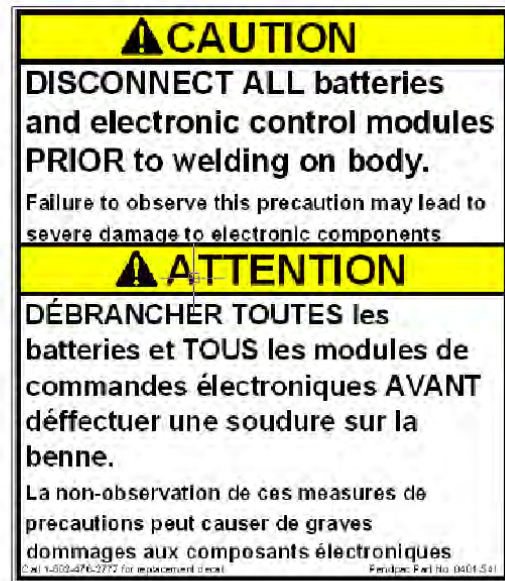
English/French Part No. 0401-540

Location: one each side on chassis frame rail

## Disconnect All Batteries and Electronic Control Modules



English/Spanish Part No. 0605-813



English/French Part No. 0401-541

Location: affixed to battery box cover.

## Remove Cap Slowly



English/Spanish Part No. 0605-843



English/French Part No. 0401-542

Location: on hydraulic tank, near filler cap.

Extension Ladder Must Be Secured

**⚠ CAUTION**

EXTENSION LADDER must be SECURED in the HOME position while vehicle is in use.

**⚠ PRUDENCIA**

Asegúrese que la Escalera de Extension se encuentre en posición plegada cuando el vehículo este en movimiento.

For replacement decal, call 1-602-476-2777      Pandapac Part No. 0605-815

English/Spanish Part No. 0605-815

**⚠ CAUTION**

EXTENSION LADDER must be SECURED in the HOME position while vehicle is in use.

**⚠ ATTENTION**

ECHELLE EXTENSIBLE doit Être sécuriser dans position FERMER durant l'utilisation du véhicule.

For replacement decal, call 1-602-476-2777      Pandapac Part No. 0401-543

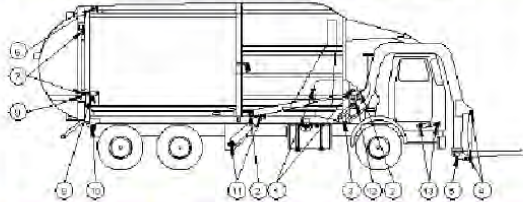
English/French Part No. 0401-543

Location: near stowage latch for roof access ladder.

Lubrication Points

**⚠ CAUTION**

Insuficiente falta de lubricante resultara en danos hidraulico!



**⚠ ATENCION**

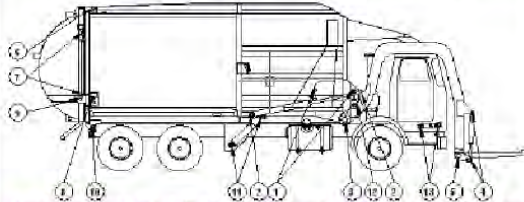
ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	PACKER PANEL CYLINDER PINS	4	9	TAILGATE LATCH PINOT PINS	2
2	ARM CYLINDER PINS	4	9	TAILGATE LATCH ROLLERS	2
3	ARM PIVOT SHAFT	4	10	BODY HINGE PINS	2
4	FOREM CYLINDER PINS	4	11	HOIST SERVICE HOIST CYLINDER PINS	4
5	FOREM PIVOT SHAFT	2	12	HOPPER CLEAROUT DOOR HINGES	2
6	TAILGATE HINGE PINS	2	13	PUMP DRIVE LINE U-JOINTS & SLIP JOINTS	3
7	TAILGATE CYLINDER PINS	4			

LUBRICANTE INTERVALO - CADA 50 HORAS O SEMANAL

English/Spanish Part No. 0401-556

**⚠ CAUTION**

Insufficient lubrication is a major cause of component failure!



**⚠ ATTENTION**

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	PACKER PANEL CYLINDER PINS	4	9	TAILGATE LATCH PINOT PINS	2
2	ARM CYLINDER PINS	4	9	TAILGATE LATCH ROLLERS	2
3	ARM PIVOT SHAFT	4	10	BODY HINGE PINS	2
4	FOREM CYLINDER PINS	4	11	HOIST SERVICE HOIST CYLINDER PINS	4
5	FOREM PIVOT SHAFT	2	12	HOPPER CLEAROUT DOOR HINGES	2
6	TAILGATE HINGE PINS	2	13	PUMP DRIVE LINE U-JOINTS & SLIP JOINTS	3
7	TAILGATE CYLINDER PINS	4			

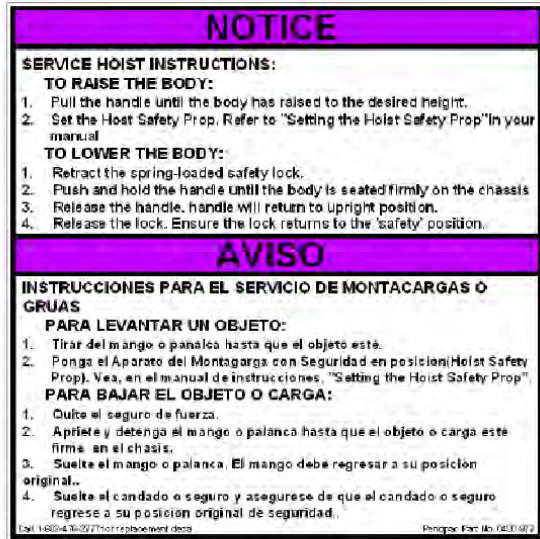
LUBRICATION INTERVAL - WEEKLY, OR EVERY 50 HOURS

English/French Part No. 0401-539

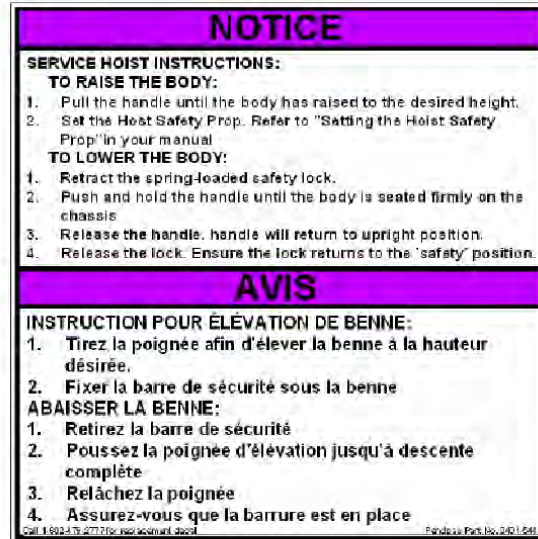
Location: half-way back, at eye level, affixed to the body wall.



## Service Hoist Instructions



English/Spanish Part No. 0605-815



English/Spanish Part No. 0605-815

Location: on cover of Service Hoist Pump

## Air Tank Drain Notice



English/Spanish Part No. 0401-468



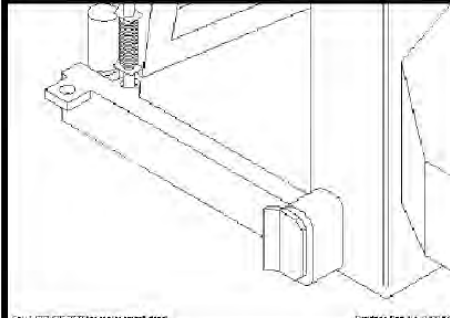
English/French Part No. 0401-547

Location: near lowest air tank drain valve.

## Setting the Tailgate Props (Curb Side)

NOTICE
<p><b>SETTING THE TAILGATE PROPS:</b></p> <ol style="list-style-type: none"> <li>1. Ensure there is adequate room behind the vehicle to open the gate.</li> <li>2. Remove both tailgate locks.</li> <li>3. Open the tailgate by approximately 3 feet (0.91 m).</li> <li>4. Unlatch each prop from its stored position and swing into the open position. Reset the latch.</li> <li>5. Close the tailgate as much as possible. Both props should fit securely into the tailgate prop sockets.</li> <li>6. Complete the LOCKOUT/TAGOUT procedure before working under propped tailgate.</li> </ol>
AVISO
<p><b>FIJAR LOS APOYOS DE LA PUERTA POSTERIOR:</b></p> <ol style="list-style-type: none"> <li>1. Asegúrese allí es sitio adecuado detrás del vehículo de abrir la puerta posterior.</li> <li>2. Quite ambas cerraduras de la puerta posterior.</li> <li>3. Abra la puerta posterior por aproximadamente 3 pies (0.91 m).</li> <li>4. Abra cada apoyo de su posición almacenada y haga pivotar en la posición abierta. Realice el cierre.</li> <li>5. Cierre la puerta posterior tanto como sea posible. Ambos apoyos deben ir con seguridad en los zócalos de la puerta posterior.</li> <li>6. Termine el procedimiento de lockout/tagout antes de trabajar debajo de puerta posterior apoyada.</li> </ol>


English/Spanish Part No. 0605-798

NOTICE
<p><b>Setting the tailgate props:</b></p> <ol style="list-style-type: none"> <li>1. Ensure there is adequate room behind the vehicle to open the gate.</li> <li>2. Remove both tailgate locks.</li> <li>3. Open the tailgate by approximately 3 feet (0.91 m).</li> <li>4. Unlatch each prop from its stored position and swing into the open position. Reset the latch.</li> <li>5. Close the tailgate as much as possible. Both props should fit securely into the tailgate prop sockets.</li> <li>6. Complete the LOCKOUT/TAGOUT procedure before working under propped tailgate.</li> </ol>
AVIS
<p><b>Installation de la barre de sécurité:</b></p> <ol style="list-style-type: none"> <li>1. Assurez-vous d'une distance sécuritaire en arrière du hayon.</li> <li>2. Retirez les barres de sécurité.</li> <li>3. Ouvrir le hayon d'environ 3 pi. (0.91 m).</li> <li>4. Dégoupillez et mettez en position d'ouverture et regoupiller.</li> <li>5. Fermer doucement le hayon afin d'insérer les barres à l'endroit prévu.</li> <li>6. Compléter cette procédure chaque fois qu'un service est requis.</li> </ol>


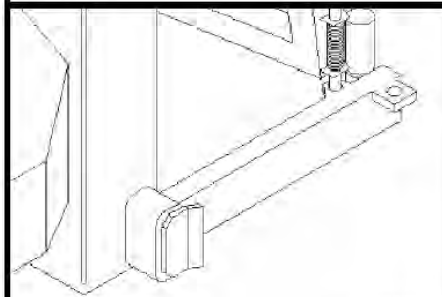
English/French Part No. 0401-545

Location: above the tailgate latch box, affixed to the body side wall, curb side.

## Setting the Tailgate Props (Street Side)

<p><b>NOTICE</b></p> <p><b>SETTING THE TAILGATE PROPS:</b></p> <ol style="list-style-type: none"> <li>1. Ensure there is adequate room behind the vehicle to open the gate</li> <li>2. Remove both tailgate locks</li> <li>3. Open the tailgate by approximately 3 feet (0.91 m)</li> <li>4. Unlatch each prop from its stored position and swing into the open position. Reset the latch</li> <li>5. Close the tailgate as much as possible. Both props should fit securely into the tailgate prop sockets</li> <li>6. Complete the LOCKOUT/TAGOUT procedure before working under propped tailgate.</li> </ol>
<p><b>AVISO</b></p> <p><b>FIJAR LOS APOYOS DE LA PUERTA POSTERIOR:</b></p> <ol style="list-style-type: none"> <li>1. Asegúrese allí es sitio adecuado detrás del vehículo de abrir la puerta posterior.</li> <li>2. Quite ambas cerraduras de la puerta posterior.</li> <li>3. Abra la puerta posterior por aproximadamente 3 pies (0.91 M).</li> <li>4. Abra cada apoyo de su posición almacenada y haga pivotar en la posición abierta. Resete el cierre.</li> <li>5. Cierre la puerta posterior tanto como sea posible. Ambos apoyos deben fit con seguridad en los zócalos de la puerta posterior.</li> <li>6. Termine el procedimiento de lockout/tagout antes de trabajar debajo de puerta posterior apoyada.</li> </ol>
 <p>Call 1-800-475-2771 for additional support</p> <p>Product Part No. 0401-558</p>

English/Spanish Part No. 0401-558

<p><b>NOTICE</b></p> <p><b>Setting the tailgate props:</b></p> <ol style="list-style-type: none"> <li>1. Ensure there is adequate room behind the vehicle to open the gate</li> <li>2. Remove both tailgate locks</li> <li>3. Open the tailgate by approximately 3 feet (0.91 m)</li> <li>4. Unlatch each prop from its stored position and swing into the open position. Reset the latch</li> <li>5. Close the tailgate as much as possible. Both props should fit securely into the tailgate prop sockets</li> <li>6. Complete the LOCKOUT/TAGOUT procedure before working under propped tailgate.</li> </ol>
<p><b>AVIS</b></p> <p><b>Installation de la barre de sécurité:</b></p> <ol style="list-style-type: none"> <li>1. Assurez-vous d'une distance sécuritaire en arrière du hayon</li> <li>2. Retirez les barres de sécurité</li> <li>3. Ouvrir le hayon d'environ 3 pi (0.91 m)</li> <li>4. Dégoupillez et mettre en position d'ouverture et regoupiller</li> <li>5. Fermer doucement le hayon afin d'insérer les barres à l'endroit prévu</li> <li>6. Compléter cette procédure chaque fois qu'un service est requis</li> </ol>
 <p>Call 1-800-475-2771 for additional support</p> <p>Product Part No. 0401-546</p>

English/French Part No. 0401-546

Location: above the tailgate latch box, affixed to the body side wall, street side.



## Diesel Fuel Notice



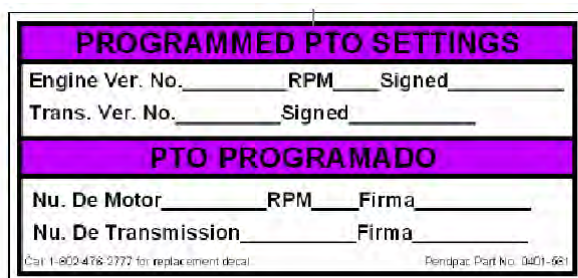
English/Spanish Part No. 0401-560



English/French Part No. 0401-548

Location: on fuel tank, near filler cap.

## Programmed PTO Settings



English/Spanish Part No. 0401-561



English/French Part No. 0401-549

Location: inside cab, affixed to the driver's (street side) door.

---

**NOTE:** Do not use PTO settings; use MDM for overspeed.

---

## Hydraulic Fluid Notice



English/Spanish Part No. 0605-846



English/French Part No. 0401-551

Location: on hydraulic tank, near filler cap.

## Hydraulic Oil Grade Notice



English/Spanish Part No. 0401-562



English/Spanish Part No. 0401-550

Location: on hydraulic tank, near filler cap.

## Hydraulic Oil Fill Level



English/Spanish Part No. 0605-967



English/French Part No. 0401-552

Location: on hydraulic tank sight gauge at proper fill height.

---

**IMPORTANT:** Failure to heed all safety decals on your vehicle and in this manual may lead to injury or death.

---



# Safety Features

Your unit may not have all the safety features explained here. Check with your supervisor or maintenance department if you have any questions or concerns.

## Automatic Grease System (optional)

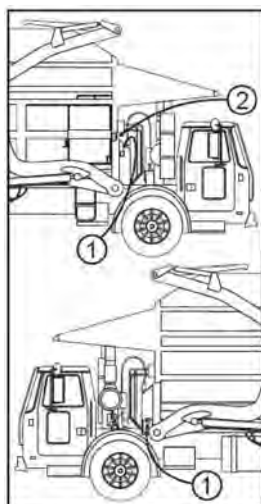
This system ensures all cylinder pins and related parts receive the required amount of grease. Consult the OEM manual for more information.

**Figure 2-2 Automatic Grease System**



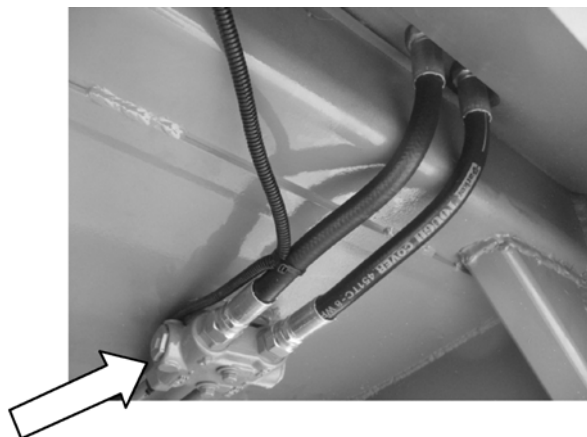
## External Access Pack Cylinder Grease Fittings

Pins at the packer blade end of the cylinders are remotely greased via two grease fittings on the curb side front of the packer blade. Pins at the front header end of the cylinders are directly greased by way of two grease fittings that are positioned on the outside of the front body. Refer to “Lubrication” on page 49.



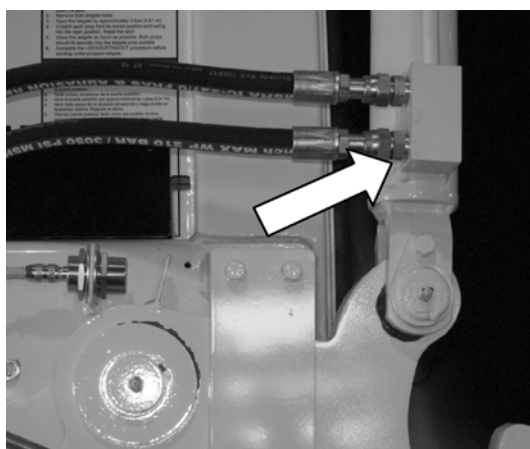
- (1) Packer blade end cylinder pin grease fittings
- (2) Front header end cylinder pin grease fittings

## Tailgate Lock Valves



The tailgate lock valves ensure that the tailgate, when open, must be “powered down”. In other words, it cannot close via gravity. These lock valves also prevent the tailgate from unlocking if it is not “powered up”.

## Tailgate Restrictor Fittings



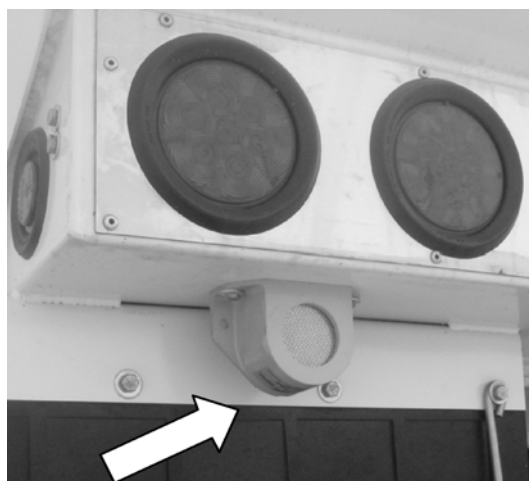
Located in the bottom part of the tailgate cylinders, the restrictor prevents rapid decent of the tailgate in the case of a hose failure.

## Hoist Restrictor/Check Valve



Located in the port of the hoist or service hoist cylinders, the restrictor prevents rapid descent of the body in the case of a hose failure.

## Backup Alarm



Located at the rear of the chassis, the backup alarm emits an audible warning whenever the transmission is in “reverse” or the tailgate is ajar or opened.

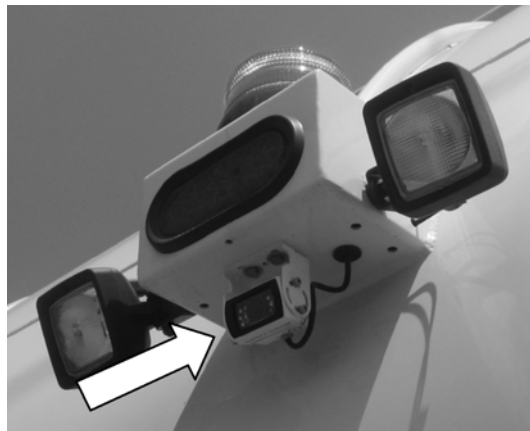
## Global Motion Sensors (optional)

These tailgate-mounted sensors set the parking brake and sound a buzzer when an obstruction is detected behind the unit. Consult the OEM manual for more information.

Figure 2-3 Global motion sensor



## Rear Vision Camera



A camera is mounted to the tailgate, sending a live image of the view behind the truck to the in-cab mounted monitor. The monitor can be set to either come on in reverse only, or to be on continuously.

## Overheight Warning Lamp



A red indicator lamp with label is mounted to the dash so as to be in the driver's field of view when looking forward. The indicator illuminates whenever the arms/forks are above 13'-6" in height.

## Body Raised Buzzer

An audible warning is transmitted by the MDM control panel whenever the body is raised and not at rest on the chassis frame.

## Access Door Open Buzzer

An audible warning is transmitted by the MDM control panel whenever the hopper access door is not completely closed.

## Amber Warning Lamp

An amber warning lamp, located in the in-cab control console, illuminates to warn the operator if:

- ♦ The packing panel is not home
- ♦ The top door is not open
- ♦ The tailgate is ajar

## Red Warning Lamp

A red warning lamp, located in the in-cab control console, illuminates to warn the operator if:

- ♦ The hopper access door is not closed
- ♦ The tailgate is fully opened
- ♦ The body is raised

## Pump “On” Indicator Lamp

A red indicator lamp, located in the pump engage switch, illuminates whenever the hydraulic pump is on.

## Auto Pack Indicator Lamp

A green indicator lamp, located in the Auto Pack control button, illuminates whenever Auto Pack is engaged.

## Doors Enable Switch

This switch must be depressed simultaneously with the top door or tailgate switches to allow activation.

## Body Safety Prop



The body safety prop is provided to support the body for maintenance purposes only. The prop ***will only support an empty body***. Never support a loaded body with this prop. Also, before using the body safety prop be sure the truck is on solid level ground.

## Setting the Body Safety Prop

The body safety prop is designed to stabilize the body in a raised position in order to safely work beneath the body. The body safety prop is standard equipment on full eject units with a service hoist, and on tip to dump units.

---

**NOTE:** The body safety prop must be engaged when accessing the underside of a raised body. Do not use the body safety prop to support a loaded body!

---

1. Ensure that the vehicle is on solid, level ground and that the body is empty.

2. Set the chassis parking brake.
3. Check for overhead clearance.
4. Chock the front and rear tires.
5. Remove left and right body latch pins.
6. Unlatch the body safety prop spring pin latch.
7. Raise the body far enough to allow the body safety prop to hang vertically.

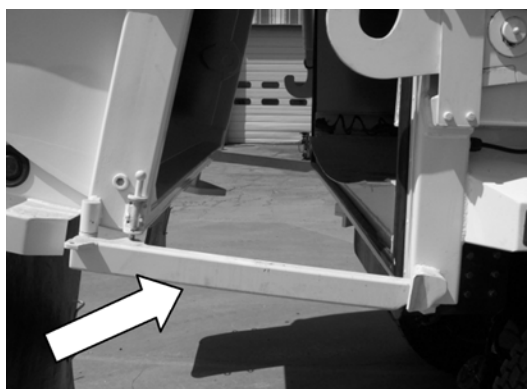
---

**NOTE:** Do not raise the body higher than is required to engage the body safety prop. If the unlatched prop does not swing into a vertical plane when the body is raised, the prop has been damaged and must be repaired prior to use.

---

8. Lower the body until the body safety prop landing pads fit into the retainer cutouts and seat securely on to the chassis frame.
9. Complete the lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 37).

## Tailgate Props



The tailgate props, one each side, when engaged, ensure that the tailgate cannot close.

## Setting the Tailgate Props

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

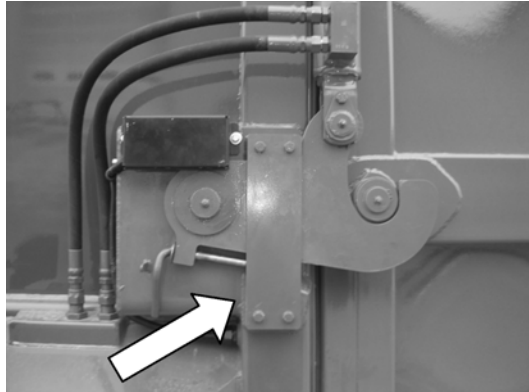
---

To set the tailgate props:

1. Ensure that there is adequate clearance behind the vehicle to allow for tailgate.
2. Remove both tailgate lock blocks.
3. Open the tailgate so that the bottom portion is approximated 36" away from the body.
4. Unlatch each prop from its stored position and allow it to swing out 90 degrees, or perpendicular to the tailgate frame.
5. Lock the props in place by releasing the spring latch rods so they engage the holes provided.

6. Close the tailgate as far as required so that the props engage the receptacles attached to the body frame.
7. Complete the Lockout/Tagout procedure (see *Lockout/Tagout Procedure* on page 37).

## Tailgate Lock Blocks



The tailgate lock blocks are an integral part of the tailgate latch. The blocks must be engaged to prevent unintentional opening of the tailgate, which could cause serious damage to the tailgate and latch.

## Fire Extinguisher



The fire extinguisher (optional) is mounted near the rear of the vehicle on the body fender.

## First Aid Kit

The first aid kit (optional) is located in the cab of the vehicle for quick access.

## Environmental Spill Kit

The environmental spill kit is mounted in a rack on the rear fender of the vehicle.



## Safety Interlock Tests

Your WITTKE RETRO FL™ is equipped with a number of safety interlock functions that are programmed into the electronic control unit (ECU). Testing of all interlock functions should become an integral part of your daily inspection as an operator.

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**IMPORTANT:** If any of these test fail, do not operate your vehicle until it has been repaired.

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**NOTE:** Your WITTKE RETRO FL™ may be equipped with some interlock functions not mentioned here. Consult your supervisor for detailed information on these optional lockouts.

---

### Test: Pump Lockout by Access Door Not Closed

The hopper access door triggers a proximity switch whenever the door is closed. The hydraulic pump bypasses to the reservoir whenever the proximity switch is not triggered (that is when the door is open), preventing operation of any of the hydraulic controls.

---

**NOTE:** Do not enter the body while the vehicle is running; injury or death may occur. Refer to “Lockout/Tagout Procedure” on page 37.

---

For this test, proceed as follows:

1. With the hydraulic pump ‘on’, open the hopper access door.
2. The red illuminated ‘danger’ warning lamp, along with the audible buzzer, should be activated on the control console.
3. The MDM control screen should read “ACCESS DOOR OPEN”.
4. Verify that all hydraulic functions have been rendered inoperative by activating one of the functions, such as the forks.
5. If hydraulic functions are still active, refer to “Adjusting Side Access Door Proximity Switch” on page 77.

### Test: Auto Pack and Eject Functions Locked Out by Top Door Not Fully Open

The top door triggers a proximity switch whenever it is fully open. This proximity switch, when triggered, allows the ‘Auto Pack’ and ‘Eject’ functions. This feature is included to prevent packing or ejecting against the top door, which may cause damage to the top door.

For this test, proceed as follows:

1. With the packing panel fully forward to its home position, activate the top door function to partially close it.
2. Activate ‘Auto Pack’. The packing panel should not move.
3. Open the tailgate completely.
4. Activate Pack Panel ‘Eject’. Again, the packing panel should not move.

5. If the packing panel moves in either instance, refer to “Adjusting Top Door Proximity Switch” on page 78.

## **Test: Auto Pack Function Locked Out by Tailgate Ajar**

Each tailgate latch hook triggers a proximity switch when fully closed. These proximity switches, when triggered, allow the ‘Auto Pack’ function. This feature is included to prevent the operator from activating Auto Pack at the landfill with the tailgate open, leaving the cab and being struck with ejecting refuse from the body.

For this test, proceed as follows:

1. With the packing panel fully forward to its home position, remove the tailgate lock blocks and activate the Tailgate ‘Open’ function so that the tailgate is at least partially open.
2. Activate ‘Auto Pack’. The packing panel should not move.
3. If the packing panel moves when depressing ‘Auto Pack’, refer to “Adjusting Tailgate Ajar Proximity Switch” on page 79.

## **Test: Eject Function Locked Out by Tailgate Not Fully Open**

Each tailgate latch hook triggers a proximity switch when fully closed. In addition, the tailgate triggers a tilt switch that senses when the tailgate is fully open. This combination of switches, allow the ‘Eject’ function only when the tailgate is fully open.

For this test, proceed as follows:

1. With the packing panel fully forward to its home position, remove the tailgate lock blocks and activate the Tailgate ‘Open’ function so that the tailgate is at least partially open.
2. Activate the ‘Eject’ Button. The packing panel should not move.
3. If the packing panel moves when depressing ‘Eject’, refer to “Adjusting Tailgate Fully Open Proximity Switch” on page 79.

## **Test: Auto Pack and Eject Locked Out by Arms Elevated**

The lift arms trigger a proximity switch when being raised to a height that would place the forks over the legal height of 13’-6”. This arm position roughly corresponds to the fork pivot tube being just above the cab windshield. The proximity switch, triggered in this position, prevents ‘Auto Pack’ and ‘Eject’ from functioning, and also illuminates the ‘Arms Overheight’ warning lamp. This prevents the operator from being able to pack with a container in the hopper.

For this test, proceed as follows:

1. With the packing panel fully forward to its home position, raise the lift arms so that the ‘Arms Overheight’ warning lamp is triggered ‘on’.
2. Activate ‘Auto Pack’. The packing panel should not move.
3. Next, leaving the arms in their current position, open the tailgate completely.
4. Activate ‘Eject’. The packing panel should not move.
5. If the packing panel moves when depressing ‘Eject’, refer to “Adjusting Arm and Fork Fully Retracted Proximity Switches” on page 82.

## Test: Arms 'Up' Locked Out by Packer Panel Not Home

The packer panel triggers a proximity switch in the fully forward or 'home' position. This proximity switch, when triggered, allows the operator to raise the arms. If the proximity switch is not triggered, the operator can only raise the arms until they trigger overheight proximity switch #1, which roughly corresponds to the arms being at a height that puts the fork pivot tube above the cab windshield. This lockout prevents the operator from dumping a container behind the packing panel.

For this test, proceed as follows:

1. With the arms down, activate the 'Auto Pack' function and then depress the 'Pump Shutoff' switch. The packing panel will stop.
2. Pull out the 'Pump Shutoff' switch to engage the pump, and raise the arms as far as they will go.
3. The arms should stop when the fork pivot tube is approximately at the level of the top of the cab windshield.
4. If the arms travel all the way to the dump position, refer to "Adjusting Packer Blade Ahead Proximity Switch" on page 74.

## Test: Arms 'Up' Locked Out by Top Door Not Open

The top door triggers a proximity switch when it is fully open. When this proximity switch is triggered, it allows the arms to lift and dump a container. If the proximity switch is not triggered, the operator can only raise the arms until they trigger overheight proximity switch #1, which roughly corresponds to the arms being at a height that puts the fork pivot tube above the cab windshield. This lockout prevents the operator from dumping a container with a closed or partially closed top door, which would cause serious damage.

For this test, proceed as follows:

1. With the arms down, activate the top door 'Close' function so that the door is partially closed.
2. Raise the arms as far as they will go.
3. The arms should stop when the fork pivot tube is approximately at the level of the top of the cab windshield.
4. If the arms travel all the way to the dump position, refer to "Adjusting Top Door Proximity Switch" on page 78.

## Test: Joystick Locked Out by Body Raised

On full eject units or on tip to dump units, the body triggers a proximity switch when at rest on the chassis frame. This proximity switch, when triggered, allows movement of the lift arms only when the body is down on the chassis frame. This lockout prevents the lift arms from damaging the chassis cab.

For this test, proceed as follows:

1. With the arms raised completely and the forks stowed in the hopper, raise the hoist or service hoist so that the body raised proximity switch is not triggered.

2. Activate arms 'down'. The arms should not move.

---

**Caution!** Be careful not to cause damage to the cab when performing this test.



- 
3. If the arms move, refer to "Adjusting Body Raised Proximity Switch (Tip-to-Dump Units)" on page 85.

## Test: Tailgate Function Locked Out by Body Raised

On full eject units with a service hoist or on tip to dump units, the body triggers a proximity switch when it is down and at rest on the chassis frame. When this proximity switch is not activated, it locks out the tailgate 'open' and 'close' functions. This lockout prevents the operator from having the tailgate contact refuse and other debris on the ground or during ejection.

For this test, proceed as follows:

1. Raise the body off the chassis frame.
2. Activate the tailgate 'open' function. The tailgate should not move.
3. Activate the tailgate 'close' function. Again, the tailgate should not move.

---

**Caution!** Be careful not to cause damage to the tailgate when performing this test.



- 
4. If the tailgate does move, refer to "Adjusting Body Raised Proximity Switch (Tip-to-Dump Units)" on page 85.

## Test: Hoist Locked Out by Arms Not Stowed

Referring to tip to dump units only, the arms trigger a proximity switch when they are raised fully and contact the body bumper pads. The forks also trigger a proximity switch when they are raised fully. When both of these proximity switches are activated (as in when the forks are stowed in the hopper), the body hoist will not function. This lockout prevents damage to the chassis cab.

For this test, proceed as follows:

1. With the arms down, activate the hoist 'up' function.
2. The hoist should not function.
3. If the hoist does move, refer to "Adjusting Arm and Fork Fully Retracted Proximity Switches" on page 82.

---

**NOTE:** Backwards arms must be stowed to raise body.

---

## Lockout Summary

**Table 1** Lockout summary

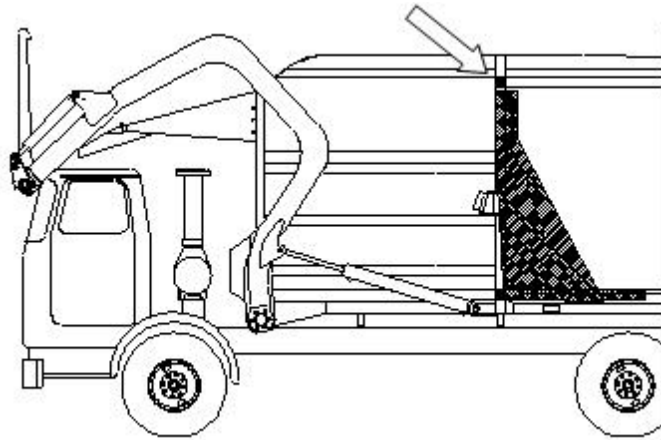
Function Locked Out	Locked Out By
Auto Pack and/or Packer “Full Eject”	Top Door Prox. Switch
Auto Pack	Tailgate Prox. Switches
Packer “Full Eject”	Tailgate Prox. Switches
Auto Pack and/or Packer “Full Eject”	Arm Overheight Prox. Switch #1
Packer “Full Eject”	Top Door Prox. Switch
Arms “Up”	Packer Home Prox. Switch
Arms “Up”	Top Door Prox. Switch
Joystick	Body Raised Prox. Switch
Pump	Access Door Prox. Switch
Tailgate	Body Raised Prox. Switch
Hoist	Arms Overheight Prox. Switch #2

## Test: Auto Pack Travel Limit

During an auto pack cycle, a cam attached to the curb side pack cylinder triggers a proximity switch so that the packing panel travels rearward a predefined distance to sweep the hopper of refuse, and then returns to the forward or home position.

For this test, proceed as follows:

1. Activate ‘Auto-Pack’. The packing panel should travel rearward until the top portion of the packing panel aligns with the roof mounted breaker bar at the top rear of the hopper.
2. If the packing panel does not stop at this point, or stops too soon, refer to “Adjusting Half Pack Proximity Switch” on page 76.



## Warning Lamp/Buzzer Tests

Distinct positions of moving body parts, such as the packer panel, top door, rear door, arms and forks will trigger either of the amber warning lamp, the red warning lamp, the in-cab buzzer or the chassis backup alarm. These warnings, in conjunction with the readout screen on the MDM electronic control unit (ECU), serve to alert the operator that a dangerous condition exists and to pay close attention to how the unit is operated in order to prevent damage or serious injury. The warning indicators are:

**Table 2**      **Warning buzzers**

Action	Buzzer	Chassis Backup Alarm
Tailgate Ajar	Yes	Yes
Body Raised	Yes	No
Access Door Open	Yes	No

**Table 3**      **Warning lamps**

Action	Amber Caution	Red Danger	Red Overheight	Green Autopack	Red Pump On
Pump On					Yes
Auto Pack Engaged				Yes	
Access Door Open		Yes			
Arms Over Height		Yes	Yes		
Packer Not Home	Yes				



**Table 3** Warning lamps (Cont'd)

Action	Amber Caution	Red Danger	Red Overheight	Green Autopack	Red Pump On
Top Door Not Open	Yes				
Tailgate Ajar	Yes				
Tailgate Fully Open		Yes	Yes		
Body Raised		Yes	Yes		

## Lockout/Tagout Procedure



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

**NOTE:** Failure to follow the lockout/tagout procedure may result in serious injury or death. Prior to performing under body work it is necessary to set the body prop as explained later in this manual.

The following is the lockout/tagout procedure:

1. Set the chassis parking brake.
2. Turn off the hydraulic pump.
3. Activate one of the hydraulic controls to relieve any residual pressure in the system.

4. Turn off engine, remove keys from the ignition and store the keys in a safe, controlled area. It is recommended that you keep the keys on your person.
5. Place an Out-of-Service tag on the steering wheel using a non-reusable fastener and place an Out-of-Service sign in the front window.
6. Turn off and lock the battery kill switch.
7. Chock the wheels.

## Lifting Components for Service

Lifting components of the Front Loader requires special attention to safety.

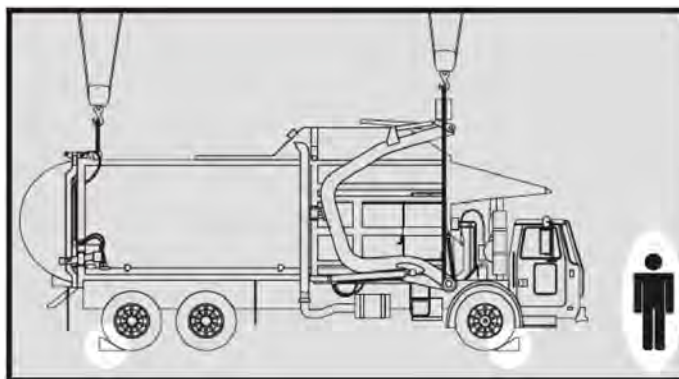
Before attempting these lifts:

- ♦ Empty the body.
- ♦ Chock both the front and rear wheels
- ♦ Stand clear of any cranes, or similar lifting devices, when doing any lifts.

Do not stand or walk under a load that is suspended unless there are additional safety blocking devices in place.

While Labrie Enviroquip Group has included the specifications of the lift equipment we use, these specifications are intended as guides only. It is your responsibility to ensure your lift equipment meets all safety standards and that only qualified personnel attempt these lifts.

Lifting the arms and forks	Requires one 5-ton overhead crane
Lifting the front body	Requires one 5-ton overhead crane
Lifting the body	Requires two 5-ton overhead cranes



Carefully follow all safety precautions when lifting the body.

## Lifting the Arms and Forks

You may need to lift the arms and forks manually. If you do need to do this, remember:

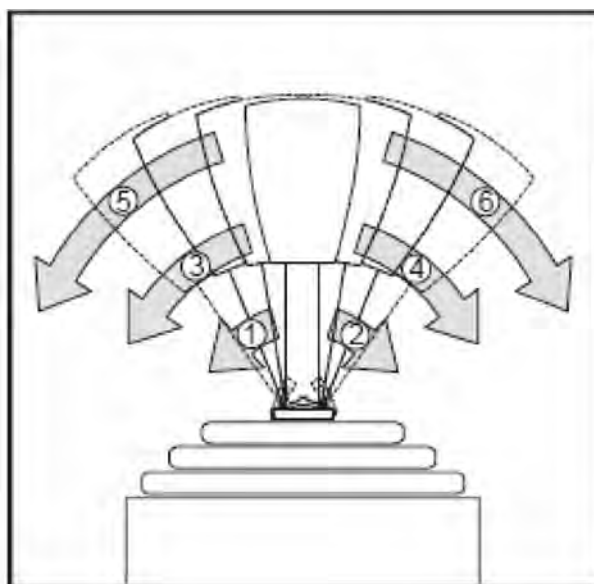
- ♦ If the fork cylinders are removed or disconnected, the forks can rotate freely - tie each fork to the arms before lifting the arms and forks assembly.
- ♦ Place a lift sling rated to 6400 lbs. (2.903 tonne) in the middle of the fork pivot tube.
- ♦ Complete job, reconnect.
- ♦ Keep the sling in place while you repressurize the system.

## Caution



If both arm cylinders are replaced, move the joystick back and forth in gradually increasing increments. This will distribute the oil evenly within the cylinders and prevent the arms from falling (see Figure 2-4).

Figure 2-4 Joystick



## Securing the Rear Body

Securing the rear body is required when you need to lift the front body for repairs. It may be secured to the chassis via a hinge, or you may need to install a lifting device.

### Securing the Rear Body to a Lift Beam

You will need one lift beam, two 5 ft. (1.524 m) lengths of chain, two shackles and two grab hooks.

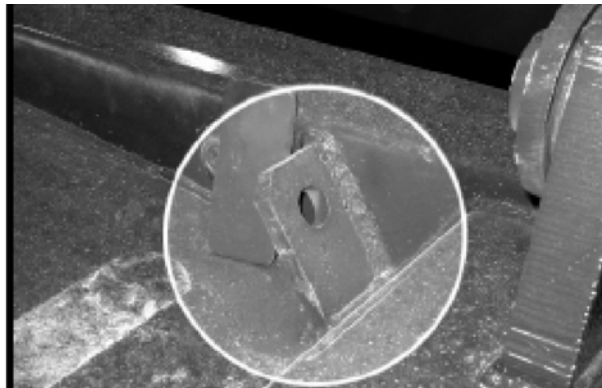
**IMPORTANT:** Never lift the front body until you have secured the rear body.

**NOTE:** The lifting beam should be 8 in. x 21 in. x 3/8 in. (20.32 cm x 53.34 cm x .5250 mm) grade 80 lift chains with a working load limit of 7100 lbs. (3.2206 tonne) at 90 degrees.

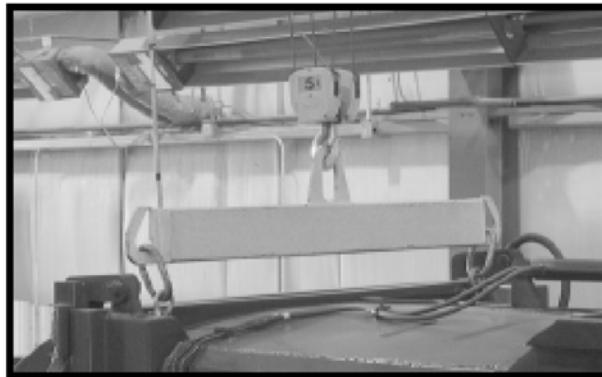
To secure the rear body:

1. Inspect the welds on the body's lifting lugs and repair, if necessary (see Figure 2-5).
2. Position the lift beam with chains 75 in. on center above the tailgate.
3. Attach a 5 ft. (1.524 m) long chain to each end of the lift beam.
4. Thread the loose end of each chain through a shackle.  
Each shackle must have a working load limit of 4.75 tons (4.8260 tonne).
5. Loop half the chain length through the shackle and attach each chain's grab hook onto the original chain.
6. Attach each shackle to its respective lifting lug.

**Figure 2-5 Lifting lug**



**Figure 2-6 Proper lift setup**



## Lifting the Front Body

Lifting the front body may be required when you need to complete repairs. You will need two lift spools, one lift beam, two 40.64 cm (9 ft. 7 in.) lengths of chain, two shackles and two grab hooks.

**IMPORTANT: Never lift the front body until you have secured the rear body.**

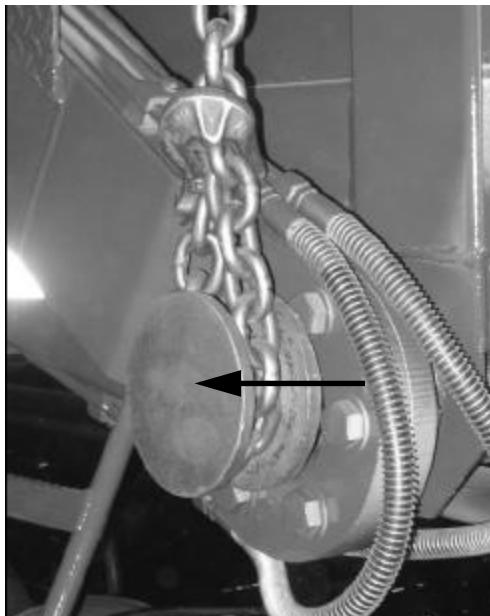
- ♦ The lift spools should be 82.55 cm (32 1/2 in.) long, 6.985 cm (2 3/4 in.) 4140 rounds with two 16.1925 cm (6 3/8 in.) od flanges 2 in. apart on the outside end.

- ♦ The lift beam should be 20.32 cm x 10.16 cm x 20.32 cm (8 in. x 4 in. x 8 in.) with .9525 cm (3/8 in.) grade 80 lift chains with a working load limit of 3.2206 tonne (7100 lbs.) at 90 degrees.

To lift the front body:

1. Secure the rear body.
2. Raise the arms and forks until they are resting on the rubber arm stops on the sides of the body.
3. Insert a lift spool into each end of the arm pivot tube.
4. Wrap a lift chain around each lift spool and fasten the grab hooks securely on each chain (see Figure 2-7).
5. Lift the front body.

**Figure 2-7** Lift spool



**Figure 2-8 Proper lift setup**



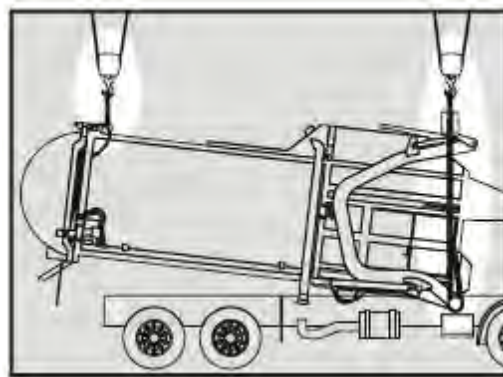
## Lifting the Body

Lifting the Front Loader body requires securing both the front body and the rear body to a lift beam. You will need two lift spools and two lift beams.

---

**IMPORTANT: Never lift the rear body until you have secured the front body to another lifting device.**

---



To lift the body:

1. Secure the rear body to a lift beam. Refer to “Securing the Rear Body” on page 39.
2. Raise the arms and forks until they are resting on the rubber arms stops on the sides of the body.
3. Insert a lift spool into each end of the arm pivot tube.
4. Wrap a lift chain around each lift spool and fasten the grab hooks securely on each chain (see Figure 2-7).



5. Lift the body.

**Figure 2-9** Proper lift setup





# 3

## Maintenance

### Warning!

Prior to using your new WITTKE RETRO FL™, it **MUST BE COMPLETELY LUBRICATED** as shown on the lube decal located near the rear of the body on the passenger side. Also refer to “Lubrication” on page 49

Initial lubrication carried out by Labrie is sufficient for production and transport purposes **ONLY!**

With your safety in mind, we would like to remind you that **ONLY QUALIFIED PERSONNEL** should service the hydraulic, electrical, and pneumatic systems on your refuse vehicle. In addition, these mechanics should be fully versed in the operation of this unit.

Please read the **SAFETY, CONTROLS, and OPERATION** sections of the Operator’s Manual, *prior* to attempting any maintenance of your WITTKE RETRO FL™.

### Prior to Hydraulic System Maintenance

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, the unit is not performing in terms of payload, or the unit has recently been put into service and the system requires adjustment following a run-in period.

Keep in mind these important points:

- ♦ Follow a proper lockout/tagout procedure prior to servicing the hydraulics. Death or serious injury can result! See the Safety section for more information on safety and lockout procedures.
- ♦ The mechanic must have previous hydraulic knowledge as serious injury or death can result from following improper procedures.

- ♦ 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.
- ♦ Also, there are extreme overhead dangers if equipment is not properly supported when servicing areas on the hydraulic system.

## Oil Identification Tag

Your new WITTKE RETRO FL™ has an Oil Identification Tag attached to the hydraulic oil tank (see Figure 3-1). This non-permanent tag specifically describes the hydraulic oil your equipment was filled with at the Labrie factory. Record this data in your service records for future reference.

**Figure 3-1** Oil identification tag



## Hydraulic System Settings

System Settings	
Main pressure relief valve (@ 1500 rpm)	2250 psi
Arms down port pressure relief valve (@ 1500 rpm)	1000 psi
With cart tipper option:	
Top pressure relief valve (@ 1500 rpm)	2350 psi
Main pressure relief valve (@ 1500 rpm) (in mid-inlet section)	2250 psi
Cart tipper port pressure relief valves (@ 1500 rpm)	1500 psi
Pressure switch in auto-pack circuit (@ 1500 rpm)	2150 psi
Hydraulic tank air pressure	5 psi maximum
Throttle advance (option)	1500 rpm

## Consumable Maintenance Materials

Maintenance Materials	
Oil tank capacity: (System capacity not shown as it varies with unit options)	22" dia. - 50 imp. gallons / 227 L
Hydraulic oil: (The oil Identification Tag attached to the hydraulic tank describes the oil the unit was filled with when it left the Labrie factory. Refer to "Oil Identification Tag" on page 46.)	Castrol HVI 32 or equivalent
Suction line	100 mesh suction strainer
Return line	10 micron return filtration
In-tank filter	Betamicon or Paper Element
Grease	Heavy duty EP-2
Grease for Automatic Grease System (option)	Consult manufacturer's recommendation
Air filtration for system controls	Air filter element  Air mist separator element

## Welding Information

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



---

The WITTKE RETRO FL™ consists primarily of 5 types of steel.

- ♦ ASTM A569 - mild sheet steel, commercial grade
- ♦ ASTM A715 - high strength, low alloy sheet and plate
- ♦ ASTM A514 - high strength, quenched and tempered steel
- ♦ QT440 - abrasion resistant steel
- ♦ Ultra Wear - abrasion resistant steel

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**NOTE:** For welding, use either low hydrogen electrodes E11018 or Spool Arc 83 mig wire.

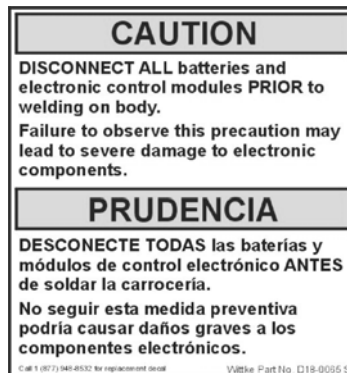
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**Caution!** Remove paint before welding or heating!  
Do not weld near lines that are pressurized or contain flammable fluid!



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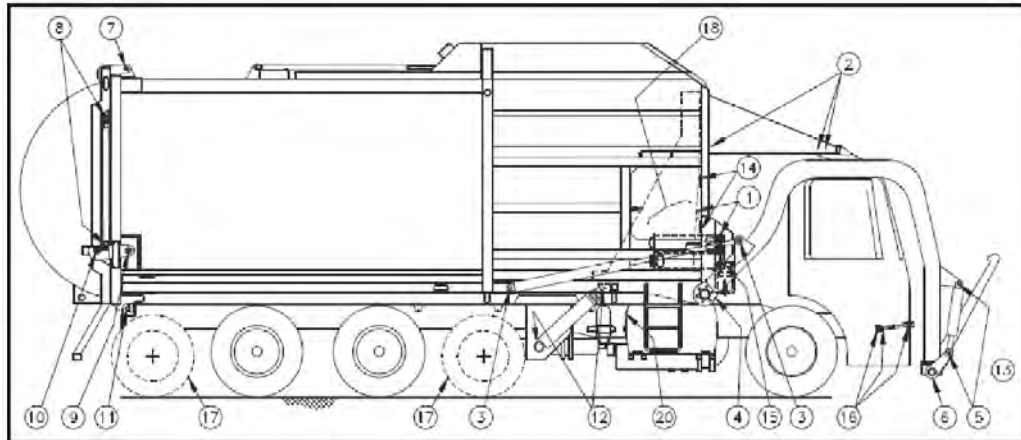
Figure 3-2 Caution decal - welding



# Lubrication

LUBRICATE, LUBRICATE, LUBRICATE!!! Insufficient lubrication is a major cause of component failure. The WITTKE RETRO FL™, like most equipment, has numerous points that require grease (see Figure 3-3).

**Figure 3-3 Lubrication points**



See Table 1 on page 50 for a complete list of lube locations and the frequency they should be greased.



# Maintenance Checklist

**Table 1 Lubrication**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
1	Packer blade cylinder pins (4)				X		
2	Follower plate pin and cylinders (3)				X		
3	Arm cylinder pins (4)				X		
4	Arm pivot tube collars				X		
5	Fork cylinder pins (4)				X		
6	Fork pivot tube collars (2)				X		
7	Tailgate hinge pins (2)				X		
8	Tailgate cylinder pins (4)				X		
9	Tailgate latch pins (2)				X		
10	Tailgate latch roller pins (2)				X		
*11 <sup>a</sup>	Rear body hinge pins (2)				X		
*12	Hoist cylinder pins (4)				X		
*13	Cart Tipper (quantity may vary) [not shown]	Consult manufacturer					
*14	Side access door hinges (2)					X	
*15	Cleanout door hinges (4)					X	
**16 <sup>b</sup>	Pump drive-line U-joints and slip yoke (3)				X		
*17	Tag and/or pusher axle (quantity may vary)	Consult manufacturer					
18	Inspect for leaks in automatic grease system plumbing				X		
*19	Inspect for leaks in packer blade remote grease lines				X		
20	Inspect hydraulic oil level in tank (not shown)				X		

a. \* Denotes option or not all units

b. \*\* Unit may be fitted with a drive-line which does not require grease

**NOTE:** Some lube points might be greased by an automatic grease system, if equipped. Consult manufacturer's manual for information.

**Table 2**      **Cleaning**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
21	Safety decals	O <sup>a</sup>					
22	Mirrors, lamps, windows, camera	O					
23	Clear debris at tailgate seal		O				
*24 <sup>b</sup>	Clear contact surfaces of body and chassis		O				
25	Debris in front of packer blade, inside hopper (more often if required)			O			
26	Wash complete body and chassis (more often if required)				O/M <sup>c</sup>		
27	Other						

a. O = Operator

b. \* Denotes option or not all units

c. M = Maintenance

**Table 3**      **Mechanical Inspection (truck at rest)**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
Inspect for distortion, cracks, and/or unusual wear. Ensure mounting and pin retainer bolts are intact and tight.							
28	Body seated flat on chassis	O <sup>a</sup>				M <sup>b</sup>	
*29 <sup>c</sup>	Body mounts (6) and related nuts, bolts and springs	O				M	
*30	Body hinge ears (2), pins (2), and retaining hardware	O				M	
*31	Hoist cylinder ears (4), pins (2), collars (2), and retaining hardware	O				M	
*32	Hoist cylinder mounting bolts on chassis (quantity varies)	O				M	

**Table 3 Mechanical Inspection (truck at rest) [cont'd]**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
*33	Service hoist cylinder ears (4), pins (4), and retaining hardware	O				M	
*34	Service hoist cylinder mounting bolts on chassis (quantity varies)	O				M	
*35	Hoist safety prop and prop sockets (inspect prior to using)		O			M	
36	Arm assemblies (2)	O				M	
37	Arm assembly mounting bolts, lockwashers and nuts	O				M	
38	Arm pivot tube (1) and pivot tube collars (2)	O				M	
39	Arm cylinder ears (4), pins (4), and retaining hardware	O				M	
40	Fork assembly	O				M	
41	Fork assembly mounting bolts (4)	O				M	
42	Fork pivot tube collars (2)	O				M	
43	Fork cylinder ears (4), pins (4), and retaining hardware	O				M	
*44	Residential carry can and mounting hardware	O				M	
*45	Cart attachment assembly	O				M	
46	Front header assembly inc. cylinder ears	O				M	
47	Packer blade assembly inc. cylinder ears			O		M	
48	Packer blade cylinder pins (4), and retaining nut/bolts			O		M	
49	Packer blade travel channels & wear plates			O		M	
*50	Follower plate hinge pin (1) and retaining hardware			O		M	
*51	Follower plate rollers (2), brackets & retaining hardware			O		M	

**Table 3 Mechanical Inspection (truck at rest) [cont'd]**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
*52	Follower plate travel channels			O		M	
*53	Front rubber scraper and holding strip			O		M	
54	Interior of hopper and main body walls, floor, and roof	O				M	
55	Exterior of hopper and main body walls, floor and roof	O				M	
56	Side access door assembly	O				M	
57	Canopy assembly and extension hardware	O				M	
58	Top door assembly	O				M	
59	Top door cylinder pins (2), ears (2), and retaining hardware	O				M	
60	Top door cylinder clamp & related nut/bolts	O				M	
61	Tailgate assembly	O				M	
62	Tailgate cylinder ears (4), pins (4), and retaining hardware	O				M	
63	Tailgate latch assembly (2), pivots (2), and roller pins (2)	O				M	
64	Tailgate seal and seal retainer		O			M	
65	Tailgate hinge ears (2), pins (2), and retaining hardware	O				M	
*66	Tailgate safety props	O				M	
*67	Safety equipment is present? (e.g. fire extinguisher, first aid kit, etc.)	O					
68	Other						

a. O = Operator

b. M = Maintenance

c. \* Denotes option or not all units

**Table 4     Operation (main controls)**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
Observe travel is smooth and even, speed is normal, controls are responsive.							
69	Forks up/down			O <sup>a</sup>		M <sup>b</sup>	
70	Arms up/down			O		M	
*71 <sup>c</sup>	Cart attachment			O		M	
72	Parker Blade Pack/return/autopack/autostop			O		M	
*73	Follower blade Pack/return/autopack/autostop			O		M	
74	Top door open/close			O		M	
75	Tailgate open/close			O		M	
*76	Hoist up/down (tailgate must be open)			O		M	
*77	Service hoist up/down			O		M	
Perform safety lockout tests to check proximity switches							
78	Side access door test (side access door proximity switch)			O		M	
79	Pack test (Half pack proximity switch)			O		M	
*80	Pack test (2/3 height packer blade units) (half pack proximity switch)			O		M	
81	Autopack test (Half pack proximity switch)			O		M	
*82	Autopack test (2/3 height packer blade units) (half pack proximity switch)			O		M	
*83	Pack lockout/tailgate test (Tailgate upper proximity switch)			O		M	
84	Pack-autopack lockout/arms test (arms elevated pack cutout proximity switch)			O		M	

**Table 4**    **Operation (main controls) [cont'd]**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
85	Arms up lockout/top door test (Top door proximity switch)			O		M	
86	Arms up lockout/packer blade test (Packer blade ahead proximity switch)			O		M	
*87	Body raised test (Body raised proximity switch)			O		M	
88	Other						

a. O = Operator

b. M = Maintenance

c. \* Denotes option or not all units

**Table 5**    **Operation (misc. controls and features)**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
Check control console warning devices are functioning							
89	Pump switch lamp			O			M
90	Packer blade warning lamp			O			M
91	Top door warning lamp			O			M
92	Access door warning lamp/buzzer			O			M
93	Tailgate ajar warning lamp/external alarm (Tailgate ajar proximity switch)			O			M
94	Arms elevated warning lamp and optional buzzer			O			M
95	Body raised warning lamp/buzzer			O			M
Check external lamps and miscellaneous are functioning							
96	Auxiliary controls			O			M
97	Stop, signal and tail lamps			O			M
98	Marker lamps			O			M
99	Hopper lamp			O			M

**Table 5**    **Operation (misc. controls and features) [cont'd]**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
100	Pack lamp			O			M
101	Backup lamps			O			M
102	Backup flood lamps			O			M
103	Strobe lamp			O			M
104	Camera dual lamps			O			M
105	Alternating flashers			O			M
106	Backup alarm			O			M
107	Global motion sensors			O			M
Check miscellaneous control console devices are functioning							
108	Throttle advance switch			O			M
109	Arms activated autopack switch			O			M
110	Fork width switch			O			M
111	Wash tank switch			O			M
112	Other						

**Table 6**    **Hydraulic system**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
<b>Hydraulic oil tank</b>							
113	Check for leaks, damage, etc. on tank	O <sup>a</sup>				M <sup>b</sup>	
114	Check tank is securely mounted to chassis frame	O				M	
115	Check oil level in tank (all cylinders retracted)	O				M	
116	Check oil condition	O				M	
117	Replace oil (more often if required)						M
118	Check suction ball valve is fully open	O				M	



**Table 6     Hydraulic system (cont'd)**

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
119	Clean the breather cap (replace if necessary) [more often if required]						M
120	Clean suction strainer with varsol/ compressed air (replace if damaged) [more often if required]						M
To protect the hydraulic components of your new equipment, the return line filter MUST BE CHANGED AFTER THE FIRST 50 HOURS OF USE. Thereupon, the filter should be changed once every 1,000 hours or following a major hydraulic component failure.							
121	Change hydraulic return line oil filter (more often if required)				M (new unit)		M
122	Clean magnetic plug (more often if required)						M
<b>Pump</b>							
123	Inspect pump for leaks	O				M	
124	Ensure pump is securely mounted	O				M	
125	Ensure driveline is securely mounted					M	
<b>Hydraulic valve bank</b>							
126	Inspect valve bank for leaks	O				M	
127	Ensure valve bank is securely mounted	O				M	
128	Check system pressure relief valve(s) settings. Adjust if required. [Use pressure gauge. Record.]						M
*129 <sup>c</sup>	Check arms down pressure relief valve settings. Adjust if required. (Use pressure gauge. Record.)						M
*130	Check cart tipper pressure relief valve settings. Adjust if required. (Use pressure gauge. Record.)						M
<b>Miscellaneous</b>							
131	Inspect all hydraulic lines for leaks, chafing	O				M	
132	Inspect all hydraulic cylinders and misc. hydraulic components for leaks	O				M	

**Table 6** Hydraulic system (cont'd)

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
133	Check pack circuit pressure switch setting. Adjust if required.						M
*134	Inspect arms up/down cam(s) are secure and tripping deceleration valve(s).	O				M	
135	Other						

- a. O = Operator  
b. M = Maintenance  
c. \* Denotes option or not all units

**Table 7** Pneumatic system

Item	Description	Pre-trip	At landfill	Daily	Weekly	Monthly	1000 hours
136	Drain air tanks (at the end of each day)			O <sup>a</sup>			
137	Inspect air lines for leaks			O			M <sup>b</sup>
138	Replace air filter element						M
139	Replace mist separator element						M
140	Lightly oil air actuators						M
141	Other						

- a. O = Operator  
b. M = Maintenance

## Further Notes on Lubrication

Although a specific manufacturer's brand of oil is listed in the Consumable Maintenance Materials list (see *Consumable Maintenance Materials* on page 47), similar oil by other manufacturers may be used. Use the recommendations below for guidelines. Also, consult the oil manufacturer to ensure your exact application needs are fulfilled.

Oil Recommendations	
Viscosity	(ASTM D-88-56) @ 100° F (40° C) - 173/187 SSU (37 CS) [Ref. 210° F (100° C) - approx. 45 SSU (5.9 CS) Minimum]
Viscosity Index	(ASTM D-567-53) 100° F (82° C) Optimum
Gravity °API	(ASTM D-287-64) 29° F (-2° C) Minimum
Flash Point	(ASTM D-92-57) 400° F (204° C) Minimum
Fire Point	(ASTM D-92-57) 430° F (221° C) Minimum (Ref.)
Pour Point	(ASTM D-97-57) 15° F (-10° C) Maximum
Foam Resistance	(ASTM D-892, Test. Seq. II)
Viscosity at Startup	[7500 SSU (1620 CS) Maximum]
Rust Resistance	(ASTM D-665-60) No Rust
Corrosion Resistance	(ASTM D-130-65) Class 1
Oxidation Stability	(ASTM D-943) 1500 Hours Minimum
Aniline Point	(ASTM D-611-64) 180 - 220° F (82 - 104° C)
Anti-Wear Additive	.06% Zinc Minimum

Cold weather operation requires special oil considerations. Viscosity should not exceed 7500 SSU (1620 CS) at lowest startup temperature. Continuous operation should range between 60-1000 SSU (10.5 - 216 CS) for all temperature ranges.

## Electrical System

The electrical system consists of numerous components connected by generic harnesses. Proximity switches provide safety lockouts and work in conjunction with the operational controls located in the control panel. The electrical control system activates air solenoid valves that in turn provide control air pressure to the main hydraulic directional valve. In other words, the system may be described as “electric over air over hydraulic”.

## Major Electrical Components

### In-cab Control Box

The in-cab control box houses switches and indicator lights to control the various functions of the vehicle. The function of these switches and indicator lights is described in the Operator's Manual.

### IQAN® Software Based Control System

The IQAN® software based control system is used to operate the front loader by using software logic elements to connect inputs such as switches, proximity switches, etc. with outputs such as solenoid valves, indicator lights, etc. The software also provides interlocks that prevent operation of some functions when it is not safe to do so. The IQAN® hardware replaces all the hard wired control relays that would be required to do the same job.

### IQAN® MDM Interface

The MDM interface is located in the main control panel located near the driver's position in the cab. When the engine is started, the MDM screen will show the date and time, the application description and version.

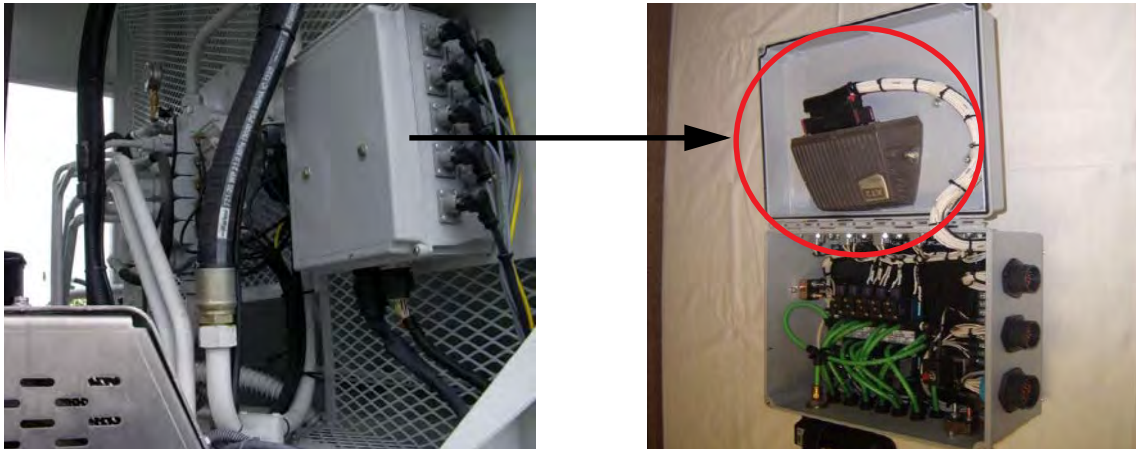
### IQAN® XT2 Expansion Modules

The WITTKE RETRO FL™ has 3 XT2 expansion modules: two are in the cab (see Figure 3-4) and one outside in the air control box (see Figure 3-5). A J1939 network links all modules and display together.

**Figure 3-4 In-cab extension modules (100 and 200 series)**



**Figure 3-5 Expansion module in air control box (300 series)**



## The WITTKE RETRO FL™ Control System

The WITTKE RETRO FL™ is controlled by a logic control system called IQAN® MDM. This system uses 3 XT2 modules that read inputs and distribute outputs.

The WITTKE RETRO FL™ system is an “electric over air over hydraulic system”, which is controlled by the MDM.

Communications between the various components of the IQAN® MDM system are performed via the CAN-based bus.

---

**NOTE:** CAN is an acronym for Controller Area Network.  
MDM stands for Master Display Module.

---

## MDM Operations

In order for the MDM screen to work (see Figure 3-6), the ignition switch must be in the “ON” position.

**Figure 3-6 MDM screen**



When you first turn on the MDM screen the Pendpac version will appear. You can then scroll up or down through all of your warning and danger indications or positions of your body. In order to clear all the warnings off of your screen you may press the OK (F1) button all the way to the left bottom of your screen.

You can get to the main menu consisting of the properties, settings, measurements and information screens by pressing the escape button on the right side of the screen and scrolling up or down through the different screens.

## Measurements Screen

Through the MDM screen you can read the different inputs and outputs for troubleshooting purposes.

To read measurements, do the following:

1. You must first escape to the main menu.
2. Scroll up or down to the measurements screen.
3. Press select (F1).
4. Select inputs (F1) or outputs (F2).
5. Then select the types of inputs or outputs (voltage in, digital out, pwm out or current out).
6. Scroll through the inputs or outputs using the arrow keys.

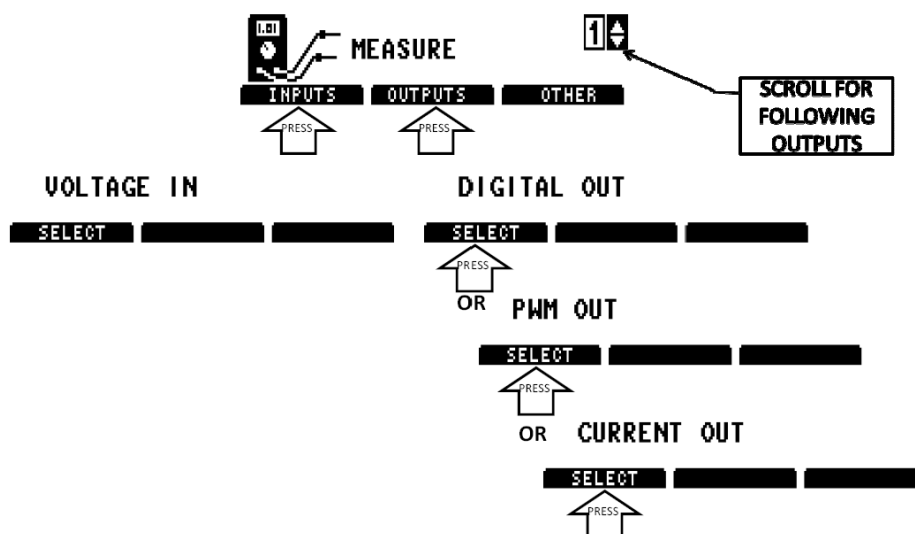
Once you have selected/found the option you can operate the function and see the live operation.

---

**NOTE:** F1 gives you readings in Milli Volts or percentages.  
F3 gives a scale reading as you operate the function.

---

### Measure options



**Voltage inputs**

<b>XT2-A0-C1: __ (100S)</b>	
Auto-Pack MOM	:21
Extend MOM	:22
Retract MOM	:23
Pump Engage	:24
Tailgate UP MOM	:25
Tailgate DN MOM	:35
Top Door OPN MOM	:36
Top Door CLS MOM	:37
Access Door Prox	:38
Body Prox	:39

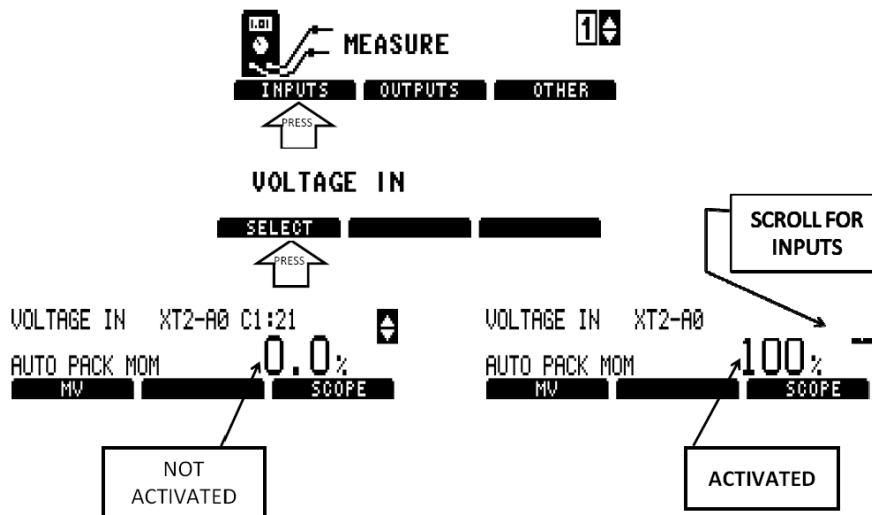
<b>XT2-A1-C1: __ (200S)</b>	
Joystick Select	:21
Hoist UP MOM	:22
Hoist DN MOM	:23
Forks Wide MOM	:24
Forks NAR MOM	:25
Auto-Pack Engage	:35

<b>XT2-A2-C1: __ (300S)</b>	
Tailgate LT Prox	:21
Tailgate RT Prox	:22
Pack Rest Prox	:23
Half Pack Prox	:24
Press Switch	:25
Tailgate Tilt Switch	:35



XT2-A2-C1: __ (300S)	
Arm Stowed Prox	:36
Arm Over Prox	:37
Fork Stowed Prox	:38
Top Door Prox	:39

### Voltage Measure Inputs



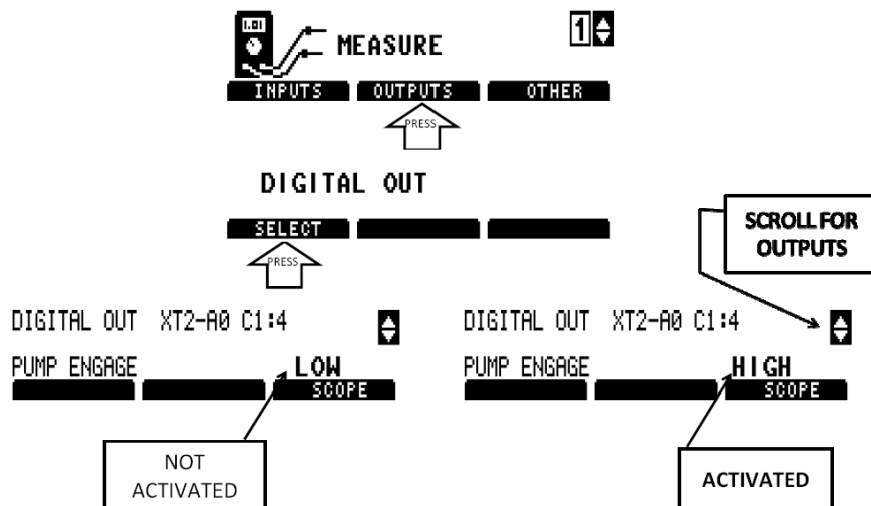
### Digital Outputs

XT2-A0-C1: __ (100S)	
Red LED	:02
Yellow LED	:03
Pump Engage	:04
Hoist UP	:05
Hoist DN	:06
Auto-Pack Light	:07

XT2-A1-C1: __ (200S)	
Joystick Selector	:02
OCB Joystick LOW	:03
Fork Tilt LO	:04
Arms Overheight	:05
Pump Indicator	:06
Back Up Alarm	:07

XT2-A2-C1: __ (300S)	
Arm UP Lockout	:02
Joystick Lockout	:03
Forks Wide	:04
Forks Narrow	:05

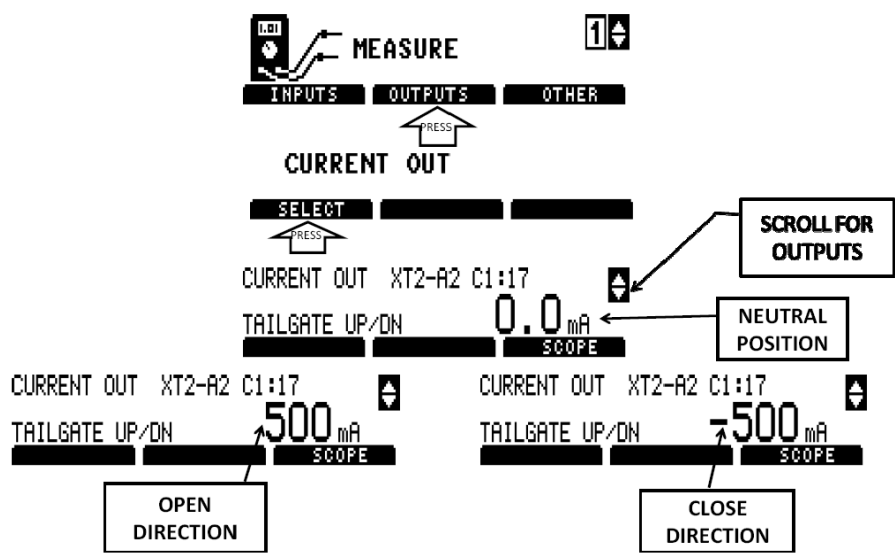
### Digital Measure Outputs



Current Outputs

XT2-A2-C1: __ (300S)	
Tailgate UP/DN	
UP	:17/18
DN	:31/32
Top Door Open/Close	
Open	:19/20
Close	:33/34

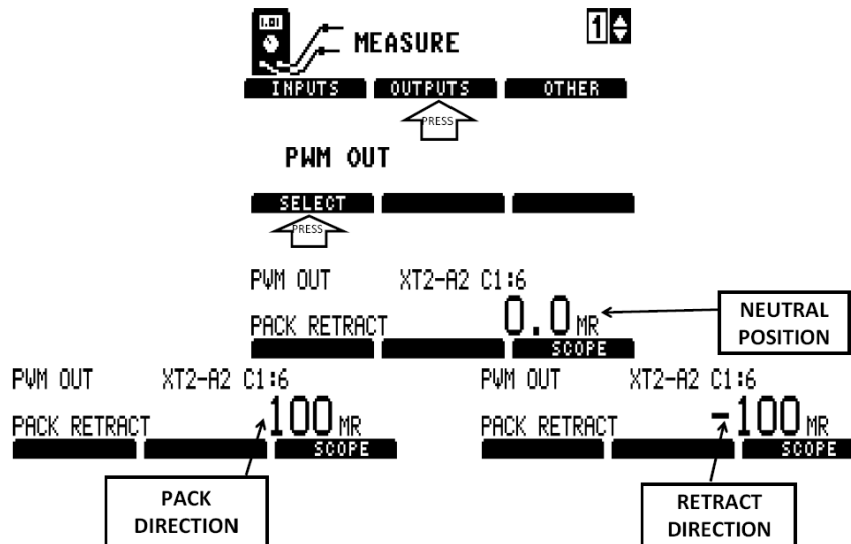
Current Measure Outputs



PWM Outputs

XT2-A2-C1: __ (300S)	
Pack	:06
Retract	:07

## PWM Measure Outputs



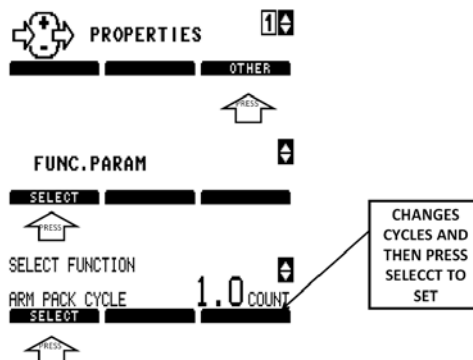
### Function Parameters

You can adjust the function parameters of your vehicle. The only function parameter for the front loader is the arm cycles it takes for the optional arms activated auto-pack.

Apply the following procedure to set the function parameters:

1. Go to the main menu.
2. Scroll up or down to the properties function.
3. Press other (F4).  
Function Parameters should appear.
4. Press select (F1).
5. Scroll to the desired function.
6. Press select (F1).
7. Scroll up or down to desired cycles.
8. Press select (F1).

### Function Parameter Adjustments



### Display Screen Settings

You can adjust the display screen settings to include contrast, LCD lighting, clock and audible alarm sound.

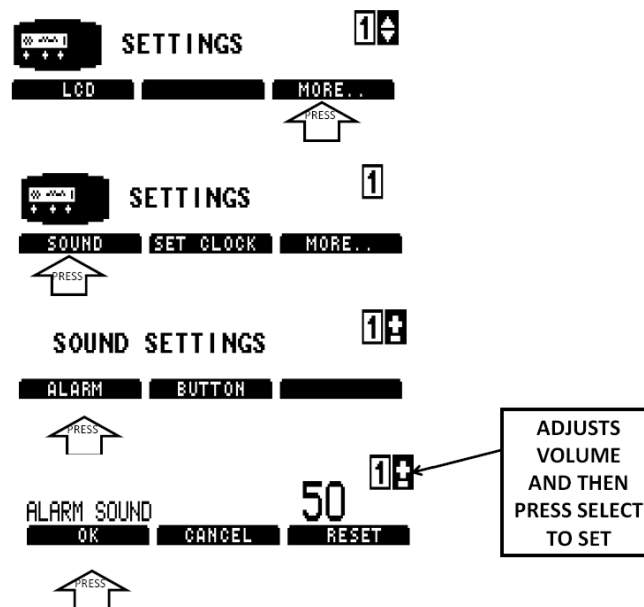
To adjust display screen settings, do the following:

1. Go to the main menu.
2. Scroll up or down to the settings function.
3. Press OK (F1).

Also:

- ♦ Press F2 to cancel.
- ♦ Press F3 to reset to factory settings.

### Screen Setting Adjustments



### Information Screen

The Information Screen shows the status of your MDM and Module Diagnostics, including voltage, temperature and current hours on the MDM.

To access the Information Screen, proceed this way:

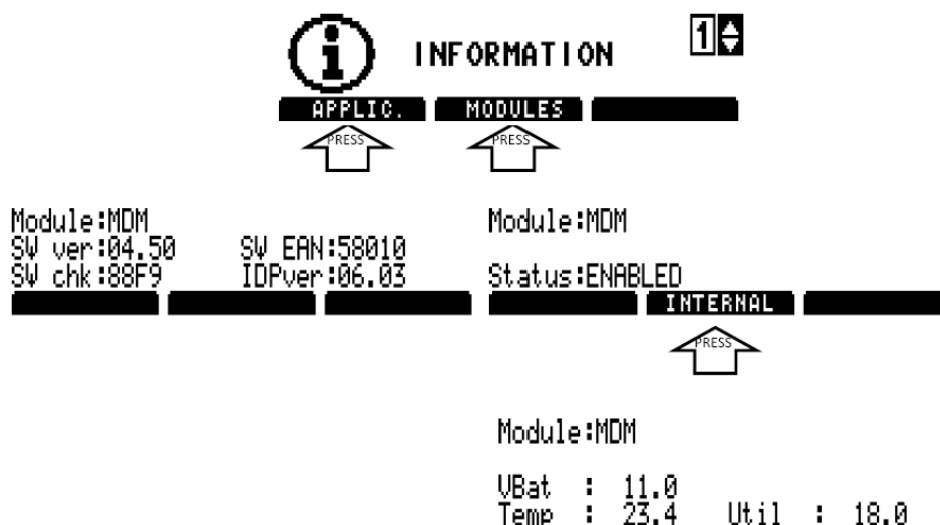
1. Go to the main menu.
2. Scroll up or down to find the Information Screen.
3. Press select (F1).

F1 shows the status of the MDM.

F2 shows the specifics of the system of your truck.

F3 shows date of production and current hours on the MDM.

## Information on the MDM



## How the Electrical System Works

The electrical system includes the following:

- ♦ MDM Control Panel
- ♦ Air Box
- ♦ Proximity Switches, and
- ♦ Harnesses

**NOTE:** Always refer to the appropriate schematic for reference and troubleshooting. Laminated schematics and an overview were sent to you at time of delivery. Please call LabriePlus for free replacements or visit our website (see *To Contact Labrie Plus* on page 3).

### MDM Control Panel (located centrally in the cab)

The Front Loader's push buttons, toggle switches and warning lamps are located in a centrally mounted control panel in the cab. Some units have auxiliary controls located on the curb side of the cab or outside the cab.

**Figure 3-7** MDM control panel



**Pneumatic Box**

Mounted on the body header, the pneumatic box houses the solenoid-operated air valves that direct air to the air actuators on the hydraulic valve bank. Power and ground are required to energize the solenoid so air can pass to the work section dedicated to that particular air valve.

---

**Figure 3-8 Pneumatic box****Proximity switches**

Body-mounted proximity switches control the packer operation and provide the means for safety lockouts.

---

**Figure 3-9 Proximity switch****Harnesses**

Harnesses (see Figure 3-10) connect all electrical components. Front Loader harnesses are generic and may contain wires and plugs that are not used.



---

**Figure 3-10 Harness**


## Circuit Breakers and Fuses

Power for the WITTKE RETRO FL™ electrical system is protected by 2 auto-reset circuit breakers and 4 manual reset circuit breakers.

### Auto-Reset Circuit Breakers

Function	Amps	Location
Main battery power	50	Fitted under the street side dash to protect the packer system circuits that utilize ignition power (alternate location: fitted in the battery box to protect the packer system circuits that utilize battery power)
Main ignition power	15	Fitted under the street side dash to protect the packer system circuits that utilize ignition power.

### Manual Reset Circuit Breakers

There are three white circuit breaker buttons to reset these circuits. They are located on front of the in-cab box (see Figure 3-11).

---

**Caution!** *Never* hold a circuit breaker button down when it refuses to reset. Severe electrical damage may result. Report this to your supervisor and maintenance department.




---

**NOTE:** Consult the OEM manual for information on equipment not manufactured by Labrie.

---

Function	Amps	LOCATION
Pump & pack circuits	10	In-cab box
Marker lamps	15	In-cab box
Backup lamps	15	In-cab box
Pack & hopper lamps	15	In-cab box
Strobe lamp	15	In-cab box
Alternating flashing lights	15	In-cab box

**Figure 3-11** Manual reset switches



## Proximity Switches

Proximity switches act as remote electrical on/off switches.

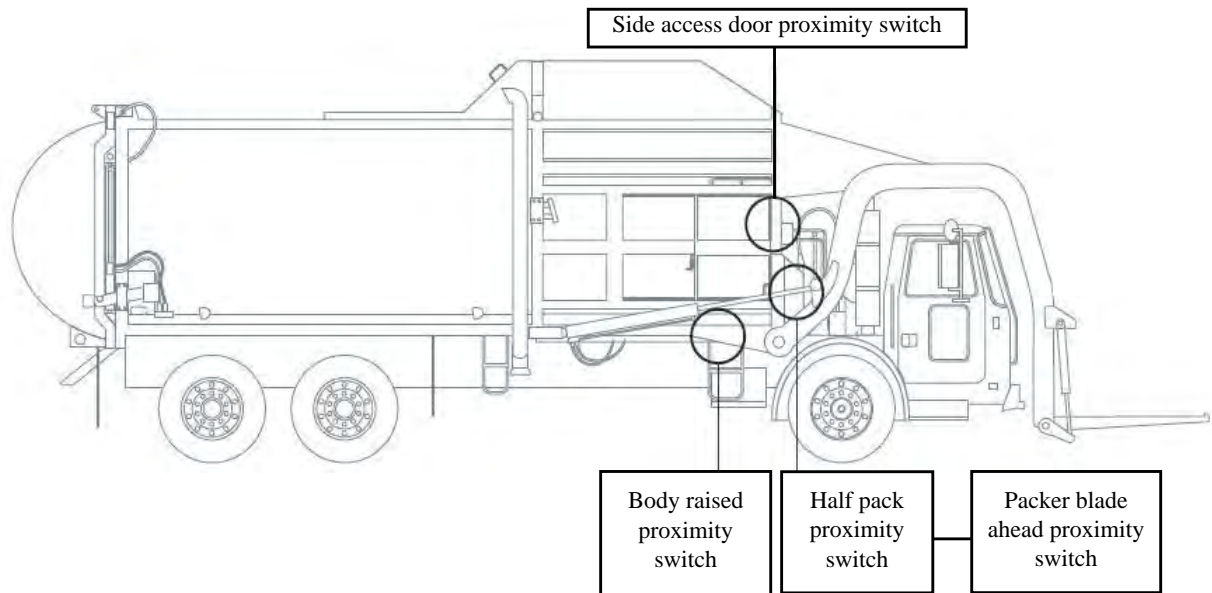
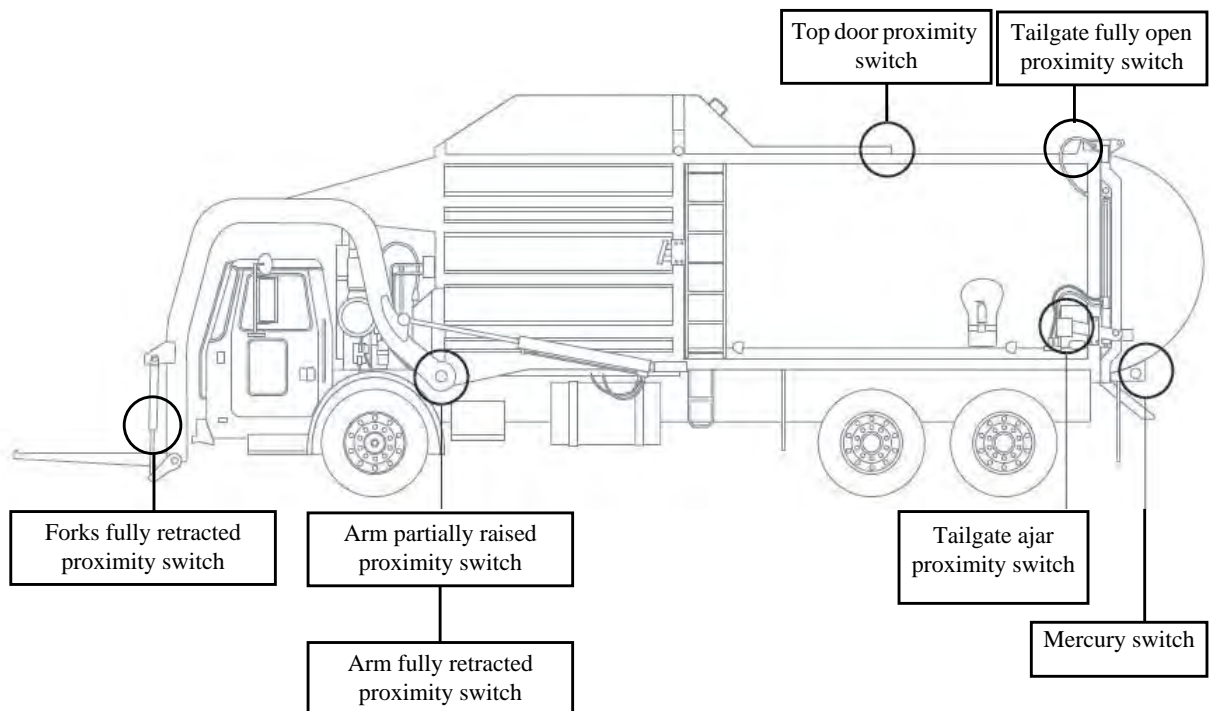
---

### Caution!



Proximity switches must function properly. Serious damage or death may result if you operate the WITTKE RETRO FL™ with improperly adjusted proximity switches.

---

**Location of Proximity Switches (curbside)****Location of Proximity switches (streetside)**

### Adjusting Gap between the Proximity Switch and the Tab

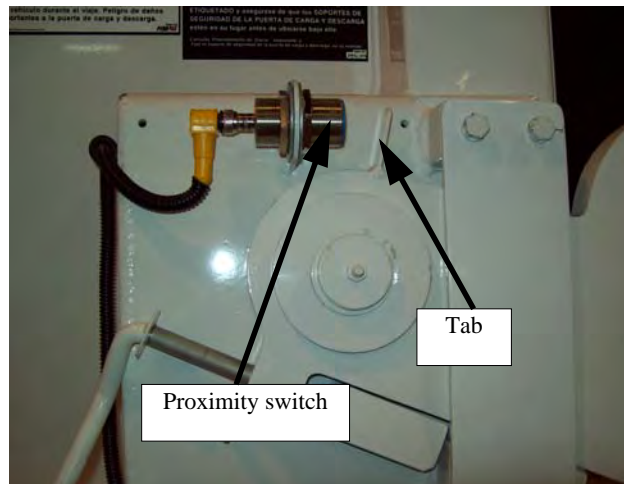
If any of the proximity switches installed on the WITTKE RETRO FL™ is not triggered when it should be, an adjustment of the gap between the proximity switch and the tab facing it must be performed.

To do so:

1. COMPLETE lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 37).
2. LOOSEN the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.
3. TIGHTEN the proximity switch nuts.
4. TEST the operation.

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

**Figure 3-12 Proximity switch and tab**



### Adjusting Packer Blade Ahead Proximity Switch

The packer blade ahead proximity switch locks out the ARMS UP function when the packer blade is not in the 'home' position, activates a warning lamp when the packer blade is not in the 'home' position, and activates a solenoid which influences the Auto-Pack cycle.

*Location:*

The proximity switch is mounted on top of the front header on the curb side (see Figure 3-13).

**Figure 3-13 Packer blade ahead proximity switch**



*Testing Procedure:*

1. Empty all refuse from the body and set the engine to 1500 rpm.
2. Initiate an Auto-Pack cycle and observe the 'home' position of the blade when the cycle completes.

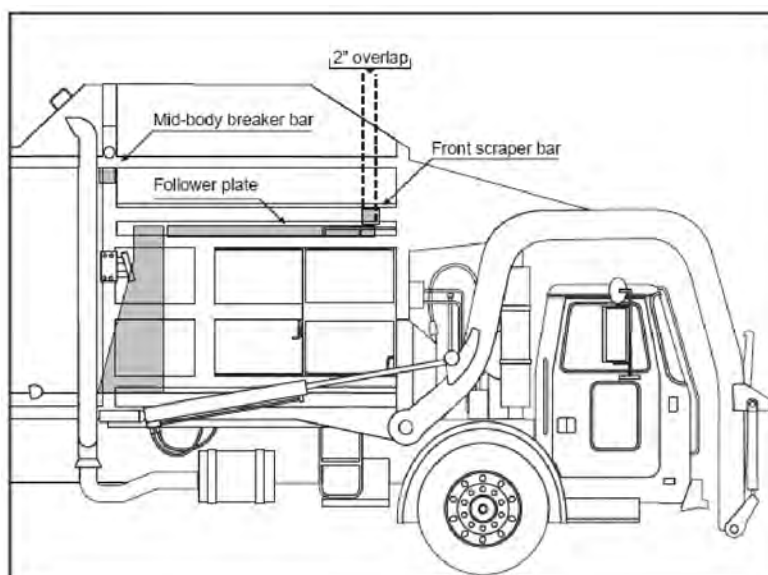
Adjust the Packer Blade Ahead Proximity Switch if:

- the packer blade stops before reaching the fully 'home' position; or
- the pack cylinders remain pressured up or abruptly bottom out at the 'home' position.

*Adjustment Procedure:*

1. Move the packer blade to the half pack position, switch off the hydraulic pump, shut the engine off and remove the key (see *Lockout/Tagout Procedure* on page 37).

**NOTE:** (2/3 blade only!) The front edge of a 2/3 blade should be set 4 in. (10.16 cm) forward of the wiper rubber.



2. Remove the cover protecting the packer blade ahead and half pack proximity switches and check that the actuator bolt is 3 3/4 in. (9.52 cm) from the front end of the slot and perpendicular to the front header. Adjust if necessary.

---

**NOTE: Full Eject:** The actuator bolt is attached to a clamp that should be 1/16 in. (1.58 mm) below the top of the shaftend cylinder collar.

**Tip-to-Dump:** The actuator bolt is threaded into a plate that is welded to the cylinder tube. The actuator bolt is cemented in place with Locktite 242 or 272.

---

3. Check the gap between the proximity switch and the tab.  
If the gap is too wide or too narrow, proceed with the adjustment:
  - 3 a. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.
  - 3 b. Tighten the proximity switch nuts.
  - 3 c. Test the operation.
4. Continue with the adjustment of the half pack proximity switch, if necessary, or replace cover.

#### Adjusting Half Pack Proximity Switch

The half pack proximity switch controls the sweep of the packer blade. An actuator trips the half pack proximity switch when the packer blade reaches the half pack position during an Auto-Pack or pack operation.

*Location:*

The half pack proximity switch is positioned on top of the front header (front of the body) on the curb side.

---

**Figure 3-14 Half pack proximity switch**



*Testing Procedure:*

1. Empty all refuse from the body and set the engine to 1500 rpm.
2. Watch the packer blade as you press the PACK button.  
Adjust the half pack proximity switch if:
  - the packer blade stops before reaching the half pack position; or
  - the packer blade travels past the half pack position.

Adjustment Procedure:

1. Move the packer blade to the half pack position, switch OFF the hydraulic pump, shut the engine off and remove the key (see *Lockout/Tagout Procedure* on page 37).
2. Remove the cover protecting the packer blade ahead and half pack proximity switches and check that the actuator bolt is 3 3/4 in. (9.52 cm) from the front end of the slot and perpendicular to the front header.

---

**NOTE:** *Full Eject:* The actuator bolt is attached to a clamp that should be 1/16 in. (1.58 mm) below the top of the shaft-end cylinder collar.

*Tip-to-Dump:* The actuator bolt is threaded into a plate that is welded to the cylinder tube. The actuator bolt is cemented in place with Locktite 242 or 272.

---

3. Check the gap between the proximity switch and the tab.  
If the gap is too wide or too narrow, proceed with the adjustment:
  - 3 a. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.
  - 3 b. Tighten the proximity switch nuts.
  - 3 c. Test the operation.
4. Start the Front Loader, switch ON the hydraulic pump and test the packer blade operation.
5. Repeat steps until the half pack proximity switch is correctly adjusted.
6. Reinstall the cover protecting the packer blade ahead and half pack proximity switches.

**Adjusting Side Access Door Proximity Switch**

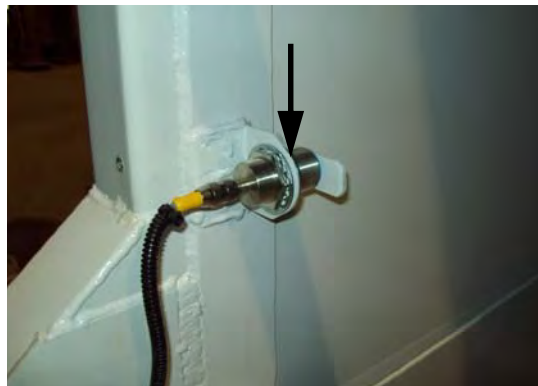
The side access door proximity switch affects the power to all packer system electric controls. It also cuts power to all hydraulic functions when the door is not fully closed.

*Location:*

The side access door proximity switch is mounted on the side access door frame.

---

**Figure 3-15** Side access door proximity switch





*Testing Procedure:*

1. Open the side access door approximately 2" (5 cm) and attempt to operate any hydraulic function. All hydraulic functions should be disabled.

---

**Caution!** Injury or death may occur if you attempt to enter the body while the packer blade or arms are working.



---

If all hydraulic functions are not disabled, it may be that the proximity switch is not adequately adjusted.

To adjust the side access door proximity switch:

1. Complete lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 37).
2. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.
3. Tighten the proximity switch nuts.
4. Test the operation.

**Adjusting Top Door Proximity Switch**

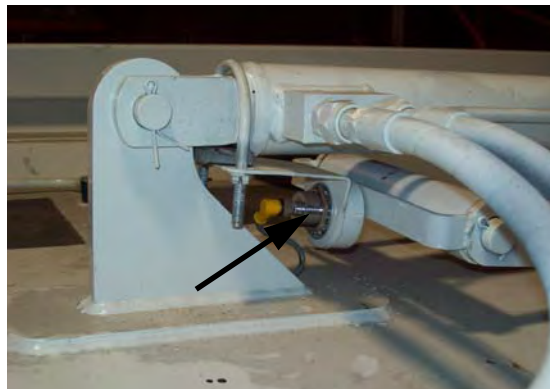
The top door proximity switch controls the cutout of the arms up function if the top door is not fully open. It also illuminates the warning lamp on the MDM control console.

*Location:*

The top door proximity switch is mounted on the body roof under the top door cylinder.

---

**Figure 3-16 Top door proximity switch**

*Adjustment Procedure:*

1. Open the top door so approximately 2 in. (5.08 cm) of the door is exposed. The top door hydraulic cylinder is almost fully retracted.
2. Complete the Lockout/Tagout Procedure (see *Lockout/Tagout Procedure* on page 37).
3. Adjust the proximity switch so the top door triggers the switch when it is fully open (see *Adjusting Gap between the Proximity Switch and the Tab* on page 74).



4. Repeat steps until proximity switch is properly adjusted.

#### **Adjusting Tailgate Fully Open Proximity Switch**

The tailgate fully open proximity switch allows the packer to complete a full eject sweep when the tailgate is fully open.

##### *Location:*

The tailgate fully open proximity switch is located on the body roof, near the street-side tailgate hinge.

**Figure 3-17 Tailgate fully open proximity switch**



##### *Adjustment procedure:*

1. Fully open the tailgate.
2. Adjust the tailgate fully open proximity switch so it can detect the tab. The “Tailgate Fully Open” warning message should appear on the MDM screen.
3. Slightly close the tailgate to about an inch. Detection of the tab by the proximity switch should not be possible now, and the “Tailgate Fully Open” warning message will have disappeared from the MDM screen.
4. Repeat the procedure until the proximity switch is properly adjusted.

#### **Adjusting Tailgate Ajar Proximity Switch**

The tailgate ajar proximity switch disables the pack cycle, illuminates a warning light on the MDM control module and sounds the backup alarm if the tailgate is not completely closed.

##### *Location:*

The tailgate ajar proximity switch (see Figure 3-18) is in front of the driver’s side tailgate hook.

**Figure 3-18 Tailgate ajar proximity switch (protective cover removed)***Adjustment Procedure:*

1. On the MDM control module, press the REAR DOOR toggle switch down while pressing the DOOR ENABLE switch to relieve any pressure on the tailgate latch blocks.
2. Remove both tailgate locks.
3. Remove the cover protecting the tailgate ajar proximity switch.
4. Lower the latch hooks and open the tailgate. Check that the tailgate ajar proximity switch warning lamp illuminates and buzzer sounds as soon as switch contact is lost.
5. With the tailgate open, operate the PACK button. The pack function should be disabled.
6. Close the tailgate and raise the latch hooks. The tailgate ajar proximity switch should be triggered again. Check that the tailgate ajar proximity switch warning lamp extinguishes and buzzer is silent as soon as switch contact is back.

Adjustment of the gap between the switch and the tab may be required if the switch contact is not working properly. To do so:

- 6 a. Complete lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 37).
- 6 b. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.
- 6 c. Tighten the proximity switch nuts.
- 6 d. Test the operation.
7. With the tailgate closed, operate the PACK button and ensure the packer blade travels to the mid-body. Return the blade to the 'home' position.
8. Repeat steps if necessary.
9. Re-install both tailgate locks, and re-install protective cover.

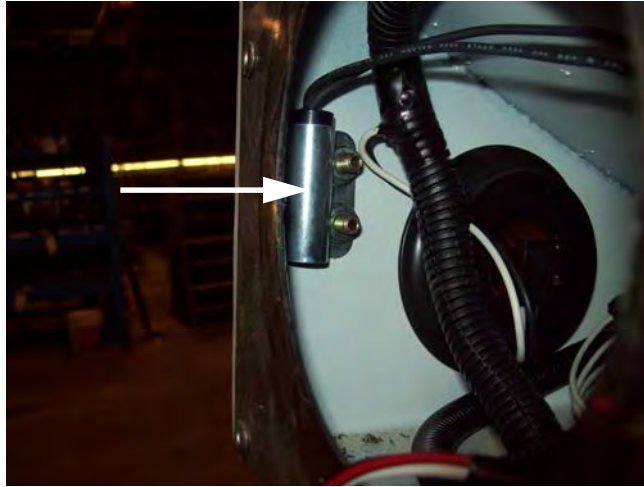
**Adjusting Tailgate Mercury Switch**

The tailgate mercury switch (see Figure 3-19) allows you to enable the pack cycle when the tailgate is fully open. When fully open, it bypasses the half pack proximity switch that limits packer blade travel to the half-pack position and allows the packer blade to complete a full eject sweep. In addition, this proximity switch disables autopack.

*Location:*

The mercury proximity switch is inside the tail light box directly behind the left tail light. Mounted with a bracket bolted to the light box, it is positioned in the open (default) position.

**Figure 3-19** Tailgate mercury switch



*Adjustment Procedure:*

1. Complete the Lockout/Tagout Procedure (see *Lockout/Tagout Procedure* on page 37).
2. Push out the left rear stop/tail light.
3. Ensure the mercury switch body is fully inserted into the mounting bracket clips, and positioned the correct way around.
4. Start the Front Loader and switch ON the hydraulic pump.
5. Open the tailgate fully.
6. Operate the PACK button and ensure the packer blade completes a full eject cycle.
7. Close the tailgate and re-insert the tail light.

---

**NOTE:** Tip-to-Dump (Gravity Dump) units are equipped with this mercury switch, although the packer blade does not complete a full eject cycle.

---

---

**NOTE:** All Units: The mercury switch is fitted to ensure that the packer blade will not operate unless the tailgate is *fully* open.

---

**Adjusting Arm Partially Raised Proximity Switch**

This proximity switch stops the arms at mid-height if the packer is not in the “home” position.

*Location:*

The arm partially raised proximity switch (see Figure 3-20) is fitted in front of the street-side arm pivot tube.

**Figure 3-20 Arm partially raised proximity switch**

*Adjustment procedure:*

1. Lower the arms.
2. Complete the Lockout/Tagout Procedure (see *Lockout/Tagout Procedure* on page 37).
3. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4" with the tab.  
Loosen the cam's retaining bolts and the locking setscrew if necessary to achieve the required gap.
4. Tighten back all nuts and bolts.
5. Start the engine and switch on the hydraulic pump.
6. Raise and lower the arms to check when the proximity switch is triggered.  
It should be triggered as soon as the fork pivot tube is at the top of the windshield.

---

**NOTE:** The warning lamp on the MDM control module should illuminate and the optional buzzer should sound while the forks travel above the windshield. The PACK function is disabled with the arms in this position.

---

7. Repeat the above steps until the proper setting is achieved.
8. Tighten the locking setscrew on the cam.

#### **Adjusting Arm and Fork Fully Retracted Proximity Switches**

The arm fully retracted proximity switch sends a signal to the warning lamp on the MDM control module to illuminate and to the monitor to display the "Arms not Stowed" message if the arms are not completely parked. Both arms and forks must be completely parked in order to turn off the warning lamp and to delete the "Arms not Stowed" message from the monitor display.

*Location:*

The arm fully retracted proximity switch is located on the street-side arm pivot tube (see Figure 3-21).

**Figure 3-21 Arm fully retracted proximity switch**

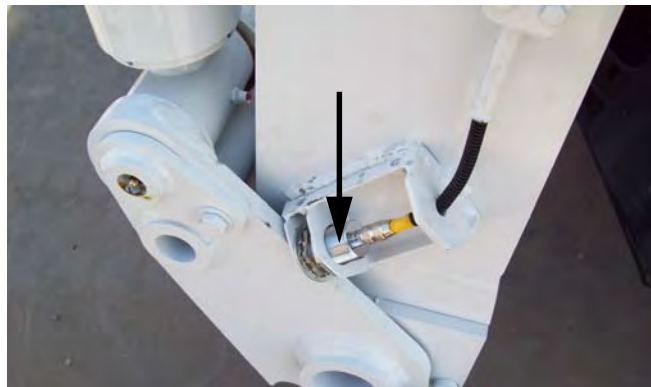


The fork fully retracted proximity switch sends a signal to the warning lamp on the MDM control module to illuminate and to the monitor to display the “Arms not Stowed” message if the arms are not completely parked. Both arms and forks must be completely parked in order to turn off the warning lamp and to delete the “Arms not Stowed” message from the monitor display.

*Location:*

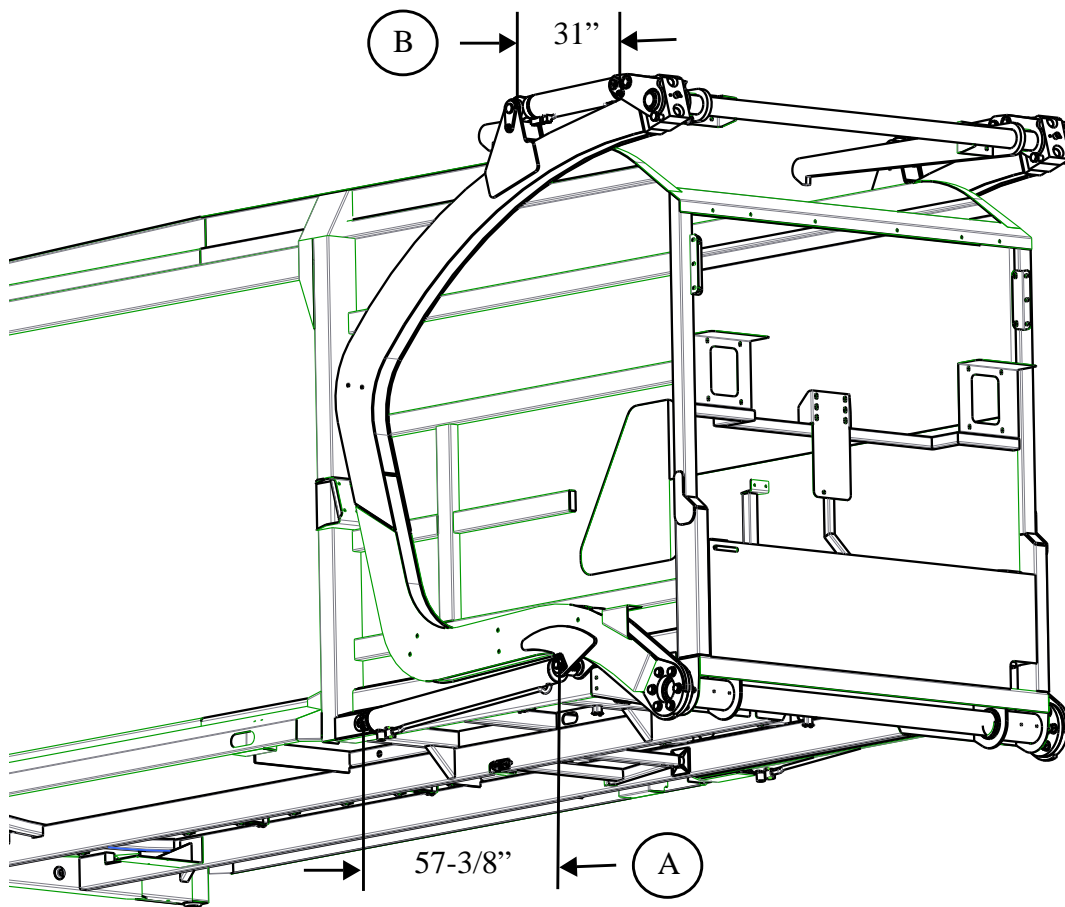
The fork fully retracted proximity switch is located on the street-side fork.

**Figure 3-22 Fork fully retracted proximity switch**



*Adjustment procedure:*

1. Raise the arms until a distance of 57 3/8 inches is achieved between both cylinder attachments (center to center) [see Figure 3-23, (A)].

**Figure 3-23 Distances to achieve**

2. Adjust the tab so it activates the arm fully retracted proximity switch.
3. Lower the arms.
4. Retract the forks until a distance of 31 inches is achieved between both fork cylinder attachments (center to center) [see Figure 3-23, (B)].
5. Adjust the tab so it activates the fork fully retracted proximity switch.
6. Perform tests to see if the warning lamp on the MDM control module reacts properly and the “Arm not Stowed” message appears on the monitor when the forks or the arms are not fully parked.
7. If the warning lamp does not “react” properly on the MDM control module or the “Arm not Stowed” message does not appear on the monitor, readjust the proximity switches and their tabs. The warning lamp should turn off only when the arms are fully raised and the forks fully retracted.

### Adjusting Body Raised Proximity Switch (Tip-to-Dump Units)

The body raised proximity switch is ACTIVATED when the plate welded to the underside of the body loses contact with the chassis. The proximity switch then triggers the “Body Raised” warning message to appear on the MDM display screen. Upon returning the body to the seated position, the body raised proximity switch is DEACTIVATED and the “Body Raised” warning message is disappeared from the MDM display screen.

#### *Location:*

The body raised proximity switch is center mounted on the curbside chassis frame rail.

**Figure 3-24 Body raised proximity switch**



#### *Adjustment procedure:*

1. Raise the body and position the body safety prop. Refer to “Setting the Body Safety Prop” on page 28.
2. Complete the Lockout/Tagout Procedure (refer to “Lockout/Tagout Procedure” on page 37).
3. Loosen the proximity switch mounting nuts. Slide the switch forward or backward in the mount to achieve a gap of approximately 1/4” with the tab.
4. Tighten the proximity switch nuts.
5. Start the Front Loader and switch on the hydraulic pump.
6. Return the body safety prop to the resting position and lower the body.
7. Raise the body again and check that the “Body Raised” warning message appears on the MDM display screen (see Figure 3-6) and the buzzer sounds as soon as the body is not properly seated on the chassis.
8. Lower the body until contact with the chassis is made. Check that the “body raised” warning message disappears and buzzer is silent only when the body is properly seated on the chassis.
9. Test and repeat steps 1– 4, if necessary.

## Pneumatic System

The pneumatic system section describes how the pneumatic components work. Refer to OEM manuals for information on the adjustment and repair of pneumatic components.



## How the Pneumatic System Works

The Pneumatic system includes:

- ♦ Air Supply
- ♦ Filtering System
- ♦ Controls
- ♦ Valve Box and Air Valves
- ♦ Air Actuators

### Air supply

Air is drawn from the chassis air tank, passes through an air and mist filter system and into the valve box. The system runs at approximately 120 psi. For additional information, consult your chassis OEM.

---

**Figure 3-25** Chassis air tanks with 90 psi check valve highlighted



### Filter system

The chassis air supply is filtered before it is used in the packer control circuit. Two filters are fitted behind the cab. Air supply is passed through an air filter, a mist separator and then routed to the air valve box.

---

**NOTE:** Filter elements should be replaced as per the Maintenance Schedule guidelines (see *Maintenance Checklist* on page 50).

**The filter bowls and chassis air tanks must be manually drained daily to remove moisture.**

---

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**IMPORTANT:** Poorly maintained pneumatic control systems are a major cause of packer control failure.

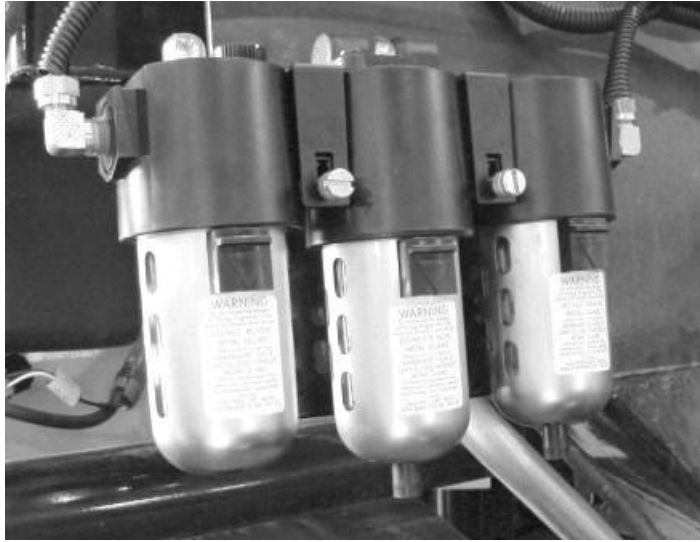
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### In-Line Lubricator (optional)

Recommended for use in cold and dry climates, the optional lubricator is fitted in line after the mist separator. It is filled with air tool oil which is bled into the system to ensure adequate lubrication.



**Figure 3-26 In-line lubricator**



### Controls

Standard arm/fork control is by means of a dual handle joystick, mounted next to the driver.

**Figure 3-27 Dual handle joystick**



The arms up joystick's air lines are the only lines with a cutout valve. This cutout valve cuts air to the joystick and to the arm up function when the packer is not in the 'home' position or when the top door is not fully open.

### Outside/Curbside Controls

Auxiliary controls can include a joystick mounted either behind the cab or mounted in the passenger side of the cab and accessible through the open passenger door from the curbside (residential package). In this case the joystick air lines are separated by Directional Control Valves.

The throttle advance switch fitted to the outside control station will advance the engine RPM to 1500 when activated. The transmission must be in neutral, and the engine ECM programmed to act on the input signal.

With the throttle advance switch in the “auto” position, the system will advance to 1500 RPM when the PACK, RETURN or AUTOPACK functions are activated.

**Figure 3-28 Outside controls (mounted behind cab)**

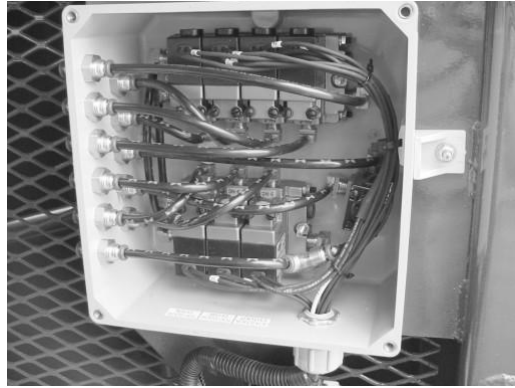


**Figure 3-29 Curbside controls**



### **Valve Box and Air Valves**

The valve box houses the solenoid-operated air valves that direct air to the air actuators on the hydraulic valve bank. Power is required to energize the solenoid so air can pass to the work section dedicated to that particular air valve.

**Figure 3-30 Valve Box**

Supply air from the chassis air tank passes through the filters then feeds the air valves in the valve box. These normally closed air valves are grouped into banks capped with manifold ends with ports for supply and exhaust air to be routed. When an air valve opens, air passes through a single air line from the air valve and leads to one of two ports on an air actuator on the hydraulic valve bank or to the joystick.

Your WITTKE RETRO FL™ may not have all the air valves listed below.

Valve Box Air Valves	
Tailgate open	extends the tailgate cylinders
Tailgate close	retracts the tailgate cylinders
Top door open	retracts the top door cylinder
Top door close	extends the top door cylinder
Pack	extends the pack cylinders
Return	retracts the pack cylinders
Arms up cutout	cuts air used to retract the arm cylinders
Tipper up	cycles tipper actuator up
Tipper down	cycles tipper actuator down
Hoist up	extends hoist cylinders
Hoist down	retracts hoist cylinders
Throttle advance	increases vehicle RPM's by retracting an air cylinder which is linked to the throttle
Main joystick cutout	disables joystick operation with the hydraulic pump off

### Air actuators

Air from the air valves and joystick is routed to the air actuators mounted on the hydraulic valve sections. The air actuators are dedicated to a particular hydraulic function and influence the direction in which the valve spool is moved. Once the air supply is removed from the actuator, the valve spool is centered by its spring, and the actuator returns to the neutral position.

**Figure 3-31 Air actuators**



### Central Air Drain Cocks (optional)

A series of air drain cocks are provided on a bracket at the battery box.

---

**IMPORTANT:** All air tanks should be drained daily.

---



---

**NOTE:** Be sure to drain the wet tank first.

Poorly maintained pneumatic control systems are a major cause of packer control failure.

---

Your air drain cocks may differ slightly from those shown in Figure 3-32.

**Figure 3-32 Air drain cocks**



### Gravity Dump (Tip-to-Dump) Units

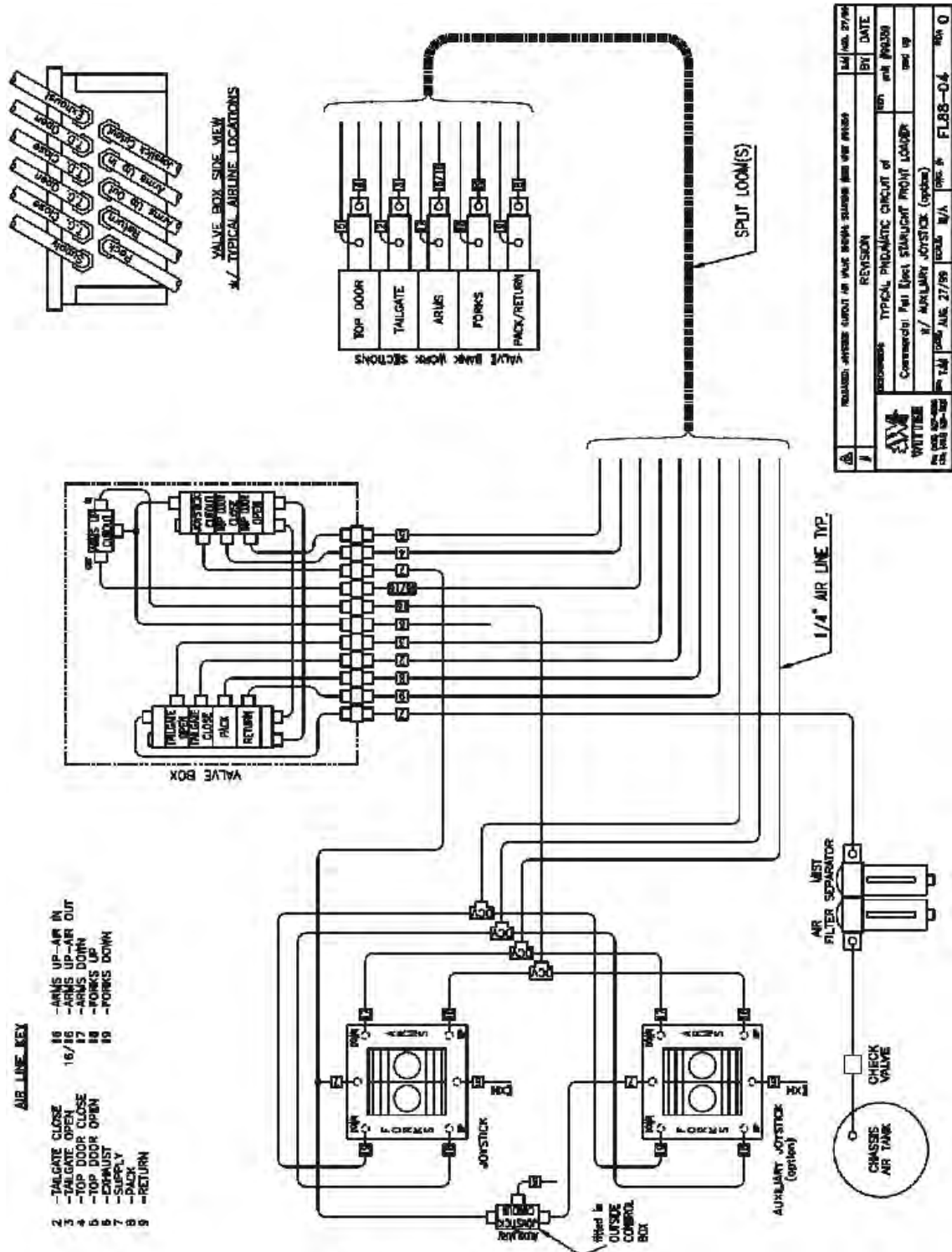
Coiled air lines are used to connect the valve box and joystick to the air actuators.

In addition, quick exhaust valves are included in the joystick lines to ensure positive control.

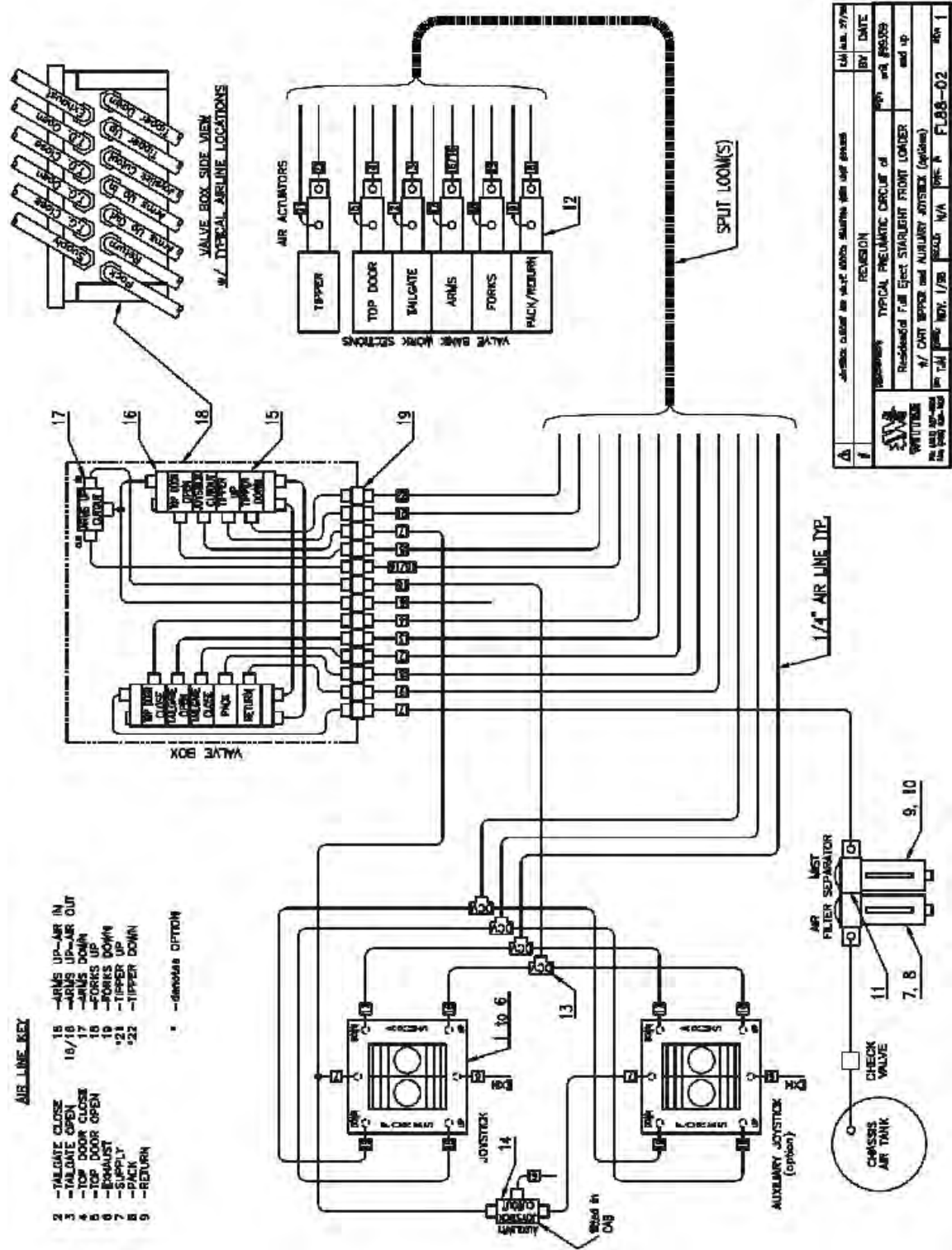
## Pneumatic System Schematics

Each WITTKE RETRO FL™ unit is provided with its specific schematic. Please refer to this schematic for more details on the pneumatic system of your unit.

### Commercial Front Loader



Residential Front Loader





## Hydraulic System (Commercial Type FI)

**NOTE:** The hydraulic system section is divided by body type (commercial, residential, tip-to-dump). The first section, Commercial Front Loader, represents a standard configuration. Residential Front Loader and Tip-to-Dump Front Loader variations follow.

### Hydraulic Oil Tank

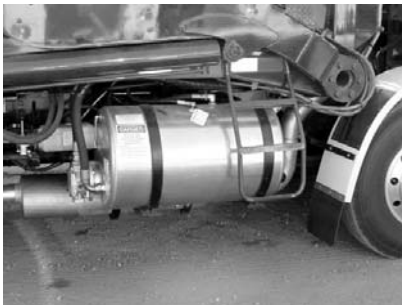
The hydraulic oil tank is a 55 gallon capacity reservoir mounted to the chassis frame. It houses the reservoir return line filter assembly, as well as a suction line strainer. Fitted to the tank is a breather cap which allows the tank to breathe as oil is drawn out of the tank. It is critical to inspect the breather cap for cleanliness and serviceability on a regular basis. A ball valve is provided in the suction line in order to isolate the tank during maintenance.

#### Caution!



The ball valve must be open while you operate the hydraulic pump. Severe damage to the hydraulic pump will occur if it is run with this valve closed.

**Figure 3-33** Oil tank (left), breather cap (center), ball valve (right)



### Return Line Filter

Oil returning from the valve bank passes through a 10 micron filter mounted in the tank. Refer to “Maintenance Checklist” on page 50 for more details on the replacement frequency.

**Figure 3-34** Return line filter

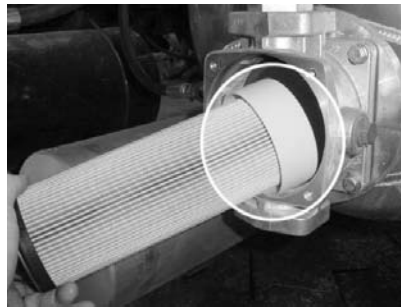




## Return Line Filter Element

While every effort is made at the Labrie Enviroquip Group factory to ensure clean hydraulic systems, it should be noted that most hydraulic system manufacturers recommend the filter be replaced after a break-in period. Labrie's recommendation is to replace this filter element after a break-in period of 50 hours operational use.

**Figure 3-35** Return line filter element



## Routine Maintenance

Routine element replacement will ensure that contaminants trapped due to ingestion and component wear are removed from the system by maintenance.

The replacement interval may be determined by operational duty cycle, operating conditions and local maintenance schedules.

Labrie Enviroquip Group recommends the filter element be replaced every 1000 hours operational use. Refer to "Maintenance Checklist" on page 50.

The element must also be changed following a major hydraulic component failure.

## Element Replacement Procedure

To replace the return line element:

1. Complete the lockout/tagout procedure (see *Lockout/Tagout Procedure* on page 37).

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**IMPORTANT:** Keep tools, working area and equipment clean. A pan will be required to collect a small amount of oil lost as the element is removed.

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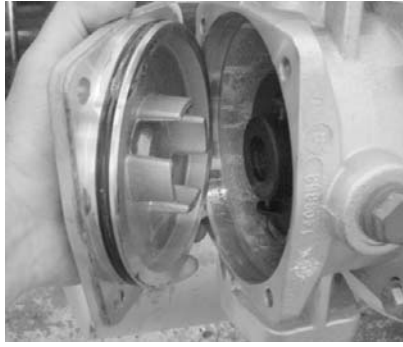


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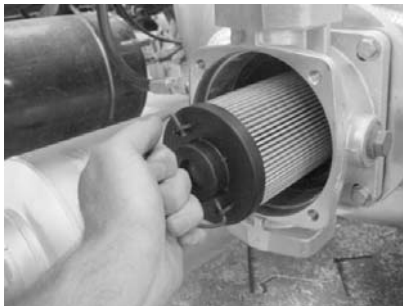
**NOTE:** The filter housing is fitted with a check valve, therefore it is not necessary to drain the hydraulic tank.

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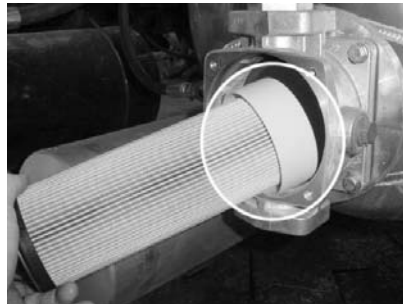
2. Release system pressure by slowly removing the hydraulic tank cap.
3. Loosen the 4 cover plate screws, rotate through 45° and lift off.



4. Carefully remove the element by the handle, rotating it as you do so to release suction.



5. Remove and retain the yellow contamination retainer. Clean and install onto the new filter.



6. Inspect O-rings and housing for damage. Replace as necessary.
7. Moisten sealing surfaces (with oil) on the filter housing and cover plate.
8. Install element into housing, carefully locating the element onto the spigot.
9. Replace cover plate.
10. Operate hydraulic system and check for leaks.

## Hydraulic Oil

Factory filled hydraulic oil is tested for cleanliness and identified by a tag attached to the hydraulic tank.

Hydraulic oil is the lifeblood of the system. Particles in the oil will devastate any hydraulic system overtime, therefore regular oil changes will most likely extend the life of components and equipment.

Oil should be replaced when it becomes oxidized, when it has a significant change in color and/or becomes milky or cloudy.

Laboratory analysis is an effective method of obtaining accurate information on the cleanliness of hydraulic oil.

The renewal interval of hydraulic oil may be determined by operational duty cycle, operating conditions and local maintenance schedule.

Labrie Enviroquip Group recommends hydraulic oil be replaced or filtered every 1000 hours.

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**NOTE:** Do not mix different brands of oil. In doubt, drain and refill with new oil.

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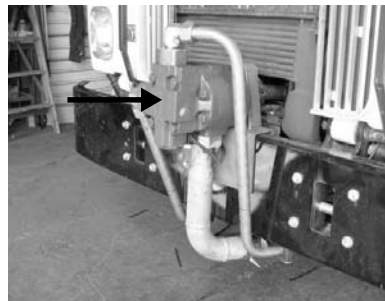
**IMPORTANT:** It is the customer's responsibility to use the grade of oil that is appropriate for the climate.

---

## Hydraulic Pump

Supply oil from the tank enters the hydraulic pump through the suction line. Pressurized oil exits the hydraulic pump through the pressure line directly to the directional control valves. A return line exits the hydraulic pump and runs excess oil back to the oil tank. Refer to the pump OEM for more information.

**Figure 3-36 Hydraulic Pump**



## Directional Control Valves

Pressurized oil is directed from the hydraulic pump to a bank of stack-type directional control valves mounted on the front header of the WITKE RETRO FL™ body (see Figure 3-37). Rubber gaskets seal each valve section.

The valve bank on a commercial unit is comprised of:

- ♦ **Inlet Section**

The oil enters the valve bank through the top of the inlet section where it is then directed to the work sections below. The pressure test port is located at the front of the inlet section. Remove the plug and install a pressure gauge to read the system operating pressure.

- ♦ **Working Sections**

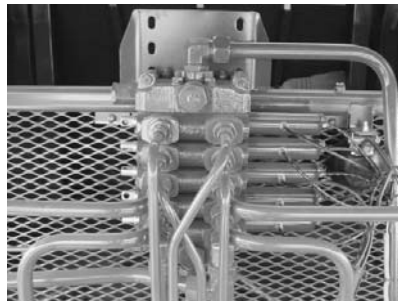
Hopper top door, tailgate, arms, forks and pack circuits are controlled by a work section dedicated to each function. Air actuators attached to the work section shift the spool in the desired direction to allow pressurized oil to operate the hydraulic cylinder. Returning oil is allowed to escape to tank via the return passage, outlet section & return lines.

- ♦ **Outlet Section**

Caps the bottom of the valve bank to provide a path for returning oil to travel to the return line filter in the tank.

---

**Figure 3-37** Directional control valves



## Pressure Relief Valve

The pressure relief valve is fitted in the inlet section of the valve bank and protects the hydraulic components from damage caused by loads in excess of 2250 psi. When pressure exceeds the setting of the relief valve, the oil overcomes the adjustment spring and opens the relief valve allowing oil to return to the tank.

---

**Figure 3-38** Pressure relief valve



## Work Circuits (Commercial)

The circuits have been listed from top to bottom as they appear in the valve bank assembly (see Figure 3-37).

---

**NOTE:** The following list is for the commercial front loader only. See following sections for residential and tip-to-dump configurations.

---

- 1. Hopper Top Door Circuit:** The hopper top door circuit includes one double-acting hydraulic cylinder and two flow restrictors.
- 2. Tailgate Circuit:** The tailgate circuit consists of two double-acting hydraulic cylinders, two lock valves and two flow restrictors.
- 3. Arms Circuit:** The arms circuit consists of two double-acting cylinders and a deceleration valve.
- 4. Forks Circuit:** The forks circuit consists of two double-acting cylinders.
- 5. Pack/Return Circuit:** The pack circuit consists of two double-acting, 3-stage cylinders, a pilot-operated check valve, and a pressure switch.

## Work Circuits (Residential)

The residential valve bank work circuits are identical to the commercial work circuits shown above with one exception: the top circuit on the residential unit is the Cart Tipper circuit. The remaining circuits follow in the same order as the commercial work circuits.

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**NOTE:** The cart tipper is optional, and therefore, this circuit may not appear on your vehicle.

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## Work Circuits (Tip-to-Dump)

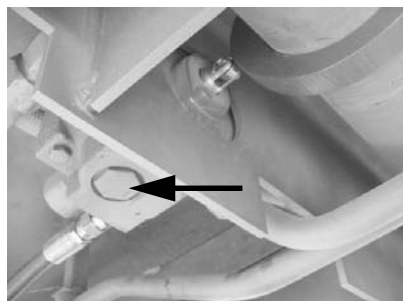
The Tip-to-Dump work circuits are identical to the commercial work circuits shown above with one exception: the top circuit on these units is the Hoist circuit. The remaining circuits follow in the same order as the commercial work circuits.

## Arms Up Deceleration Valve

The arms up deceleration valve (see Figure 3-39) automatically decelerates the arms as they are raised to the dump position. A cam bolted to the arm pivot tube rotates as the arms are raised and gradually depresses the valve spool, reducing the flow of oil exiting the tube end of the arm cylinders.

---

**Figure 3-39** Deceleration valve




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**NOTE:** The deceleration valve greatly reduces impact on the arm assembly, body structure, and hydraulic components.

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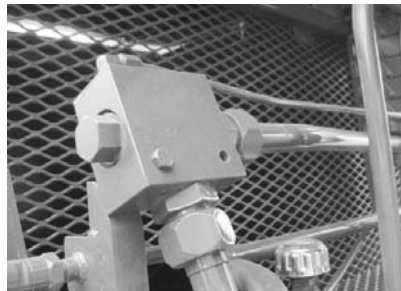
Location: Fitted to the underside of the body, behind the arm pivot tube on the curbside.

For adjustment procedure, refer to “Adjusting the Arms Up Deceleration Valve” on page 107.

## Pack Circuit Dump Valve

The pilot-operated check valve (dump valve [see Figure 3-40]) is fitted into the pack hydraulic circuit for the purpose of speeding up the return stroke of the packer blade.

**Figure 3-40** Dump valve



Pressure in the pilot line during the return stroke opens the dump valve and allows approximately 50 percent of the oil exiting the cylinders to go directly to the hydraulic tank. The dump valve is non-adjustable.

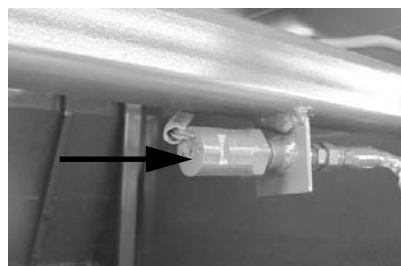
**NOTE:** Symptoms of pack circuit dump valve failure include poor payloads, slow cycle times, and low pressure readings during the pack cycle.

Location: The pack circuit dump valve is fitted on to the front header behind the passenger side of the cab.

## Pressure Switch

The pressure switch (see Figure 3-41) ensures the packer blade returns to the ‘home’ position during an Auto-Pack cycle, when the body is nearing capacity and the blade is therefore unable to complete a full sweep.

**Figure 3-41** Pressure Switch



**NOTE:** Symptoms of pressure switch failure include poor payloads, premature return of packer blade during Auto-Pack, and failure of blade to return during Auto-Pack.

**Location:** The pressure switch is fitted onto the front header cross tube, next to the main hydraulic valve.

For adjustment procedure, refer to “Adjusting the Main System Pressure” on page 109.

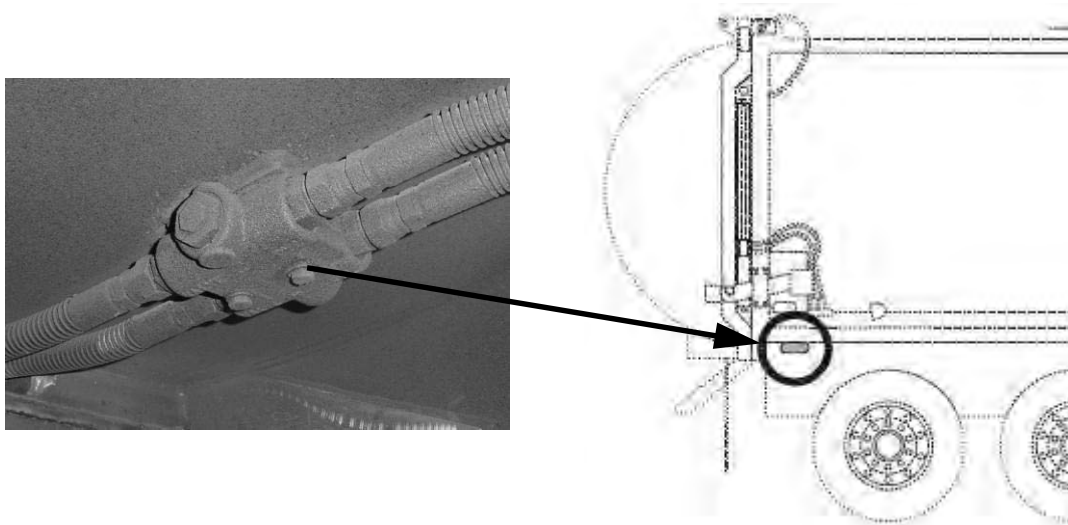
## Tailgate Lock Valves

The lock valves (see Figure 3-42) provide a hydraulic lock to keep the tailgate cylinders from bleeding oil back into the system. The resulting loss of pressure can result in the tailgate becoming unlatched, if the operator has failed to secure the tailgate latch blocks.

Hydraulic pressure must be applied to the lock valve in order to open the return passage. The valves are non-adjustable.

**Location:** The tailgate lock valves (2) are located on the underside of the body, near the tailgate on either side of the body.

**Figure 3-42** Lock valve (left), and its location (right)



## Service Hoist (optional)

The service hoist circuit is independent of the main work circuits and is operated by an electric hydraulic pump (see Figure 3-43) with adjoining oil tank. Two small bore cylinders allow the body to be raised for maintenance purposes.

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**Caution!** The service hoist is not intended to lift a loaded body.



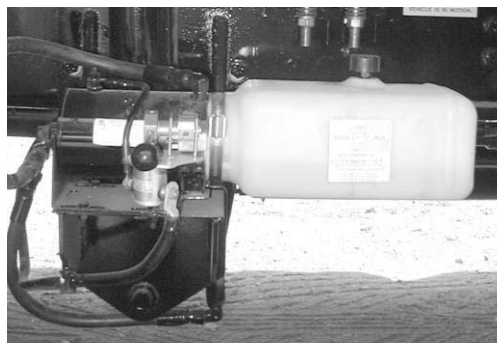

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Should adjustment be required, an adjustment screw is located on the truck side of the pump body (see Figure 3-44).

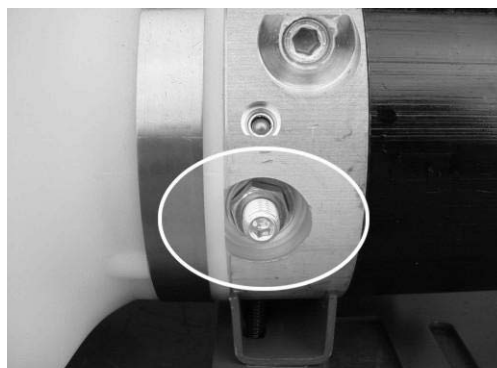
To adjust the service hoist pressure:

1. Loosen locknut.
2. Using an allen wrench, turn the adjustment screw clockwise  $\frac{1}{2}$  turn.
3. Tighten locknut.

**Figure 3-43 Service hoist pump**



**Figure 3-44 Adjustment screw**



## Hydraulic System (Residential Type FI)

The hydraulic system on a residential Front Loader with the cart tipper option includes:

- ♦ Priority Valve,
- ♦ Directional Control Valves,
- ♦ Pressure Relief Valves, and
- ♦ Work Circuits.

### Priority Valve

The priority valve cartridge (see Figure 3-45) divides hydraulic oil into two lines: a priority line for the auxiliary hydraulic attachment (i.e. cart tipper) and a bypass line for the hopper top door, tailgate, arms, forks and pack circuits. The cartridge supplies 3 GPM to the main valve inlet section. The remaining oil is passed to the mid-inlet section in the main valve bank.



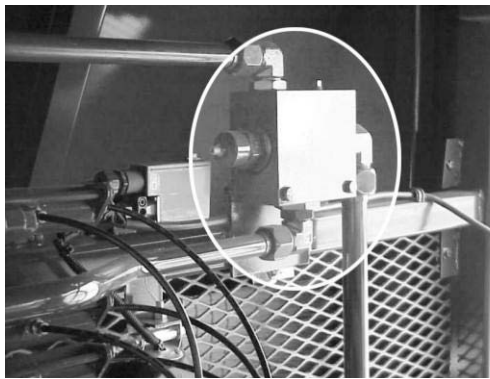
While the priority valve cartridge is adjustable plus or minus 20 percent, it is factory set and should not require adjustment.

**Caution!** Tampering with the priority flow may exceed cart tipper manufacturer's recommendations and void warranty.



Location: Front header, behind the driver's side of the cab, next to the main valve.

**Figure 3-45** Priority valve



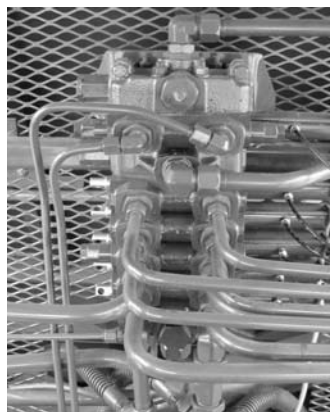
## Residential Main Valve Bank

The residential main valve bank (see Figure 3-46) differs from the commercial main valve bank in that the incoming oil is split and enters the valve via a top inlet section and mid-inlet section.

The top inlet section receives 3 GPM priority flow for use in the cart tipper circuit. All remaining oil enters the mid-inlet section for use in the remaining hydraulic circuits. When the cart tipper is not in use, the 3 GPM is available for use in other circuits.

Both inlet sections contain a pressure relief valve. Refer to "Adjusting the Main System Pressure" on page 109.

**Figure 3-46** Residential main valve bank



## Auxiliary Hydraulic Attachment Work Section

The uppermost of the working sections, the auxiliary hydraulic attachment work section (see Figure 3-47) commonly directs oil to the cart tipper attachment and receives oil from the top inlet section.

The outlet ports are equipped with work port relief valves preset to 1500 psi. These protect the cart tipper circuit from excessive pressure and are non-adjustable.

---

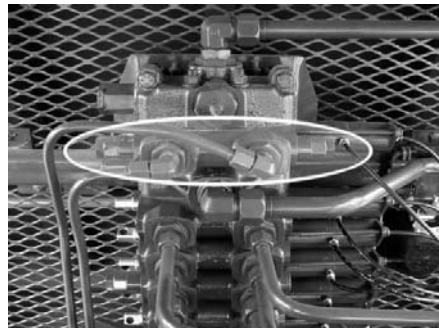
**Caution!** Tampering with work section relief valves may exceed cart tipper manufacturer's recommendation and void warranty.



---

Location: Main hydraulic valve bank, on the front header of the body.

**Figure 3-47** Auxiliary hydraulic attachment work section



## Arms Down Work Section

Designed to protect the arm hydraulic circuits, the arms down work section (see Figure 3-48) is equipped with a work port relief valve in the arms down outlet port only and is preset to 1000 psi.

---

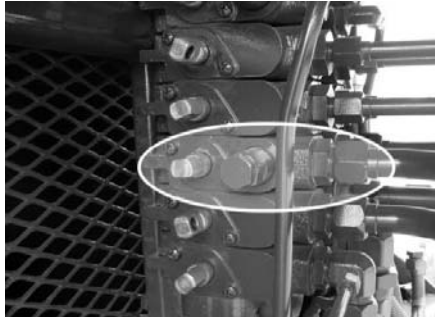
**Caution!** Tampering with the work port relief valve may cause serious damage to the arms circuit and void warranty.



---

Location: Main hydraulic valve bank, on the front header of the body.

**Figure 3-48 Arms down work section**



## Arms Down Deceleration Valve

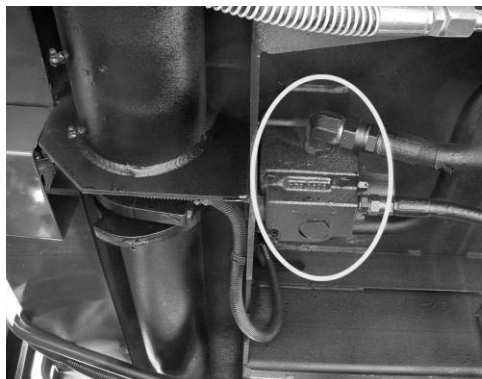
The arms down deceleration valve (see Figure 3-49) automatically decelerates the arms as they are lowered. A cam bolted to the arm pivot tube rotates as the arms are lowered and gradually depresses the valve spool, reducing the flow of oil exiting the shaft end of the arm cylinders.

**NOTE:** The deceleration valve greatly reduces impact on the arm assembly, body structure, and hydraulic components.

Location: Fitted to the underside of the body, behind the arm pivot tube on the streetside.

For adjustment procedure, refer to “Adjusting the Arms Down Deceleration Valve” on page 108.

**Figure 3-49 Arms down deceleration valve**



## Hydraulic System (Tip-to-Dump Type FI)

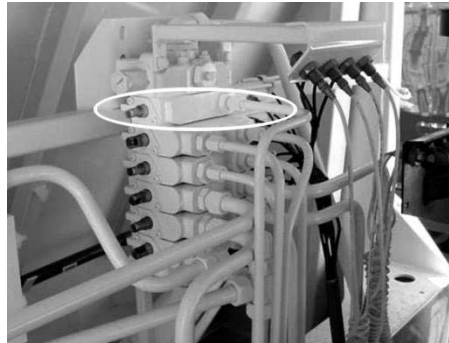
### Hoist Work Section

The hoist circuit employs single acting cylinders, therefore the hoist section has only one outlet (see Figure 3-50).

**NOTE:** The normal travel position for this valve is in the exhaust to tank position.

Location: Main hydraulic valve bank, on the front header of the body (uppermost section).

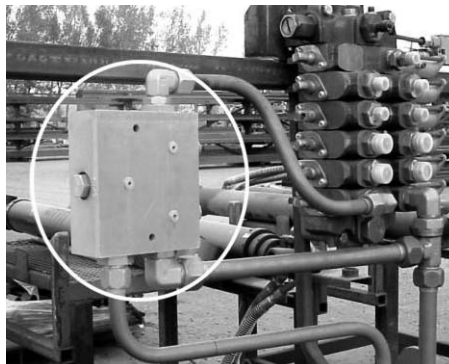
**Figure 3-50 Hoist work section**



## Regeneration Valve

The regeneration valve (see Figure 3-51) enables the PACK cycle to complete a rapid sweep of the hopper area. It consists of an aluminum block with 3 valve cartridges.

**Figure 3-51 Regeneration valve**



(1) During the PACK sweep, the pilot to close check valve directs the oil exiting the packer cylinders directly back to the 'live' end of the cylinder, boosting oil flow and speed (see Figure 3-52 #1).

(2) Pressure builds in the system as resistance increases. When pressure reaches 2,000 psi, the kick down relief valve opens, simultaneously closing the pilot to close check valve. Packing system pressure is now available at the cylinders (see Figure 3-52 #2).

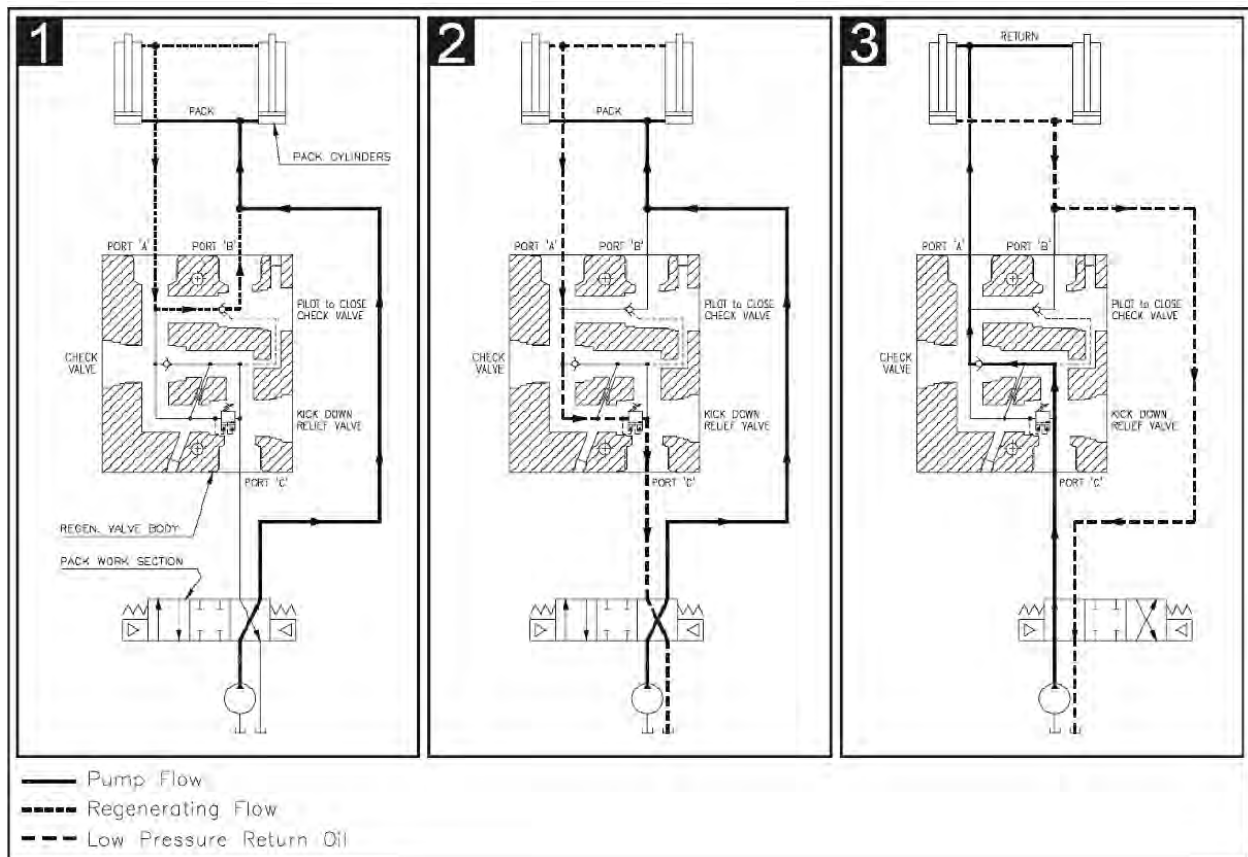
(3) During the return cycle, oil travels through the valve in the opposite direction and overcomes the check valve in the regeneration block. Returning oil must pass through the main valve and hydraulic filter before returning to the hydraulic tank (see Figure 3-52 #3).

---

**NOTE:** The regeneration valve is non-adjustable. Symptoms of failure include slow PACK cycle and poor payloads.

---

Location: Next to the main valve bank, on the front header behind the cab.

**Figure 3-52 Regeneration valve and the PACK cycle**

## Hydraulic System Adjustments

The required hydraulic system adjustments include:

- ♦ Adjusting the Arms Up Deceleration Valve
- ♦ Adjusting the Arms Down Deceleration Valve
- ♦ Adjusting the Main System Pressure.
- ♦ Adjusting the Pressure Switch

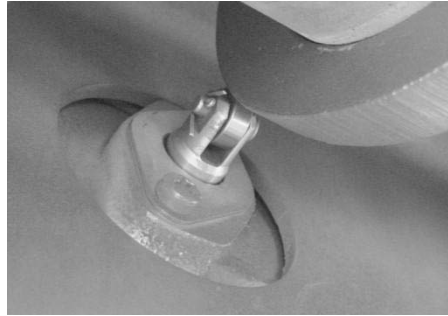
### Adjusting the Arms Up Deceleration Valve

For description of this valve, refer to “Arms Up Deceleration Valve” on page 99.

To adjust the arms up deceleration valve:

1. Raise the arms up until they rest on the arm stops.
2. Position the cam so it depresses the spool of the deceleration valve until there is approximately 3/16 in. (4.75 mm) of the spool still exposed (see Figure 3-53).

---

**Figure 3-53 Position the cam**

3. Tighten the retaining bolts of the cam.
4. Lower and raise the arms while running the engine at idle speed and again while running the engine at 1500 rpm.

---

**NOTE:** The arms should slow when they are approximately 18 in. (45.72 cm) away from the arm stops and gently come to rest against the arm stops.

---

5. If the arms reach the stops with jarring impact or the arms stop before reaching the arm stops:
  - 5 a. Loosen one retaining bolt and tap the cam in the required direction.
  - 5 b. Tighten the retaining bolt of the cam and repeat step 4.
6. Attach a container to the forks and repeat steps 4 and 5.
7. Remove the container from the forks and repeat steps 5 and 6 until the arms decelerate with and without a container on the forks.
8. Tighten the locking setscrew.

## Adjusting the Arms Down Deceleration Valve

For description of this valve, refer to “Adjusting the Arms Down Deceleration Valve” on page 108.

To adjust the arms down deceleration valve:

1. Lower the arms down as far as possible.
2. Position the cam so it depresses the spool of the deceleration valve until there is approximately 3/16 in. (4.75 mm) of the spool still exposed.
3. Tighten the retaining bolts of the cam.
4. Raise and lower the arms while running the engine at idle speed and again while running the engine at 1500 rpm.

---

**NOTE:** The arms should slow when they are approx. 18 in. (45.72 cm) away from being fully lowered and gently come to rest at the bottom of their travel.

---

5. If the arms reach the bottom of their travel with jarring impact or the arms stop before being fully lowered:
  - 5 a. Loosen one retaining bolt.

- 5 b. Tap the cam in the required direction.
- 5 c. Tighten the retaining bolt of the cam and repeat step 4.
- 6. Attach a container or carry can to the forks and repeat steps 4 and 5.
- 7. Remove the container from the forks and repeat steps 5 and 6 until the arms decelerate with and without a container on the forks.
- 8. Tighten the locking setscrew.

## Adjusting the Main System Pressure

As with all hydraulic systems, it may be necessary to periodically check and adjust pressure relief settings.

### Commercial Front Loader

To adjust the main system pressure:

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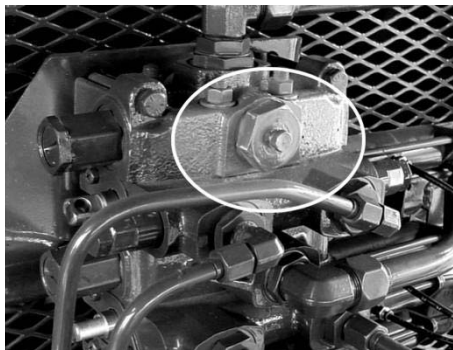
**NOTE:** The system pressure should be at 2250 psi.

---

- 1. Remove the plug from the test port located at the top of the main valve bank. Insert an 0-3000 psi pressure gauge (see Figure 3-54).

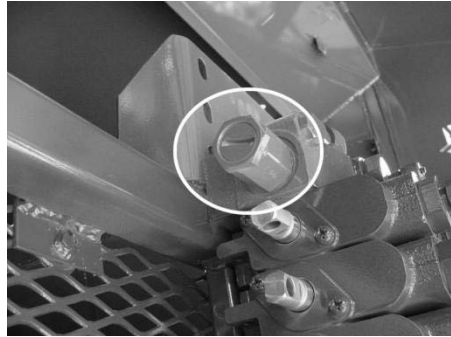
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**Figure 3-54 Plug to be removed**



- 2. With the engine running and the pump switch ON, raise the engine RPM to 1500 and return all hydraulics to their 'home' position (packer blade at front of body, arms down, forks down, hopper top door open, tailgate closed, body down). Note the reading on the gauge.
- 3. If adjustment is required (system pressure is higher or lower than 2250 psi), switch off the pump and locate the pressure relief valve screwed into the inlet section of the main valve bank (see Figure 3-55).

---

**Figure 3-55 Pressure relief valve (top inlet section)**

4. Loosen the locknut and turn the screw clockwise to increase system pressure, counterclockwise to decrease.
5. Repeat step 2.
6. When the hydraulic pressure is set to 2250 psi, tighten the locknut and recheck.
7. Remove the gauge and replace the plug.

**Residential Front Loader**

Residential Front Loaders are equipped with two pressure relief valves in the top inlet and mid-inlet sections.

The pressure relief valve fitted into the mid-inlet section is responsible for the main system pressure relief. The pressure relief valve fitted into the top inlet section is responsible for the cart tipper, or auxiliary hydraulic attachment work section. The top inlet section relief valve is set slightly higher since the cart tipper circuit is protected with work port relief valves set at 1500 psi (refer to “Auxiliary Hydraulic Attachment Work Section” on page 104).

To adjust the main system pressure:

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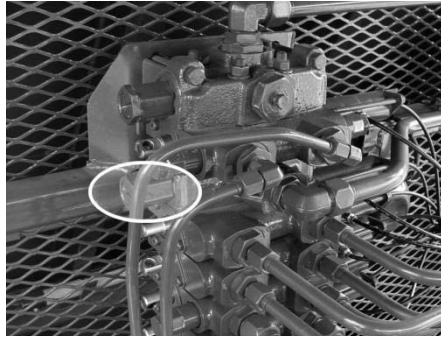
**NOTE: The system pressure should be at 2250 psi.**

---

1. Remove the plug from the test port located at the top of the main valve bank. Insert a 0-3000 psi pressure gauge (see Figure 3-54).
2. With the engine running and the pump switch ON, raise the engine RPM to 1500 and return all hydraulics to their ‘home’ position (packer blade at front of body, arms down, forks down, hopper top door open, tailgate closed, body down). Operate one hydraulic function and note the reading on the gauge.
3. If adjustment is required (system pressure is higher or lower than 2250 psi), switch off the pump and locate the pressure relief valve screwed into the mid-inlet section valve bank (see Figure 3-56).

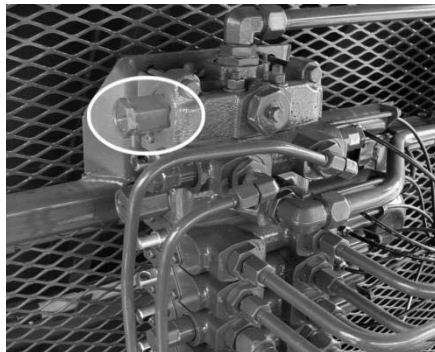


**Figure 3-56 Pressure relief valve (mid-inlet section)**



4. Loosen the locknut and turn the screw clockwise as far as it will go. Note the starting position.
5. Run a hydraulic function and note the reading on the gauge. This reading should be approximately 2350 psi and indicates the pressure relief setting of the top inlet section. This should be approximately 100 psi *higher* than the mid-inlet section.
6. If adjustment is required (pressure is higher or lower than 2350 psi), loosen the locknut of the top inlet section pressure relief valve and turn the screw clockwise to increase the pressure, counterclockwise to decrease (see Figure 3-57).

**Figure 3-57 Pressure relief valve (top inlet section)**



7. Repeat the operation of the hydraulic function and check the pressure is at 2350 psi. Tighten the locknut.
8. Now return the mid inlet section pressure relief valve screw to the starting position noted in step 4 and check that the main system pressure is at 2250 psi (see Figure 3-56).
9. If adjustment is required, turn the screw clockwise to increase system pressure, counterclockwise to decrease.
10. Repeat the operation of the hydraulic function and check the pressure is at 2250 psi. Tighten the locknut and recheck.
11. Remove the gauge and replace the plug.

## Adjusting the Pressure Switch

Both the commercial and residential Front Loaders are equipped with a pressure switch set to 2150 psi. Refer to "Pressure Switch" on page 100.

To adjust the pressure switch:

---

**NOTE:** This procedure is best carried out when the body is full and the half pack proximity switch is inoperable due to insufficient packer blade travel.

---

1. Check the main system pressure and verify that it is correctly set to 2250 psi. Refer to “Adjusting the Main System Pressure” on page 109.

---

**NOTE:** Leave the pressure gauge in place.

---

2. Locate the pressure switch (see Figure 3-41) and remove the cap screw plug (see Figure 3-58).

**Figure 3-58** Cap screw plug



3. Insert the allen wrench into the adjustment screw.
4. With the engine running and the pump switch ON, raise the engine RPM to 1500 and initiate an AUTOPACK cycle and watch the pressure gauge. Note when the blade begins the RETURN cycle.

---

**NOTE:** If the setting is incorrect, the blade will either RETURN early (before the system pressure reaches 2150 psi), or it will continue packing the load after system pressure has passed 2150 psi.

---

5. If the RETURN cycle initiated early, turn the adjustment screw clockwise to increase the pressure switch setting. If the AUTOPACK cycle continued past 2150 psi, turn the adjustment screw counterclockwise to decrease the pressure switch setting.
6. Repeat step 4 and recheck the pressure reading.
7. When you are satisfied the pressure setting is correct (100 psi below main system pressure, or 2150 psi), remove the allen key and replace the cap screw plug.

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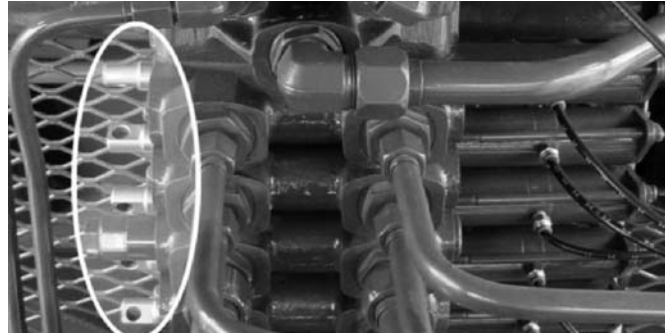
**IMPORTANT:** Remember to remove the pressure gauge.

---

## Pressure Relief Valves

Pressure relief valves for the residential Front Loaders include a top pressure relief valve, a main pressure relief valve, two cart tipper port pressure relief valves and an arms down port pressure relief valve.

**Figure 3-59** Pressure relief valves



- ♦ The inlet section pressure relief valve protects the cart tipper circuit and is set 50-100 psi *higher* than the main pressure relief valve.
- ♦ The main pressure relief valve is located in the mid-inlet section and protects the remaining downstream work circuits. It is set to 2250 psi.
- ♦ The two cart tipper port pressure relief valves protect the lines leading to the cart tipper and are set to 1500 psi.
- ♦ The arms down port pressure relief valve reduces downward pressure allowed against the arm cradle assembly and is set to 1000 psi.

## Hydraulic Hose

Labrie Enviroquip Group uses only premium quality hydraulic hoses designed specifically for use in our hydraulic systems. All pressure hoses have a maximum working pressure of at least 3,000 psi, with a x4 burst pressure rating. The hydraulic hose type is identified on the hose covers, in the 'lay line' (see Figure 3-60). When replacing any hydraulic hose, it is extremely important that the replacement hose carries the same SAE rating as the original hose.

**Figure 3-60** Hose "lay line"



Hose types are listed by a designation or number set by a regulatory authority such as ISO and the SAE (Society of Automotive Engineers). These regulatory bodies set standards in the hydraulic hose industry.

Inspect all hydraulic hoses and tubing daily for abrasion, cuts, cracks and damage. Refer to “Maintenance Checklist” on page 50.

Replace any hydraulic hose which shows signs of damage.

## Hydraulic Cylinders

Hydraulic cylinders used by Labrie Enviroquip Group incorporate the very latest designs and technology. Many cylinders feature rods treated with a nitration process to achieve exceptional wear resistance and protection against corrosion and mechanical damage (see Figure 3-61).

**Figure 3-61 Nitrate hydraulic cylinder**



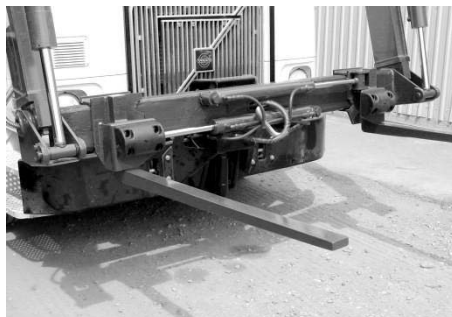
Individual cylinders are identified with a part and serial number. Since cylinders vary in size and model, it is important to quote the part and serial numbers when calling Labrie*Plus* for parts or service.

## Hydraulic Options

### Dual Sliding Forks

Dual sliding forks are optional for all units (see Figure 3-62).

**Figure 3-62 Dual sliding forks**



If your unit is equipped with this option, an additional work section has been added to the main valve bank, equipped with work port relief valves, to supply the adjustment cylinders mounted to the fork assembly.

The work port relief valves are preset to 1500 psi and are non-adjustable.

Pressurized oil is directed from the work section to the flow dividers mounted on the fork assembly. The flow dividers ensure the cylinders receive equal amounts of oil.

## Curotto Automated Can

The Curotto Can (see Figure 3-63) is a hydraulic attachment which allows for automated residential collection using a commercial style vehicle.

**Figure 3-63 Curotto Can**



Details can be found in the Curotto Can “Operations and Maintenance” and “Parts and Service” manuals available from Labrie.

## Cart Tipper

Refer to “Auxiliary Hydraulic Attachment Work Section” on page 104.

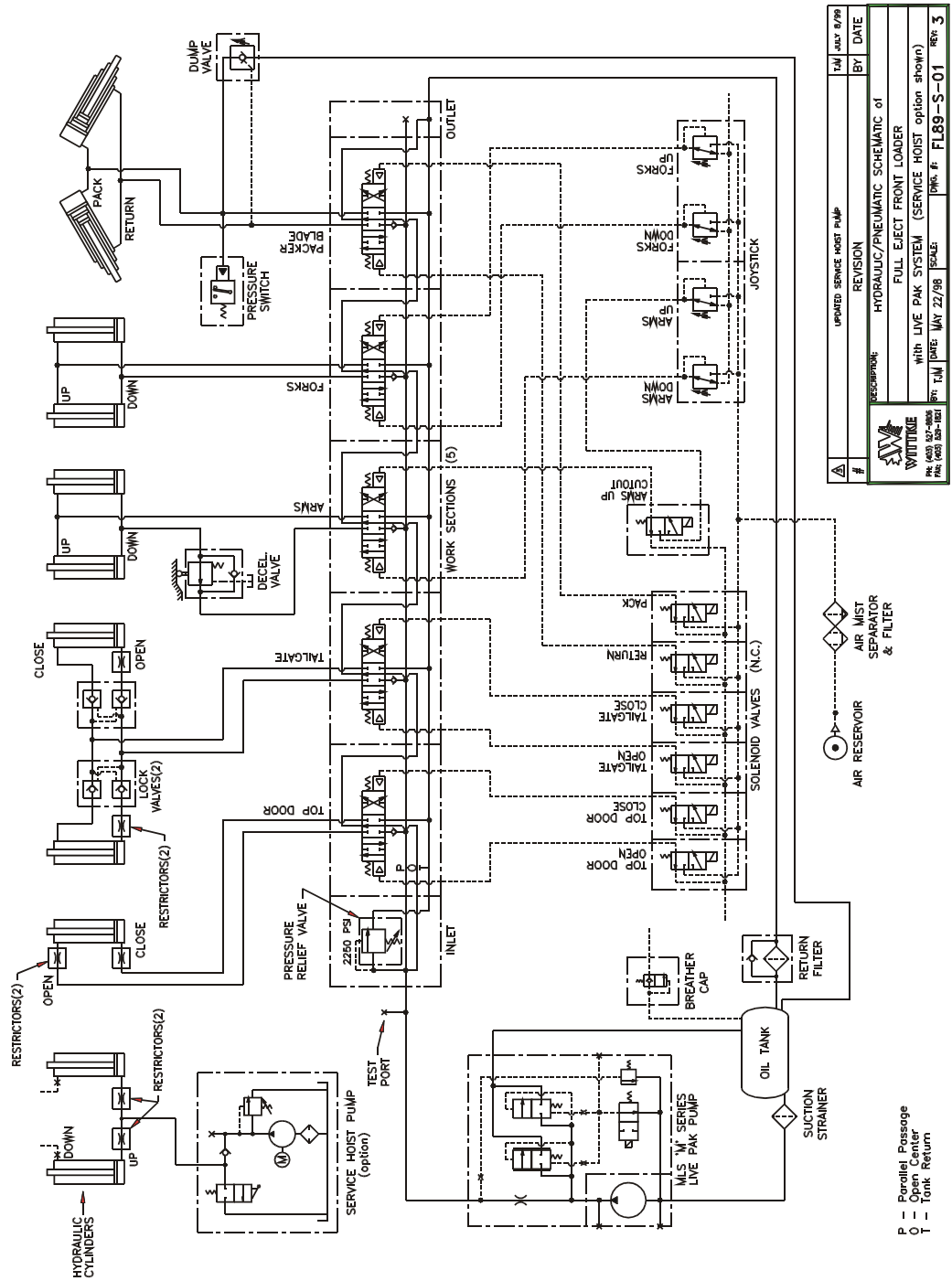
Consult OEM for further information.

**Figure 3-64 Cart tipper**

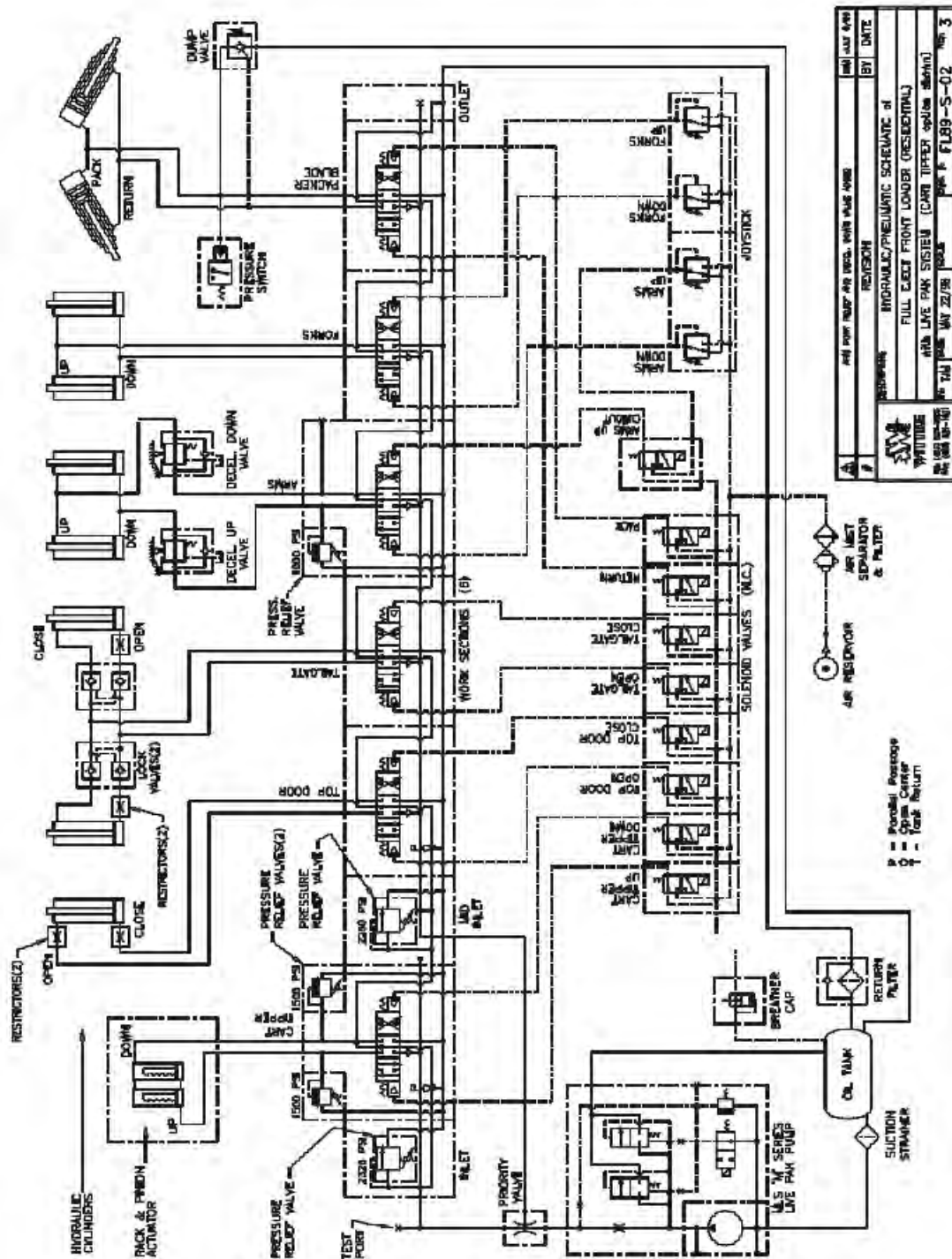


# Hydraulic System Schematics

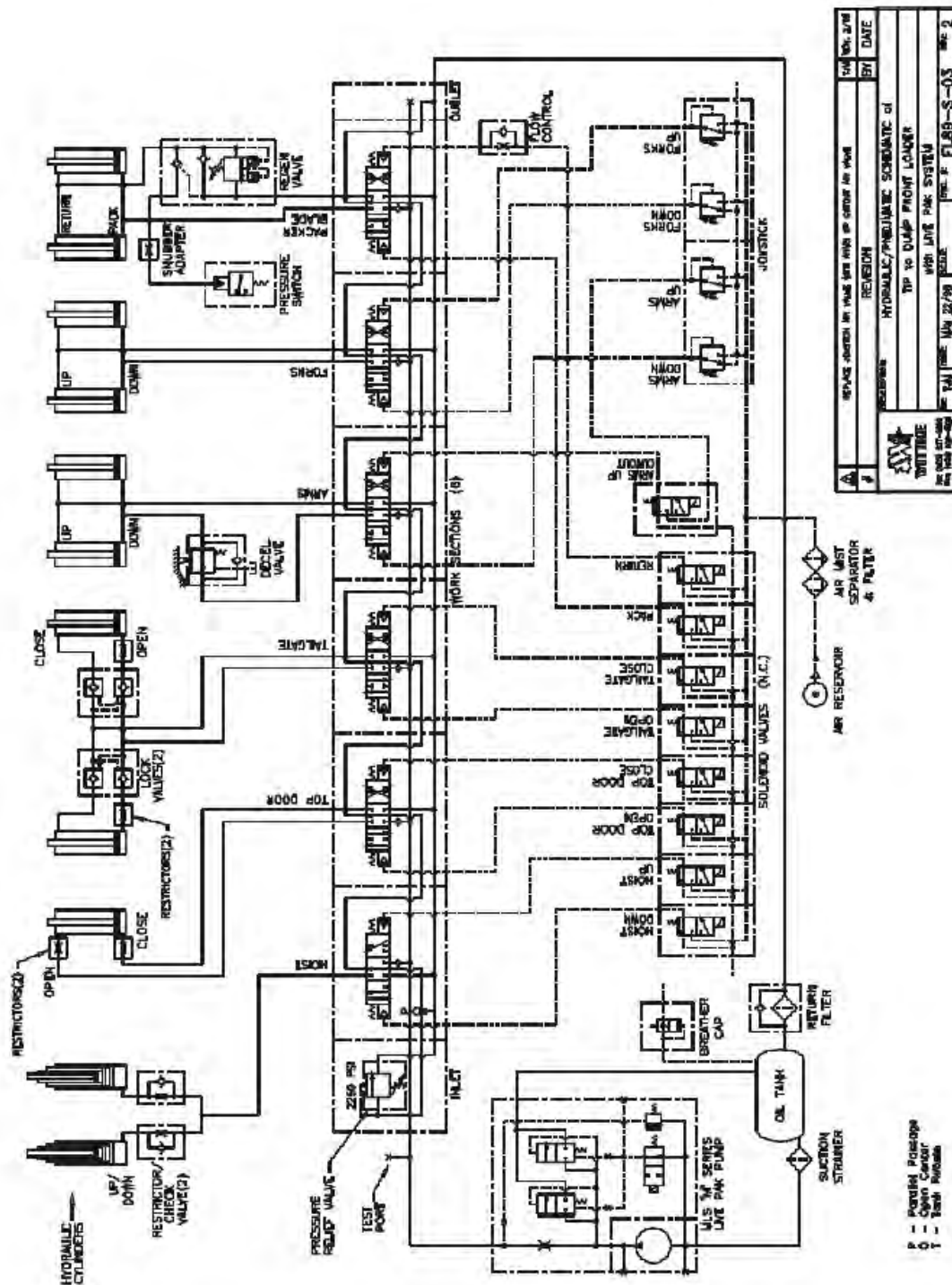
## Commercial Front Loader



### Residential Front Loader



### Tip-to-Dump









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Part# 153170\_R0

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