



# DuraPack® 5000

## HIGH-COMPACTION REAR LOADER

### OPERATION MANUAL

ISSUED SEPTEMBER 2017

#### **⚠ WARNING**

Failure to follow all instructions and safety precautions in this manual, in the Service Manual, in other manufacturers' manuals and on the safety decals attached to the product could result in serious injury or death to operators or bystanders and/or damage to property.

DO NOT operate this vehicle before you READ and UNDERSTAND this Operation Manual, the Service Manual for this unit, other applicable manufacturers' manuals, and the safety decals on the product.

Each operator of this unit must read and understand all directions in this manual before they first operate this vehicle.

Keep this manual in the cab for new operators and to remind all operators about safe use.





## **READ THIS MANUAL!**

**EVERY PERSON** who will **OPERATE, MAINTAIN, REPAIR, OR OTHERWISE WORK** with the Heil unit **MUST READ AND UNDERSTAND** this entire Operator's Manual before starting the engine or activating any switches or controls. **MAKE SURE** to read the Service Manual for the unit **BEFORE** you do any maintenance or repair procedures.

**ALL USERS** of this equipment must be trained professionals who understand how the machine operates and know how to avoid the risks associated with driving the vehicle and with picking up, compacting, and dumping refuse in an ever-changing traffic environment.

If you do not understand an operation or instruction, seek additional help or instruction from a qualified source **BEFORE** you operate the unit.

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**DuraPack® 5000**

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**DuraPack® 5000**  
**HIGH-COMPACTION REAR LOADER**

**OPERATION MANUAL**  
**ISSUED SEPTEMBER 2017**  
**TP1DP5-OM-0917**

# DuraPack<sup>®</sup> 5000

**NOTES:**

# **SECTION 1 INTRODUCTION**

## PREVIEW

Read this section to learn about:

- The responsibilities of the owner, the operator, and the mechanic
- Warranty information
- Telephone numbers and website URL for parts, technical support, warranty claims, training and manuals
- Identifying the different models
- Identifying the left (street side) of the unit
- The unit serial plate
- Various parts of the unit

## HOW TO USE THIS MANUAL

### Product Variance

This manual may cover options not included on your unit. Also, the location and appearance of the controls on your unit may be different than those shown in this manual. Make sure you know the location of the controls and how you operate the controls on your unit before operation.

### Manual Sections

This manual is divided into twelve (12) sections.

1. Introduction
2. Safety Messages and Decals
3. Lock-Out/Tag-Out Procedures
4. Features, Controls, Switches, and Indicator Lights
5. Body and Tailgate Props
6. Daily Checklist
7. Before Going on Route
8. On-Route Operation Procedures
9. Landfill/Transfer Station/Recycle Center Procedures
10. End of Day Procedures
11. Preventive Maintenance Chart
12. Lubrication Guide

### Terminology

This manual uses terminology that is defined in the **Glossary** which is in Section 1, Introduction.

### Directives

When we give directions for using the equipment, we capitalize key words. These words are usually a command followed by a result.

For example, “MOVE the body raise switch to LOWER ...”.

### Use of **Bold** and CAPITAL Letters

We also put some words in **BOLD AND CAPS** for emphasis, usually related to safety or something of other importance, such as “**MAKE SURE** you close the side doors”.

We put some words in just bold for emphasis, such as “All warranty repairs **must** be performed by ...”.

Each DANGER, WARNING, and CAUTION notice precedes its applicable text.

## TO THE OWNER

This manual is designed to help ensure safe, efficient and proper operation of The Heil Co. d/b/a Heil Environmental ("Heil") DuraPack® 5000 Rear Loader refuse collection vehicle (or the unit).

The manual will familiarize you with the unit and will give you proper operating procedures and tips.

For chassis operation and maintenance instructions, see the Chassis Owner's Manual and the DuraPack® 5000 Service Manual.

As the owner, you have several responsibilities:

- You must complete and return the warranty registration for the unit to Heil.
- You must make sure that each operator has the proper driver's license.
- You must make sure that the operator does not operate the unit under the influence of drugs or alcohol.
- You must make sure that the unit is properly maintained to meet all local, state and federal requirements.
- You must keep the vehicle maintained and properly adjusted to meet the manufacturer's standards and recommendations.
- You must keep accurate records of daily inspections, breakdowns, malfunctions, maintenance and repairs of the unit.

- You must make sure that repairs are made that may affect the safe operation of the unit before it is made available for operation.
- You must provide adequate lighting on the unit for safe operation under low light or night conditions.
- You must provide adequate training for each operator and mechanic that will operate the unit BEFORE an operator goes on route or BEFORE a mechanic performs maintenance or repair procedures.
- You must determine if an operator or mechanic has difficulties reading or understanding this manual. When a person has difficulties reading or understanding this manual, you must provide adequate assistance so that the person does understand the material in this manual.
- You must make sure that each operator uses the equipment on a route as given in the instructions of this manual and other manufacturers' manuals.
- You must provide on-going training for each operator and mechanic that operates the unit.
- You must make sure that this manual stays with the vehicle at all times.

Properly operated and maintained, your DuraPack® 5000 unit should give you years of low-cost, trouble free service.

## TO THE OPERATOR

### **DANGER**

Do not operate the unit or perform repair or maintenance procedures on the unit until you read and understand all of the instructions in this manual. Failure to do so may result in injury or death to operators or bystanders.

As the operator of the unit, you have several responsibilities:

- You must have a valid driver's license.
- You must understand and follow all manufacturers' instructions for equipment operation.

- You must observe pertinent laws and regulations.
- Do not use drugs or alcohol while you operate the unit.
- You must read, study and understand all procedures and requirements of this Operation Manual before you operate the unit for the first time. If you do not understand or have difficulty reading this manual, **YOU MUST** tell the owner or designated person before you operate the unit. **DO NOT** operate the unit until you understand the procedures and requirements of this manual.
- You must receive proper training before you operate (or service and maintain) the unit. If you have not been trained, you must inform the owner.
- You must perform a daily inspection of the unit before you go on route. Refer to the **Daily Checklist** [83].
- You must make sure that all decals and labels are clean and readable.
- You must report to the owner (or the designated person) any and all deficiencies, malfunctions or problems you find during the daily inspection.
- You must read, understand and obey all safety messages and decals that are on the outside or in the cab of the unit.

## TO THE OPERATOR (CONTINUED)

- Always use your employer's Lock-Out/Tag-Out procedures. If your employer does not have Lock-Out/Tag-Out procedures, use the **Lock-Out/Tag-Out Procedure** <sup>(57)</sup> in this manual.
- Before you start the engine or operate the unit for the first time
  - You must clear the area of other people.
  - You must learn and practice safe use of all controls and indicators before you operate the unit in a collection route environment or before you do repair or maintenance procedures.
- Before each time you start the engine or operate the unit, you must clear the area of other people.
- Before you operate the unit in reverse, you must make sure the area behind the unit is clear of other people, vehicles or other obstructions.
- You must make sure the unit is on hard, stable ground when you unload refuse at the landfill or transfer station.

## TO THE MECHANIC

### **WARNING**

Do not operate the unit or perform repair or maintenance procedures on the unit until you read and understand all of the instructions in this manual. Failure to do so may result in injury or death to operators or bystanders and/or damage to the unit or other property.

### **WARNING**

A unit that needs service or repair can malfunction and create a dangerous condition. A part failure during operation can cause serious injury or death to a person or damage to the unit. Repair or replace any failed or defective part immediately.

### **NOTICE**


If you do not understand a procedure or instruction, tell the owner or the designated person immediately. Do not operate the unit if you do not understand all procedures and instructions in this manual. The owner or designated person can contact your Heil dealer or Heil for additional help. See **Customer Service and Repair Parts Contact Information** <sup>(11)</sup>.



## TO THE MECHANIC (CONTINUED)

As the mechanic of the unit, you have several responsibilities:

- You must have a valid driver's license if you operate the unit on a public road.
- You must understand and follow all manufacturers' instructions for equipment operation.
- You must observe pertinent laws and regulations.
- Do not use drugs or alcohol while you service or operate the unit.
- You must read, study and understand all procedures and requirements of this Operation Manual and the Service Manual before you operate the unit for the first time.
- If you do not understand or have difficulty reading this manual or the Service Manual, You must tell the owner or designated person before you operate or service the unit.
- DO NOT operate or service the unit until you understand the procedures and requirements of this manual and the Service Manual.
- You must receive proper training before you operate or service and maintain the unit. If you have not been trained, you must inform the owner.
- You must read, understand, and obey all safety messages and decals that are on the outside or in the cab of the unit.

- Always use your employer's Lock-Out/Tag-Out procedures. If your employer does not have Lock-Out/Tag-Out procedures, use the **Lock-Out/Tag-Out Procedure**  in this manual.
- Before you start the engine or operate the unit for the first time:
  - You must clear the area of other people
  - You must learn and practice safe use of all controls and indicators before you operate the unit or before you do repair or maintenance procedures.
- Before you operate the unit in reverse, you must make sure the area behind the unit is clear of other people, vehicles or other obstructions.

### **WARNING**

---

A unit that needs service or repair can malfunction and create a dangerous condition. A part failure during operation can cause serious injury or death to a person or damage to the unit. Repair or replace any failed or defective part immediately.

---

## WARRANTY CLAIMS AND INQUIRIES

The HEIL ENVIRONMENTAL WARRANTY STATEMENT is printed on the inside, back cover of this manual. Should a failure occur that is covered by this warranty, contact the nearest Heil dealer for warranty repair unless otherwise authorized by Heil.

For all parts, warranty claims, and inquiries, please give the dealer or service center the unit's model and serial number located on the body serial plate. See **Serial Plate Location** <sup>13</sup> page for the location of the body serial plate.

## CUSTOMER SERVICE AND REPAIR PARTS CONTACT INFORMATION

### **Customer Care**

Phone: 866-275-4345

### **Tech Services**

Phone: 866-310-4345

### **Parts Central**

Phone: 800-528-5308

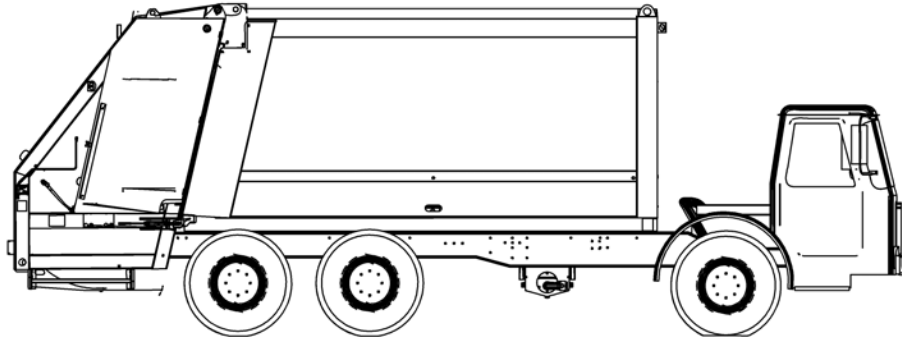
4301 Gault Avenue North  
Fort Payne, AL 35967  
[www.heil.com](http://www.heil.com)

## MODELS

The DuraPack® 5000 is a Rear End Loader (REL) and has one body model, the eject model. See the figure below.

The blade and upper panel open the hopper for loading refuse into the hopper, sweep the refuse into the body and compacts the refuse.

The unit has an eject mode for dumping the refuse from the body. You remove the refuse from the body by raising the tailgate and then operating the ejector panel which pushes the refuse from the body.



**Figure 1. Eject Model**

## SERIAL PLATE LOCATION

You determine the sides of the unit by facing the direction of forward travel. The left side is the “streetside” and the right side is the “curbside”. The figure below shows the locations of the serial plates on the street side of the unit’s body and tailgate. See the next page for a description of the information that is on the serial plate.

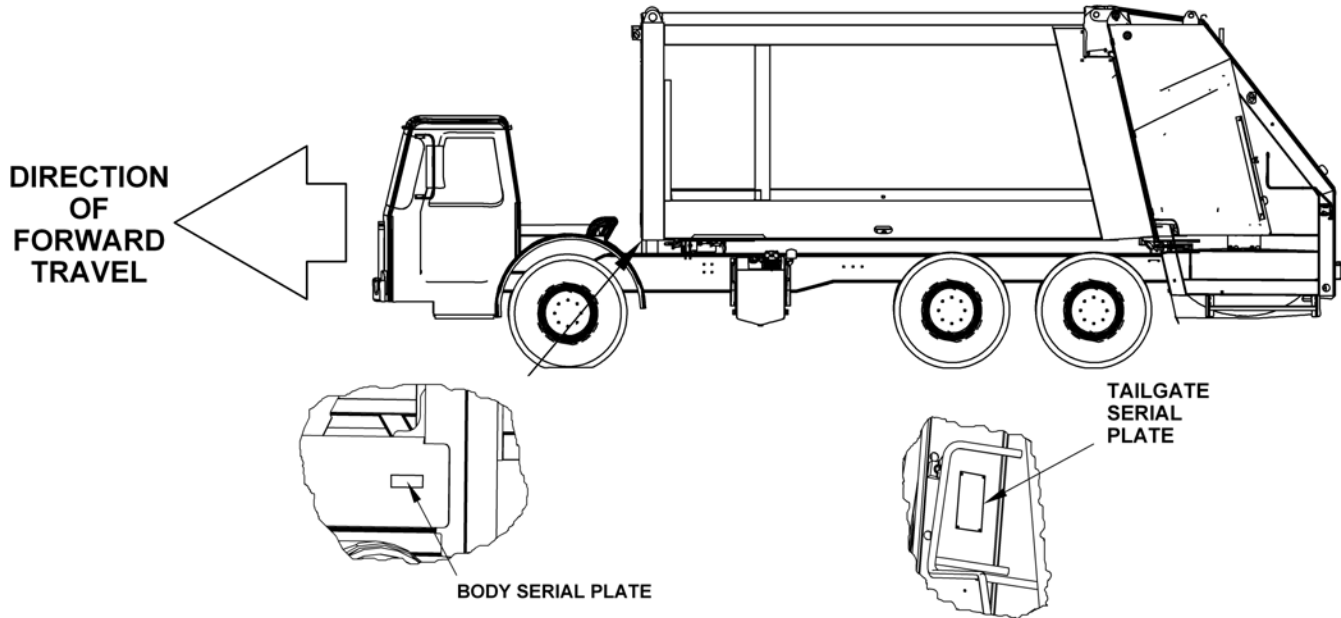
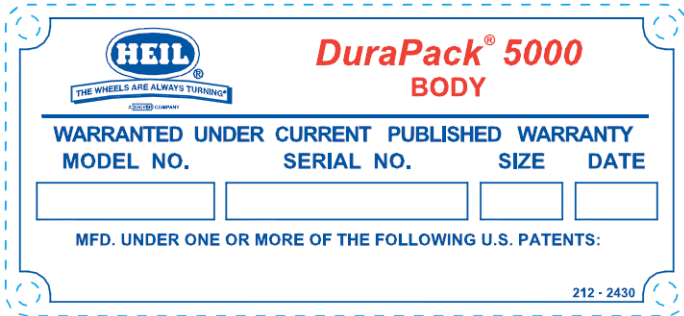


Figure 2. Serial Plate Locations

## READING THE SERIAL PLATE

The serial plate is the “birth certificate” of the unit. See the figure below.



**Figure 3. Reading the Serial Plates**

Information stamped in the boxes on the serial plate indicates:

Model number:

612-nnnn-001 is a dump body, -002 is an eject body, and -003 is a service hoist body (“n” is any single-digit number).

Unit’s unique serial number

Body size (cu. yd.)

Date of manufacture (last number of the year followed by the number of the day of the year, e.g. 6145 is year 2006 and the 145th day of 2006).

## NOTICE

The code for the year of manufacture is in accordance with FMVSS 115. See the following table.

Year of Manufacture			
Year Code	Year	Year Code	Year
5	2005	F	2015
6	2006	G	2016
7	2007	H	2017
8	2008	J	2018
9	2009	K	2019
A	2010	L	2020
B	2011	M	2021
C	2012	N	2022
D	2013	P	2023
E	2014	R	2024

## PRODUCT NOMENCLATURE

The figure below shows the major components and their typical location on the unit. See the following pages for brief descriptions of each component shown below.

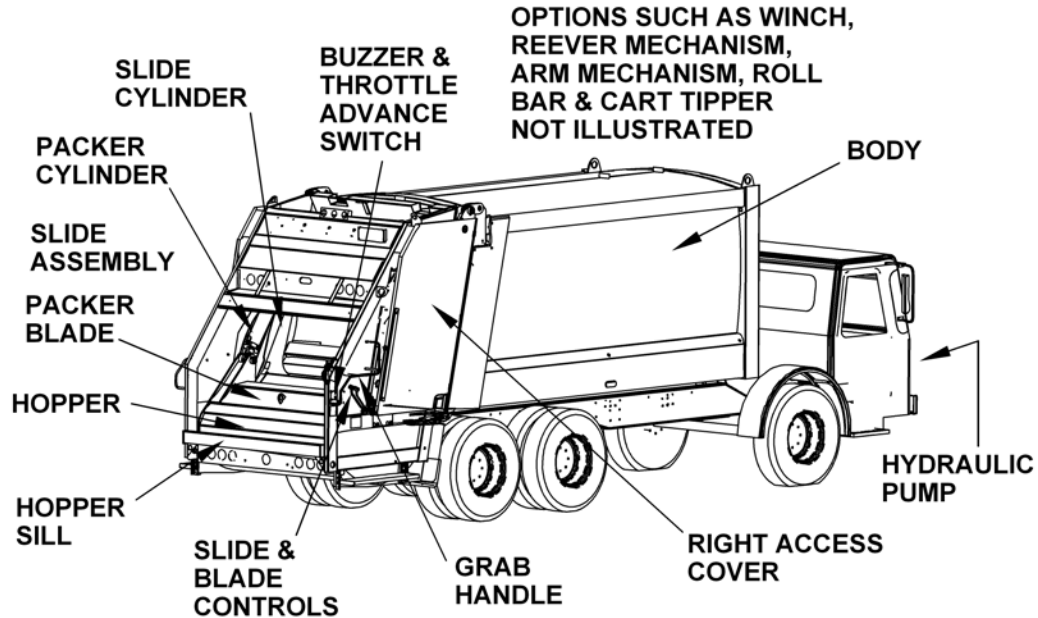


Figure 4. Product Nomenclature (1 of 2)

## PRODUCT NOMENCLATURE (CONTINUED)

The figure below shows the major components and their typical location on the unit. See the following pages for brief descriptions of each component shown below.

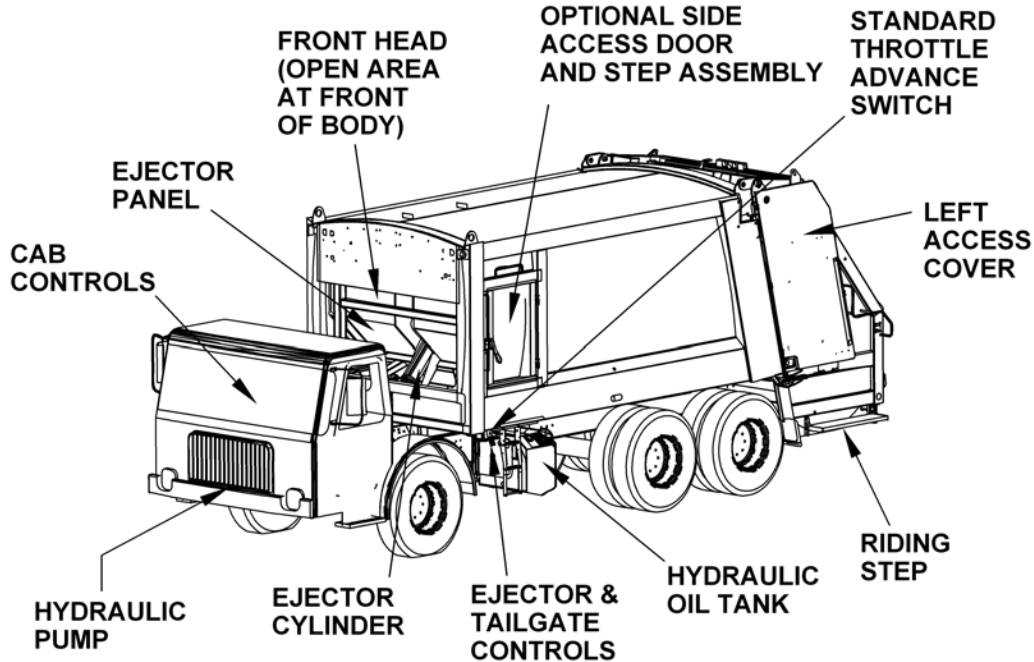


Figure 5. Product Nomenclature (2 of 2)



## PRODUCT NOMENCLATURE (CONTINUED)

### DANGER

---

Do not use an arm mechanism or roll bar as a riding step. Obey safety messages and use the riding step for when traveling on the unit. Serious injury or death may occur.

---

**Arm Mechanism** – This option allows an operator to load refuse from a commercial refuse container into the hopper with the assist of an arm mechanism. After the operator secures the refuse container with notches in the arm mechanism, the operator secures the refuse container with the latch bar and uses the controls to lift the refuse container with the arm mechanism and tilt the container which dumps the refuse into the hopper. The operator then lowers the container to the ground with the arm mechanism.

### DANGER

---

Make sure the unit is in the Lock-Out/Tag-Out mode before you enter the body. When the unit is not in the Lock-Out/Tag-Out mode and a person is in the body, the packer/ejector panel and/or diverter panels can be operated. Serious injury or death may occur if the packer/ejector panel moves while a person is in the body.

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
### DANGER

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When available, use the side door for entry to the body. When there is no side door, use the front head for entry to the body. Make sure the unit is in the lock-out mode before you enter the body. When the unit is not in the lock-out mode and a person is in the body, the ejector panel, slide assembly or packer blade can be operated. Serious injury or death may occur if the ejector panel, slide assembly or packer blade moves while a person is in the body.

---

**Body** – The body stores the compacted refuse until you dump the refuse at the landfill. **DO NOT** enter the body from the hopper. Use the space available at the front head or, if equipped, the side access door.

**Cab Controls** – The standard cab control panel has two toggle switches to operate the pump and the throttle advance; has indicator lights for the pump and tailgate; and the space for two options: a filter bypassed indicator light and a strobe light switch. See **Cab Controls, Switches and Indicator Lights**  for the different controls that may be installed in your unit.

## PRODUCT NOMENCLATURE (CONTINUED)

**Cart Tipper** – One or more optional cart tippers can be located on the tailgate assembly. An operator uses a cart tipper to raise and dump a residential refuse container. The controls will be located on the rear, curb side of the unit.

### **DANGER**

---

Do not use an arm mechanism or roll bar as a riding step. Obey safety messages and use the riding step for when traveling on the unit. Serious injury or death may occur.

---

**Comb Lift and Arm Mechanism** options allow operators to lift compatible waste containers and empty them into the hopper. When using either of these optional devices the movement is controlled at the rear of the tailgate using a sustained pressure control. Operators must ensure that nearby personnel are clear of the area around the movement of the lifting mechanism. The area directly behind the containers must also be clear in the event of the loss of the container during the lifting operation. Only containers that are in good condition should be used with a lifting device to prevent them from dislodging from the lifting device. The tailgate mechanics should not be operated while the container and the mechanism are in the raised position to prevent potential impact of the packing mechanism to the container.

### **CAUTION**

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Stand clear when the ejector panel is in motion. Keep side access door closed when ejector panel is in motion. Failure to obey may result in minor or moderate injury.

---

### **NOTICE**

---

Do not use the ejector panel to pack refuse against a closed tailgate (backpack). Packing refuse against a closed tailgate may result in damage to body or ejector cylinder.

---

**Ejector Panel & Cylinders** – The ejector panel and cylinders push the refuse out of the body when the tailgate is OPEN.

**Ejector & Tailgate Controls** – These controls are located in the cab of the unit and allow an operator to OPEN the tailgate and fully EXTEND the ejector panel, which pushes the refuse out of the unit. The operator then uses the controls to RETRACT the ejector panel and CLOSE the tailgate.

## PRODUCT NOMENCLATURE (CONTINUED)

**Front Head** – The open area at the front of the body. You can see the ejector panel from the cab through the front head. Use this opening to access the body, **ESPECIALLY** when the unit does not have the optional side access door.

### **WARNING**

---

**BE CAREFUL** at all times when you use the ladder rungs and grab handles. Maintain good balance with two feet and one hand, or one foot and two hands, firmly in place.

---

**Grab Handles** – The grab handles are on the street and curb sides of the tailgate. You use the grab handles to help stabilize you when you use the riding step.

### **DANGER**

---

Do not enter the hopper unless the unit is in the Lock-Out/Tag-Out mode. When the unit is not in the Lock-Out/Tag-Out mode and a person is in the hopper, the packer/ejector panel can be operated. **DEATH** or **SERIOUS INJURY** may occur if the packer/ejector panel moves while a person is in the hopper.

---

**Hopper** – The hopper is the refuse loading chamber of the tailgate. **NEVER** use the hopper as an entrance to the body.

**Hopper Sill** – A lip on the hopper over which you dump the refuse into the hopper. The lip provides a resting spot for manual loading of residential refuse containers. **NEVER** climb or stand on the hopper sill.

**Hydraulic Oil Tank** – The tank is the reservoir for the hydraulic oil which operates all hydraulic cylinders described above.

### **WARNING**

---

Operating the unit's controls with a suspended load, such as a raised tailgate or a container on a lift mechanism, will allow the load to move even when the hydraulic pump is **OFF**.

---

## PRODUCT NOMENCLATURE (CONTINUED)

**Hydraulic Pump** – The unit's hydraulic pump provides the oil flow for the hydraulic system. It is located either in front of the unit's engine or underneath the unit, powered by the transmission through a Power Take-Off (PTO). With a front-mount pump, the operator turns the pump ON and OFF as needed with the SYSTEM POWER switch located on the in-cab control panel. With a PTO pump, the operator engages the PTO then turns the SYSTEM POWER switch ON to activate the pump. Depending on the pump and PTO combination, hydraulic oil may flow through the system when the pump is off, however, the operator controls are inoperative and the system hydraulic oil pressure is not sufficient to operate the unit's functions.

**Latch Bar** – The latch bar provides a means of securing a refuse container for lifting and tilting with a reeving mechanism, a winch or, a roll bar.

### DANGER

---

The packer blade and slide assembly are dangerous. They can cause serious injury or death if a person is inside the hopper. Make sure no one is inside the hopper before you begin a packer function. Put the unit in the Lock-Out/Tag-Out mode if a person must enter the hopper.

---

**(Packer) Blade** – You MOVE the packer blade UP while you move the slide assembly OUT to load refuse into the hopper. You MOVE the packer blade DOWN while you move the slide assembly IN to sweep refuse from the hopper towards the body.

**Packer Panel** – The packer panel is comprised of the blade and upper panel (and other parts). The packer panel opens to load refuse into the hopper, moves refuse from the hopper into the body and compacts it.

**Reeving Mechanism** – The reeving mechanism is an assembly that includes a cylinder, an attached cable with hook and controls. This option allows an operator to load refuse from a commercial refuse container into the hopper. The controls will be located on the rear, curb side of the unit.

### DANGER

---

Do not use an arm mechanism or roll bar as a riding step. Obey safety messages and use the riding step for when traveling on the unit. Serious injury or death may occur.

---

## PRODUCT NOMENCLATURE (CONTINUED)

**Roll Bar** – This option allows an operator to load refuse from a commercial refuse container into the hopper with the assist of a roll bar. The operator first secures the refuse container with the latch bar, then uses the controls to lift the refuse container and tilt the container which dumps the refuse into the hopper. The roll bar rests about half way up from the bottom of the refuse container.

### **DANGER**

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Use only the riding step provided to travel on the outside of the unit during collection activities. Use hand holds provided and maintain at least 3 points of contact. Failure to obey these instructions can result in serious injury or death.

---

### **WARNING**

---

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

---

**Riding Step** – The riding steps are on the street and curb sides of the tailgate. You use the riding step and grab handles when it is necessary to ride on the rear of the unit for short distances while on route. Make sure you use both of the grab handles and the riding step.

**Side Access Door** – The optional side access door is located on the front, street side of the body. Use this door for access to the body for cleaning or other maintenance tasks. **MAKE SURE** the unit is in lock-out condition and the keys are removed from the ignition and in the operator's control **BEFORE** you enter the side door. Always use the step assembly when you use the side access door. **BE CAREFUL** at all times when you use the step assembly. Maintain good balance with at least two feet and one hand, or one foot and two hands, firmly in place at all time.

**Slide (Upper Panel) Assembly** – You move the slide assembly **OUT** while you move the packer blade **UP** to load refuse into the hopper. You move the blade **IN** while you move the packer blade **DOWN** to push the refuse into the body.

**Slide/Blade Controls** – The operator uses these controls to operate the slide assembly and the packer blade to open the hopper to load refuse and to move refuse from the hopper into the body.

## PRODUCT NOMENCLATURE (CONTINUED)

### **DANGER**

A tailgate in motion is dangerous. Serious injury or death may occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you raise or lower the tailgate.

---

**Tailgate** – Raise the tailgate at the landfill or transfer station to unload the refuse.

A red light and an alarm inside the cab let the operator know when the tailgate is OPEN (UP). The TAILGATE OPEN red light illuminates (is ON) and the alarm sounds when the tailgate is RAISED. The light is OFF and the alarm stops when the tailgate CLOSED (DOWN).

**Tailgate Left and Right Access Covers** – In normal operation, the tailgate doors protect the operator from various exposed pinch points.

### **DANGER**

Always prop a tailgate when you leave it raised for maintenance, service or cleaning procedures. Any part of your body between the unit's body and the tailgate while you prop the tailgate or when the tailgate is propped is dangerous. Serious injury or death may occur if any part of your body is between the tailgate and the body if the tailgate suddenly closes.

---

**Tailgate Props** – Always use both tailgate props, one on each side of the unit, when you raise the tailgate for maintenance or service procedures.

**Tailgate Cylinders** – You use these cylinders to RAISE the tailgate before you unload the compacted refuse at the landfill. After you unload the refuse, you use the cylinders to LOWER the tailgate.

## PRODUCT NOMENCLATURE (CONTINUED)

**Throttle Advance** – There are two standard and an additional switch when there is a lifting option (winch, etc.) installed. The primary switch is in the cab and must be set to ON for the outside switch(es) to operate. The second standard switch is next to the tailgate and ejector panel controls at front, street side of the body. The switch allows the operator to increase the RPMs of the engine which delivers more hydraulic flow for raising the tailgate and extending the ejector panel while pushing refuse out of the body.

A third throttle advance switch is located on the curb side of the tailgate when there is an optional lift device. The operator uses the switch to increase hydraulic flow while raising a commercial refuse container with a winch, reeving mechanism, an arm mechanism or a roll bar.

The throttle advance is automatically engaged during the tailgate packing cycle.

**Winch Assembly** – The winch assembly includes a winch, an attached cable with hook and controls. This option allows an operator to load refuse from a commercial refuse container into the hopper. The controls will be located on the rear, curb side of the unit.

## GLOSSARY

TERM	DEFINITION
accident	An incident that results in unintended harm.
arm mechanism	An option for Rear End Loaders (RELs), an assembly that uses arms that mate with a refuse container's slots to lift, dump and lower a refuse container.
bin	The refuse collection container
blade	The assembly that moves refuse into the body. The blade works with the upper panel to open the hopper, move refuse into the body, compact the refuse and to close the hopper.
body	The complete body assembly or the area of the body where the refuse is stored.
cart tipper	A Rear End Loader (REL) option attached to the tailgate that allows an operator to secure a residential refuse container and unload its contents into the hopper
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
collapsed position	The fully retracted position of a cylinder
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
extend/EXTEND	Make a cylinder rod move out its base / Command to move the packer panel towards the body
front head	The part of the body that allows access to the body from the front of the body. This is the ONLY access to the body when the unit does not have an optional side access door.
FULLY RETRACTED POSITION	The packer/extend cylinder is fully retracted and the packer panel is all the way to the front of the hopper. May also be referred to as "Home Position" or "Front Head".
hand holds (grab handles)	An attachment to the tailgate of a Rear End Loader (REL) that an operator grabs with their hands while using the riding step.
harm	An action that causes death, injury or property damage




## GLOSSARY

TERM	DEFINITION
hazard	A potential source of harm
hopper	The loading chamber of the unit in front of the packer panel where you dump the refuse material.
illuminate	Make a lamp shine light (the lamp is on).
IN	Command to move the slide assembly IN
incident	An unintended and undesired event that has the potential to harm
latch bar	The assembly that secures a residential refuse container to the tailgate
LATCHED	The condition when the tailgate is fully CLOSED, thereby locking the tailgate
LOAD POSITION	Applicable to Rear End Loaders (RELs), the packer panel is UP and the slide assembly is OUT. This opens the hopper for loading.
lower/LOWER	Move the lift arms, forks, body or tailgate down. / Command to move the lift arms, forks, body or tailgate down
may	You are allowed to do the action, but it is not mandatory. It is understood to be permissive.
must	The action is mandatory.
NOTICE	Alerts you to practices not related to personal injury, such as damage to the unit or other equipment
off/OFF	When a light or lamp does not illuminate / The position of a switch or other control to stop a function
on/ON	When a light or lamp illuminates / The position of a switch or other control to start a function

## GLOSSARY

TERM	DEFINITION
operator	Any person who uses the unit and its equipment. One who controls the operation of various unit accessories and mechanisms, loads material, performs functions such as operating the loader, cart tipping and packing of wastes or recycled products, and who may also drive the unit along the route during the collection process. The operator may also be the driver.
(packer) blade	The packer assembly that moves refuse into the body. The blade works with the slide to close the hopper, to move refuse into the body and to open the hopper
packer panel	The packer panel is comprised of the blade and the upper panel. The packer panel moves refuse out of the hopper and compacts it into the body.
PACK POSITION	Applicable to Rear End Loaders (RELs), the packer blade is DOWN and the slide assembly is IN. The operator uses this position, repeated as necessary, to sweep refuse from the hopper and compact the refuse into the body.
PTO	Power Takeoff
raise/RAISE	Move the tailgate up. / Command to move the tailgate up
REL	Rear End Loader
retract/RETRACT	Make a cylinder rod go into its base. / Command to move the packer panel towards the hopper
reeving mechanism	An option for Rear End Loaders (RELs), a cylinder assembly that is located on the centerline of the roof with which an operator can raise and dump a commercial refuse container
riding step	On Rear End Loaders (RELs), the platform at the side of the tailgate that an operator stands on while riding on the outside of the unit during collection activities
roll bar assembly	An option for Rear End Loaders (RELs), an assembly that uses a bar to lift, dump and lower a residential refuse bin
RPM	Revolutions Per Minute

## GLOSSARY

TERM	DEFINITION
should	The action is advised.
side access door	The optional side access door is located on the street side of the unit. This is the preferred access into the body. ALWAYS <b>Lock-Out/Tag-Out</b>  the unit <b>BEFORE</b> entering the body.
tailgate access covers	Covers on each side of the tailgate that protect an operator from pinch points during normal operation
throttle advance	On Rear End Loaders (RELs), when the unit is in neutral, you use the throttle advance to increase the RPMs of the engine which results in greater flow of hydraulic fluid for operation of the tailgate, ejector and optional container lifting devices.
unit	The Heil DuraPack® 5000 refuse collection vehicle referred to in this manual.
UNLATCHED	The side access door is not closed or secured.
upper panel	The assembly that moves refuse into the body. The upper panel works with the blade to open the hopper, move refuse into the body, compact the refuse and to close the hopper.
WARNING	Indicates a hazardous situation, which if not avoided, could result in death or serious injury.
winch	An option for Rear End Loaders (RELs), a mechanism with a hook and cable that an operator uses to raise, dump and lower a commercial refuse container

**NOTES:**

# **SECTION 2**

# **SAFETY MESSAGES AND DECALS**


## PREVIEW

Read this section to learn about:

- General safety precautions and safety precautions for the safe operation and maintenance of the unit
- The safety precautions for NOT towing another vehicle or machine
- Safety decals on the unit

## PRECAUTIONARY STATEMENTS

Read this entire manual and especially this safety section before you operate the vehicle. Failure to follow these important precautions could result in serious injury, death, or property damage.

 This safety alert symbol indicates important safety messages in this manual and on safety decals attached to the equipment. Make sure you read all of these messages and follow the instructions and precautions.

In the general text of the manual and in the safety labels attached to the product, signal words indicate the type and seriousness of risk that you could encounter if you do not follow the precautions. The signal words and their definitions follow:

### **DANGER**

---

DANGER indicates a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY.

---

### **WARNING**

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WARNING indicates a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.

---

### **CAUTION**

---

CAUTION indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE INJURY.

---

### **NOTICE**


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NOTICE addresses practices not related to personal injury, such as property damage or damage to the equipment.

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The following pages provide a summary of some of the more important safety precautions that are in this manual. There are additional safety precautions in other sections of this manual that are not contained in this section. You must also read, understand and follow those messages.

## GENERAL SAFETY PRECAUTIONS

- **DO NOT** operate the unit under the influence of alcohol or drugs or when extremely tired or when you are not alert, as this may result in an accident that can cause serious injury or death.
  - **DO NOT** operate the unit unless you have the proper training and vehicle operator license.
  - **ALWAYS** carry and maintain a fire extinguisher and first aid kit in the unit. **MAKE SURE** you know how to use them.
  - **CLEAN AS NECESSARY** any safety decals that you cannot read at a safe viewing distance from the hazard because of dirt. If any decals are illegible from damage or wear, **REPLACE** them **IMMEDIATELY**. Get decals from your Heil dealer or Heil.
  - **DO NOT** use this refuse collection vehicle to TOW another vehicle or equipment. It **IS NOT DESIGNED** or equipped to tow another vehicle or other equipment. Towing another vehicle or equipment may result in injury or death to the operator or other people or damage to the unit.
  - **MAKE SURE** all individuals are clear of any moving parts, mechanisms or components of the unit before you operate the controls.
- **DISENGAGE** the PTO or PUSH the SYSTEM POWER switch so the pump shuts off when you are not using the unit, when you are repairing the unit, when you are working on the unit, or when traveling in the unit for longer than two minutes.
  - ENGAGE the PTO or PULL the SYSTEM POWER switch **ONLY** when you are on route OR as necessary to perform repairs.
  - When the unit is stored or not in use, you **MUST** do the following:
    - SET ALL lift cylinders (including the body raise cylinders) to the collapsed position.
    - For units with manual transmissions, DISENGAGE the PTO and PUSH the PUMP switch so it shuts off the pump.
    - For units with automatic transmissions PUSH the SYSTEM POWER switch so the pump shuts off.
    - **REMOVE** the key from the ignition. This helps prevent tampering by unauthorized persons.
    - Refer to **Lock-Out/Tag-Out Procedure**  571.
  - You must be attentive at all times while you operate the controls and be ready to stop or reverse the function if necessary.



## BEFORE OPERATING THE EQUIPMENT

- **DO NOT** operate or service this machine until you are fully trained and have read and understand this entire manual.
- **NEVER** operate the unit **UNLESS** you are fully knowledgeable of all control functions. See the **Controls, Switches, and Indicator Lights** [\[67\]](#) section of this manual.
- **MAKE SURE BEFORE** you operate the vehicle or its controls that all individuals are at a safe distance away from the unit.
- **DO NOT** operate the unit when it needs service or repair.
- **DO A VISUAL CHECK** at the beginning of each shift of the unit and run it through several cycles to find fluid leaks, broken, missing or malfunctioning, and excessively worn components (including hoses). See the **Daily Checklist section** [\[83\]](#) of this manual. If you find leaks, broken, missing or malfunctioning parts, immediately stop and get the condition repaired or serviced.

## USE PERSONAL PROTECTIVE EQUIPMENT

- **ALWAYS WEAR** the proper safety equipment, such as hard hats, safety shoes, protective eye wear, reflective clothing and gloves. Confirm with the owner/operator that you are using proper safety equipment.
- **WEAR PROPER EYE PROTECTION** and avoid contact with oil if possible whenever you work on or about hydraulic lines or components. **NEVER** check for oil leaks with your bare hands.

## BEWARE OF OVERHEAD OBSTRUCTIONS

- **KNOW** the clearance required for **ALL** overhead obstructions (such as viaducts and bridges) that you may encounter when you drive the unit. See the decal in the chassis cab for your unit's overall height.
- **NEVER** drive the unit under any overhead obstruction of unknown height clearance.
- Become familiar with your route. Be aware of all overhead trees and obstructions that could cause problems during refuse collection.
- **CHECK** the height of the unit after you do any modifications to the chassis suspension. Any chassis suspension modification may change the height of the unit. See Tables 1 and 2.

- **LOOK UP AND LIVE. MAKE SURE** there is enough clearance between a lowered or raised container and overhead power lines. It is not necessary for the unit or container to touch the electric cable for the electricity to pass through the unit. See Tables 1 and 2.
- **STAY IN THE CAB** and **KEEP AWAY FROM ALL METAL PARTS OF THE UNIT** if the unit does touch a power line. **STAY IN THE UNIT UNTIL HELP ARRIVES.**

## OVERHEAD CLEARANCES

### NOTICE

Table 1 and 2 is in accordance with OSHA 29CFR 1910.333. (Also refer to ANSI Standard B30.5-2004, 5-3.4.5.) If local rules and laws require more clearance, you must follow them.

**Table 1. Overhead Clearances When Operating the Unit**

Voltage of Electric Line	Minimum Clearance
50,000 or less	10 feet (3 m)
Above 50,000 to 200,000	15 feet (4.6m)
Above 200,000 to 350,000	20 feet (6.1 m)
Above 350,000 to 500,000	25 feet (7.6 m)
Above 500,000 to 750,000	35 feet (10.7 m)
Above 750,000 to 1,000,000	45 feet (13.7 m)

**Table 2. Overhead Clearances When Driving the Unit**

Voltage of Electric Line	Minimum Clearance
750 or less	4 feet (1.2 m)
Above 750 to 50,000	6 feet (1.8 m)
Above 50,000 to 345,000	10 feet (3 m)
Above 345,000 to 750,000	16 feet (4.9 m)

**Table 2. Overhead Clearances When Driving the Unit**

<b>Voltage of Electric Line</b>	<b>Minimum Clearance</b>
Above 750,000 to 1,000,000	20 feet (6.1 m)

## **LOADING REFUSE INTO THE UNIT**

- **YOU MUST BE ATTENTIVE** at all times when you load refuse and be ready to stop or reverse the function in use if necessary.
- **ALL PERSONS MUST STAND CLEAR** when the tailgate is in motion and during the unloading cycle. **MAKE SURE** no one stands under or crosses under a raised tailgate.
- **LOOK UP AND LIVE.** Make sure there is enough clearance between a raised container and overhead power lines. Refer to Tables 1 and 2.

## **UNLOADING**

- **MAKE SURE** the unloading area is clear of all personnel.
- **ALL PERSONS MUST STAND CLEAR** when the tailgate is in motion and during the unloading cycle. **MAKE SURE** no one stands under or crosses under a raised tailgate.

## **TOWING OF ANY EQUIPMENT**

- Heil **DOES NOT** recommend that you tow any kind of equipment with the unit. The unit was **NOT DESIGNED** nor intended for towing.

## DECALS

The following pages show the DANGER, WARNING and CAUTION decals and list the reflective safety materials that are on the vehicle. See the Parts and Service Manual for the location and part numbers of all decals on the unit.

### NOTICE

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Replace any decal with a new decal if the old decal is lost, destroyed, painted over or cannot be read. When you replace a part that had decals, make sure you install new decals on each new part. Decal part numbers can be found below and in the Parts Manual. You can purchase replacement decals from your **Heil Dealer** or from the **Heil Parts Central, 800-528-5308**.

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## REFLECTIVE SAFETY MATERIALS

See the Parts and Service Manual for the location and part numbers of the reflective safety materials on the unit.

### NOTICE

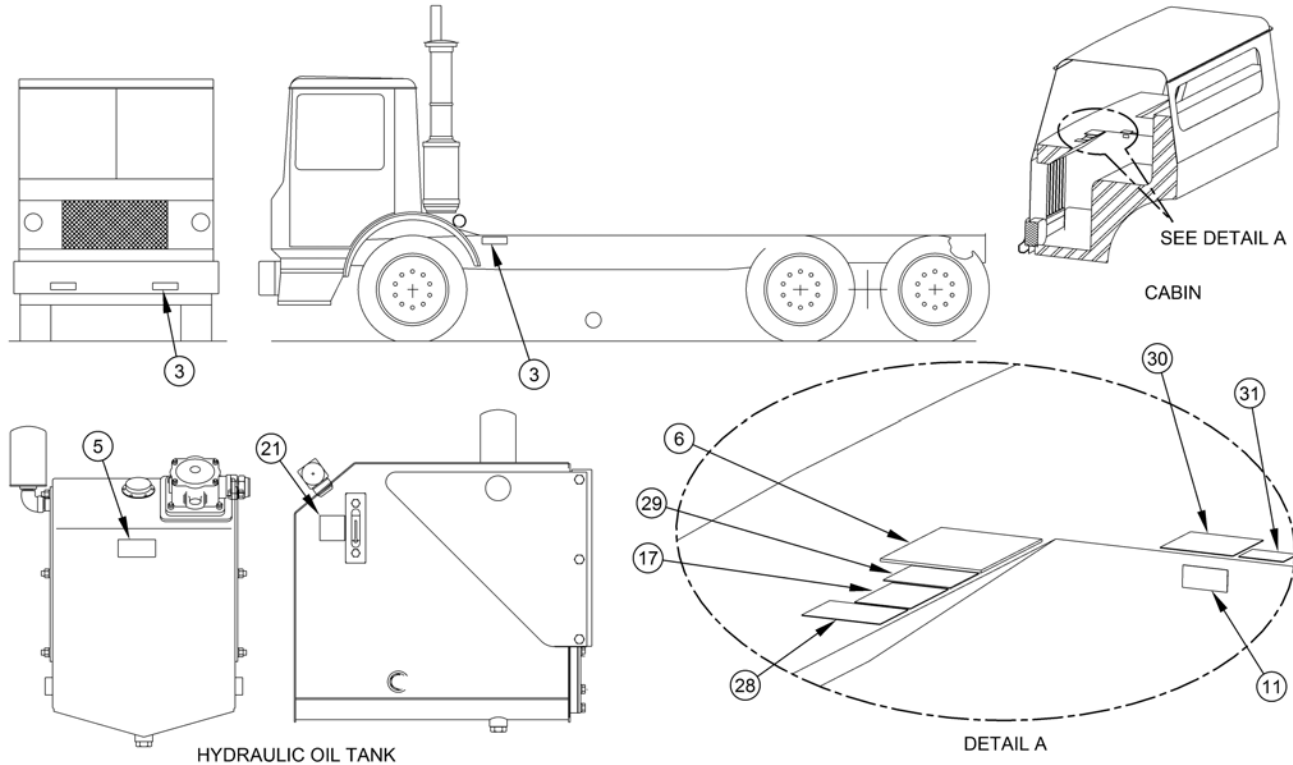
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Replace any safety material with new safety material if the old safety material is lost, destroyed, painted over or cannot be seen. When you replace a part that had safety material on it, make sure you install new safety material on the new replacement part. See the Parts and Service Manual for all part numbers and location of the safety materials.

You can purchase replacement decals from your **Heil Dealer** or from the **Heil Parts Central, 800-528-5308**.

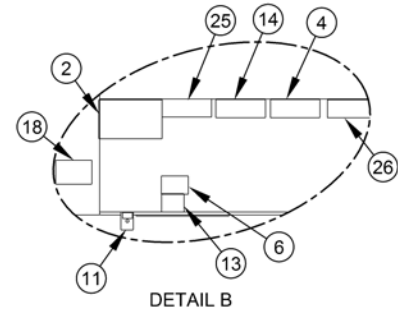
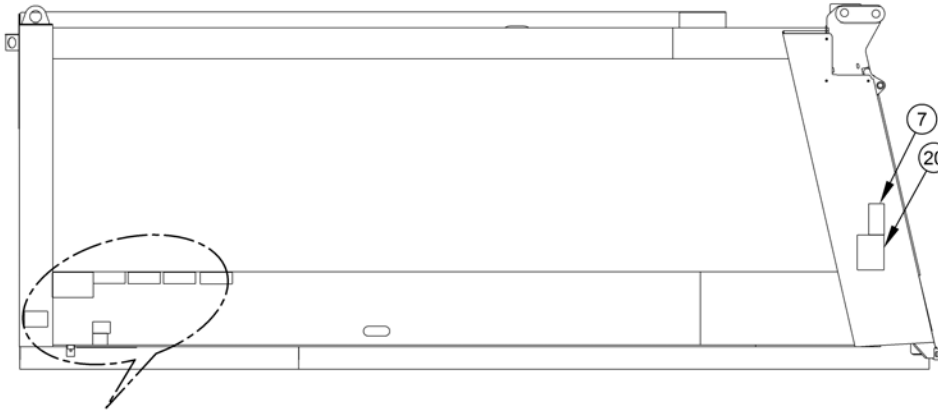
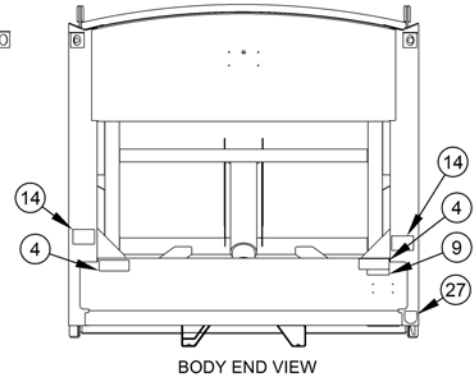
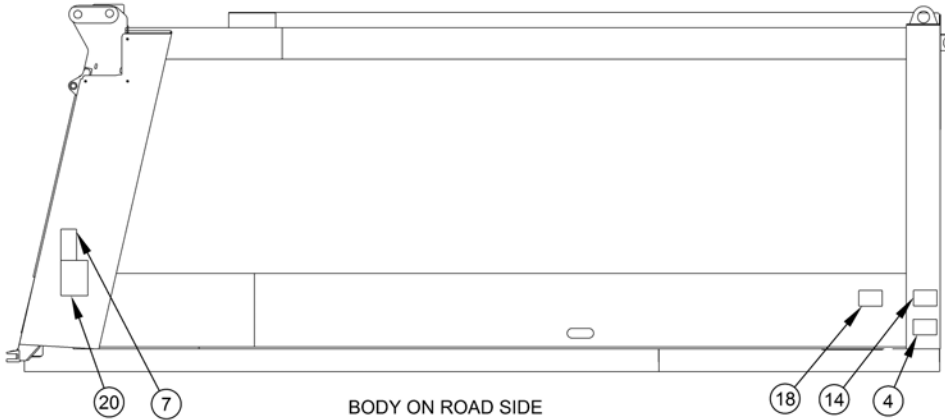
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## DECAL PLACEMENT

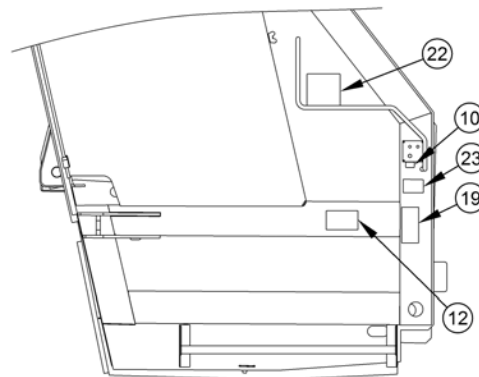
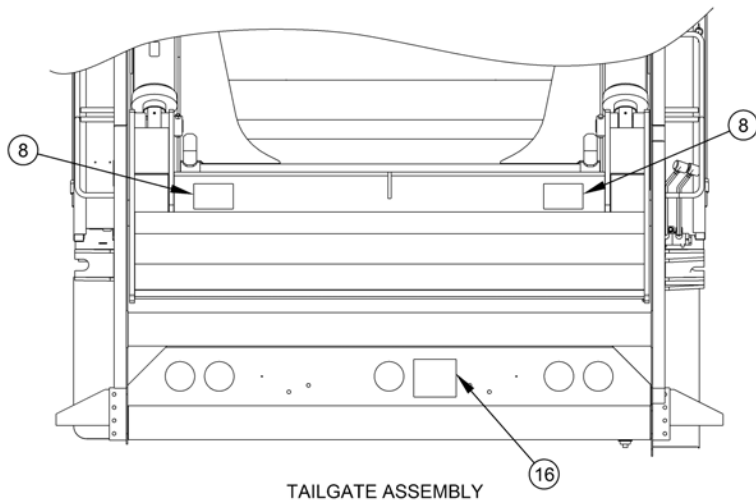


SHEET 1 OF 4

## DECAL PLACEMENT (CONTINUED)



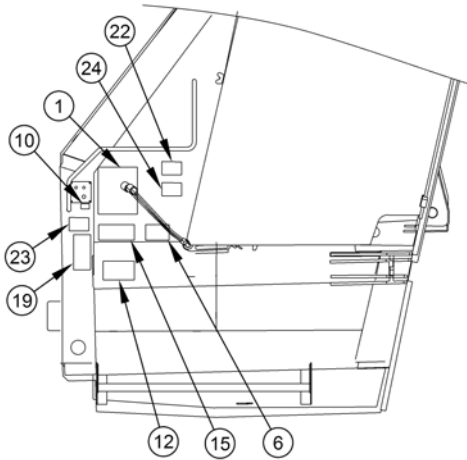
## DECAL PLACEMENT (CONTINUED)



TAILGATE ASSEMBLY  
LH END VIEW

SHEET 3 OF 4

## DECAL PLACEMENT (CONTINUED)



TAILGATE ASSEMBLY  
RH END VIEW

SHEET 4 OF 4



## DECAL PLACEMENT (CONTINUED)

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	212-1579	KIT, Decal, Std. ....	-	REF
1	212-1541	DECAL, Tailgate Controls .....	-	1
2	212-1542	DECAL, Lubrication Guide .....	-	1
3	212-1764	DECAL, Danger, Under Chassis, Stop Engine .....	-	3
4	212-1781	DECAL, Caution, Enter Body, Stop Engine .....	-	3
5	212-1782	DECAL, Hydraulic Oil Only .....	-	1
6	212-1783	DECAL, Warning, Operator's Manual .....	-	1
7	212-1801	DECAL, Danger, Stand Clear When Tailgate Raise .....	-	2
8	212-1802	DECAL, Danger, Stand Clear When Packer Panel in Motion .....	-	2
9	212-1841	DECAL, Safety Requirements, ANSI .....	-	1
10	212-1903	DECAL, Buzzer .....	-	2
11	212-1904	DECAL, Throttle Advance, Accelerator .....	-	1
12	212-1905	DECAL, Caution, Riding Step .....	-	2
13	212-1906	DECAL, Slide Blade, Tailgate Ejector .....	-	1
14	212-1911	DECAL, Caution, Stand Clear When Panel in Motion .....	-	2
15	212-1969	DECAL, Blade .....	-	1
16	212-1821	DECAL, Danger, Not Designed for Towing .....	-	1
17	212-1902	DECAL, Caution, Do Not Use Riding Step .....	-	1
18	212-2689	DECAL, Flag, Made in the USA .....	-	2
19	212-2691	DECAL, Cross Behind .....	-	2
20	212-2791	DECAL, Caution, Tailgate Prop Operation .....	-	2
21	212-2275	DECAL, Oil Level .....	-	1
22	212-1899	DECAL, Danger, Stay Clear When Container Off the Ground .....	-	2
23	212-1838	DECAL, Container, Dump .....	-	2
24	212-1839	DECAL, Winch Mechanism .....	-	1
25	212-1907	DECAL, Danger, Access Door Closed .....	-	1
26	212-1780	DECAL, Caution, Side Door .....	-	1
27	212-1915	DECAL, Information-Heil Replacement Parts .....	-	1
28	212-1909	DECAL, Warning, Overall Height .....	-	1
29	212-1918	DECAL, Safety Instructions, Back-Up Alarm .....	-	1
30	212-1968	DECAL, Caution, Disengage PTO .....	-	1
31	212-1970	DECAL, Tailgate Raise Alarm .....	-	1

## DECAL IMAGES

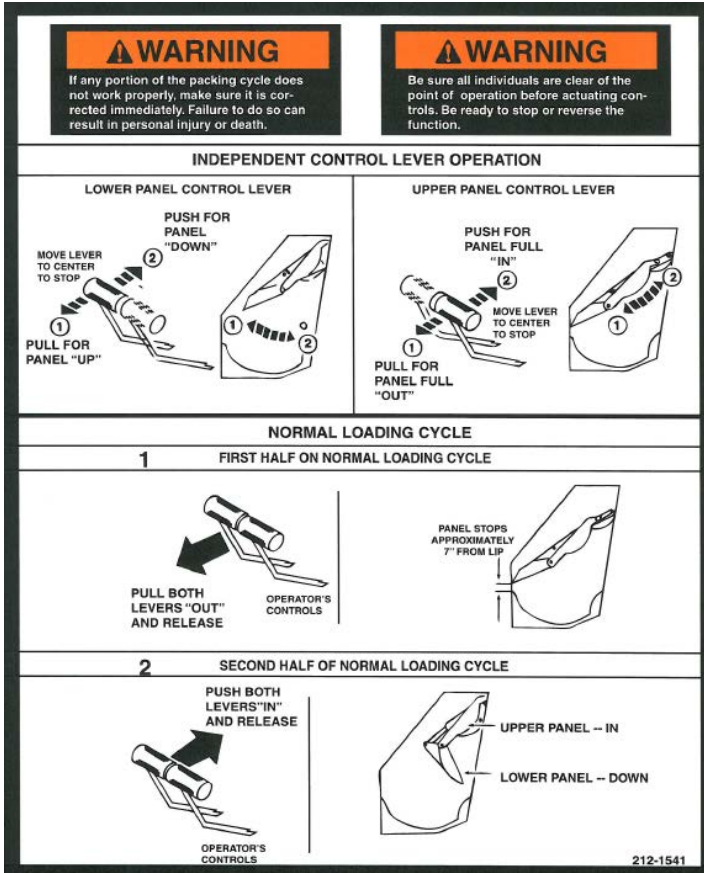


Figure 6. Warning: Control Lever Operation, PN 212-1541



Figure 7. Danger: Stand clear tailgate, PN 212-1801

## DECAL IMAGES (CONTINUED)

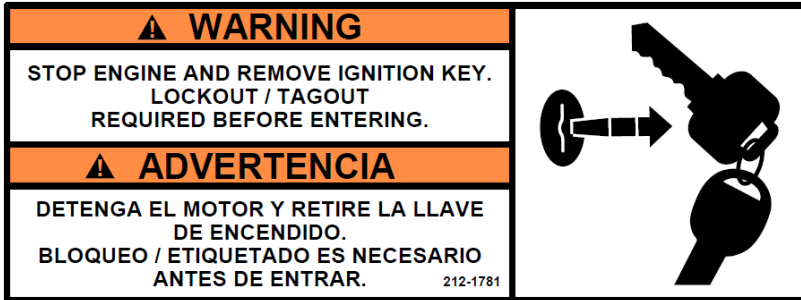


Figure 8. Warning: Lock-out / Tag-out, PN 212-1781



Figure 9. Warning: Operations manual, PN 212-1783



Figure 10. Danger: Do not enter under, PN 212-1764

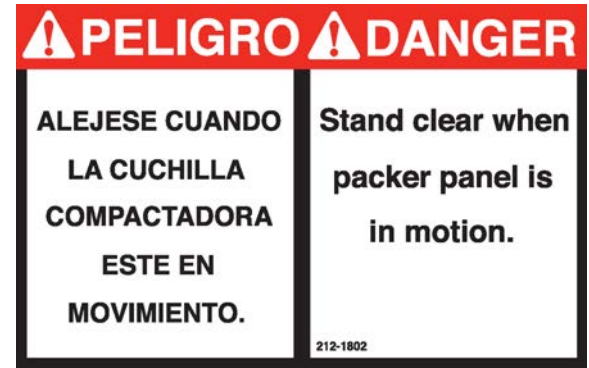


Figure 11. Danger: Stand clear packer, PN 212-1802

## DECAL IMAGES (CONTINUED)

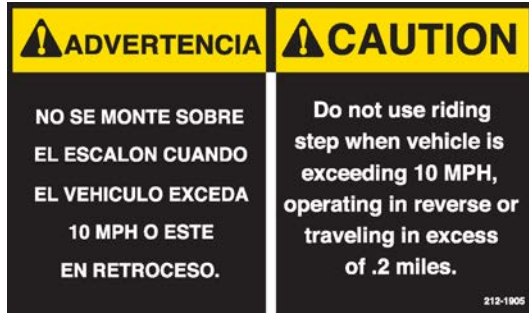


Figure 12. Caution: Riding Step Speed Limit, PN 212-1905



Figure 13. Caution: Stand clear panel, PN 212-1911



Figure 14. Hydraulic Oil Only, PN 212-1782



Figure 15. Danger: Not for towing, PN 212-1821

## DECAL IMAGES (CONTINUED)



Figure 16. Warning: Do not cross/stand behind, PN 212-2691

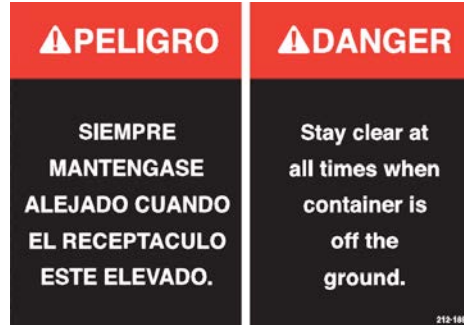


Figure 17. Danger: Stay clear container, PN 212-1899

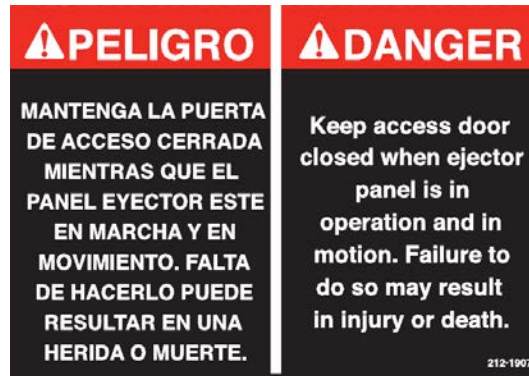


Figure 18. Danger: Keep access door closed, PN 212-1907

## DECAL IMAGES (CONTINUED)

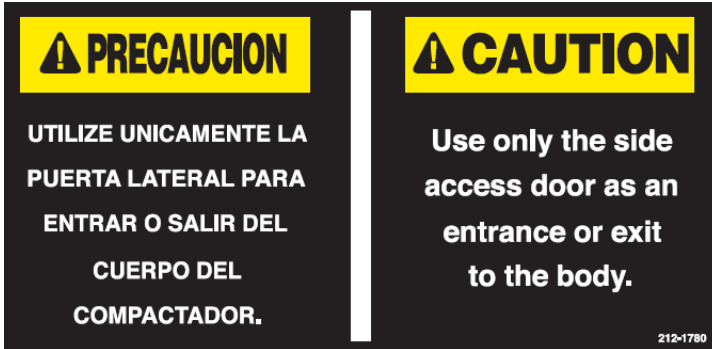


Figure 19. Caution: Side access door only, PN 212-1780



Figure 20. Warning:  
Overall height, PN  
212-1909



Figure 21. Buzzer, PN  
212-1903



Figure 22. Caution:  
Disengage P.T.O., PN  
212-1968

## DECAL IMAGES (CONTINUED)

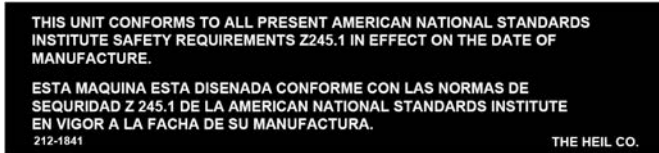


Figure 23. Safety Requirements, ANSI, PN 212-1841



Figure 24. Throttle Advance, ANSI, PN 212-1904

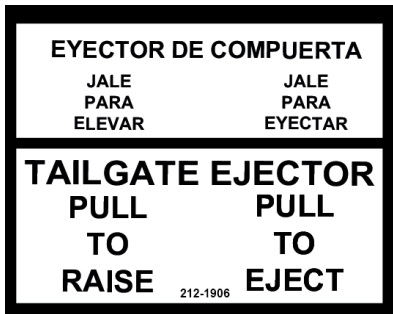


Figure 25. Tailgate/Ejector Operation, PN 212-1906

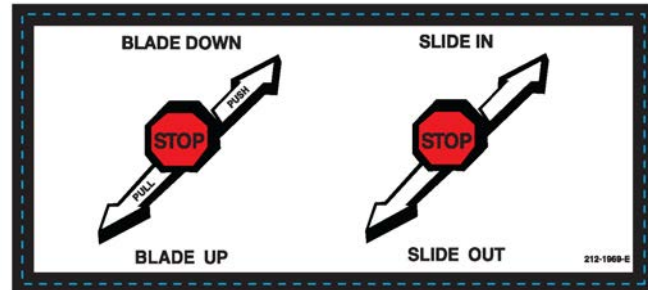


Figure 26. Blade/Slide Controls, PN 212-1969

## DECAL IMAGES (CONTINUED)



Figure 27. Caution, Riding Step, ANSI, PN 212-1902



Figure 28. Flag, Made in USA, PN 212-2689

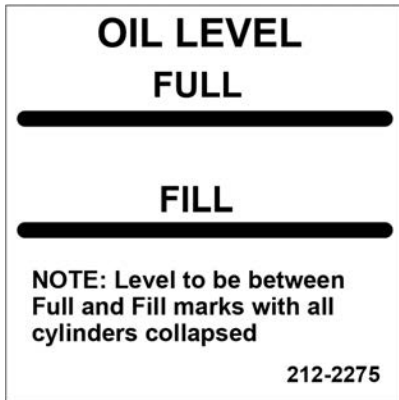


Figure 29. Oil Level, PN 212-2275

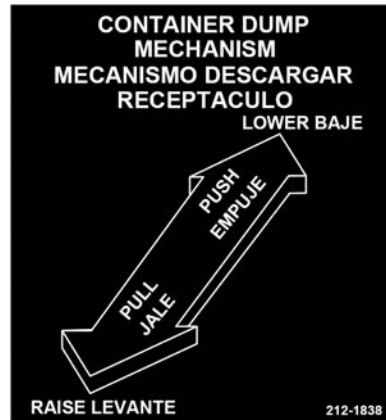


Figure 30. Container Dump Mechanism Controls, PN 212-1838



## DECAL IMAGES (CONTINUED)



**Figure 31. Winch Mechanism Controls, PN 212-1839**



**Figure 32. Heil Replacement Parts, PN 212-1915**



**Figure 33. Safety Instructions, Back-Up Alarm, PN 212-1918**



**Figure 34. Tailgate Raise Alarm, PN 212-1970**

## DECAL IMAGES (CONTINUED)

### TAILGATE PROP OPERATION

**IMPORTANT: TAILGATE MUST BE FREE OF REFUSE AND ALL PERSONS CLEAR OF TAILGATE BEFORE PERFORMING THE FOLLOWING STEPS.**

CAUTION

TWO PROPS ARE INSTALLED ON THE UNIT. BOTH MUST BE USED!

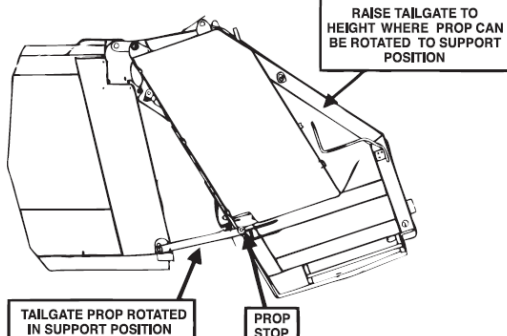
**TO USE PROPS**

2. Set unit on level surface and apply parking brake.
3. Loosen turnbuckle clamps. (Units with automatic tailgate locks do not use these clamps.)
4. Remove pins holding prop in stored bracket.
5. Raise tailgate to height where props can be rotated to support position.

6. Rotate props.
7. Lower tailgate until props mate with tailgate stop.
8. Turn engine off and remove ignition key.

**TO STORE PROPS**

1. Raise tailgate slightly and rotate prop to stored position and install pin.
2. Lower tailgate completely and tighten turnbuckle clamps.

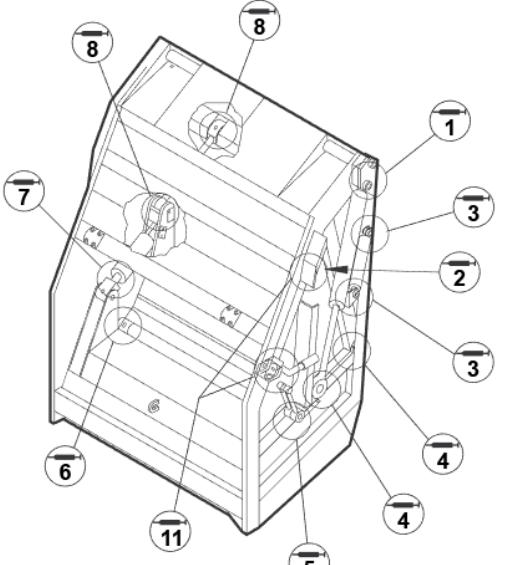


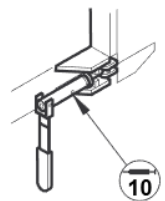
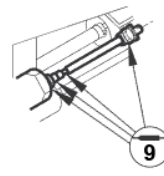
212-2791

**Figure 35. Caution: Tailgate Prop Operation, PN 212-2791**

## DECAL IMAGES (CONTINUED)

<b>DuraPack® 5000 Lubrication Guide</b>			
<p><b>Note:</b> Clean fittings then pump grease into fittings. Always pump enough grease to flush old grease from fittings. Remove excess grease from fittings.</p> <p><b>Note:</b> Lubricate moveable, mechanical parts with non-detergent motor oil every 60 days.</p>			
REF. NO.	LOCATION	QTY.	INTERVAL
1	Tailgate Hinge	2	Weekly/40 Hours
2	Outside Packing Cylinder (Both Ends)	4	Weekly/40 Hours
3	Tailgate Raise Cylinder (Both Ends)	4	Weekly/40 Hours
4	Lower Link Pivot (Both Ends)	4	Weekly/40 Hours
5	<b>Control Handles/Linkage:</b>		Weekly/40 Hours
	A. Upper Bellcranks	2	
	B. Kick-Out Lever	1	
	C. Lower Yoke Ass'y	2	
	D. Control Handle Pivots	2	
6	Packer Panel Pivot (Bottle Pin to Upper Panel)	4	Weekly/40 Hours
7	Inside Packing Cylinder (Both Ends)	4	Weekly/40 Hours
8	Upper Link Arms	4	Weekly/40 Hours
9	PTO (Pump) Drive Shaft	4	Weekly/40 Hours
	Front Mount Drive Shaft	3	Weekly/40 Hours
10	Tailgate Turnbuckle Clamps	2	Weekly/40 Hours
11	<b>Container Mech. Control:</b>		Weekly/40 Hours
	A. Handle	1	
	B. Upper Pivot	1	Weekly/40 Hours
12	Ejector Cylinder (Not Shown)	1	Weekly/40 Hours



212-1542

Figure 36. Lubrication Guide, PN 212-1542

## REFLECTIVE SAFETY MATERIALS

See the Parts and Service Manual for the location and part numbers of the reflective safety materials on the unit.

### NOTICE

---

Replace any safety material with new safety material if the old safety material is lost, destroyed, painted over or cannot be seen. When you replace a part that had safety material on it, make sure you install new safety material on the new replacement part. See the Parts and Service Manual for all part numbers and location of the safety materials.

You can purchase replacement decals from your **Heil Dealer** or from the **Heil Parts Central, 800-528-5308**.

---

## CARE OF DECALS

It is important that the decals are properly cleaned to make sure that they are readable and do not come off the unit. Use the following steps to clean the decals.

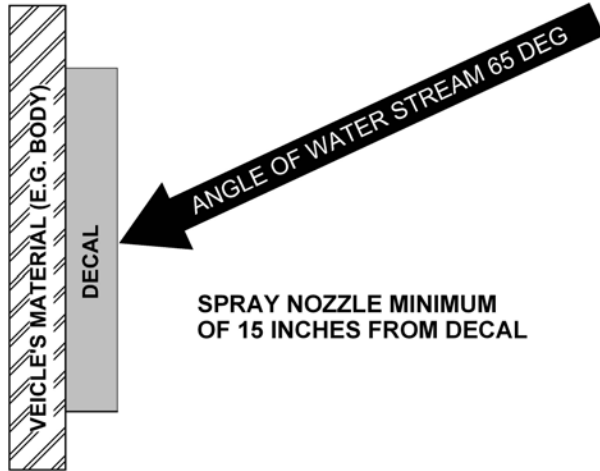
### General Instructions

- Wash the decals with a blend of mild car wash detergent and clean water.
- Rinse with clean water.
- Let the vehicle air-dry or dry with a micro-fiber cloth.
- Do not allow fuels to stay in contact with the decal for an extended period of time. Remove the fuel contamination as quickly as possible.
- Do not use carnauba-based wax over the decals.
- Do not use a mechanical brush while washing the decals.

### Pressure Washer Precautions

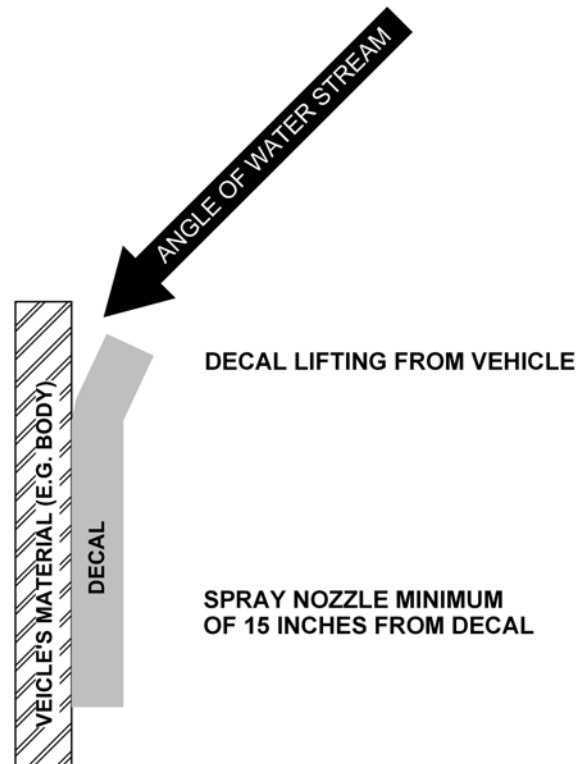
- Pressure washing can cause damage to decals. It can cause the edges of the decals to lift and peel the decal away from the unit. Over time, the decal can fade, crack or chip away.
- See the following figures for correct and incorrect methods of pressure washing.
- Use pressure washing only when other cleaning methods are not effective. If you use a pressure washer, use the following precautions.
  - Spray nozzle opening: 40° wide pattern
  - Spray angle: 65° from vehicle's body
  - Distance of nozzle to decal: 15" minimum
  - Water pressure: ≤ 800 psi
  - Length of time: not more than 30 sec.
  - Do not use sharp angles to clean the decals – this can lift the decals from the unit.
  - NEVER use a “turbo pressure nozzle”.

## PRESSURE WASHER TECHNIQUE



RECOMMENDED TECHNIQUE

Figure 37. Recommended Technique



INCORRECT TECHNIQUE

Figure 38. Incorrect Technique

## ALTERNATIVE CLEANING PROCEDURE

When normal cleaning procedures do not remove difficult debris from the decals, try the following:

### **WARNING**

---

Isopropyl alcohol is flammable and is harmful to eyes and skin. Keep isopropyl alcohol away from heat or open sources of ignition. Flush eyes and skin with water for 15 minutes after contact. Seek immediate medical help.

---

- Spot clean the decal with Isopropyl Alcohol and a micro-fiber cloth (rag).
- If these methods do not work on a problem area, call a Heil Dealer or Heil Customer Service.

**NOTES:**



# **SECTION 3**

# **LOCK-OUT/TAG-OUT PROCEDURE**

## PREVIEW

Read this section to learn about the proper Lock-Out/Tag-Out procedures.

You MUST Lock-Out/Tag-Out a unit BEFORE:

- You enter the body
- Do maintenance or repair procedures.

## LOCK-OUT/TAG-OUT PROCEDURE

### NOTICE

Always use your employer's Lock-Out/Tag-Out procedures. If your employer does not have Lock-Out/Tag-Out procedures, use the procedures that follow. Contact your supervisor or Heil Technical Service if you have any questions about Lock-Out/Tag-Out procedures.

Put the unit in a Lock-Out/Tag-Out mode:

- BEFORE you enter the unit's body.
- BEFORE you perform maintenance, repair, or cleaning procedures on the unit.

### Follow These Steps:

1. APPLY the brakes. MAKE SURE the brakes do not let the unit move and they work properly.
2. Chock all wheels.
3. SET the tailgate props when you raise the tailgate for service, maintenance or cleaning.
4. If equipped, SET the body props when you raise the body for service, maintenance or cleaning.
5. When there are in-cab controls, turn the ignition switch to ON, then:

- a. Move the switches of the hydraulic controls. This relieves the pressure in the cylinders.
  - b. Turn the ignition switch to OFF.
6. When there are no in-cab controls, move the outside control levers to relieve the pressure in the cylinders.
  7. Put a LOCK-OUT/TAG-OUT tag onto the steering wheel.
  8. Remove the ignition key from the cab, lock the vehicle, and put the key in a secure location.



Figure 39. Lock-Out/Tag-Out Tag  
(Do Not Operate Tag)

### NOTICE

You can order Lock-Out/Tag-Out tags (Part No. 212-1586) through your Heil dealer or through Heil.

**NOTES:**

**SECTION 4**  
**FEATURES, CONTROLS, SWITCHES,**  
**AND INDICATOR LIGHTS**

## PREVIEW

Read this section to learn about the operation of the in-cab and outside controls, switches, buttons, and indicator lights.

### NOTICE

---

The location and appearance of the controls may be different than those shown in this manual. Make sure you know the location of the controls and the how you operate the controls on your unit before you use the vehicle.

---

This section tells you:

- Learn about the unit's features and operation specifications
- The in-cab cab controls, switches and buttons
- How the in-cab controls work
- The in-cab indicator lights available
- The outside controls and how they work

## CONTROLS

The unit's standard controls are located on the In-Cab Control Panel and on the body. The standard controls in the cab enable the hydraulic pump and the throttle advance. The hydraulic controls are installed on the street side of the body (tailgate and ejector panel controls) and on the curb side of the body (upper panel and blade).

The controls for optional equipment are located on the curb side of the body. These controls include cart tippers, reeving mechanism and winch.

## IN-CAB CONTROL PANEL

There is one basic main control panel for different models of truck chassis. The control panel can be assembled in various enclosures or locations depending on the truck chassis. See the figure on the right side of this page.

The control panel has labels or markings that identify each standard function and its operations. The panel has the capacity for two options, an indicator light for a filter bypassed condition and a switch to operate a strobe light. Make sure you are familiar with the control panel in your unit.

The labeling/marketing scheme is straight-forward and identifies a function and its operations. For example, look at the figure below and find the PUMP ON switch and its ON operation. The marking identifies the function (PUMP ON) and its operation (ON). When you want to enable the pump, for example, you MOVE the PUMP ON switch to the ON position.

Similarly, the following instructions tell you to MOVE a switch to a position (as given by the panel's label/markings) for the operation shown on the panel's label/markings.

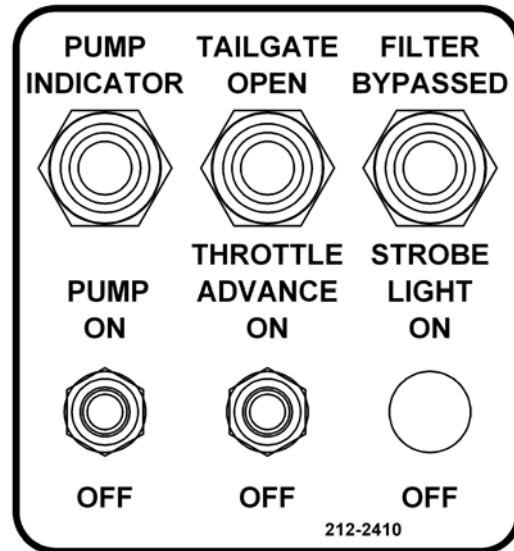


Figure 40. In-Cab Control Panel

## IN-CAB CONTROL PANEL (CONTINUED)

Use the switches and indicator lights described in the following paragraphs to enable the standard hydraulic pump and throttle advance functions and to monitor standard indicator lights.

### Standard Toggle Switches

The following paragraphs describe the standard toggle switches that are on your unit.

While the control panel may be in different locations in different cabs, the panel and its label/markings will look similar to the panel and labels/markings shown on the figure of the next page.

1. PUMP ON – This toggle switch enables and disables the hydraulic pump:
  - MOVE the switch to the ON position to enable the hydraulic pump.
  - MOVE the switch to the OFF position to disable the hydraulic pump.
2. THROTTLE ADVANCE – This toggle switch enables and disables the throttle advance function.
  - MOVE the switch to the ON position to enable the Throttle Advance switches on the body.
  - MOVE the switch to the OFF position to disable the Throttle Advance switches on the body.

### Standard Indicator Lights

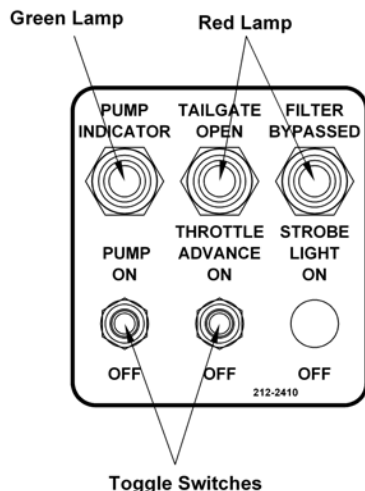
The following paragraphs describe the standard indicator lights that are on your unit.

While the control panel may be in different locations in different cabs, the panel and its label/markings will look similar to the panel and labels/markings shown on the figure of the next page.

1. PUMP INDICATOR – This green indicator light illuminates (turns ON) when the pump is ON. When the pump is OFF, the light is OFF.
2. TAILGATE OPEN – This red light illuminates when the tailgate is NOT FULLY CLOSED. The light is OFF when the tailgate is fully CLOSED. When the tailgate is NOT FULLY CLOSED, an alarm sounds in the cab.
3. FILTER BYPASSED – This red light illuminates when the filter monitor switch on the hydraulic oil tank senses the pressure in the oil flow returning to the hydraulic oil tank. When the pressure is greater than a preset limit, current flows in the switch and turns the FILTER BYPASSED light ON. When the pressure in the oil flow is lower than the preset limit, the filter monitor switch is OFF, current does not flow to the FILTER BYPASSED indicator light and it is OFF.



## IN-CAB CONTROL PANEL (CONTINUED)



**Figure 41. Control Panel Standard Functions**

### Optional Toggle Switches

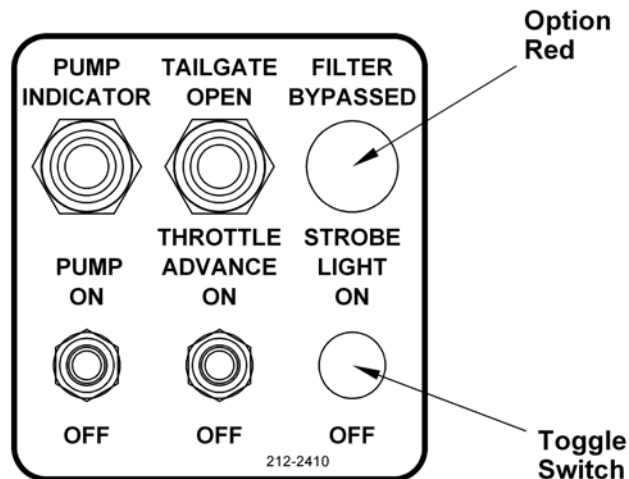
The optional toggle switch in the control panel is for an optional strobe light. The switch operates in the same manner as the standard toggle switches to control turning the optional light ON or OFF. See the figure to the right.

Other optional toggle switches may be located in other areas of the cab. Each such switch will be labeled with its function and operations. You must become familiar with the location and operation of any optional toggle switches that are not located in the Control Panel.

### Optional Indicator Lights

The optional indicator light in the control panel is for the FILTER BYPASSED function. See the figure below. The filter monitor switch on the hydraulic oil tank senses the pressure in the oil flow returning to hydraulic oil tank. When the pressure is lower than a preset limit, current flows in the switch and turns the FILTER BYPASSED light ON. When the pressure in the oil flow is greater than the preset limit, the filter monitor switch is OFF, current does not flow to the FILTER BYPASSED indicator light and it is OFF.

Other optional indicator lights may be located in other areas of the cab. Each such switch will be labeled with its function and operations. You must become familiar with the location and operation of any optional indicator light that is not located in the Control Panel.



**Figure 42. Control Panel Optional Functions**

## STANDARD OUTSIDE CONTROLS

The standard outside controls for the unit are located on the front street side of the body and on the curb side of the tailgate near the hopper.

The upper panel and packer blade levers have detents. Once you push or pull the lever past the detent (fully push or pull the lever), the selected operation continues and you can release the lever. The lever will self-center at the end of the commanded operation by way of internal hydraulic pressure. You can reverse the direction of a function at any time when you push or pull the lever past the detent in the opposite direction.

You must move the tailgate and ejector levers in the direction of travel you want and hold the lever at that position until the tailgate or ejector reaches the desired position then release the lever. You can stop an operation at any time by releasing the lever.

### **DANGER**

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

#### A. PACKER BLADE Lever

This lever is on the curb side of the tailgate next to the UPPER PANEL lever. It is the lever closest to the end of the tailgate. See the figures on the next two pages.

1. PUSH the lever to the FULL DOWN position and RELEASE it to MOVE the blade UP.
2. PULL the lever to the FULL UP position and RELEASE it to MOVE the blade DOWN.
3. MOVE the lever in the opposite direction to stop an UP or DOWN operation at any time.
4. You usually operate this lever at the same time you operate the UPPER PANEL lever to:
  - a. OPEN the hopper to load refuse
  - b. CLOSE the hopper for the in-transit position
  - c. MOVE and COMPACT the refuse in the hopper to the body.

#### B. UPPER PANEL Lever

This lever is on the curb side of the tailgate next to the BLADE lever. See the figures on the next two pages.

1. PULL the lever to the UP position and RELEASE it to MOVE the upper panel IN.
2. PUSH the lever to the DOWN position and RELEASE it to MOVE the upper panel OUT.
3. MOVE the lever in the opposite direction to stop an IN or OUT operation at any time.
4. You usually operate this lever at the same time you operate the BLADE lever to:
  - a. OPEN the hopper to load refuse
  - b. CLOSE the hopper for the in-transit position
  - c. MOVE and COMPACT the refuse in the hopper to the body.

## STANDARD OUTSIDE CONTROLS (CONTINUED)

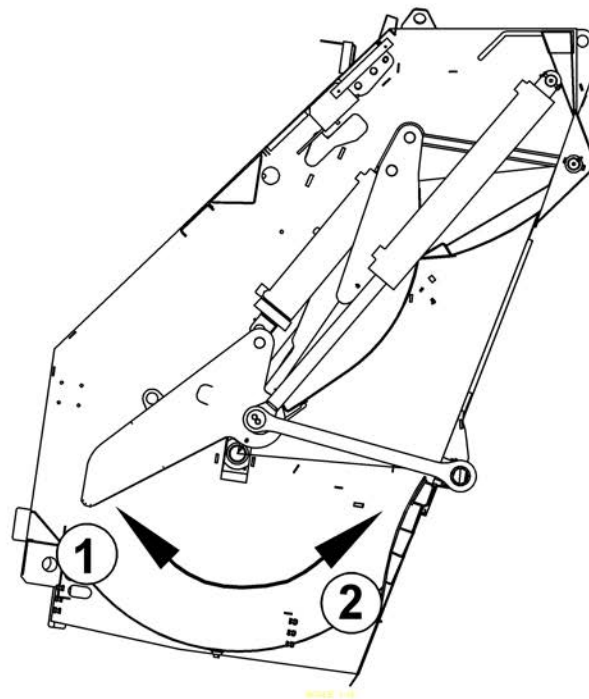
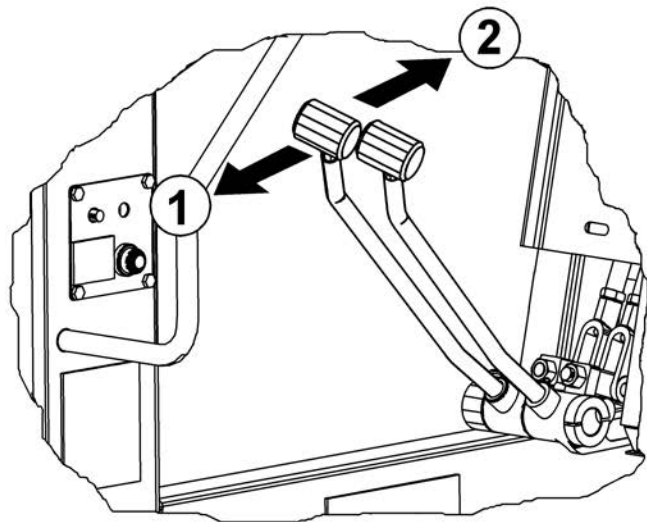


Figure 43. Blade Control Lever

## STANDARD OUTSIDE CONTROLS (CONTINUED)

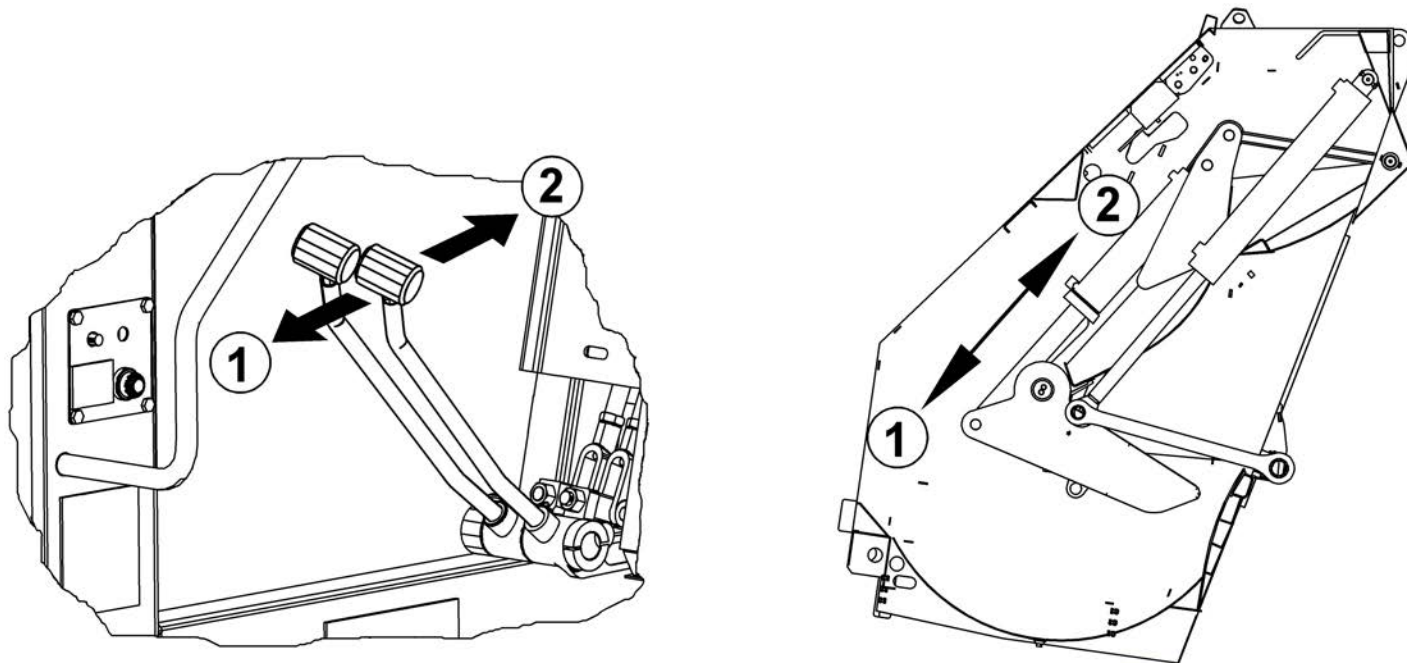
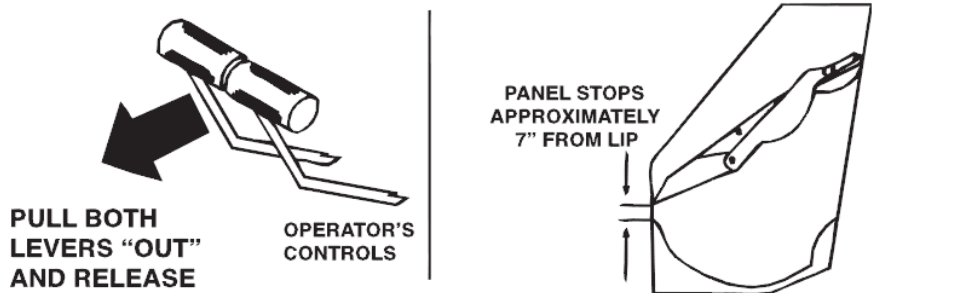


Figure 44. Upper Panel Control Lever

## STANDARD OUTSIDE CONTROLS (CONTINUED)

### NORMAL LOADING CYCLE

#### 1 FIRST HALF ON NORMAL LOADING CYCLE



#### 2 SECOND HALF OF NORMAL LOADING CYCLE

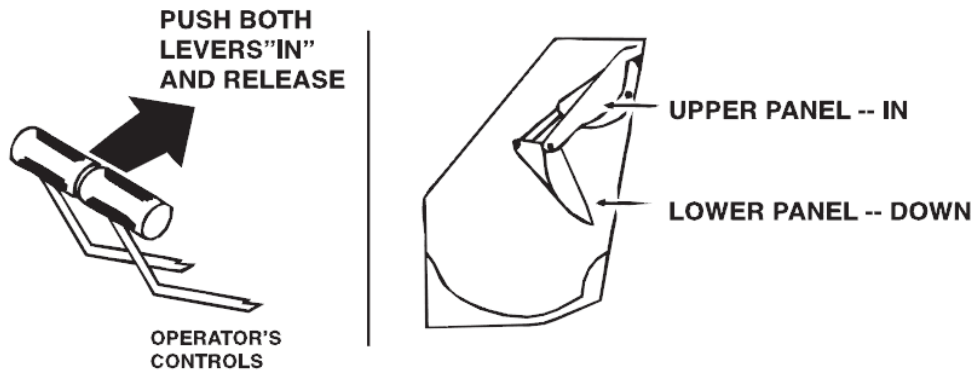


Figure 45. Normal Loading Cycle

## STANDARD OUTSIDE CONTROLS (CONTINUED)

### **DANGER**

A tailgate in motion is dangerous. Serious injury or death may occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you lower the tailgate.

### C. TAILGATE Lever

This lever is on the front, street side of the body and controls the raising and lowering of the tailgate. See the figure on the next page.

1. PULL the lever to the UP position and HOLD it there to raise the tailgate.
2. PUSH the lever to the DOWN position and HOLD it there to lower the tailgate.
3. RELEASE the lever to stop an UP or DOWN operation at any time or when the tailgate is fully raised or lowered.
4. The TAILGATE red indicator light is ON when the tailgate is NOT FULLY CLOSED and goes OFF when it is fully CLOSED.

### **CAUTION**

Stand clear when the ejector panel is in motion. Keep side access door closed when ejector panel is in motion. Failure to obey may result in minor or moderate injury.

### **NOTICE**

Do not use the ejector panel to pack refuse against a closed tailgate (backpack). Packing refuse against a closed tailgate may result in damage to body or ejector cylinder.

### D. EJECTOR Lever

This lever is on the front, street side of the body and is next to the TAILGATE lever. This lever controls the EXTEND and RETRACT functions of the ejector panel. You EXTEND the ejector panel when you want to push refuse out of the body and you RETRACT the ejector panel after body is empty of refuse. You also set the position of the ejector panel at the start of a route before you load any refuse. See the figure on the next page.

1. PULL the lever to the UP position and HOLD it there to EXTEND the ejector panel and push refuse out of the body.
2. PUSH the lever to the DOWN position and HOLD it there to RETRACT the ejector panel after it pushes the refuse from the body.
3. RELEASE the lever to stop an EXTEND or a RETRACT operation at any time or when the ejector panel is fully EXTENDED or RETRACTED.

## STANDARD OUTSIDE CONTROLS (CONTINUED)

### E. THROTTLE ADVANCE Switch

Use this switch to increase engine RPMs and the flow of hydraulic fluid when you use the ejector panel to push refuse out of the body. You must enable this switch by MOVING the in-cab THROTTLE ADVANCE enable switch to ON. See the figure below.

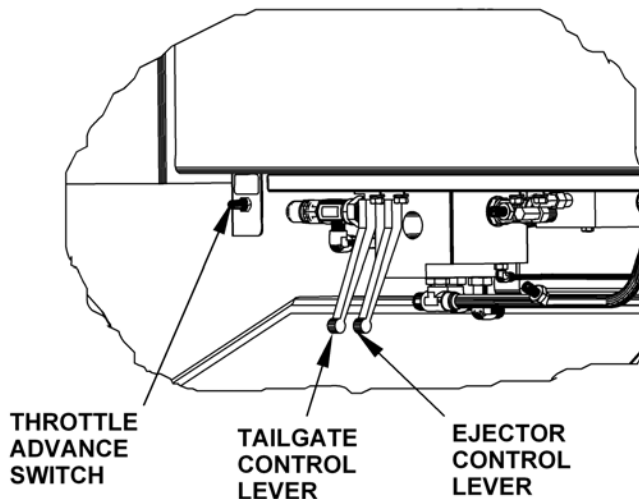


Figure 46. Front Street Side Controls

### F. BUZZER Switch

Without any options, this switch is located on curb side of the tailgate near the grab handle. This switch may be located in different areas depending on optional container lifting devices. See the figure below.

1. PUSH the switch IN to activate the buzzer in the cab when the helper is on the riding step and ready for the unit to move to the next pickup location.
2. RELEASE the switch to stop the buzzer in the cab.
3. MAKE SURE you (the helper) are ready for the unit to move. This means that you observe the safety message for using the riding step.

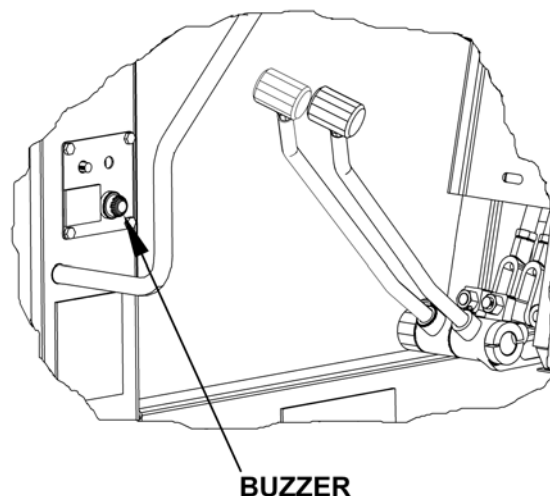


Figure 47. Buzzer Switch Location

## STANDARD OUTSIDE CONTROLS (CONTINUED)

### G.HOPPER LIGHT Switch (Option)

If equipped, use this switch to turn on the Hopper Light.  
See the figure to the right.



**Figure 48. Buzzer and Hopper Light Switch Location**



## OPTIONAL OUTSIDE CONTROLS

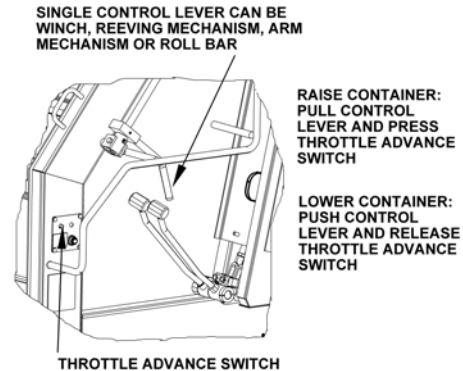
The optional outside controls include levers to operate the optional hydraulic equipments such as:

- Reeving mechanism
- Winch
- Arm mechanism
- Roll bar
- Cart tipper

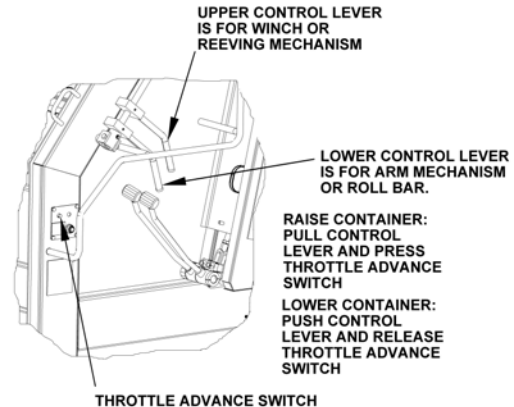
There are several combinations of optional equipment. The controls for optional equipment are usually located on the curb side of the unit, but may also be located on the street side of the unit. You must become familiar with the optional equipment and their controls that are on your unit. See the figure to the right.

You must secure the refuse bin with the latch bar before you lift the refuse bin with any of the optional container lift equipment except the arm mechanism and the cart tipper.

An additional throttle advance toggle switch is installed when there is at least one optional lifting equipment. The switch is a momentary switch which means that you must PRESS and HOLD the switch to increase the engine RPMs. It is located on the same plate as the buzzer. The engine RPMs decrease as soon as you stop pressing the switch. You use the switch to increase the RPMs of the engine which increases the hydraulic oil flow. The increased flow of hydraulic oil increases the speed of the optional lifting equipment.



CONTROL LEVER FOR SINGLE OPTION  
**Figure 49. Optional Container Lift Controls (1 of 2)**



CONTROL LEVERS FOR TWO OPTIONS  
**Figure 50. Optional Container Lift Controls (2 of 2)**

## OPTIONAL OUTSIDE CONTROLS (CONTINUED)

### **DANGER**

Container lifting equipment in motion is dangerous. Serious injury or death may occur if a person is struck by a refuse container or the lifting equipment. Clear the area near the tailgate of all unnecessary people before you use the container lifting equipment.

### **WARNING**

A refuse container that is not in good condition with retaining washers in place may not be secured with the latch bar and can suddenly move. Death or serious injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the latch bar before you raise or lower the container.

## A. REEVING MECHANISM

An optional reeving mechanism (a cylinder with an attached cable and hook) will be located along the center line of the roof with its hook end at the top of the tailgate. When not in use, you secure its hook in the eye provided on either side of the tailgate. You use the reeving mechanism and its hook to secure a commercial refuse bin, pull it to the hopper, tip the bin to empty the refuse into the hopper and lower the bin to the ground.

1. PUSH the lever to the LOWER position and HOLD it there to MOVE the cylinder OUT (EXTEND).

2. PULL the lever to the RAISE position and HOLD it there to MOVE the cylinder IN (RETRACT).
3. RELEASE the lever to stop a RAISE or LOWER operation at any time or when the cable hook is at the position you want.
4. Attach the latch bar to the refuse bin **BEFORE** you attach the hook to the refuse container.
5. PULL/PUSH the lever to RAISE the container over the hopper lip, dump the refuse from the container and lower the container to the ground.

## B. WINCH

An optional winch will be mounted at the top, center of the tailgate. You use the winch and its hook to secure a commercial refuse bin, pull it to the hopper, tip the bin to empty the refuse into the hopper and lower the bin to the ground. The lever controls the RAISE and LOWER operations of the winch.

1. PUSH the lever to the LOWER position and HOLD it there to UNWIND the cable.
2. PULL the lever to the RAISE position and HOLD it there to the WIND the cable.
3. RELEASE the lever to stop an LOWER or RAISE operation at any time or when the cable hook is at the position you want.
4. Attach the latch bar to the refuse bin **BEFORE** you attach the hook to the refuse container.
5. PULL/PUSH the lever to RAISE the container over the hopper lip, dump the refuse from the container and lower the container to the ground.

## OPTIONAL OUTSIDE CONTROLS (CONTINUED)

### C. ARM MECHANISM

The optional arm mechanism consists of a lift arm on each side of the tailgate connected by a cross tube. Each lift arm hooks onto a trunnion bar on the refuse container. Each arm is raised and lowered by a cylinder. The two cylinders are controlled by a single lever.

1. PUSH the lever to the LOWER position and HOLD it there to LOWER the roll bar.
2. PULL the lever to the RAISE position and HOLD it there to RAISE the roll bar.
3. RELEASE the lever to stop an LOWER or RAISE operation at any time or when the roll bar is at the position you want.
4. MAKE SURE the refuse container is SECURED by the arm mechanism **BEFORE** you RAISE or LOWER the refuse container.
5. PULL/PUSH the lever to RAISE the container over the hopper lip, dump the refuse from the container and lower the container to the ground.

### D. ROLL BAR

The optional roll bar mechanism consists of a lift arm on each side of the tailgate connected by a tube. You raise and lower each arm with two cylinders. A single lever controls the two cylinders.

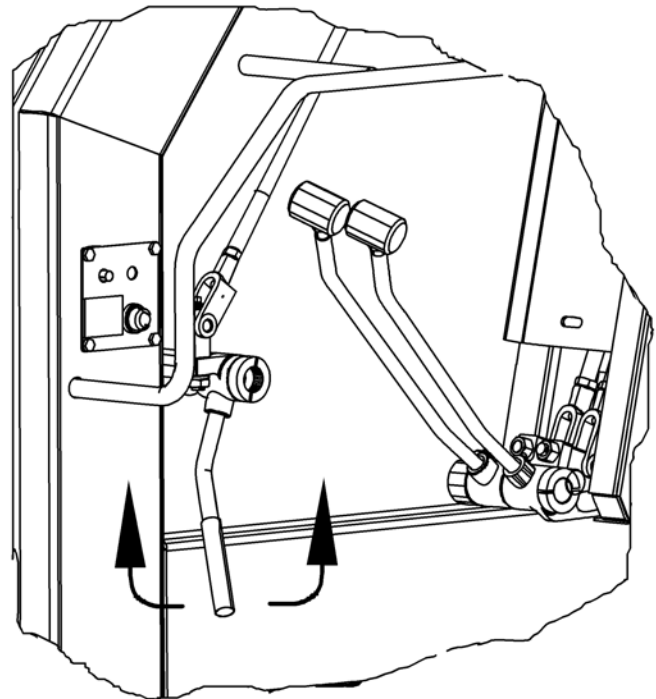
1. PUSH the lever to the LOWER position and HOLD it there to LOWER the roll bar.
2. PULL the lever to the RAISE position and HOLD it there to RAISE the roll bar.
3. RELEASE the lever to stop an LOWER or RAISE operation at any time or when the roll bar is at the position you want.
4. Attach the latch bar to the refuse bin **BEFORE** you RAISE the refuse container.
5. MAKE SURE the refuse container is SECURED by the latch bar **BEFORE** you LOWER the refuse container.
6. PULL/PUSH the lever to RAISE the container over the hopper lip, dump the refuse from the container and lower the container to the ground.

## OPTIONAL OUTSIDE CONTROLS (CONTINUED)

### E. CART TIPPER

One or two optional cart tippers can be installed on the unit. The control lever for a single cart tipper will be located on the curb side of the tailgate as shown in the figure to the right.

1. Bring the refuse container to the cart tipper and secure the container to the cart tipper with the cart tipper lock.
2. PULL and HOLD the lever to RAISE the cart tipper. The cart tipper will RAISE and (by continuing to PULL the lever) tip the container, thereby dumping the refuse in the hopper.
3. MAKE SURE the container latch bar is over the cart tipper saddle **BEFORE** you RAISE the container.
4. MAKE SURE the cart tipper slider latch EXTENDS and LOCKS the container when you RAISE the container.
5. If the latch does not extend, LOWER the container, make sure the container latch bar is over the cart tipper saddle and RAISE the container again. DO NOT continue to RAISE a refuse container when the slider latch does not extend and lock the container.
6. When the refuse container is empty, PUSH and RELEASE the lever to LOWER the cart tipper. At the end of the LOWER cycle, the cart tipper will stop lowering.
7. RELEASE the refuse container from the cart tipper's lock.



**Figure 51. Cart Tipper Control Lever**

## OPTIONAL OUTSIDE CONTROLS (CONTINUED)

### F. LATCH BAR ASSEMBLY

You use the latch bar assembly to secure a refuse container BEFORE you raise or lower the container with a reeving mechanism, winch or roll bar. Refer to the figure on the right.

1. You ROTATE the latch assemblies UP which RELEASES the latch bars and they can ROTATE DOWN.
2. You move the refuse container to the tailgate into position for latching its trunnion bar.
3. You ROTATE the latch bars UP and ROTATE the latch bar assemblies DOWN over the latch bars. This locks container's trunnion bar in the latch bar assembly.
4. A "bash bar" prevents the container from over-rotating into the hopper.

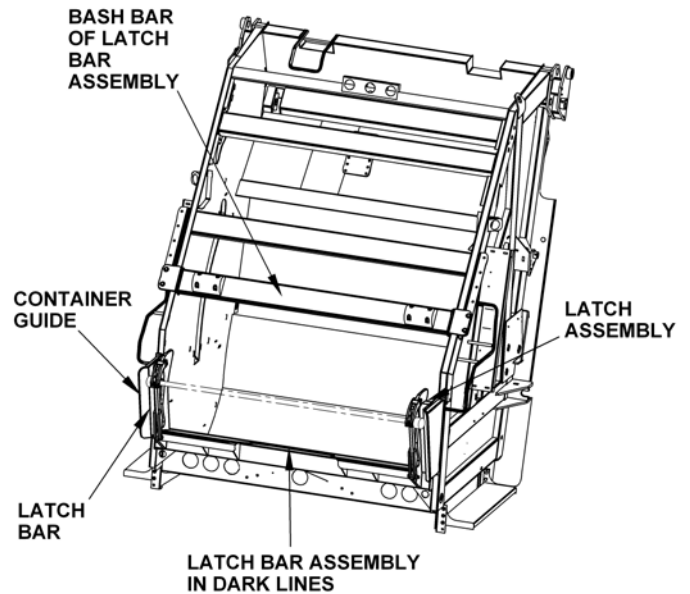


Figure 52. Latch Bar Assembly

**NOTES:**

# **SECTION 5**

# **BODY AND TAILGATE PROPS**

## PREVIEW

Read this section to learn about:

- Using the body props
- Using the tailgate props



## PROPPING THE BODY

There are no body props as you cannot raise the body of the unit since the unit is an eject model and not a dump model.

## PROPPING THE TAILGATE

**YOU MUST** prop the tailgate when you open it for service or maintenance. Use the instructions that follow and prop the tailgate with the factory-installed tailgate props.

Observe and obey the following **DANGER** and **WARNING** notices while you prop the tailgate with the factory tailgate props.

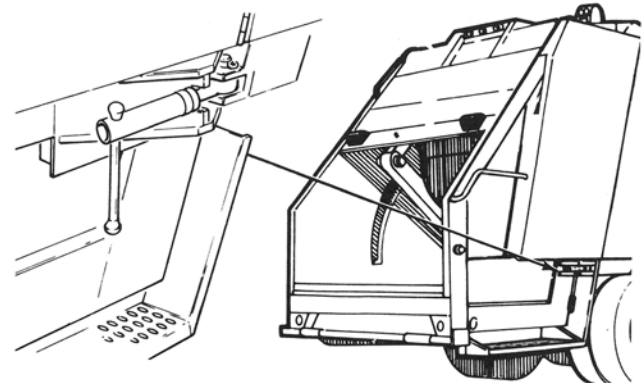
### **⚠ DANGER**

A tailgate is dangerous while you raise or lower it. A prop may fail and cause the tailgate to close suddenly which can result in serious injury or death if you become trapped between the tailgate and the body. Do not walk under or go between the body and the tailgate when the tailgate is in motion, while you prop the tailgate or while the tailgate is propped.

### Factory Tailgate Props

**YOU MUST USE BOTH** of the two support props at the rear of each unit whenever you open the tailgate for service or maintenance.

**MAKE SURE** the unit is on flat, stable ground and apply the parking brake and chock the wheels. Then follow the instructions on the Tailgate Prop Operation Decal on the unit (also shown on the next page).



**Figure 53. Tailgate Clamps (Turnbuckles)**

## TAILGATE PROP OPERATION

**IMPORTANT: TAILGATE MUST BE FREE OF REFUSE AND ALL PERSONS CLEAR OF TAILGATE BEFORE PERFORMING THE FOLLOWING STEPS.**

**CAUTION**

**TWO PROPS ARE INSTALLED ON THE UNIT. BOTH MUST BE USED!**

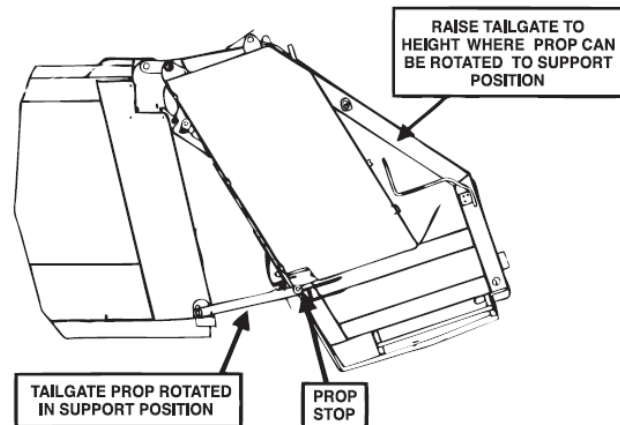
### TO USE PROPS

2. Set unit on level surface and apply parking brake.
3. Loosen turnbuckle clamps. (Units with automatic tailgate locks do not use these clamps.)
4. Remove pins holding prop in stored bracket.
5. Raise tailgate to height where props can be rotated to support position.

6. Rotate props.
7. Lower tailgate until props mate with tailgate stop.
8. Turn engine off and remove ignition key.

### TO STORE PROPS

1. Raise tailgate slightly and rotate prop to stored position and install pin.
2. Lower tailgate completely and tighten turnbuckle clamps.



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**SECTION 6  
DAILY CHECKLIST**

## DAILY CHECKLIST

Make sure you perform a daily check of the unit. Make copies of the **Refuse Vehicle Daily Inspection** <sup>(86)</sup> on the next several pages to have the Operator mark completed items before each route. Many checks in the Daily Checklist are maintenance related, such as checking tire pressures and hoses for wear and damage.

Refer to the **Daily Checklist Maintenance Items Chart** below for items to check and the required action.

DAILY CHECKLIST MAINTENANCE ITEMS	
Item	Required Action
Low air pressure in tires	Inflate the tire to the correct air pressure given on the tire
Worn tire	Replace when the wear is greater than allowed by law or before the tread is no longer visible
Damaged tire	Replace immediately BEFORE going on route.
Hydraulic pump leaks	Determine the cause of the leak and repair immediately.
Damaged hydraulic pump	Repair or replace IMMEDIATELY
Loose or missing hardware for the hydraulic pump	Tighten loose hardware Replace missing hardware immediately
Damaged decal or decal not readable	Replace decal immediately
Low level of hydraulic oil	Fill the hydraulic oil tank immediately
Worn or damaged hoses	Replace immediately
Leaks at cylinders, hoses or fittings.	Tighten loose connection
Loose or missing hardware	Tighten loose connections Replace missing hardware
Worn fiber guards	Replace hoses/fittings as necessary Install new fiber guard on new hoses
Worn or damaged tailgate lock components	Replace worn or damaged components
Loose or missing tailgate lock hardware	Tighten loose hardware Replace missing hardware
Damaged tailgate seal	Replace seal

# DuraPack® 5000

<b>DAILY CHECKLIST MAINTENANCE ITEMS</b>	
<b>Item</b>	<b>Required Action</b>
Body structure has loose or missing hardware	Tighten loose hardware Replace missing hardware
Body structure has cracked weld joints	Repair immediately
Body mounting brackets have loose hardware, damaged hardware or cracked welds	Tighten loose hardware Replace missing hardware Repair cracked welds
Air regulator (typically located at front of body)	90 PSI

# DuraPack® 5000



## REFUSE VEHICLE DAILY INSPECTION

DATE: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

UNIT NO. \_\_\_\_\_

Enter one of the following codes in the Inspection Results Code column:

Use a  $\checkmark$  to indicate inspected and no repair, service or adjustment is necessary.

Use an **R** to indicate repair, service or adjustment is necessary.

Use an **N** to indicate vehicle not equipped.

---

### FOLLOW ALL APPLICABLE LOCK-OUT / TAG-OUT PROCEDURES

Printed Name of Operator:

\_\_\_\_\_

I certify with the signature that follows that I performed a complete inspection in accordance with the following check list on the date given above.

Signature of Operator:

\_\_\_\_\_

Refer to **Preventative Maintenance Chart** <sup>149</sup> and **Lubrication Guide** <sup>153</sup> for additional information and requirements.

CHECKS AND INSPECTIONS	INSPECTION RESULTS CODE (√/R/N)
<i>INSPECT PER APPLICABLE MANUFACTURER MANUAL</i>	
Cab/Drive	
Wheels and Tires	
Tractor and Chassis Electrical	
Chassis	
Engine & Transmission & Fluid Levels	
Chassis Lubrication	
<i>REFUSE COLLECTION SYSTEMS AND COMPONENTS</i>	
<b>CAB OUTSIDE AREA</b>	
Check air pressure of tires. Add air to any tire with air pressure lower than recommended before going on route.	
Check wear of tire tread. Replace tire worn below tire manufacturer's recommendation or state requirement before going on route.	
Check tires for damage. Replace any damaged tire before going on route.	
Inspect pump for leaks.	
Inspect pump for damage or loose hardware.	
Inspect all decals on cab for damage and readability.	
Inspect unit for refuse on or about the engine or exhaust components. <b>Remove all refuse to prevent a fire.</b>	
<b>BODY AND CHASSIS CURB SIDE INSPECTION</b>	

<b>CHECKS AND INSPECTIONS</b>	<b>INSPECTION RESULTS CODE (√/R/N)</b>
Inspect level of hydraulic oil if tank is mounted on curb side. It must be full. <b>Add recommended oil as necessary.</b>	
Inspect body structure for damage, loose or missing nuts and bolts and for cracked welds and metal.	
Inspect body mounting brackets for cracked welds, missing bolts or nuts or movement.	
Inspect decals on curb side body for damage and readability.	
Inspect decals on body prop for damage and readability.	
Check air pressure of tires. Add air to any tire with air pressure lower than recommended before going on route.	
Check wear of tire treads. Replace any tire worn below tire manufacturer's recommendation or state requirement before going on route.	
Check tires for damage. Replace any damaged tire before going on route.	
Inspect tailgate raise components.	
Cylinder, hoses and fittings for leaks	
Hoses for wear and damage	
Cylinder for damage	
Loose or missing mounting hardware	
Inspect tailgate lock components	
Clamp components for wear and damage	
Loose or missing mounting hardware	
Make sure tailgate is locked	



<b>CHECKS AND INSPECTIONS</b>	<b>INSPECTION RESULTS CODE (√/R/N)</b>
Right hand tailgate access cover is secured with quick disconnect pin AND wing screw	
<b>TAILGATE</b>	
Inspect decals on tailgate and underride bumper for damage and readability	
Inspect tailgate seal does not have visible damage	
Inspect underride bumper for damage and loose components.	
Inspect slide assembly	
Cylinders, hoses and fittings for leaks	
Hoses for wear and damage	
Cylinder for damage	
Loose or missing mounting hardware for hydraulics	
Loose or missing hardware for slide assembly	
Inspect packer blade	
Cylinders, hoses and fittings for leaks	
Hoses for wear and damage	
Cylinder for damage	
Loose or missing mounting hardware for hydraulics	
Loose or missing hardware for packer blade	

CHECKS AND INSPECTIONS	INSPECTION RESULTS CODE (√/R/N)
<b>BODY AND CHASSIS STREET SIDE INSPECTION</b>	
Left hand tailgate door is secured with quick disconnect pin AND wing screw	
Make sure tailgate is locked.	
Inspect tailgate lock components.	
Clamp components for wear and damage	
Loose or missing mounting hardware	
Inspect tailgate raise components.	
Cylinder, hoses and fittings for leaks	
Hoses for wear and damage	
Cylinder for damage	
Loose or missing mounting hardware	
Check air pressure of tires. Add air to any tire with air pressure lower than recommended before going on route.	
Check wear of tire treads. Replace any tire worn below tire manufacturer's recommendation or state requirements before going on route.	
Check tires for damage. Replace any damaged tire before going on route	
Inspect all decals on street side body for damage and readability.	
Inspect body structure for damage, loose or missing nuts and bolts and for cracked welds.	
Inspect body mounting brackets for cracked weld, missing bolts or nuts or movement.	

<h2 style="text-align: center;">CHECKS AND INSPECTIONS</h2>	<b>INSPECTION RESULTS CODE</b> (√/R/N)
Inspect level of hydraulic oil if tank is mounted on street side. It must be full. <b>Add recommended oil as necessary.</b>	
Battery disconnect switch is turned to OFF then:	
Check wiring and battery cables from the battery box to the engine starter for wear and other damage. <b>IMMEDIATELY REPLACE WORN OR DAMAGED WIRING</b>	
Check wiring and cables for loose connections. <b>IMMEDIATELY TIGHTEN LOOSE CONNECTIONS</b>	
<b>OPERATION OF UNIT - <i>Skip this section if the unit will not be operated today</i></b>	
Make sure the air tank drain valve is closed.	
Turn battery disconnect to ON.	
Apply parking brake.	
Make sure the starter interlock operates – make sure unit will not start in gear.	
Start the engine.	
Indicator lights and gauges show normal operation of engine.	
Make sure the parking brake does not allow the vehicle to move forward or reverse at idle.	
Make sure the throttle advance (if equipped) operates only in neutral.	
Check all cab, body and tailgate lights for proper operation.	
Make sure the backup alarm and light operate.	
Make sure all people not necessary and any hazards are clear of the area and then:	
Operate the in-cab controls and make sure:	

<h2 style="text-align: center;">CHECKS AND INSPECTIONS</h2>	<b>INSPECTION RESULTS CODE</b> (√/R/N)
If equipped, engage the PTO	
MOVE the PUMP ON switch UP – the switch’s green light is ON and the PUMP ON light is ON	
MOVE the PUMP ON switch DOWN – the switch’s green light is OFF and the PUMP ON light is OFF	
MOVE the PUMP ON switch UP – the switch’s green light is ON and the PUMP ON light is ON	
If equipped, The FILTER BYPASSED light is OFF. If not, and the filter was not changed before starting the unit, report this to your supervisor immediately. DO NOT go on route until the unit is repaired if the filter was not changed	
Operate all optional equipment switches and make sure the option operates correctly, such as a light	
Check the operation of all optional lights. Report any light that is ON and should be OFF or is OFF and should be ON	
Operate the standard outside controls located at the tailgate:	
At the same time, PUSH the SLIDE and BLADE levers	
The blade should move DOWN	
The slide should move IN	
At the same time, PULL the SLIDE and BLADE levers	
The blade should move UP	
The slide should move OUT	
Operate each installed optional outside control located at the tailgate:	
Reeving Mechanism	

CHECKS AND INSPECTIONS	INSPECTION RESULTS CODE (✓/R/N)
Release the cable hook from its storage eye and hold the hook	
PUSH the control lever – the cylinder should OUT (EXTEND)	
PULL the control lever – the cylinder should move IN (RETRACT)	
Attach the cable hook to its storage eye	
Winch	
Release the cable hook from its storage eye and hold the hook	
PUSH the control lever – the winch spool should UNWIND the cable from the spool	
PULL the control lever – the winch spool should WIND the cable on the spool	
Attach the cable hook to its storage eye	
Arm Mechanism	
PULL the control lever – the lift arms should RAISE	
PUSH the control lever – the lift arm should LOWER	
Make sure the arm mechanism is at the full LOWER position	
Roll Bar	
PULL the control lever – the roll bar should RAISE	
PUSH the control lever – the roll bar should LOWER	
Make sure the roll bar is at the full LOWER position	

<h2 style="text-align: center;">CHECKS AND INSPECTIONS</h2>	<b>INSPECTION RESULTS CODE</b> (√/R/N)
<p style="text-align: center;">Cart Tipper</p>	
<p style="text-align: center;">PULL the control lever – the cart tipper should RAISE</p>	
<p style="text-align: center;">PUSH the control lever – the cart tipper should LOWER</p>	
<p style="text-align: center;">Make sure the cart tipper is at the full LOWER position</p>	
<p style="text-align: center;">PRESS the Buzzer – the in-cab alarm should sound</p>	
<p style="text-align: center;">Operate the standard outside controls located at the front, street side of body:</p>	
<p style="text-align: center;">If the body has refuse, do not operate the controls:</p>	
<p style="text-align: center;">If the body does not have refuse:</p>	
<p style="text-align: center;">PULL the tailgate lever and RAISE the tailgate sufficiently to set the tailgate props</p>	
<p style="text-align: center;">The TAILGATE OPEN light and alarm are ON</p>	
<p style="text-align: center;">Set the tailgate props</p>	
<p style="text-align: center;">Inspect the tailgate seal for damage</p>	
<p style="text-align: center;">Inspect the floor, ejector rails and ejector shoes</p>	
<p style="text-align: center;">Store the tailgate props and RAISE the tailgate completely</p>	
<p style="text-align: center;">PULL the ejector lever and FULLY EXTEND the ejector panel</p>	
<p style="text-align: center;">PUSH the ejector lever and FULLY RETRACT the ejector panel</p>	
<p style="text-align: center;">CLOSE the tailgate</p>	

<h2 style="text-align: center;">CHECKS AND INSPECTIONS</h2>	<b>INSPECTION RESULTS CODE</b> (√/R/N)
<p style="text-align: center;">The TAILGATE OPEN light and alarm are OFF</p>	
<p>Keep the engine running and continue the inspection</p>	
<b>IN-CAB INSPECTION</b>	
<p>Inspect all in-cab decals for damage and readability.</p>	
<p>Make sure the following lights are OFF:</p>	
<p style="padding-left: 40px;">TAILGATE OPEN – if it is ON, make sure the tailgate is CLOSED and secured</p>	
<p style="padding-left: 40px;">PUMP INDICATOR light is OFF – if it is ON, MOVE the PUMP ON switch to OFF</p>	
<p style="padding-left: 40px;">FILTER BYPASSED – if it is ON, REPLACE the filter BEFORE you go on route</p>	
<p style="padding-left: 40px;">All other optional lights</p>	
<p>If equipped, check the operation of each camera.</p>	
<b>FINAL INSPECTION</b>	
<p>While you walk completely around the vehicle, look for:</p>	
<p style="padding-left: 40px;">Fluid Leaks</p>	
<p style="padding-left: 40px;">Cracked or damaged welds and metal</p>	
<p style="padding-left: 40px;">Loose or missing bolts, nuts and clamps</p>	

**NOTES:**



# **SECTION 7**

# **BEFORE GOING ON ROUTE**

## PREVIEW

Read this section to learn proper procedures for:

- Checking the unit each day
- Starting the unit in cold weather
- Setting the unit up for the route
- Removing power to the unit during periods of not using the unit

## BATTERY DISCONNECT SWITCH

The battery box is typically located on the streetside of the chassis frame near the front of the body, however it can be mounted at a different location on different chassis. Become familiar with the location of the battery box and battery disconnect switch on your unit.

1. You must turn the battery disconnect switch to the OFF position whenever the unit is shut off for any length of time – especially when the unit will be left unattended.
2. You must turn the battery disconnect switch to the ON position whenever you will use the unit.
3. You must check the position of the battery disconnect switch as part of the daily inspection.

### NOTICE

Battery cables must be securely anchored and not rubbing other equipment. Cable insulation must be free of damage and abrasion. Inspect weekly.

### NOTICE

Always disconnect the battery before welding on the chassis or body.

## DAILY CHECKLIST

See the **Daily Check section** <sup>83</sup> for the daily checks and procedures checklist. Make a copy of the check list.

### WARNING

A unit that needs service or repair can malfunction and create a dangerous condition. A part failure during operation can cause serious injury or death to a person or damage to the unit. Repair or replace any failed or defective part immediately.

## BEFORE STARTING A ROUTE

Before you start a route, do the following:

- Perform an inspection of the unit with the **Daily Checklist** <sup>83</sup>.
- Check the **Hydraulic Oil Tank**.
- Cycle all **Hydraulic Functions**.
- If equipped, close the **Side Access Door**.
- Check the “**In-transit**” **Settings** <sup>104</sup>.

### Use the Daily Checklist to Inspect the Unit

It is the operator's responsibility to do a visual inspection of the unit and make sure the unit is in good operating condition before you start a route.

The requirements for the daily checks are given in the **Daily Checklist section** <sup>83</sup>. Make sure you complete the inspections on the checklist and you make all entries, including your signature.

## COLD WEATHER WARMUP PROCEDURE

When ambient air temperature is cold (below 0 degrees F), it is necessary to warm up the unit's hydraulic oil before you start your daily route operation or to check the oil level. The hydraulic oil is sufficiently warmed when the temperature is between 120° and 160°F.

### **WARNING**

Moving parts on the unit are dangerous. Serious injury or death can occur if a person is struck by the equipment. Clear all people from the area before you operate the unit

Follow the steps below to warm up the hydraulic oil.

1. START the TRUCK and let the engine idle.
2. APPLY the PARKING BRAKE and make sure it holds.
3. ENGAGE the HYDRAULIC PUMP for approximately five minutes.
4. MAKE SURE the AREA IS CLEAR of all unnecessary people BEFORE you operate the controls.
5. OPERATE the PACKER EXTEND and PACKER RETRACT functions through ten (10) cycles while the engine idles. See the Operator's Manual for operation instructions.
6. Make sure the oil temperature on the site gauge is between 120° and 160°F. If not, repeat step 5.
7. Check for fluid leaks. Repair if necessary.

## PREPARING THE UNIT TO CHECK THE HYDRAULIC OIL LEVEL

Before checking the oil level or adding oil, make sure the oil is warmed up and the unit is in the following position with all cylinders collapsed:


- Truck – on level ground
- Tailgate and Body – fully down and locked
- Ejector Panel – at the front of the body
- Packer Panel – in the in-transit position with all cylinders retracted

## CHECK HYDRAULIC OIL LEVEL

Check the hydraulic oil level (after warming up the oil) daily or every eight (8) hours, whichever comes first. Fill as necessary.

### Cycle All Hydraulic Functions

#### Follow These Steps:

1. Operate the packing panel, and body and tailgate functions two or three times each. See **Section 3**  for proper operation of controls.
2. Put the unit back in the position described above and check the oil level again.

3. Add oil if necessary. See the “Recommended Hydraulic Oil” chart below. Refer to the Service Manual for instructions for filling the oil tank.

RECOMMENDED HYDRAULIC OIL
The following oils by brand name are approved for use in the hydraulic system on this equipment and considered to be all-temperature hydraulic fluids: <ul style="list-style-type: none"><li>• Shell Tellus T32</li><li>• Mobil DTE 13M</li><li>• Texaco Rando HDZ 32</li></ul>
<b>NOTE:</b> Cold weather operation requires special oil considerations. Viscosity should not exceed 7500 SSU at lowest startup temperature. Continuous operation should range between 40–1000 SSU for all temperature ranges.



## NOTICE

Contamination is a hydraulic system’s worst enemy. DO NOT let dirt enter the system. Use a clean rag and remove dirt or other contamination around any system component before you disconnect or remove it. While you fill the reservoir, filter the oil through a 200 mesh (or finer) screen. NEVER use a cloth to filter the oil.

## HYDRAULIC OIL TANK WITH SIGHT GAUGE

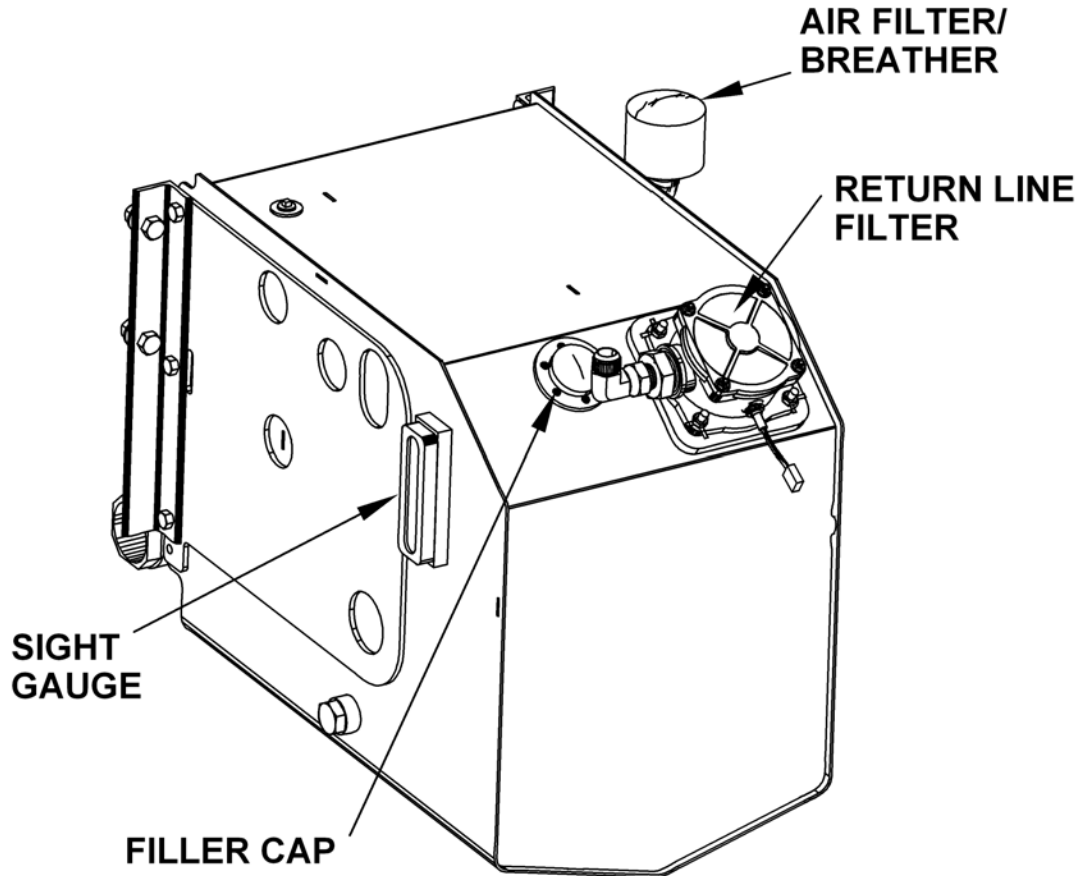


Figure 54. Hydraulic Oil Tank with Sight Gauge

## CYCLE ALL HYDRAULIC FUNCTIONS

Check the operation of all hydraulic controls on the unit. See **Section 4** for proper operation of controls.

### **WARNING**

Moving equipment can be dangerous to bystanders. Serious injury or death can occur if a person is in the wrong area or is not attentive to the operations. Clear the area of all unnecessary people before you operate the controls.

### **Perform These Steps:**

### **DANGER**

Your body or clothing can become caught by the packer blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the packer blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the packer blade and upper panel and keep all parts of your body away from the packer blade.

#### 1. Upper Panel/Blade

Use the controls and **MOVE** the Upper Panel/Blade through at least one cycle of the start, sweep and pack positions.

### **DANGER**

A tailgate in motion is dangerous. Serious injury or death may occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you lower the tailgate.

#### 2. Tailgate Raise Cycle

If the body is empty, do a tailgate **RAISE** and **LOWER** cycle. **DO NOT** raise the tailgate with refuse in the body or in the hopper.

### **CAUTION**

Stand clear when the ejector panel is in motion. Keep side access door closed when ejector panel is in motion. Failure to obey may result in minor or moderate injury.

### **NOTICE**

Do not use the ejector panel to pack refuse against a closed tailgate (backpack). Packing refuse against a closed tailgate may result in damage to body or ejector cylinder.

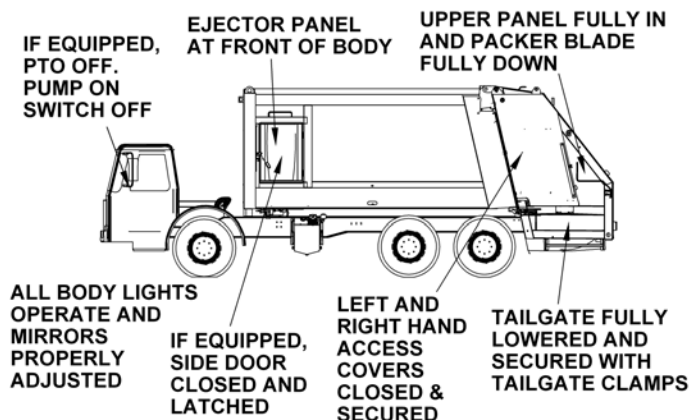
#### 3. Ejector Panel

Do not operate the ejector panel if the body has refuse. When the body does not have refuse, **UNLOCK** and **RAISE** the tailgate, then do at least one **EJECTOR PANEL** cycle, which includes a full **EXTEND** cycle and a full **RETRACT** cycle.

## CHECK THE TRAVELING OR “IN-TRANSIT” POSITION

When you travel to and from the landfill or transfer station, make sure the unit is in the in-transit mode as follows (see the figure to the right):

- The tailgate is fully LOWERED and CLOSED. Check the TAILGATE UP light in the cab. It must be OFF.
- The tailgate clamps (turnbuckles) are tight and secure the tailgate.
- If equipped with a winch or reeving mechanism, the cable hook is secured in the eye on the tailgate.
- The left and right hand access doors are both closed and secured. For each door:
  - The quick release pin is secured in the barrel.
  - The wing screw is securely tightened against the door.
- For a unit with refuse, the blade is up tight against refuse. For a unit with no refuse, the blade is at the START POSITION.
- The ejector panel is at the front of the body.
- If equipped, the PTO is DISENGAGED.
- The PUMP ON switch is OFF.
- You properly ADJUST and CLEAN the mirrors.
- All outside lights turn ON and OFF.
- If equipped, the side access door is CLOSED and LOCKED.

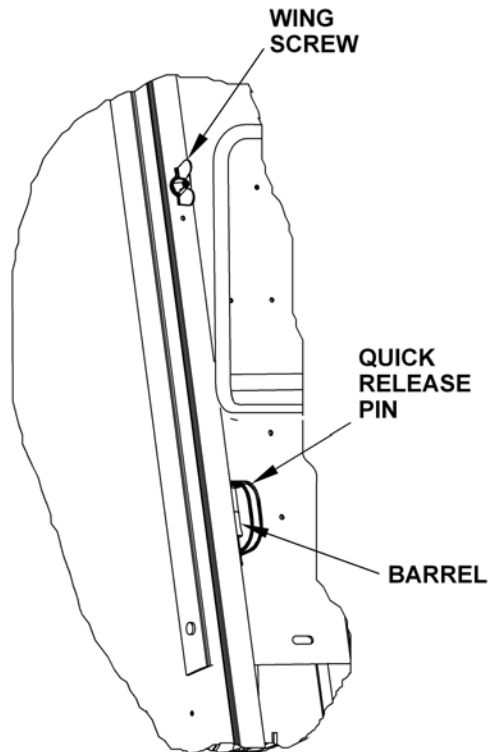


**Figure 55. In-Transit Position**



## CHECK THE TRAVELING OR “IN-TRANSIT” POSITION (CONTINUED)

## NOTES:



## DOOR DETAILS

Figure 56. In-Transit Position (Door Details)

**NOTES:**

# **SECTION 8**

# **ON-ROUTE OPERATION PROCEDURES**

## PREVIEW

Read this section to learn about:

- Setting up the unit for a route
- Loading refuse
- Packing the load
- Packing on-the-move
- Washout system
- Setting up the unit for the landfill or transfer station

## DRIVING TO PICK-UP LOCATIONS

Whenever you drive the unit to and from a route, along the route, to the landfill, etc., make sure the unit is set up as follows:

- The tailgate is fully LOWERED and CLOSED. Check the TAILGATE UP light in the cab. It must be OFF.
- The tailgate clamps (turnbuckles) are tight and secure the tailgate.
- If equipped with a winch or reeving mechanism, the cable hook is secured in the eye on the tailgate.
- The left and right hand access doors are both closed and secured. For each door:
  - The quick release pin is secured in the barrel.
  - The wing screw is securely tightened against the door.
- For a unit with refuse, the blade is up tight against refuse. For a unit with no refuse, the blade is at the START POSITION.
- The ejector panel is at the front of the body.
- If equipped, the PTO is DISENGAGED.
- The PUMP ON switch is OFF.
- You properly ADJUST and CLEAN the mirrors.
- All outside lights turn ON and OFF.
- If equipped, the side access door is CLOSED and LOCKED.

### Use of Curb Side Drive

If equipped, drive from the curb-side driver position **ONLY** on the collection route. **DO NOT** use this station during travel to or from a route, landfill or transfer station.

## BEFORE LOADING

Before you start to load refuse, make sure the packing mechanism is in the correct position.

1. If equipped, the PTO is engaged. The PUMP ON switch is ON.

## NOTICE

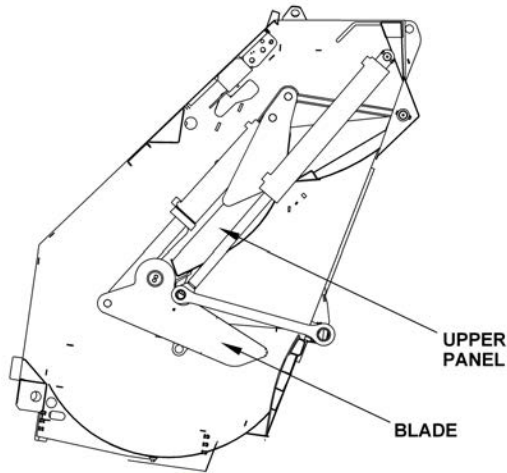
The ejector panel should never be used to “backpack” (operating the ejector extend function with the tailgate closed against trash in a fully or partially loaded unit). This can possibly result in damage to the unit including structural components and cylinder failure. The resulting damage will NOT be covered by warranty.

## CAUTION

Stand clear when the ejector panel is in motion. Keep side access door closed when ejector panel is in motion. Failure to obey may result in minor or moderate injury.

## BEFORE LOADING (CONTINUED)

2. The ejector panel should be:
  - a. For normal route pickup, about three (3) feet from the tailgate.
  - b. If starting with bulk refuse, the ejector panel should be about six (6) feet from the tailgate.
3. The packing mechanism should be in the **START POSITION** with the upper panel fully **IN** and the blade fully **DOWN**. See the figure below.



**Figure 57. Packer Blade Starting Position**

## LOADING REFUSE MANUALLY

Use the following procedures at each stop along the route to manually load refuse into the unit with the lift arm. Observe the **DANGER** and **WARNING** notices.

### **! DANGER**

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

1. Move the upper panel and blade into the **START** position. See the figure to the left.
  - a. **PUSH** the upper panel and blade levers at the same time and **RELEASE** the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.
  - b. The upper panel will move **IN** and the blade will move **DOWN**.
  - c. The hopper is now ready to receive refuse.
2. Load the refuse from a container into the hopper and then move the container to the pick-up location.

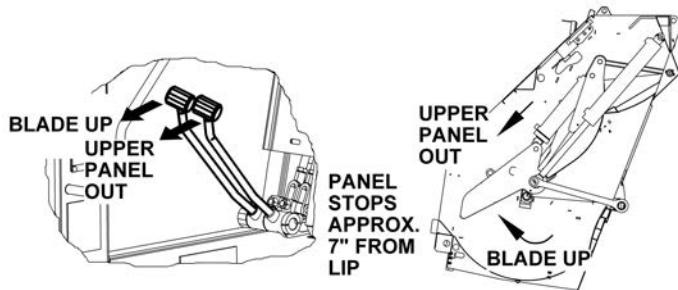
## LOADING REFUSE MANUALLY (CONTINUED)

### Packing Refuse into the Body

#### **CAUTION**

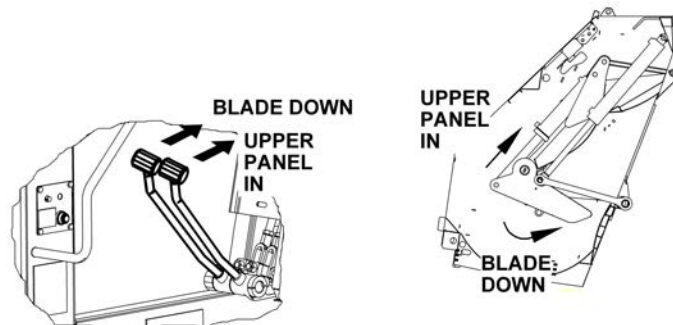
The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

3. The In-Cab Packer Switch should be ON.
4. Make sure the tailgate is LOCKED.
5. Sweep the refuse from the hopper and pack it into the body.
  - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See the figure below.



**Figure 58. Loading Refuse**

- b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.
- c. Watch for refuse that is pushed out of the hopper.
- d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See the figure below.
- e. The upper panel and blade move and compact the refuse into the body.



**Figure 59. Packing the Refuse**

6. Repeat Steps 1 and 5 as necessary to compact the refuse.
7. Leave the blade against the refuse.
8. Move the refuse container to its pick-up location.

## LOADING REFUSE MANUALLY (CONTINUED)

## NOTES:

 **DANGER**

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

 **DANGER**

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.

9. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
10. Go to the next stop on the route.

 **WARNING**

Moving equipment can be dangerous. Serious injury or death may occur if a person is in the wrong area or is not attentive to the operations. Clear the area of all unnecessary people before you operate the controls.



## LOADING REFUSE WITH A REEVING MECHANISM

An option for Rear End Loaders (RELs), a reeving mechanism is a cylinder assembly that is located on the centerline of the roof with which an operator can raise and dump a commercial refuse container.

The reeving mechanism hook and cable are not intended for any other purpose than dumping a Type T container into the hopper. The hook and cable should not be used for lifting, dragging, or manipulating containers, appliances, or other large items toward or into the hopper.

Use the instructions that follow to load refuse from a commercial refuse container into the hopper with a reeving mechanism.

Observe the DANGER and WARNING notices.

### DANGER

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### WARNING

Crush or Pinch Hazard.

Lifting or dragging uncontrolled items with hook and cable may cause items to move in a way that can pinch or crush the operator.


Use winch or reeving cylinder hook and cable for dumping properly restrained ANSI Type T containers only.

Never use hook and cable for any other purpose.



Failure to comply may injure or kill.

### CAUTION

The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.


1. Move the upper panel and blade into the START POSITION. See **Figure 43** .
- a. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.

## LOADING REFUSE WITH A REEVING MECHANISM (CONTINUED)

- b. The upper panel will move IN and the blade will move DOWN.
  - c. The hopper is now ready to receive refuse.
2. Load the refuse from a container into the hopper. See **Figure 44**  and **Figure 45** .
- a. Remove the reeving mechanism's cable hook from the eye on the tailgate.
  - b. PUSH the control lever for the reeving mechanism until you have sufficient cable to connect to the refuse bin.


### WARNING

A refuse container that is not in good condition with retaining washers in place may not be secured with the latch bar and can suddenly move. Death or serious injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the latch bar before you raise or lower the container.

- c. Make sure the latch bar secures the container **BEFORE** you raise the container. See **Using a Latch Bar** .

- d. PULL the control lever for the reeving mechanism until the reeving mechanism lifts the refuse container over the hopper sill and the refuse empties into the hopper. RELEASE the control lever. (If necessary, you can PRESS the Throttle Advance Switch during loading.)

When the refuse container's cover is not closed because it is overfilled with refuse:

- (1) Raise the container enough to empty part of the refuse from container into the hopper.
  - (2) Lower the container to the ground.
  - (3) Perform **Step 3**  (sweep the refuse and compact it into the hopper).
  - (4) Raise the container and finish emptying the container.
- e. After the refuse container is empty of refuse, PUSH the control lever for the reeving mechanism until the refuse bin rests firmly on the ground and there is enough slack in the cable to remove the cable hook from the refuse container.
  - f. Remove the cable hook and attach it to the eye on the tailgate.
  - g. PULL the control lever for the reeving mechanism until the cable tightens and secures the hook in the eye on the tailgate.

## LOADING REFUSE WITH A REEVING MECHANISM (CONTINUED)

- h. RELEASE the container's trunnion bar from the latch bar. See **Using a Latch Bar** <sup>133</sup>.
- i. MOVE the container to its pick-up location.

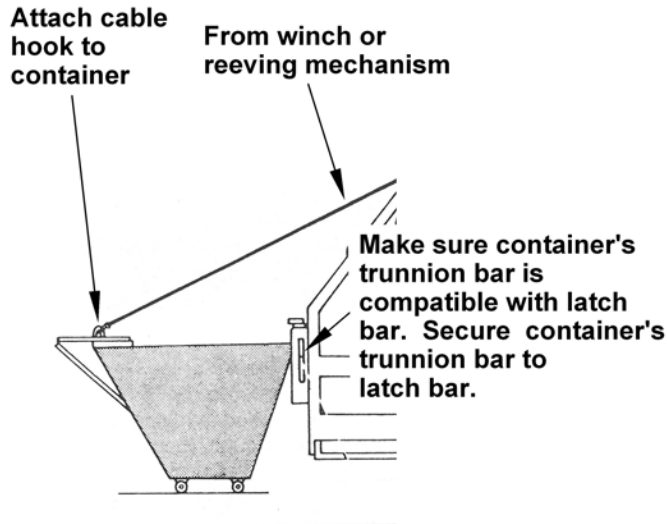


Figure 60. Reeving Mechanism or Winch Setup

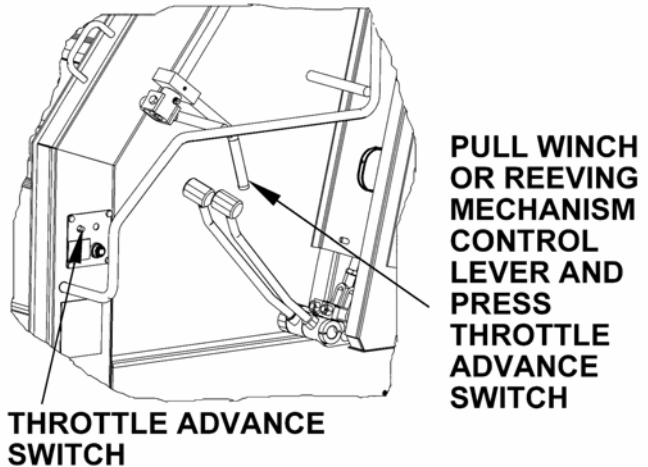
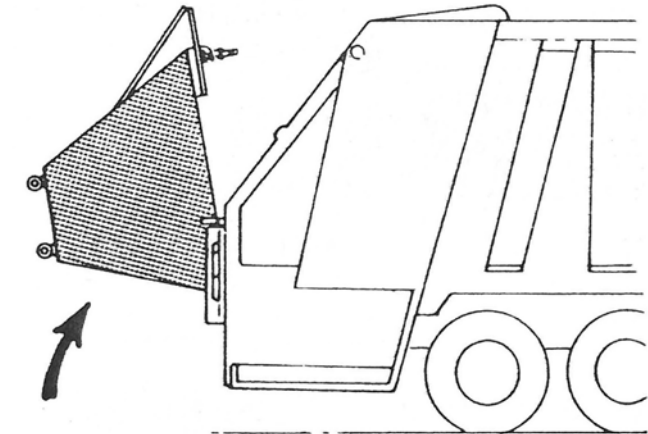


Figure 61. Loading Refuse with Reeving Mechanism or Winch

## LOADING REFUSE WITH A REEVING MECHANISM (CONTINUED)

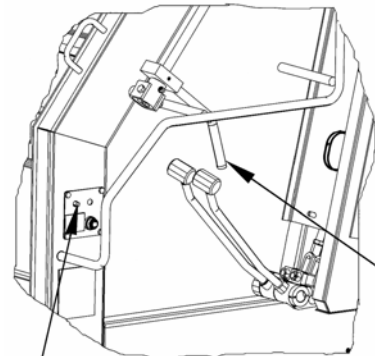
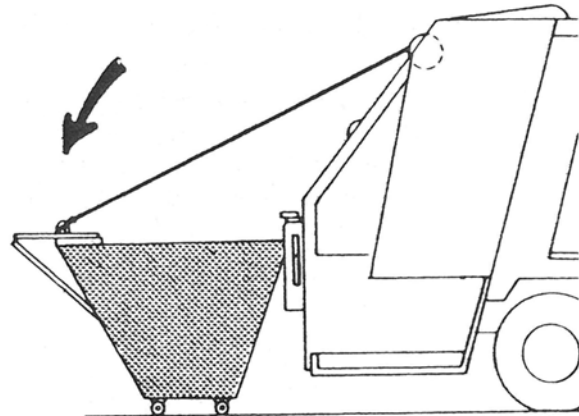
### **⚠ DANGER**

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### **⚠ CAUTION**

The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

3. Sweep the refuse from the hopper and pack it into the body.
  - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Figure 44**.
  - b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.
  - c. Watch for refuse that is pushed out of the hopper.




**PUSH WINCH OR REEVING MECHANISM CONTROL LEVER AND RELEASE THROTTLE ADVANCE SWITCH**

**THROTTLE ADVANCE SWITCH**

**Figure 62. Loading Refuse with Reeving Mechanism or Winch**

## LOADING REFUSE WITH A REEVING MECHANISM (CONTINUED)

- d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Figure 45** .
- e. The upper panel and blade move and compact the refuse into the body.
4. Repeat Steps 1 and 3 as necessary to compact the refuse.
5. Leave the blade against the refuse.

### **DANGER**

---

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

---

### **DANGER**

---

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.

---

6. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
7. Go to the next stop on the route.

## LOADING REFUSE WITH A WINCH

An option for Rear End Loaders (RELs), a winch is a mechanism with a hook and cable that an operator uses to raise, dump and lower a commercial refuse container

The winch hook and cable are not intended for any other purpose than dumping a Type T container into the hopper. The hook and cable should not be used for lifting, dragging, or manipulating containers, appliances, or other large items toward or into the hopper.

Use the instructions that follow to load refuse from a commercial refuse container into the hopper with a winch.

Observe the DANGER and WARNING notices.

### **DANGER**

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### **WARNING**

Crush or Pinch Hazard.

Lifting or dragging uncontrolled items with hook and cable may cause items to move in a way that can pinch or crush the operator.

Use winch or reeving cylinder hook and cable for dumping properly restrained ANSI Type T containers only.




Never use hook and cable for any other purpose.

Failure to comply may injure or kill.

### **CAUTION**


The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

## LOADING REFUSE WITH A WINCH (CONTINUED)


1. Move the upper panel and blade into the START POSITION. See **Figure 43** .
    - a. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.
    - b. The upper panel will move IN and the blade will move DOWN.
    - c. The hopper is now ready to receive refuse.
2. Load the refuse from a container into the hopper. See **Figure 44**  and **Figure 45** .
    - a. Remove the winch's cable hook from the eye on the tailgate.
    - b. PUSH the control lever for the winch until you have sufficient cable to connect to the refuse bin.

### **WARNING**




A refuse container that is not in good condition with retaining washers in place may not be secured with the latch bar and can suddenly move. Death or serious injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the latch bar before you raise or lower the container.

- c. Make sure the latch bar secures the container **BEFORE** you raise the container. See **Using a Latch Bar** .
- d. PULL the control lever for the winch until the refuse container lifts over the hopper sill and the refuse empties into the hopper. RELEASE the control lever. If necessary, you can PRESS the Throttle Advance Switch during loading.

When the refuse container's cover is not closed because it is overfilled with refuse:

- (1) Raise the container enough to empty part of the refuse from container into the hopper
- (2) Lower the container to the ground
- (3) Perform **Step 3**  (sweep the refuse and compact it into the hopper)
- (4) Raise the container and finish emptying the container.

## LOADING REFUSE WITH A WINCH (CONTINUED)

- e. After the refuse container is empty of refuse, PUSH the control lever for the winch until the refuse bin rests firmly on the ground and there is enough slack in the cable to remove the cable hook from the refuse container.
  - f. Remove the cable hook and attach it to the eye on the tailgate.
  - g. PULL the control lever for the winch mechanism until the cable tightens and secures the hook in the eye on the tailgate.
  - h. RELEASE the container's trunnion bar from the latch bar. See **Using a Latch Bar** .
  - i. MOVE the container to its pick-up location.
  - j. Sweep the refuse from the hopper and pack it into the body.
3. Sweep the refuse from the hopper and pack it into the body.
    - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Figure 44** .
    - b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.
    - c. Watch for refuse that is pushed out of the hopper.
    - d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Loading Refuse Manually (Continued)** .
  4. The upper panel and blade move and compact the refuse into the body.
  5. Repeat Steps 1 and 3 as necessary to compact the refuse.
  6. Leave the blade against the refuse.



## LOADING REFUSE WITH A WINCH (CONTINUED)

 **DANGER**

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

 **DANGER**

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.

7. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
8. Go to the next stop on the route.

## NOTES:

## LOADING REFUSE WITH AN ARM MECHANISM


An option for Rear End Loaders (RELs), an arm mechanism is an assembly that uses arms that mate with a refuse container's slots to lift, dump and lower a refuse container.

Use the instructions that follow to load refuse from a commercial refuse container into the hopper with an arm mechanism.

Observe the DANGER and WARNING notices.



### DANGER

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.


1. Move the upper panel and blade into the START position. See **Figure 43** .
  - a. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.
  - b. The upper panel will move IN and the blade will move DOWN.
  - c. The hopper is now ready to receive refuse.

### CAUTION

A refuse container that is not in good condition may not be secured by the arm mechanism and can suddenly move. Minor or moderate injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the arm mechanism before you raise or lower the container.

2. Load the refuse from a container into the hopper. See **Figure 44**  and **Figure 45** .
  - a. Secure the refuse container to the arm mechanism.
  - b. PULL the control lever for the arm mechanism until the arm mechanism lifts the refuse container over the hopper sill and the refuse empties into the hopper. RELEASE the control lever. (If necessary, you can PRESS the Throttle Advance Switch during loading.)

When the refuse container's cover is not closed because it is overfilled with refuse:

- (1) Raise the container enough to empty part of the refuse from container into the hopper.
- (2) Lower the container to the ground.
- (3) Perform **Step 3**  (sweep the refuse and compact it into the hopper).
- (4) RAISE the container and finish emptying the container.

## LOADING REFUSE WITH AN ARM MECHANISM (CONTINUED)

- c. After the refuse container is empty of refuse, PUSH the control lever for the arm mechanism until the refuse bin rests firmly on the ground. (RELEASE the Throttle Advance Switch if you pressed it during loading.)
- d. RELEASE the container from the arm mechanism.
- e. PULL the control lever for the arm mechanism until the arms are fully up and folded.
- f. MOVE the container to its pick-up location.

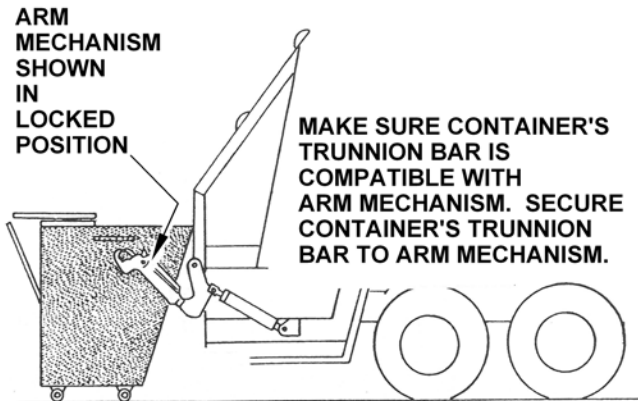


Figure 63. Arm Mechanism Setup

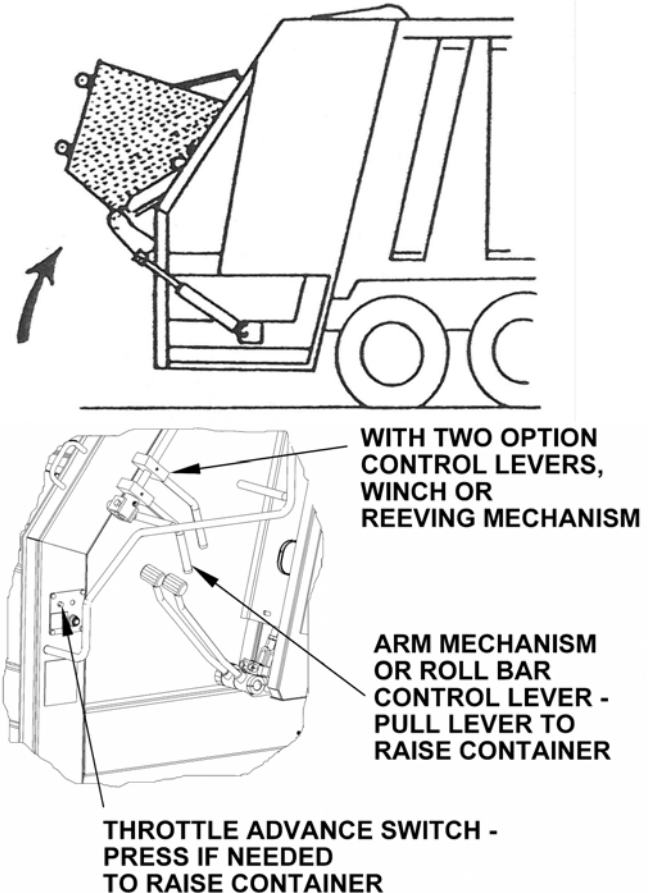


Figure 64. Loading Refuse with Arm Mechanism


## LOADING REFUSE WITH AN ARM MECHANISM (CONTINUED)

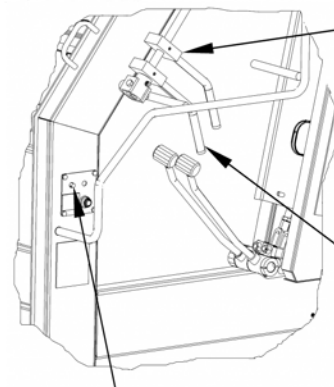
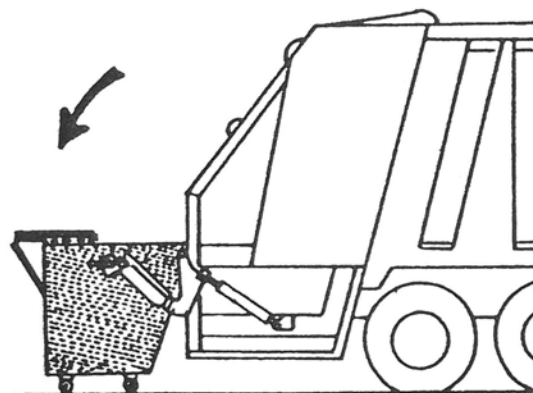
### DANGER

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### CAUTION

The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

3. Sweep the refuse from the hopper and pack it into the body.
  - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Loading Refuse Manually (Continued)** .
  - b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.




WITH TWO OPTION CONTROL LEVERS, WINCH OR REEVING MECHANISM

ARM MECHANISM OR ROLL BAR CONTROL LEVER - PUSH LEVER TO LOWER CONTAINER

THROTTLE ADVANCE SWITCH - RELEASE IF PRESSED TO RAISE CONTAINER

Figure 65. Loading Refuse with Arm Mechanism

## LOADING REFUSE WITH AN ARM MECHANISM (CONTINUED)

- c. Watch for refuse that is pushed out of the hopper.
  - d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Figure 45** .
  - e. The upper panel and blade move and compact the refuse into the body.
4. Repeat Steps 1 and 3 as necessary to compact the refuse.
  5. Leave the blade against the refuse.

### DANGER

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

### DANGER

Do not use an arm mechanism or roll bar as a riding step. Obey safety messages and use the riding step for when traveling on the unit. Serious injury or death may occur.

### DANGER

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.

6. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
7. Go to the next stop on the route.

## LOADING REFUSE WITH A ROLL BAR MECHANISM


An option for Rear End Loaders (RELs), a Roll Bar Mechanism is an assembly that uses a bar to lift, dump and lower a residential refuse bin.



Use the instructions that follow to load refuse from a commercial refuse container into the hopper with a roll bar mechanism.

Observe the DANGER and WARNING notices.

### DANGER


Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

1. Move the upper panel and blade into the START position. See **Figure 43** .
  - a. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.
  - b. The upper panel will move IN and the blade will move DOWN.
  - c. The hopper is now ready to receive refuse.

2. Load the refuse from a container into the hopper. See **Figure 44**  and **Figure 45** .
  - a. Set the refuse container in front of the roll bar until the container touches or nearly touches the roll bar.

### CAUTION

A refuse container that is not in good condition with retaining washers in place may not be secured with the latch bar and can suddenly move. Minor or moderate injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the latch bar before you raise or lower the container.

- b. Make sure the latch bar secures the container **BEFORE** you raise the container. See **Using a Latch Bar** .
- c. PULL the control lever for the roll bar mechanism until the roll bar lifts the refuse container lifts over the hopper sill and the refuse empties into the hopper. RELEASE the control lever.

### WARNING


Do not use roll bar to bounce refuse container in order to empty the container. Bouncing the container with the roll bar may disengage or break the container's trunnion bar. Death or serious injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the latch bar before you raise or lower the container.



## LOADING REFUSE WITH A ROLL BAR MECHANISM (CONTINUED)

- d. When the refuse container's cover is not closed because it is overfilled with refuse:
  - o Raise the container enough to empty part of the refuse from container into the hopper.
  - o Lower the container to the ground.

### CAUTION

The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

- o Perform Step 3 (sweep the refuse and compact it into the hopper).
- o RAISE the container and finish emptying the container.
- e. After the refuse container is empty of refuse, PUSH the control lever for the roll bar mechanism until the refuse bin rests firmly on the ground and you can release the latch bar.
- f. RELEASE the container's trunnion bar from the latch bar. See **Using a Latch Bar** .
- g. RELEASE the container from the roll bar mechanism.

- h. MOVE the container to its pick-up location.
3. Sweep the refuse from the hopper and pack it into the body.
  - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Loading Refuse Manually (Continued)** .
  - b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.
  - c. Watch for refuse that is pushed out of the hopper.
  - d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Loading Refuse Manually (Continued)** .
  - e. The upper panel and blade move and compact the refuse into the body.
4. Repeat Steps 1 and 3 as necessary to compact the refuse.

## LOADING REFUSE WITH A ROLL BAR MECHANISM (CONTINUED)

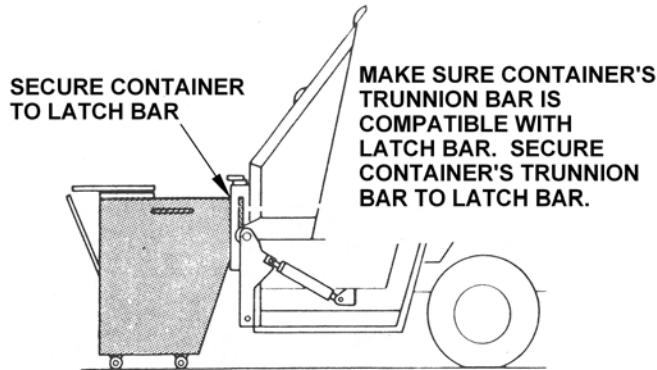


Figure 66. Roll Bar Setup

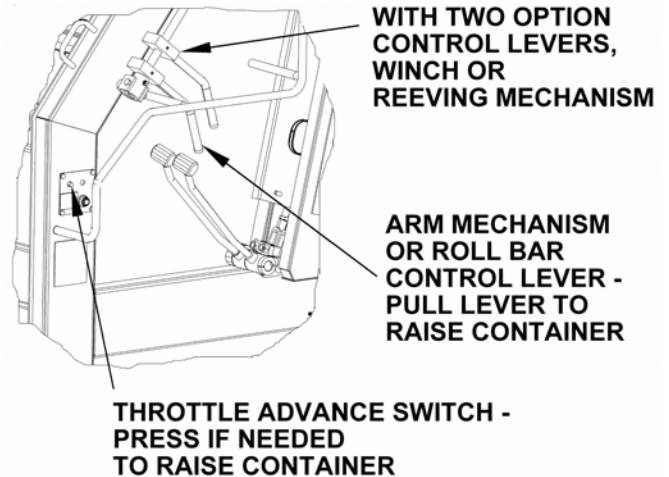
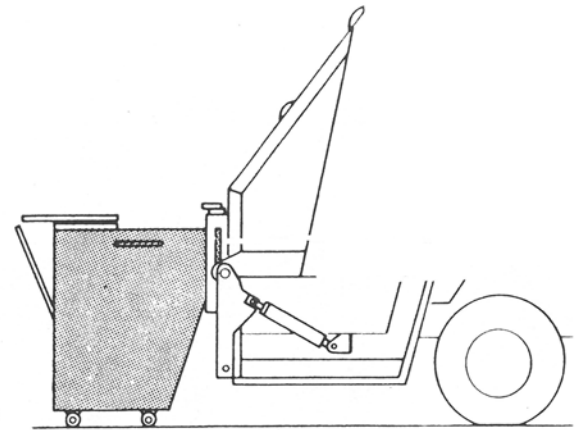


Figure 67. Loading Refuse with Roll Bar



## LOADING REFUSE WITH A ROLL BAR MECHANISM (CONTINUED)

5. Leave the blade against the refuse.

### **⚠ DANGER**

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

### **⚠ DANGER**

Do not use an arm mechanism or roll bar as a riding step. Obey safety messages and use the riding step for when traveling on the unit. Serious injury or death may occur.

### **⚠ DANGER**

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.

6. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
7. Go to the next stop on the route.

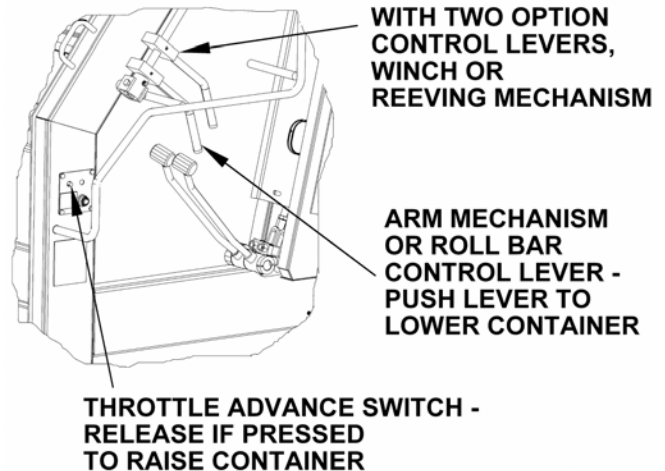
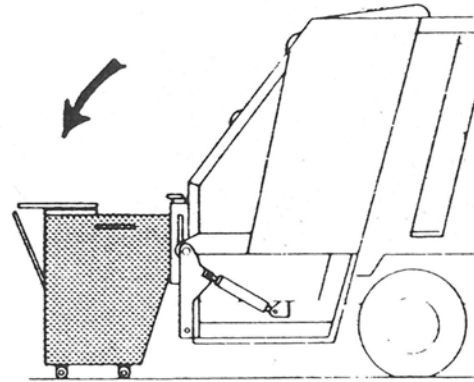


Figure 68. Loading Refuse with a Roll Bar

## LOADING REFUSE WITH A CART TIPPER


A cart tipper is a Rear End Loader (REL) option attached to the tailgate that allows an operator to secure a residential refuse container and unload its contents into the hopper

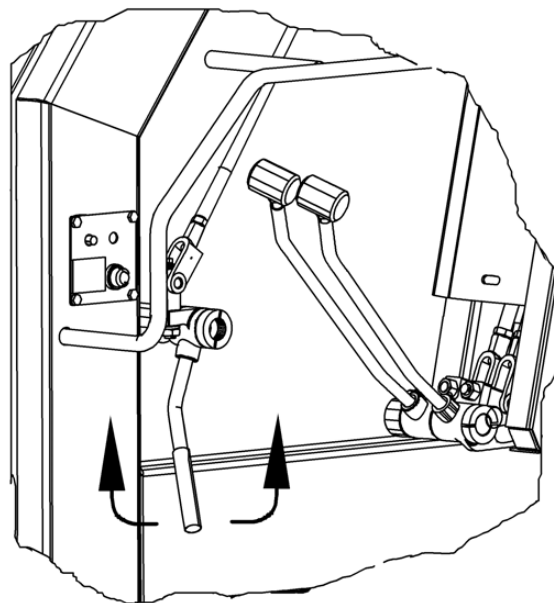
Use the instruction that follow to load refuse from a commercial refuse container into the hopper with a cart tipper. See the figure to the right for the location of the cart tipper control lever.

Observe the DANGER and WARNING notices.



### DANGER

Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

1. Move the upper panel and blade into the START position. See **Figure 43** .
  - a. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure.
  - b. The upper panel will move IN and the blade will move DOWN.
  - c. The hopper is now ready to receive refuse.



**Figure 69. Cart Tipper Control Lever**

2. Load the refuse from a container into the hopper. See **Figure 44**  and **Figure 45** . Set the refuse container in front of the cart tipper until the container latch bar is over the cart tipper saddle.

### CAUTION

A refuse container that is not in good condition may not be secured by the cart tipper's latch and can suddenly move. Minor or moderate injury can occur when a person is struck by a moving container that is not properly secured. Make sure the refuse container is properly secured to the cart tipper before you raise or lower the container.

## LOADING REFUSE WITH A CART TIPPER (CONTINUED)


- a. PULL the control lever for the cart tipper until the refuse container lifts over the hopper sill and the refuse empties into the hopper. RELEASE the control lever.  
When the refuse container's cover is not closed because it is overfilled with refuse:
- Raise the container enough to empty part of the refuse from container into the hopper.
  - MAKE SURE the cart tipper upper panel latch extends and LOCKS the container when you RAISE the container.
  - If the latch does not extend, lower the container, make sure the container latch bar is over the cart tipper saddle and RAISE the container again. DO NOT continue to RAISE a refuse container when the upper panel latch does not extend and lock the container.
  - Lower the container to the ground.

### DANGER

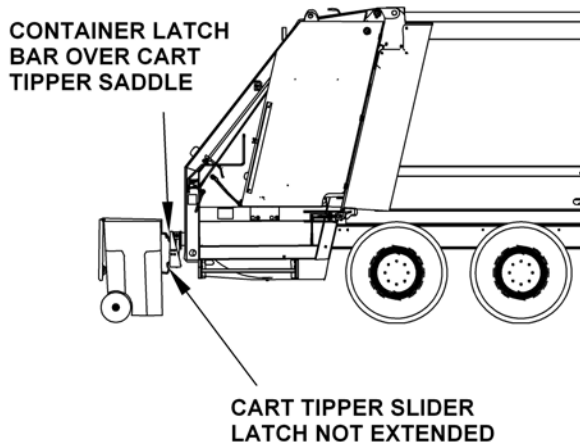
Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### CAUTION

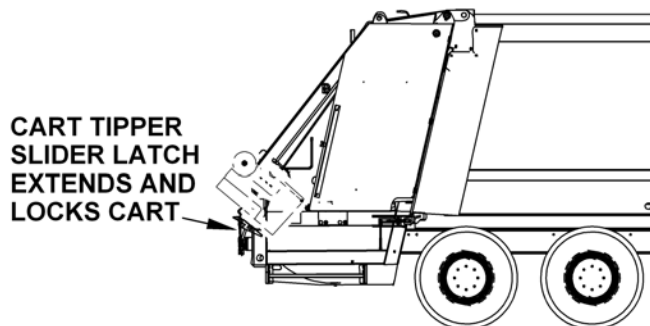
The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

- Perform **Step 3**  (sweep the refuse and compact it into the hopper).
  - Raise the container and finish emptying the container.
- b. After the refuse container is empty of refuse, PUSH and RELEASE the control lever for the cart tipper. The cart tipper will LOWER the refuse bin to the ground.
- c. If the cart tipper does not operate at the speed given on the tipper or in the cart tipper Operator's Manual, refer to the tipper's Service Manual or call the manufacturer.
- d. Release the refuse container from the cart tipper.
- e. Move the container to its pick-up location.

## LOADING REFUSE WITH A CART TIPPER (CONTINUED)



**Figure 70. Cart Tipper Setup**



**Figure 71. Loading Refuse with Cart Tipper**

### **⚠ DANGER**


Your body or clothing can become caught by the blade while it moves. Serious injury or death may occur if a person is in or near the hopper when the blade and upper panel move. Clear the area near the hopper of all unnecessary people before you move the blade and upper panel and keep all parts of your body away from the blade.

### **⚠ CAUTION**

The upper panel in/out and blade up/down operations can push refuse out of the hopper or break objects. Refuse broken by the blade can cause moderate or minor injury. Stay clear of the packer panel during upper panel in/out and blade up/down operations.

3. Sweep the refuse from the hopper and pack it into the body.
  - a. PULL the upper panel and blade levers at the same time and RELEASE the levers. The levers return to their center position. See **Figure 44** <sup>1111</sup>.
  - b. The upper panel will move OUT and the blade will move UP. STOP the blade UP operation when the blade is at the pinch point with the hopper sill.
  - c. Watch for refuse that is pushed out of the hopper.

## LOADING REFUSE WITH A CART TIPPER (CONTINUED)

- d. PUSH the upper panel and blade levers at the same time and RELEASE the levers. The levers will self-center at the end of the commanded position by way of valve internal hydraulic pressure. See **Figure 45** .
  - e. The upper panel and blade move and compact the refuse into the body.
4. Repeat Steps 1 and 3 as necessary.
  5. Leave the blade against the refuse.

### DANGER



Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

### DANGER

Do not ride on or in the hopper opening. Use riding step and obey all safety messages.



6. Each helper must PRESS the buzzer on their side of the tailgate and let the driver know each helper is ready to move to the next location.
7. Go to the next stop on the route.

## USING A LATCH BAR

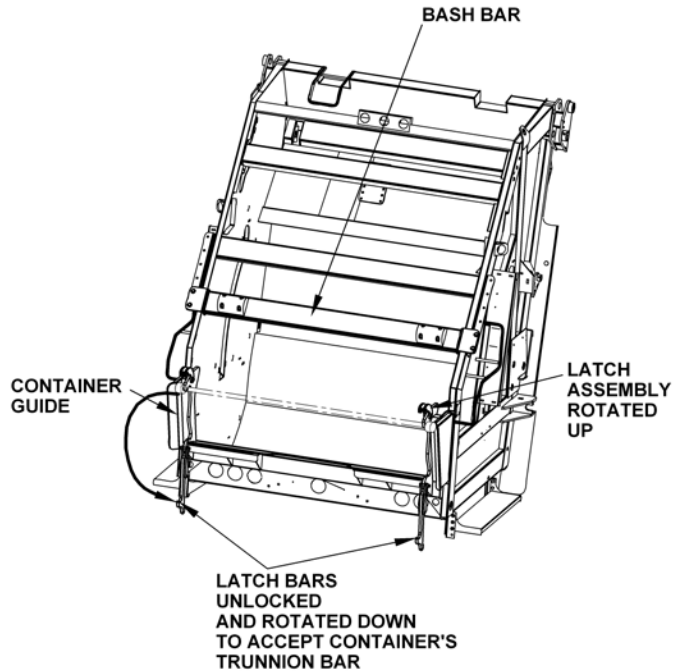
The latch bar is an assembly and its major components are two latch assemblies, two latch bars, two container guides and a bash bar. **Figure 58**  shows the latch bar's components rotated down, that is ready to accept a refuse container. **Figure 59**  shows the latch bar's components rotated up when it locks a container.

### CAUTION

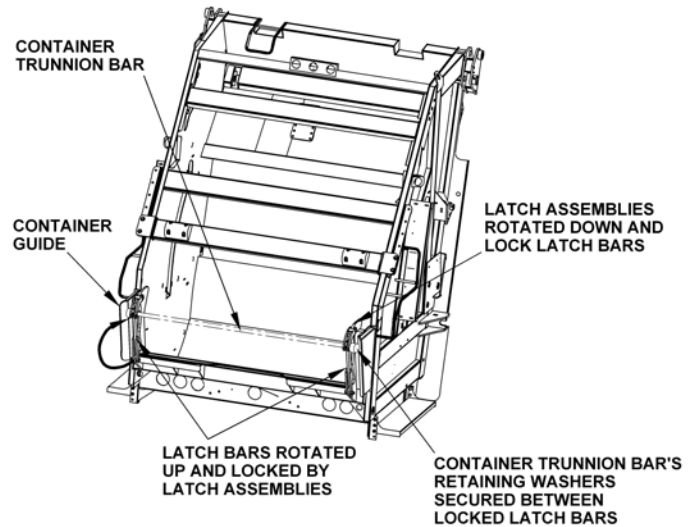
Do not use a refuse container that does not have a compatible trunnion bar. If the trunnion bar is not compatible with the latch bar, the refuse container may not lock properly with the latch bar assembly. Minor or moderate injury may occur when the latch bar cannot properly lock a container's trunnion bar.

1. Before you move the refuse container, ROTATE the latch assemblies UP which releases the latch bars. See **Figure 58** .
2. Move the container so that the ends of its trunnion bar are on the outside of the two latch bars. The container guides will help you with this alignment. The container guides are angled away from the tailgate.
3. ROTATE the latch bars UP and ROTATE the latch bar assemblies DOWN over the two latch bars. This locks the container's trunnion bar for lifting and lowering operations. See **Figure 59** .
4. The bash bar prevents the container from over-rotating into the hopper.

## USING A LATCH BAR (CONTINUED)



**Figure 72. Latch Bars Rotated Down**



**Figure 73. Latch Bars Rotated Up**

## PACKING ON-THE-MOVE

Heil DuraPack® 5000 units can pack on-the move. The operator does this manually while on the riding step (if equipped) between stops. Some units will not do this because of transmission options or customer-specified configurations. Contact Customer Support at 866-275-4345 for more information about these units.

### DANGER

Use only the riding step provided to travel on the outside of the unit during collection activities. Use hand holds provided and maintain at least 3 points of contact. Failure to obey these instructions can result in serious injury or death.

### DANGER

Do not use riding step when vehicle speed is more than 10 MPH or to travel more than 2 tenths (0.2) of a mile. Do not use riding step when vehicle operates in reverse. Always face vehicle when using riding step.

## ACHIEVING PAYLOADS


Read this section for advice and tips on how to pack the most efficient loads with your unit.

Payloads in any refuse/waste handling vehicle will vary greatly, depending on the type of material loaded. Dry bulk cardboard and reconstruction/building materials, Styrofoam, foam packing materials, loose plastic, etc. cannot be compressed and packed as effectively as wet, soft, garbage type materials. If dry materials can be mixed with some wet material, more effective payloads can be achieved.

Follow these techniques to attain greater efficiency in packing the load in your unit:

1. After you empty the first few bins, the body begins to fill and material can begin to “fall back” into the hopper
2. If the route allows, mix some wet bins in with dry bins. This helps compact the dry material more. Wet material also helps lubricate the body, which results in better packing.

## LEAVING THE ROUTE FOR THE LANDFILL/ TRANSFER STATION

At the end of the route, or when the unit has a full load, prepare the unit to go to the landfill. See **Driving to Pick-up Locations**  and make sure the unit is properly set up for travel.

- The tailgate is fully LOWERED and CLOSED. Check the TAILGATE UP light in the cab. It must be OFF.
- The tailgate clamps (turnbuckles) are tight and secure the tailgate.
- If equipped with a winch or reeving mechanism, the cable hook is secured in the eye on the tailgate.
- The left and right hand access doors are both closed and secured. For each door:
  - The quick release pin is secured in the barrel.
  - The wing screw is securely tightened against the door.
- For a unit with refuse, the blade is up tight against refuse. For a unit with no refuse, the blade is at the START POSITION.
- The ejector panel is at the front of the body.
- If equipped, the PTO is DISENGAGED.
- The PUMP ON switch is OFF.
- You properly ADJUST and CLEAN the mirrors.
- All outside lights turn ON and OFF.
- If equipped, the side access door is CLOSED and LOCKED.

## NOTES:



**SECTION 9**  
**LANDFILL/TRANSFER STATION/  
RECYCLE CENTER PROCEDURES**

## PREVIEW

Read this section to learn about:

- Setup conditions to dump the refuse
- Unloading the refuse
- Using the sump and (optional) washout system
- Preparing the unit to return to route.

## OVERVIEW OF LANDFILL/TRANSFER STATION/RECYCLE CENTER PROCEDURES

Use the following information as an overview of the steps to follow when you unload a load of refuse at the landfill.

For each step in this overview, read and follow the detailed instructions that follow the overview:

1. Set the unit in position for unloading.
2. Unlock and fully RAISE the tailgate.
3. Fully EXTEND the EJECTOR panel.
4. Fully LOWER and secure the tailgate.
5. Prepare the unit to return to the route.

### NOTICE

The location of the controls on your unit may be different than those shown in this manual. Make sure you know your unit's control pattern before you operate the the unit.

## SETTING UP THE UNIT FOR UNLOADING

After you position the unit on firm ground for unloading at the landfill, set it up properly before dumping the refuse.

### Follow These Steps:

1. Some suspensions allow more movement in the chassis than others. Always stop the unit on the most stable, hard, dry and level surface you can find before you empty the refuse.

2. Shift the transmission to NEUTRAL.
3. SET the parking brake.
4. For a manual transmission, engage the PTO and MOVE the PUMP ON switch to ON. For automatic transmissions, just MOVE the PUMP ON switch to ON.
5. MOVE the in-cab THROTTLE ADVANCE switch to ON.
6. If there is refuse in the hopper, cycle the blade until the hopper is clear of refuse.

## UNLOADING REFUSE

### A. Unlocking and Raising the Tailgate

The unit has a mechanical clamp on each side of the body to lock (clamp) the tailgate. Loosen the tailgate clamps (turnbuckles) enough to swing the clamps clear of the tailgate.

### DANGER

A tailgate in motion is dangerous. Serious injury or death may occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you lower the tailgate.

1. PULL the TAILGATE lever UP and HOLD.
2. PRESS and HOLD the THROTTLE ADVANCE switch (at the front of the body) while you HOLD the TAILGATE lever UP.

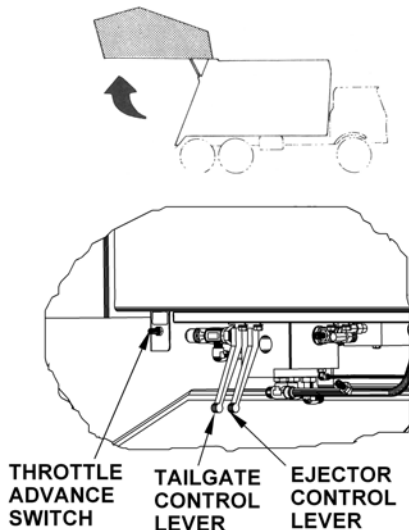
## UNLOADING REFUSE (CONTINUED)

### A. Unlocking and Raising the Tailgate (Continued)

3. HOLD the lever until the tailgate is COMPLETELY raised.
4. RELEASE the TAILGATE LEVER and the THROTTLE ADVANCE switch.

### NOTICE

The TAILGATE UP light turns ON and the in-cab alarm will sound to indicate the tailgate is open.



**Figure 74. Raising the Tailgate**

### CAUTION

Do not drive the unit for an extended distance. The unit may become unstable and you may cause damage to the tailgate cylinders.

### B. Ejecting Refuse

1. Extend the Ejector Panel
  - a. PRESS and HOLD the throttle advance switch while you PULL the EJECT lever UP and HOLD until the ejector panel fully EXTENDS and comes to a complete stop.
  - b. The refuse is now unloaded from the unit.
  - c. RELEASE the EJECT lever and the THROTTLE ADVANCE switch.
2. Retract the Ejector Panel
  - a. PUSH the EJECT lever DOWN and HOLD until the ejector panel is fully RETRACTED and at the front of the body.
  - b. RELEASE the eject lever.

## UNLOADING REFUSE (CONTINUED)

### B. Ejecting Refuse (Continued)

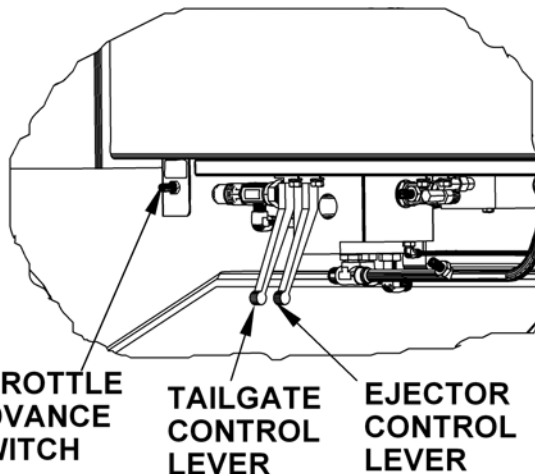
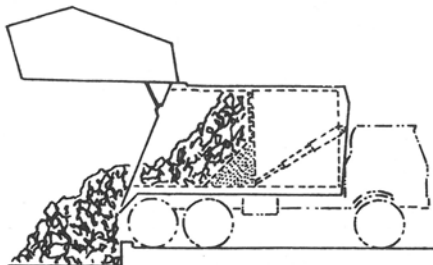


Figure 75. Unloading Refuse

### C. Clean and Inspect the Tailgate

#### **⚠ DANGER**

Always prop the tailgate when you leave it raised for maintenance, service or cleaning procedures. Any part of your body between the unit's body and the tailgate while you prop the tailgate or when the tailgate is propped is dangerous. Serious injury or death may occur if any part of your body is between the tailgate and the body if the tailgate suddenly closes.

- **BEFORE** you lower the tailgate, **MAKE SURE** the area where the tailgate seal mates with the body is **CLEAN AND FREE** of any refuse and debris.
- **DO NOT** drive the unit for an extended distance if you must move the vehicle to another area to clean and inspect the tailgate seal.
- **DO NOT** go under the tailgate to clear refuse, instead, use a broom or pole to clean the tailgate seal.
- Inspect the seal for possible wear or damage and replace if necessary.

## UNLOADING REFUSE (CONTINUED)

### D. Lowering the Tailgate

#### **⚠ DANGER**

A tailgate in motion is dangerous. Serious injury or death may occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you lower the tailgate.

1. PUSH the TAILGATE lever to LOWER the tailgate.
2. HOLD the TAILGATE lever until the tailgate is COMPLETELY down then RELEASE the switch.

#### **NOTICE**

The TAILGATE OPEN warning light will go OFF and the alarm will stop when body is FULLY down and the tailgate is completely closed.

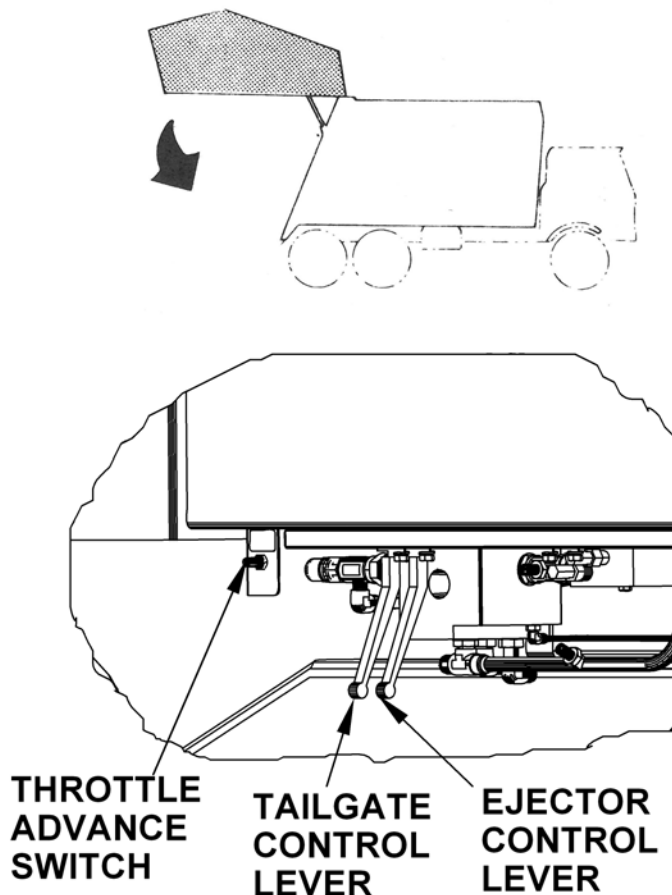


Figure 76. Lowering the Tailgate

## UNLOADING REFUSE (CONTINUED)

### E. Locking the Tailgate

Swing the tailgate clamps up and tighten each clamp, locking the tailgate.

### F. Clean and Inspect the Hopper and Packer Panel

1. Put the unit in the Lock-Out/Tag-Out mode, turn the engine OFF and REMOVE the ignition keys.
2. Remove any remaining refuse in the hopper.
3. INSPECT the packer panel and hopper floor for excessive wear or possible damage. If there is excessive wear or other damage, get the damage repaired or parts replaced as soon as possible.
4. Take the unit out of Lock-Out/Tag-Out, then use the ignition keys and start the unit.
5. MOVE the PUMP ON switch to ON.
6. Use the blade and upper panel controls and do at least one cycle of the blade and upper panel: STARTING POSITION, OPEN and PACK. If the blade and upper panel do not operate correctly, report the problem to your supervisor for maintenance action.

### G. Remove Refuse from the Engine and Exhaust Areas

**IMPORTANT!** Inspect unit for refuse on or about the engine or exhaust components. Remove all refuse to prevent a fire.

### H. Sump Doors and Washout System

The DuraPack® 5000 unit does not have sump doors.

If equipped, use the optional washout system to clean out the body and hopper at the end of a work day.

### I. Preparing to Return to Route

See **Driving to Pick-up Locations** <sup>109</sup> and make sure the unit is properly set up for travel.

- The tailgate is fully LOWERED and CLOSED. Check the TAILGATE UP light in the cab. It must be OFF.
- The tailgate clamps (turnbuckles) are tight and secure the tailgate.
- The left and right hand doors are both secured. For each door:
  - The quick release pin is secured in the barrel.
  - The wing screw is securely tightened against the door.
- For a unit with refuse, the blade is up tight against refuse. For a unit with no refuse, the blade is at the START POSITION.
- If equipped, the PTO is DISENGAGED.
- The PUMP ON switch is OFF.
- You properly ADJUST and CLEAN the mirrors.
- All outside lights turn ON and OFF.
- If equipped, the side access door is CLOSED and LOCKED.

**NOTES:**



# **SECTION 11**

# **END OF DAY PROCEDURES**

## PREVIEW

Read this section to learn about:

- Parking the Unit
- Washout System
- Final Inspection
- Report to Employer/Supervisor
- Ignition Keys

## END OF DAY PROCEDURES

### Parking the Unit

1. Park the unit in the space designated by your employer/supervisor.
2. Set the parking brake.


### Washout System

If the unit has a washout system and you did not use it at the landfill/transfer station, you should clean the body and hopper, unless your employer has a different policy. If your employer's policy is different from this manual, follow their policy.

### Final Inspection

Perform a final inspection of the unit:

1. Clear the area of all people.
2. Start the engine if it is not running.
3. Make sure all lights and in-cab control switches operate correctly.
4. Put the transmission in reverse while you press the service brake. The backup alarm should sound in the cab. If the alarm does not sound in the cab, report this to your employer/supervisor immediately.
5. Check the unit for fluid leaks from the hoses, cylinders, valves, pump and fittings. Report any leaks to your employer/supervisor.

6. Make sure all cylinders (except tailgate lock cylinders and arm raise cylinders) are in their retracted position.
7. APPLY the parking brake.
8. Put the transmission in neutral and turn the engine OFF.
9. Put the unit in the **Lock-Out/Tag-Out mode** .
10. Open the air tank drain valve.
11. Turn the battery disconnect switch to OFF.
12. Follow the company policy for locking the cab doors.

### Reports to Employer/Supervisor

Complete any reports required by your employer/supervisor. If you found any problems during the final inspection, prepare the necessary report for the employer/supervisor.

### Ignition Keys

Put the ignition keys in a secure storage area designated by your employer/supervisor.

**NOTES:**

# **SECTION 12**

# **PREVENTIVE MAINTENANCE CHART**

## BODY PREVENTIVE MAINTENANCE CHART

Preventive maintenance must be performed to ensure the safe and reliable operation of your unit. Use the chart below as a guideline for when essential items should be checked and serviced.

COMPONENT/SYSTEM	*HOURS OF OPERATION					CHECK/SERVICE
	8	40	200	1000	2000	
Hydraulic System	☑					Check oil level – add if necessary
		☑				Check cylinders, pump, hoses, tubes, fittings, and adapters for leaks. Check hoses for cracks, crushes, and cover blisters. Repair or replace if necessary with genuine Heil parts. Any replacement hose should be the same size and pressure rating as listed on the original OEM hose.
		☑				Check Control valve seals for leaks. Repair or replace if necessary.
				☑		Replace filter after first 30 days of operation, then every 6 months or 1000 hours of operation OR when filter bypass light is ON.
				☑		Replace tank breather filter every time you replace filter element.
					☑	Drain, flush, and refill. Change filter element.
Electrical, Battery Cables	☑					Check for proper operation.
		☑				Check battery cables from battery to starter for loose cables, rubbing or damage and abrasions to cables. Replace if necessary.

# DuraPack® 5000

*HOURS OF OPERATION						
COMPONENT/SYSTEM	8	40	200	1000	2000	CHECK/SERVICE
Operator Controls	<input checked="" type="checkbox"/>					
Front Mount Pump or Power Take-Off (PTO)		<input checked="" type="checkbox"/>				Check seals for leaks and operation. Replace if necessary
		<input checked="" type="checkbox"/>				Check drive line for smooth operation. Replace as necessary.
		<input checked="" type="checkbox"/>				Check set screws for tightness. Tighten as necessary.
		<input checked="" type="checkbox"/>				Make sure keys are in place. Replace if necessary.
			<input checked="" type="checkbox"/>			For greaseable PTOs (non-wet spline), remove the pump's bolt flange about 2 inches from the PTO and apply grease to female pilot of PTO pump flange. Failure to lubricate female pilot of PTO as given may cause damage to the pump shaft. Greasing is NOT required on wet spline PTOs such as the Chelsea 890/897 series.
Grease Fittings		<input checked="" type="checkbox"/>				Lubricate as shown on Body Lube Chart.
Body Undercoating					<input checked="" type="checkbox"/>	Inspect body undercoating and repair as necessary.
Fork Bearing Block Bolts (Half/Pack® and Odyssey™ Models Only)			<input checked="" type="checkbox"/>			Each of the four fork bearing block bolt torques should be 460 Ft-Lbs.
Calibrate Cylinder Sensors (Odyssey™ Models Only)					<input checked="" type="checkbox"/>	For Odyssey models only, calibrate cylinder sensors. See Service Manual - Odyssey Cylinder Sensors Calibration.
* Daily = 8 hrs. Weekly = 40 hrs. Monthly = 200 hrs. 6 Months = 1000 hrs. Yearly = 2000 hrs.						

**NOTES:**

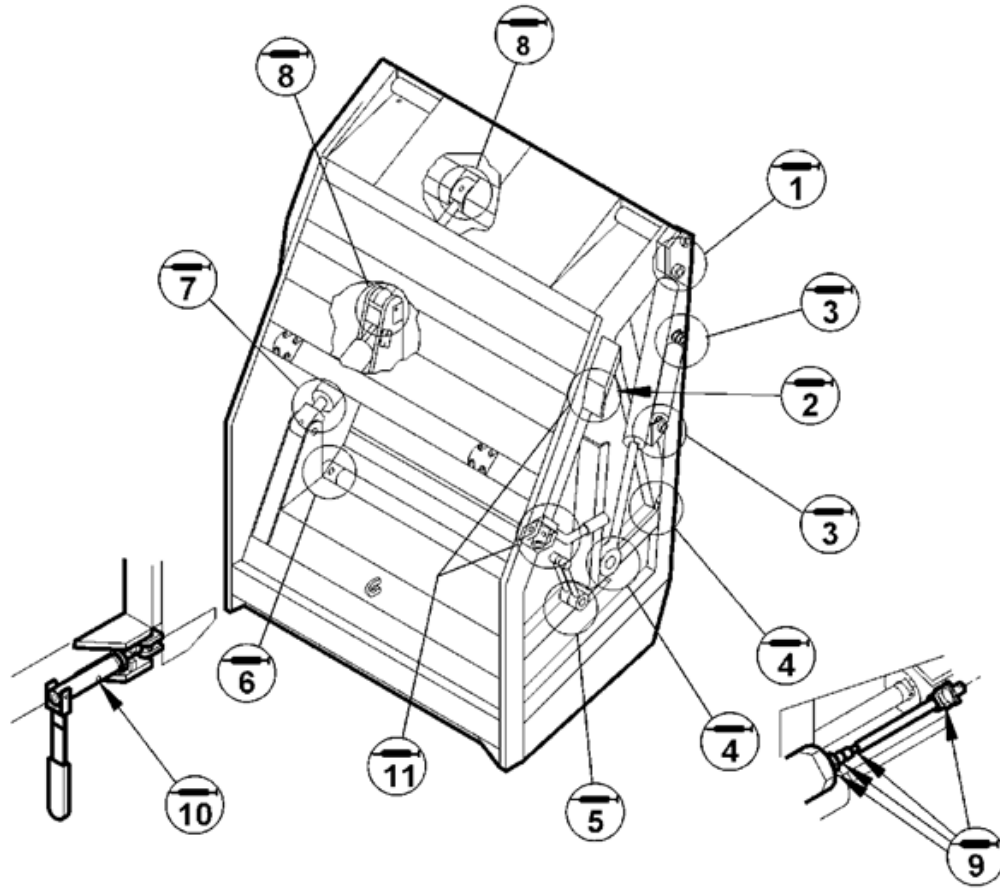


# **SECTION 13**

# **LUBRICATION GUIDE**

## LUBRICATION GUIDE

Clean fittings before applying grease and always pump enough grease into joint to remove the old grease. Wipe off excess grease. Lubricate moveable mechanical parts without fittings every 60 days with non-detergent engine oil.



## LUBRICATION GUIDE (CONTINUED)

REF. NO.	LOCATION	QTY.	INTERVAL
1	Tailgate Hinge	2	Weekly/40 Hours
2	Outside Packing Cylinder (Both Ends)	4	Weekly/40 Hours
3	Tailgate Raise Cylinder (Both Ends)	4	Weekly/40 Hours
4	Lower Link Pivot (Both Ends)	4	Weekly/40 Hours
5	Control Handles/Linkage:		Weekly/40 Hours
	A. Upper Bellcranks	2	
	B. Kick-Out Lever	1	
	C. Lower Yoke Assembly	2	
	D. Control Handle Pivots	2	
6	Packer Panel Pivot (Bottle Pin to Upper Panel)	4	Weekly/40 Hours
7	Inside Packing Cylinder (Both Ends)	4	Weekly/40 Hours
8	Upper Link Arms	4	Weekly/40 Hours
9	PTO (Pump) Drive Shaft	4	Weekly/40 Hours
	Front Mount Drive Shaft	3	Weekly/40 Hours
10	Tailgate Turnbuckle Clamps	2	Weekly/40 Hours
11	Container Mech. Control:		
	A. Handle	1	Weekly/40 Hours
	B. Upper Pivot	1	Weekly/40 Hours
12	Ejector Cylinder (Not Shown)	1	Weekly/40 Hours

**NOTES:**

**SECTION 14  
COMPRESSED NATURAL GAS (CNG)  
OPTION**

## IMPORTANT SAFETY INFORMATION

### NOTICE

For CNG units, this manual should be used in conjunction with any associated CNG System Manufacturer's Operation and Maintenance Manuals. Always read and understand all associated manuals alongside the Heil Operation Manual and Heil Parts and Service Manual before operating or servicing the unit. CNG training is required for any person inspecting, operating, or performing maintenance on a CNG unit.

Read, understand and follow the instructions within this document before operating, servicing or adjusting referenced equipment. Anyone using or maintaining this equipment must be familiar with the product and fully trained. Improper usage or maintenance of this equipment may result in injury or death.

Always keep a copy of this manual readily available for persons who operate the equipment or perform maintenance procedures. Safe working procedures must be followed at all times. Lock-Out/Tag-Out procedures must be followed when performing applicable procedures.

A vehicle equipped with a compressed natural gas fuel system will have a blue reflective decal on the rear of the vehicle identifying Compressed Natural Gas (CNG). See the image below.



## IMPORTANT SAFETY INFORMATION (CONTINUED)

### A. Safety Notices

Throughout this manual, safety notices are included to warn operators and maintenance technicians of the dangers associated with the described equipment operations and maintenance. Improper operation or maintenance procedures may cause serious injury or death. Safety notices accompany potentially hazardous situations throughout this manual. Please read and follow instructions carefully.

For supplemental information, refer to the following codes:

- United States: NFPA 52, State and Local Regulations
- Canada: CAN/CGA B109, CAN/CSA B108, FMVSS 304

### **DANGER**

The CNG Fuel Module System contains some lines that are under continuous high pressure. DO NOT attempt to loosen or disconnect those lines.

### **DANGER**

Natural Gas is Flammable and Explosive. Never use an open flame (match, lighter, or other) to light a work area near the CNG fuel storage system.

### **DANGER**

Keep work area well ventilated to avoid asphyxiation due to concentrated levels of carbon monoxide.

### **WARNING**

Do not start the engine if a natural gas leak is detected.

## IMPORTANT SAFETY INFORMATION (CONTINUED)

### **WARNING**

Never open system components while the system is under pressure. Treat all cylinders as full until defueling has been completed.

### **WARNING**

Never weld or perform any type of "hot work" on any part of a compressed natural gas vehicle unless the compressed natural gas fuel system has been purged with inert gas.

### **WARNING**

Avoid open flames and sparks near a compressed natural gas vehicle.

### **WARNING**

Do not smoke cigarettes, cigars, or use any other lit or sparking items within 30 feet of a compressed natural gas vehicle or a dispensing/filling station.

### **WARNING**

Do not use a cell phone or other electronic device within 30 feet of a compressed natural gas vehicle or a dispensing/filling station.

### **CAUTION**

Keep the compressed natural gas equipment area well ventilated.

### **CAUTION**

A portable fire extinguisher must be installed on the vehicle in an accessible location.



## COMPRESSED NATURAL GAS (CNG) FUEL MODULE

The images on the following pages show a typical CNG system configuration. Your CNG system configuration may vary.

### A. Fuel Module Functions

The CNG fuel tanks contain CNG at a pressure of 3,600 psi in USA, (3,000 psi in Canada). The CNG Fuel Module serves multiple functions within a natural gas vehicle (NGV) fuel system.

These functions include:

- Storage tank refueling
- Storage tank pressure measurement
- Manual and ignition controlled fuel shut-off
- Pressure reduction from storage tanks to engine supply
- Fuel system filtration
- Liquid removal from fuel system

### B. Fuel Module Components

#### 1. High Pressure Gauge

The high pressure gauge, located in the front panel of the fuel control module, indicates the pressure of the CNG being supplied to the regulator. If the manual shut-off valve is turned to 'on' and all other valves are open between the fuel tank and the fuel control module, this gauge reflects fuel tank pressure.

#### 2. Low Pressure Gauge

Located below the high pressure gauge in the front panel of the fuel control module, the low pressure gauge indicates the pressure of the CNG leaving the regulator and supplying the vehicle's engine. A typical reading for this gauge is 100-120 psi, dependent upon regulator setting.

## COMPRESSED NATURAL GAS (CNG) FUEL MODULE (CONTINUED)

### B. Fuel Module Components (Continued)

#### 3. Manual Shut-Off Valve

The manual shut-off valve is located on the bottom front of the fuel control module. Rotate the handle clockwise so arrow turns down and points to the 'OFF' position to prohibit fuel flow from the tanks to the vehicle's engine. Rotate the handle counterclockwise so arrow points to the 'ON' position to allow fuel flow from the tanks to the vehicle's engine.

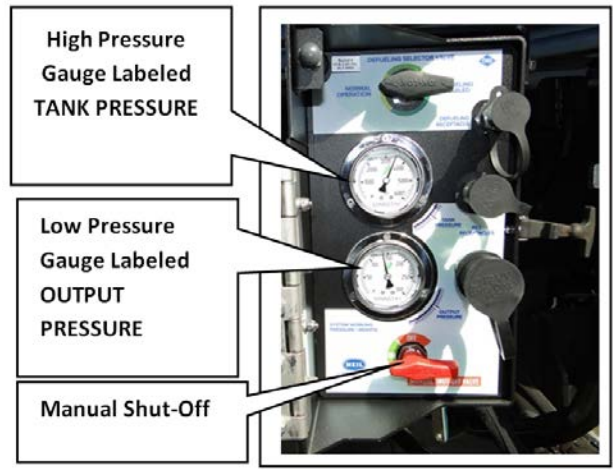


Figure 77. Manual Shut-Off Valve

#### 4. Purge Valve

Located inside the side maintenance access door, the purge valve, when loosened counterclockwise, purges CNG from the vehicle's fuel control module to allow safe access to the filter assembly.

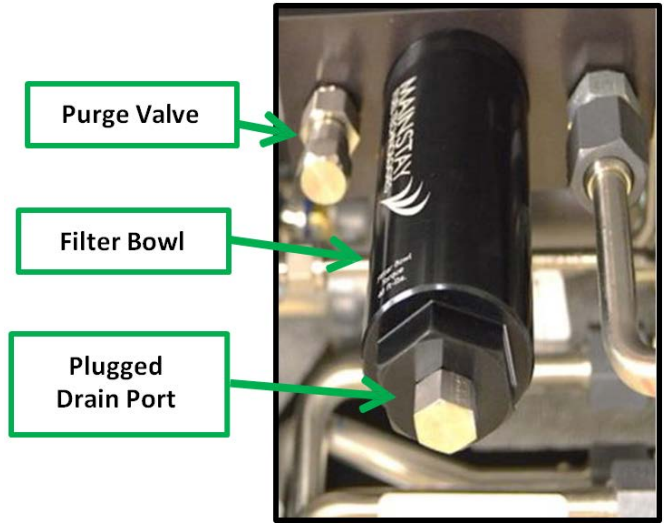


Figure 78. Purge Valve

## COMPRESSED NATURAL GAS (CNG) FUEL MODULE (CONTINUED)

### B. Fuel Module Components (Continued)

#### 5. Fuel Filter

The fuel filter is located inside the side maintenance access door, within the filter bowl. This filter collects both solid and liquid contaminants. It requires periodic maintenance, as outlined in **CNG Fuel Module Maintenance and Part Replacement** in the Compressed Natural Gas (CNG) section of your Service Manual.



Side Maintenance Access

Figure 79. Side Maintenance Access

## PROPERTIES OF NATURAL GAS

- Auto Ignition Point: 900 - 1170° F (482 - 632°C)
- Lower Explosive Limit (%): 3.8 – 6.5
- Upper Explosive Limit (%): 13 – 17

## CNG VEHICLE OPERATOR EMERGENCY RESPONSE

A vehicle equipped with a compressed natural gas fuel system will have a blue reflective decal on the rear of the vehicle identifying compressed natural gas (CNG).

### **WARNING**

During an emergency situation, never jeopardize safety to shut down the system. If it becomes evident that the steps cannot be safely completed, move to a safe distance, call 9-1-1 and alert emergency personnel of the situation, informing them of the presence of a CNG system and that it is not properly shut down.

### Emergency Response for Gas Leaks

If the vehicle has sustained damage or a gas leak is detected:

1. Do not approach the vehicle if any sources of ignition may exist such as fire, sparks, electrostatic charges, lights or electronic devices.
3. If the vehicle is indoors, move the vehicle outside and away from any ignition sources.
4. Do not use road flares.
5. Do not smoke or allow anyone else to smoke near the vehicle.
6. Turn the ignition switch off, set the parking brake and turn off the battery at the main disconnect.

7. If it is safe to do so, close the main shutoff valve and the cylinder valves. Check the fuel system near the damaged area for leaks by smell, sight, and sound. CNG is odorized and can be detected by smell.
8. Keep traffic and pedestrians away.
9. Beware that gas may continue to leak once ignition is turned off and the manual shutoff valves are closed.
10. Have a qualified technician verify leak locations with suitable methane detection fluid.
11. Have the leaks repaired by a qualified technician immediately.

### Vehicle Fire Procedures

In the event of a CNG fire, it is imperative that the vehicle operator acts quickly:

1. Get passengers out of the vehicle as quickly as possible.
2. Evacuate the area.
3. Call 9-1-1.
4. If possible without putting yourself in harm's way, dump the refuse load from the body and move the vehicle a safe distance away from any burning refuse.

## CNG VEHICLE OPERATOR EMERGENCY RESPONSE (CONTINUED)

### CNG Vehicle Emergency Shut Down Procedure

#### **WARNING**

During an emergency situation, never jeopardize safety to shut down the system. If it becomes evident that the steps cannot be safely completed, move to a safe distance, call 9-1-1 and alert emergency personnel of the situation, informing them of the presence of a CNG system and that it is not properly shut down.

Complete the following steps to shut down the CNG system:

1. Turn OFF Ignition and Electrical System.
2. Turn OFF Fuel Module Manual Shut-Off Valve.
3. Close each Tank Valve.
4. Call Technical Services at 866-310-4345 for further assistance.

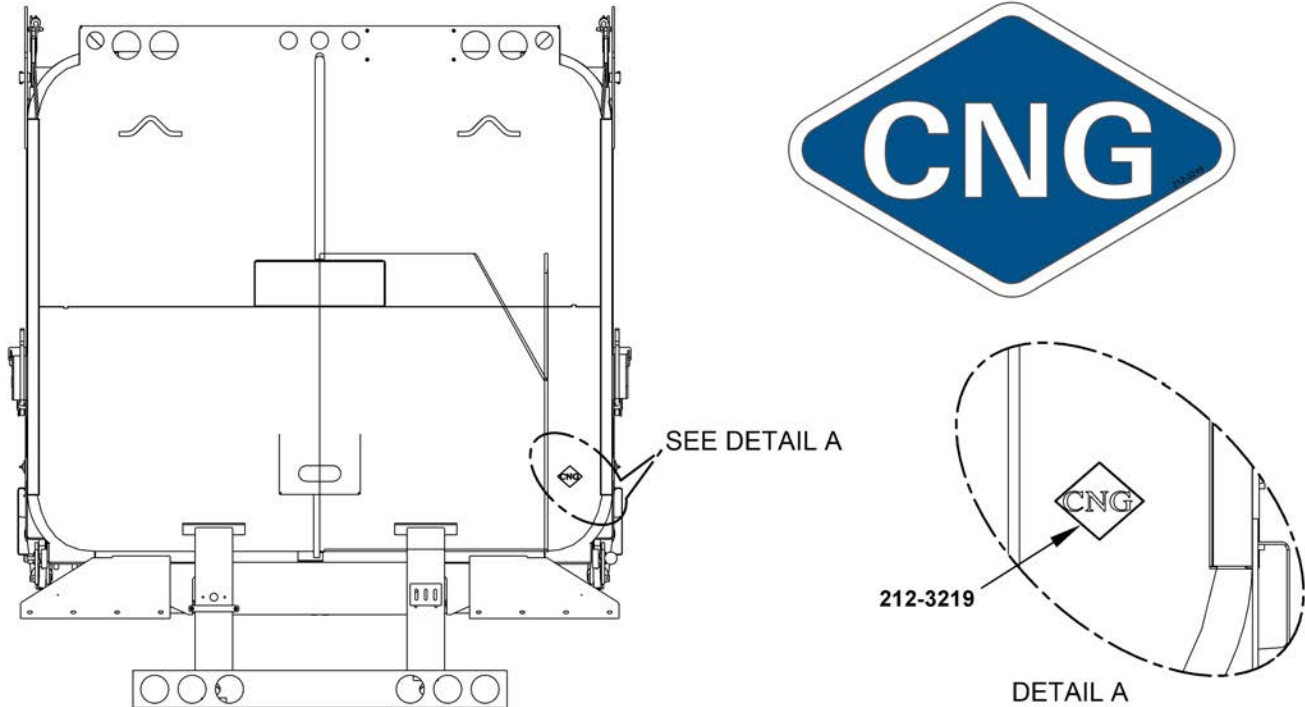
### Emergency Venting/Defueling Procedure

If an emergency arises in which the fuel must be purged immediately, an emergency vent can be performed as follows:

1. Ensure that an electrical ground connection has been established between the cylinders, the vent system, and earth ground.
2. Connect the on-board defueling connection to the vent system using a conductive high pressure defueling hose.
3. Slowly open the hand valve to achieve a slow and steady flow to prevent freezing. No gas flow may indicate a normally closed solenoid valve on the cylinder. Consult the vehicle manufacturer for information on opening electronic solenoids.
4. Allow the on-board storage system to vent completely.
5. When completed, disconnect the on-board defueling connection from the vent system and disconnect the earth ground.

## CNG FRONT OF BODY / TOP OF BODY DECAL PLACEMENT

In addition to the decal shown below, there may be other decals placed on the fuel management module (FMM), tank compartments or elsewhere on the CNG system components. Refer to the CNG System Manufacturer's Operation and Maintenance Manuals for replacement decal part numbers.



## STARTING VEHICLE

### NOTICE

Starting a natural gas vehicle requires a delay between the battery power being turned on and the starter motor being activated.

1. Make sure that the system has been properly leak tested and that no leaks exist.
2. Make sure that plastic caps are installed on all exposed vent lines. For tailgate mounted CNG, vent lines route to the top of the tailgate. If the plastic caps are missing, contact Heil Parts Central for replacement caps (Part Number 042-2078 for 3/8" and 042-2079 for 1/2") at 800-528-5308.
3. Make sure that the cylinder shut-off valves (one on each cylinder) are "OPEN" and the manual shut-off valve is "ON".
4. Without starting the engine, turn the key to the "RUN" position and wait 20-30 seconds. This will allow the fuel to properly fill the system and provide adequate back-pressure for the high-pressure solenoid valve to function properly.
5. Start the engine.
6. If this is the first start of the day, let the vehicle idle for five minutes. This will allow coolant to warm the fuel and ensure that the low-pressure lines down-stream of the primary pressure regulator do not freeze up. On extremely cold days, the vehicle may have to idle for a longer period until the fuel warms adequately.

## FUELING PROCEDURE

### A. CNG Fueling Steps

Two options exist for filling a vehicle with CNG – timed fill or fast fill. Despite the size of the receptacle, the fueling hose connects in the manner for either type of fill.

The steps include:

1. Locate the fueling fill receptacle in the CNG fuel module.

### NOTICE

Optional, fill receptacles may be installed in a remote location on the vehicle's front bumper.

2. Remove the dust cover on the fill receptacle.
3. Remove fueling nozzle from the CNG dispenser holder.
4. Begin fueling the CNG vehicle.
5. When complete, disengage the Fueling Nozzle.
6. Return the nozzle to the CNG dispenser.
7. Replace the dust cover on the receptacle.
8. Close the CNG fuel module door and engage door lock.

## FUELING PROCEDURE (CONTINUED)

### B. Types of Fueling Hoses

Dependent upon the fueling station, different types of fueling hoses may be utilized. Refer to the figures below and on the next page to determine which type of fueling hoses you will be using.

#### 1. Type 1:

When utilizing this type of nozzle, follow directions below to refuel:

- a. Slide the nozzle over the receptacle intake. In order to properly engage the fill hose with the receptacle, hold the nozzle in one hand. With the free hand, twist the lever counterclockwise to line up the two arrows, facing each other. Complete the connection by pushing the fueling hose fully onto the receptacle.
- b. Once the hose fits completely onto the fill receptacle, you will hear a click and the arrow on the lever will shift, misaligning with the arrow on the actual hose. This indicates that the hose fueling nozzle is properly seated onto the receptacle.
- c. When the hose fully connects, turn the lever clockwise until both arrows are pointing toward the fill receptacle to begin fueling.
- d. When fueling is complete, release the nozzle connection. Holding the nozzle in one hand, use the other hand to turn the nozzle so that arrows again point toward each other (as shown in step "a"). You will hear a release of pressure.

- e. Disconnect the fuel hose, and return it to the fuel dispenser.



Figure 80. Type 1 Fueling Hoses



**\*\*\*NOTE:** Arrows must be aligned as shown to allow proper engagement of the hose with the fill receptacle.

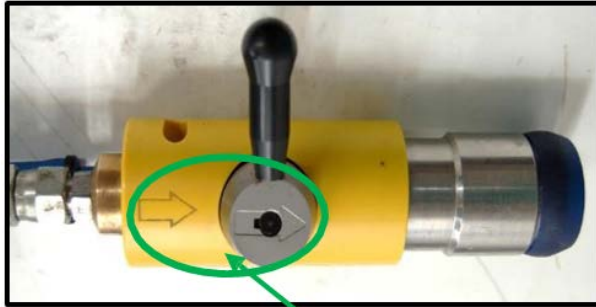
Figure 81. Type 1 Fueling Hoses



## FUELING PROCEDURE (CONTINUED)

### B. Types of Fueling Hoses (Continued)

#### 1. Type 1 (Continued):



Arrows must be aligned and pointing toward the fill receptacle to allow fueling.

**Figure 82. Type 1 Fueling Hoses**

#### 2. Type 2:

This fueling hose operates in the following manner:

- a. Locate fill receptacle and remove dust cap.
- b. Slide fueling hose nozzle onto the fueling receptacle.
- c. Compress the hand grip until the locking lever engages.
- d. Begin fueling.
- e. When complete, release the locking lever and disconnect the fueling hose.



**Figure 83. Type 2 Fueling Hose**

## FUELING PROCEDURE (CONTINUED)

### 3. Type 3:

To utilize this hose:

- a. Locate fill receptacle and remove dust cap.
- b. Holding firmly, press nozzle onto fill receptacle.
- c. Rotate lever clockwise 180° to begin fueling.
- d. When fueling is complete, rotate lever counterclockwise 180° to allow fuel hose disconnection.



**Figure 84. Type 3 Fueling Hose**

## TRANSFER FUELING (DEFUELING) MODES, COMPONENTS AND PROCEDURES

Defueling is generally the process of removing any residual fuel from the fuel tanks and on-board fuel delivery system prior to performing any welding or a major repair. Capturing the CNG in a system that can send it back to a CNG fueling station storage facility for reuse is the most environmentally responsible method. Atmospheric venting of CNG might be illegal and against local environmental regulations for your area. Check local laws and regulations before venting CNG to the atmosphere.

Before attempting to defuel a CNG vehicle, read and understand **National Fire Protection Association (NFPA) 52 sections 6.14.1 - 6.14.4.4** as they provide a detailed list of requirements to be followed when performing defueling. Also read and understand all of the safety alert messages and procedures in this section. Maintenance of a compressed natural gas system is to be performed **ONLY** by authorized service personnel.

### Basic Rules for Defueling

- Consume as much fuel as possible prior to defueling
- Notify appropriate nearby personnel prior to defueling and clear the area of all unessential people
- ALWAYS ground (earth ground) the vehicle AND the fuel system being defueled
- NEVER defuel indoors
- Always wear personal protective equipment
- Be familiar with evacuation routes

## TRANSFER FUELING (DEFUELING) MODES, COMPONENTS AND PROCEDURES (CONTINUED)

### A. CNG Fuel Module Defueling Functions

The fuel module is equipped with a defueling functionality. This allows the transfer of CNG fuel into the fill receptacle of a second CNG vehicle, using a defueling hose, or capturing of CNG fuel in a system that can send it back to a CNG fueling station storage facility for reuse.

### NOTICE

The defueling process does not deplete the CNG fuel in the supplying (defueling) vehicle. The pressure in both tanks will be equalized with CNG fuel after the defueling process is completed. To completely deplete the CNG fuel from a vehicle, the defueling hose can be connected to a CNG fuel recovery system instead of a second vehicle.

### B. CNG Fuel Module Defueling Operating Modes

When the Defueling Selector Valve is positioned to the “Normal Operation” position, the defueling receptacle is vented to the atmosphere to allow disconnection of the defueling hose.

When the Defueling Control Valve is positioned to the “Defueling Enabled” position, CNG fuel from the storage tanks can flow to the Defueling Receptacle.



Fuel Module Defueling Selector Valve Set to Normal Operation

Figure 85. Fuel Module Defueling Selector Valve Set

### C. CNG Fuel Module Defueling Components

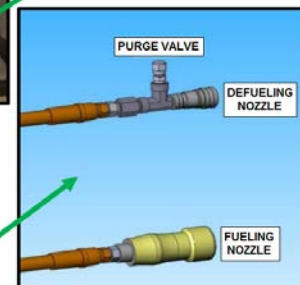
Defueling components are located on the front panel of the fuel module. The components include:

1. Defueling Receptacle – connection point for transferring CNG fuel out of the fuel system.
2. Defueling Selector Valve – facilitates CNG fuel transfer



Defueling Selector Valve

Defueling Receptacle



The Defueling Hose (Part Number 057-3168) is equipped with a quick-connect on both the Fueling and Defueling ends.

Figure 86. Fuel Module Defueling Components

## TRANSFER FUELING (DEFUELING) MODES, COMPONENTS AND PROCEDURES (CONTINUED)

### 3. Defueling Hose

- a. The Defueling Hose (if available) is to be used for the purpose of transferring CNG fuel from a supplying (defueling) vehicle to a receiving (fueling) vehicle.
- b. The tank pressure of the supplying vehicle must be higher than the tank pressure of the receiving vehicle in order for CNG fuel to transfer.
- c. Once the two (2) vehicles' tank pressures have equalized due to the transfer of CNG fuel, no further transfer of CNG fuel will occur.
- d. In order to use the Defueling Hose, the vehicle being defueled must be equipped with a defueling receptacle.
- e. If the vehicle is not equipped with a defueling receptacle, then the defueling operation is not possible using the Defueling Hose Assembly.

### E. CNG Fuel Module Defueling Methods

There are three methods by which to defuel a CNG vehicle using a Defueling Panel with a Defueling Receptacle. If your unit has the **Heil CNrG™ Solenoid System** option, the ignition must be left ON while defueling in order for all tanks to defuel. See **Heil CNrG™ Solenoid System Option** <sup>188</sup> section for more information.

## WARNING

Venting does not completely empty the system of combustible gas. Never weld on a compressed natural gas vehicle unless the compressed natural gas fuel system has been purged with inert gas. See **Paragraph F** <sup>174</sup>.

### 1. Defueling to Another Vehicle

- a. Prior to connecting the defueling hose to either vehicle, open the purge valve on the hose to release any residual pressure that may be in the hose.
- b. Close the purge valve and continue.
- c. Position the defueling control valve on the fuel module in the "Normal Operation" position. This will release any pressure in the defueling circuit and allow the hose's defueling nozzle to be connected to the defueling receptacle.
- d. If the valve is not in this position, it will not be possible to make the connection.
- e. Connect the hose's defueling nozzle to the defueling receptacle of the fuel module on the supplying (defueling) vehicle.

## TRANSFER FUELING (DEFUELING) MODES, COMPONENTS AND PROCEDURES (CONTINUED)

### 1. Defueling to Another Vehicle (Continued)

- f. Connect the hose's fueling nozzle to the NGV1 fueling receptacle on the receiving (fueling) vehicle.
- g. Turn the defueling control valve on the supplying (defueling) vehicle to "Defueling Enabled". This will initiate the flow of CNG fuel from the supplying vehicle to the receiving vehicle.
- h. To stop the flow of CNG fuel, turn the Defueling Control Valve to the "Normal Operation" position. This will stop the flow of CNG fuel and vent the pressure in the defueling hose so that it can be disconnected. If the supplying vehicle is not equipped with a defueling control valve which automatically vents the pressure in the hose when the flow of CNG fuel is stopped, then the purge valve must be used to vent the hose, allowing disconnection of the hose from the receptacle.

### 2. Atmospheric Venting Method

- a. You must first check to see if this method is legal in your area. There could be local environmental regulations regarding the release of methane into the atmosphere.

- b. If atmospheric venting is acceptable in your area, then a vent stack apparatus that meets the requirements established in either the Uniform Building Code or the International Building Code must be followed as well as NFPA 52.
- c. With the local authority having jurisdiction, typically the Fire Marshal should be consulted.
- d. BOTH the vehicle AND the fuel system should be grounded. Use a minimum 14-gauge multi-stranded wire. Contact the CNG system manufacturer for attachment points for the ground wire.
- e. Restrain all tanks during depressurization to prevent the tanks from moving.
- f. Attach a defueling nozzle to the defueling receptacle. Contact the CNG system manufacturer for the minimum distance the vent hose should be positioned above the ground.
- g. After this nozzle is connected, the valves that allow system pressure to reach the defueling receptacle must be turned to the "defueling enabled" position (if equipped).

### 3. Compressor Inlet Method

- a. This procedure requires pre-planning and special equipment installed at the CNG fueling station. Check with your CNG fueling station supplier or installer.
- b. In this method, the vehicle is connected through the fueling nozzle to the defueling panel receptacle and the compressor at the fueling station extracts the compressed natural gas from the vehicle.

## TRANSFER FUELING (DEFUELING) MODES, COMPONENTS AND PROCEDURES (CONTINUED)

### 3. Compressor Inlet Method (Continued)

- c. BOTH the vehicle AND the fuel system should be grounded. Use a minimum 14-gauge multi-stranded wire. Contact the CNG system manufacturer for attachment points for the ground wire.

### F. Purging with an Inert Gas Prior to Welding or Major Repairs

If welding or major repairs is required, you must remove all of the fuel from the vehicle including the residual fuel and replace it with an inert gas such as nitrogen. The objective is to completely purge the system of all combustible gas. In order to complete the operation, the entire system should be purged with the inert gas 3 times to a pressure of at least 689kPa (100 psig). Approximately 70kPa (10 psig) of residual inert gas pressure should be left on the system during the major repair.

### **WARNING**

Never weld on a compressed natural gas vehicle unless the compressed natural gas fuel system has been purged with inert gas.

### **NOTICE**

Avoid exposing CNG system parts to molten metal from weld, torch, cutting, or grinding splatter. The CNG system and/or the CNG system components can be damaged.

### G. Recharging the Fuel System after Purging and after Major Repairs

After repairs, the inert gas must be removed from the system in a similar manner as the inert gas was introduced. Specifically, the entire system should be charged 3 times with approximately 689kPa (100 psig) of natural gas. Between each natural gas charging session, the system should be vented or extracted to remove the remaining inert gas from the system. See the Notices below and the atmospheric venting method instructions on the previous page.

### **NOTICE**

It is critical when venting between gas charging sessions to make sure the tank pressure never goes below 34kPa (5 psig). 69-138kPa (10-20 psig) is the recommended cutoff for this procedure. This will ensure that outside air does not re-enter the tank due to the pressure dropping too low in the tank.

### **NOTICE**

If venting to atmosphere, you must first check to see if this method is legal in your area as some natural gas will be vented along with the inert gas.

## CNG SYSTEM MAINTENANCE

Routine maintenance of the compressed natural gas system in accordance with the **Table 1. Inspection/Preventive Care Schedule** (next page) will ensure that the system and components are functioning properly. See the **Compressed Natural Gas (CNG)** section of your Service Manual for additional maintenance information.

### **WARNING**

System components must not be under pressure during servicing. Servicing components under pressure may cause serious injury.

### **WARNING**

Never weld on any part of a compressed natural gas vehicle unless the compressed natural gas fuel system has been purged with inert gas.

### **WARNING**

Make sure the unit is in the Lock-Out/Tag-Out mode when you do maintenance or service procedures, or when you go in the hopper, climb in or on the body or on equipment. The unit can be operated intentionally or accidentally when the unit is not in the Lock-Out/Tag-Out mode which can cause serious injury or death to anyone in the hopper, in or on the body or on equipment.

### **CAUTION**

Maintenance of a compressed natural gas system is to be performed **ONLY** by authorized service personnel. Unauthorized maintenance can result in personal injury and/or extensive damage to the unit.

## INSPECTION/PREVENTIVE CARE SCHEDULE

**Table 1. Inspection/Preventive Care Schedule**

ITEM	FREQUENCY
Storage System:	
Leak Test with Methane Detector*	Every month
Component Inspection*	Every month
Drain Filter	Every 10,000 miles
Replace Filter Element	Every 40,000 miles
Drain Vent Lines	Every month (or immediately if blue vent cap is missing)
Cylinders*	Inspect compressed gas cylinders as outlined by cylinder manufacturer
* To be completed by a qualified and trained person.	

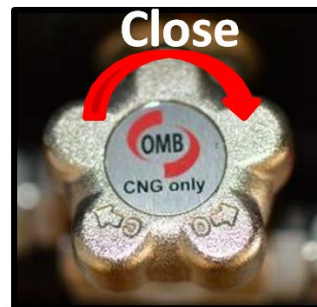
## PREPARATION BEFORE MAINTENANCE

It is necessary to prepare the truck to be serviced. A mechanic's initial focus while preparing the vehicle for service should be safety. The primary preparation involves relieving the pressure within the system BEFORE performing any maintenance procedures.

Follow the steps as outlined to ensure that no pressure remains.

1. Leave the Fuel Management Module Manual Shut-Off Valve in the 'ON' position.

2. Turn OFF each supply tank's valve(s) inside CNrG Tailgate.



**Figure 87. Tank Valve**

3. Start the vehicle's engine, allowing it to run until the engine shuts off. This will ensure that all CNG in the lines has been consumed.
4. As an added safety precaution, open the system purge valve to ensure no latent pressure remains.
5. Ensure the high pressure gauge on the fuel control module reads 0 psi.
6. Turn off the power supply if an electrical component of the system requires service.
7. Perform any maintenance ONLY after completing these instructions.

See the **Compressed Natural Gas (CNG)** section of your Service Manual for additional maintenance information.



## FUEL MANAGEMENT MODULE (FMM) REFERENCE DRAWING

Component drawing for Heil 151-4764 Fuel Management Module is shown below.

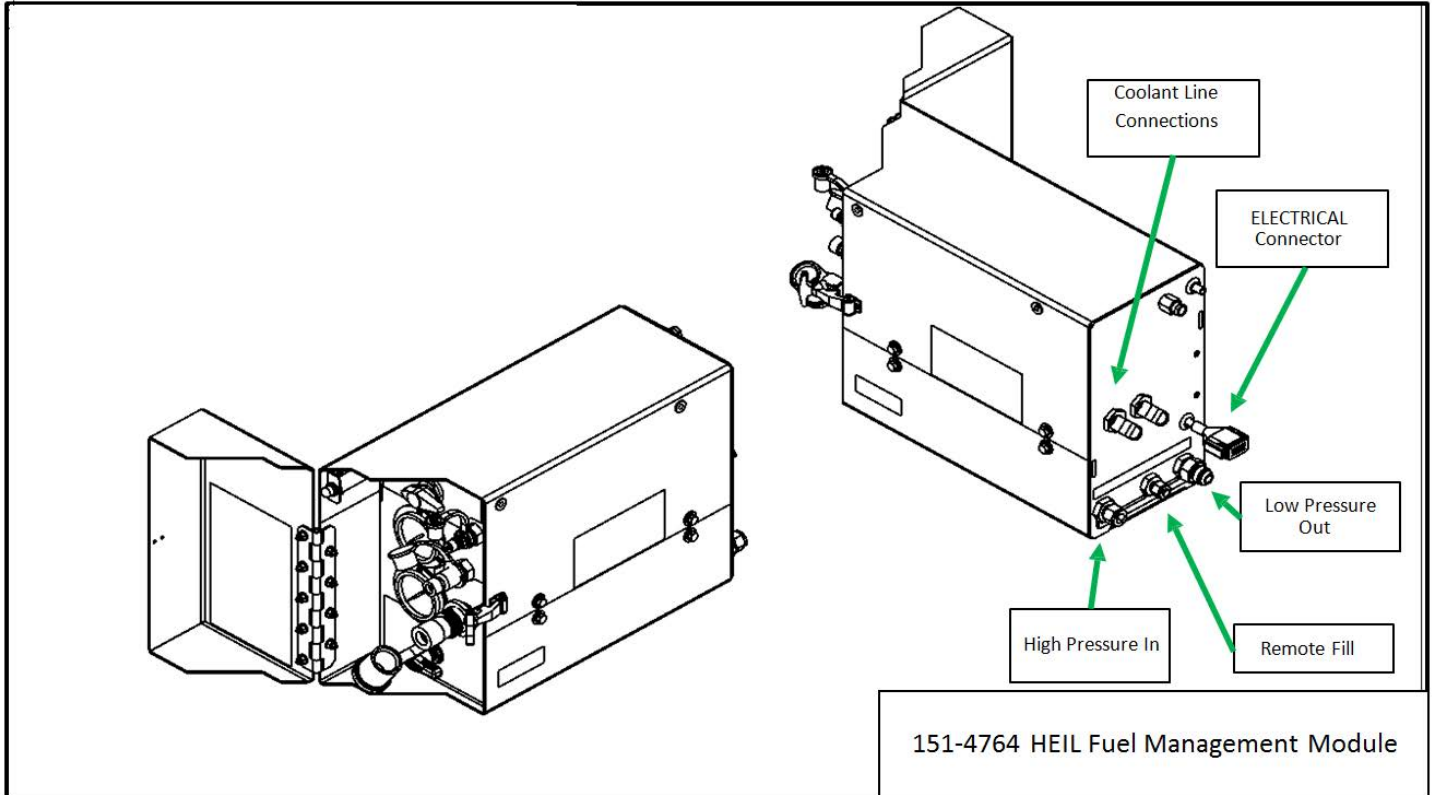


Figure 88. Fuel Management Module

## CNG FUEL CYLINDER AND SYSTEM INSPECTION

### **WARNING**

If a CNG-fueled vehicle has been involved in an accident or fire, the system and cylinders must be inspected by a certified CNG fuel system inspector.

### **NOTICE**

Inspections must be performed by qualified inspectors using guidelines from the fuel cylinder manufacturer in addition to the guidelines listed here.

1. Based on cylinder manufacturer recommendations and industry standard practices, visual CNG cylinder inspections should be performed at a frequency of 3 years or 36,000 miles, whichever occurs first.
2. In addition, Heil recommends a daily walk-around or pre-trip and post-trip visual inspection be performed.

## 3. NOTES:

## HEIL CNrG™ SOLENOID SYSTEM OPTION

When equipped, the optional Heil CNrG Solenoid System will monitor and display live in-cab CNG system and tank pressures and notifications on the InSight™ Diagnostic Display. Additionally, the system detects and alerts of leaks (visually and audibly) while closing solenoid valves of affected tanks to isolate the leak(s).

On the display, tanks are numbered starting with the tank at the top of the of the CNrG tailgate, "TANK-1", and ending with the tank lowest in the CNrG tailgate, in the system shown below, "TANK-7". When the system is operating without any issues, all boxes are green as shown below.



Figure 89. Main Display Screen

### Summary of Features

- Display screen inside the cab which gives live pressure monitoring for each tank and system.
- Visual warning in form of messages and color on the screen along with audible alarm whenever solenoid failure occurs.
- System visual and audible warning if one of the pressure transducers is unplugged in either ignition ON or OFF conditions.
- Whenever the ignition is OFF and truck is not running, system gives audible alarm in the event of any leaks on tank or system side. The operator needs to turn the ignition ON and check the display screen that will show the tank location of the leak.
- As a safety feature, all solenoids will be closed whenever there is a leak. A maintenance bypass code will need to be entered to be able to open solenoids and drive the vehicle. The leak detection feature is available only when the ignition is OFF.
- Leaks are detected at a pressure difference of 600 psi.

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### Pressure Transducer Sensors

#### **WARNING**

ALL Pressure Transducer Sensors MUST be functioning for System to be able to detect a leak.

#### **WARNING**

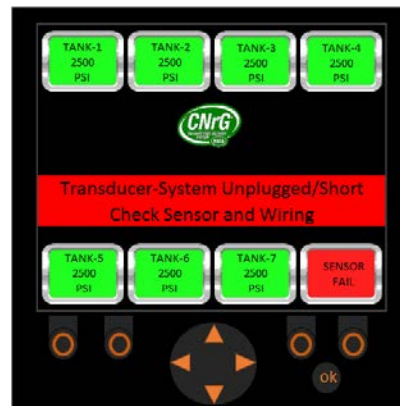
Tank MUST be empty before removing tank Pressure Transducer Sensor.

Plugged directly into the live port of the valve of each tank and behind the FMM (Fuel Management Module) box live line, the pressure transducer sensors measure live pressures of each tank and of the system. When a pressure transducer sensor fails or becomes unplugged, the system sends a visual warning on the InSight™ Diagnostic Display along with an audible alarm.

Whenever there is a single sensor issue, the main screen will show which sensor has failed as shown in the figure to the top right. However, if there are multiple sensor issues, it will tell you to go to alarm summary screen to get more details as shown in the figure to the bottom right.

#### **NOTICE**

The audible buzzer will be active regardless of ignition ON or ignition OFF and will not turn OFF until the issue is corrected.



**Figure 90. Pressure Transducer Sensor behind FMM Unplugged/Faulty**



**Figure 91. Multiple Pressure Transducer Sensors Unplugged/Faulty**

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

The Alarm Summary Screen can be reached by pressing the right arrow on the display twice.

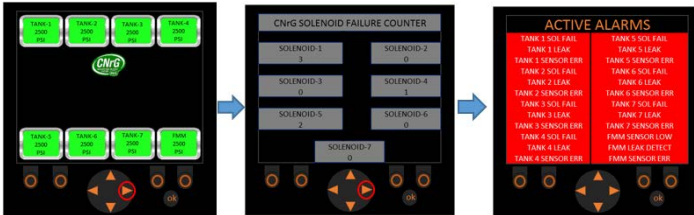


Figure 92. Path to Alarm Summary Screen



Figure 93. Alarm Summary Screen

### Solenoid System Function

The valve body on each CNG tank has an integrated solenoid. The solenoids are normally closed when the ignition is OFF and open when ignition is ON and a voltage is supplied to them.

### Leak Detection/Solenoid Lock

The system is capable of detecting a leak in the system or leak in any tank when the ignition is initially OFF and the leak starts. For safety purposes, if a leak is detected, all solenoids are locked in the closed position and not allowed to open until a maintenance code is entered and bypass is activated. The audible alarm activates whenever there is pressure difference detected of 600 psi or more and the truck ignition is OFF (ignition must be turned ON to see more details about the leak on the display screen).

## NOTICE

Authorized Service Personnel should contact Heil Technical Service for the maintenance code to unlock the CNG solenoids.

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### Leak Detection/Solenoid Lock (Continued)

The figures on this page show example display screenshots of possible leak detection notifications. Other leak detection notifications exist and are not shown here.

### **WARNING**

You must follow all safety/emergency procedures of your company in the event of a CNG leak. At a minimum, follow the instructions on Emergency Shutdown Procedure section of this manual.



**Figure 94. Tank 1 Leak.  
Maintenance Bypass Required.**



**Figure 95. Multiple Tank Leaks.  
Maintenance Bypass Required.**



**Figure 96. System Leak.  
Maintenance Bypass Required.**

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### Solenoid Failure Detection

The system is capable of detecting solenoid failures to open (in the event of a wiring or component issue) when the ignition is turned ON as per requirement of NFPA 52.

Whenever there is a single solenoid issue, the main screen will show which solenoid has failed as seen on the figure to the top right of this page. However, if there are multiple solenoid issues, it will tell you to go to alarm summary screen to get more details as seen in the figure to the bottom right. **Alarm Summary Screen** <sup>187</sup> can be reached by pressing the right arrow on the display twice.

The figures on this page show example display screenshots of solenoid failure detection notifications. Other solenoid failure detection notifications exist and are not shown here.

To defuel after a solenoid failure on one of the tanks, first refer to **Heil CNrG™ Solenoid System Defueling After Solenoid Failure** <sup>188</sup> and then use one of the methods described in **CNG Fuel Module Defueling Methods** <sup>172</sup>.

### NOTICE

The audible buzzer will be active only when ignition is ON and will not turn OFF until the issue is corrected.



Figure 97. Display Screenshot:  
Tank 2 Solenoid Failure

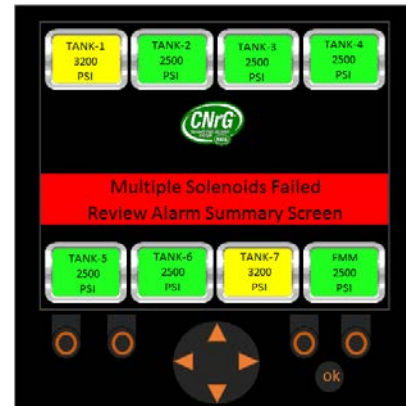


Figure 98. Display Screenshot:  
Multiple Solenoids Failed

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

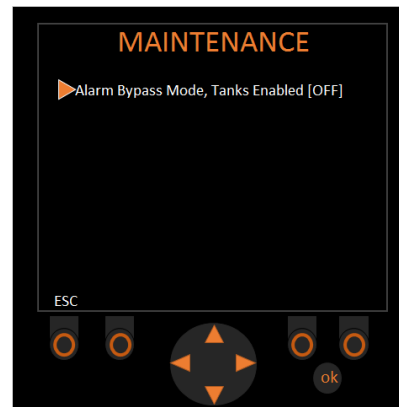
### Maintenance Bypass

The following are the steps must be followed by a qualified maintenance technician after getting any display messages described in this manual. This will allow a qualified service person to get the truck back on route/correct the issue:

1. Driver will need to call maintenance department of their company in order to drive/move the truck since all solenoids are locked and need maintenance bypass for them to open.
2. For any leaking tank, open the oblong access covers on the street side of the CNrG tailgate and then close that tank's manual shut off valve. In case of system leak, solenoids will not open until the leak is stopped (system leak is a leak detected in the line going from FMM to tanks on high pressure side).
3. Go inside the cab and on display screen hold "ok" button on screen until it prompts you to enter maintenance code.
4. Enter the maintenance bypass code and you will see the screen shown in the figure to the right.

### NOTICE

Authorized Service Personnel should contact Heil Technical Service for the maintenance bypass code to unlock the CNG solenoids.



**Figure 99. Display Screenshot:  
Maintenance Screen**

5. Make sure you have first closed the manual shut off valves on the tanks that are leaking (Step 2). You will notice that the Bypass Mode is OFF by default. Press "ok" button and turn ON Bypass Mode. Once you do this, all solenoids (except leaking tank/tanks) open. However, all tanks are now connected to each other and to the main supply/return line. This is the reason it is very important to first perform Step 2 before performing this step.
6. You will now be able to drive the truck to your maintenance department to evaluate and repair the leak. The audible alarm will not go OFF until the issue is corrected.



## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### Low Fuel Level Detection

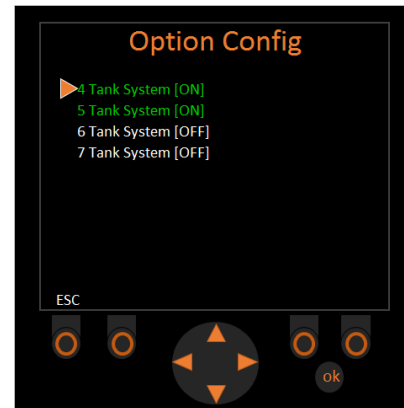
The system is capable of detecting low fuel levels and will give audible and visual alerts that the truck needs to be refueled, as shown in the figure below. Whenever pressure drops below 500 psi on the system side, the system will show a Low Fuel Warning alert message along with an audible alert.



**Figure 100. Display Screenshot: Low Fuel Warning**

### CNG Tank Option Configuration

The system is designed for different tank configurations and is a common design which will work from 3 tank to 7 tank system. This helps the customer to upgrade to higher DGE (Diesel Gallon Equivalents) by adding more tanks without need to modify anything in this system. The figure below shows a snapshot of the Tank Option Configuration maintenance screen where you can configure the number of tanks on the truck.

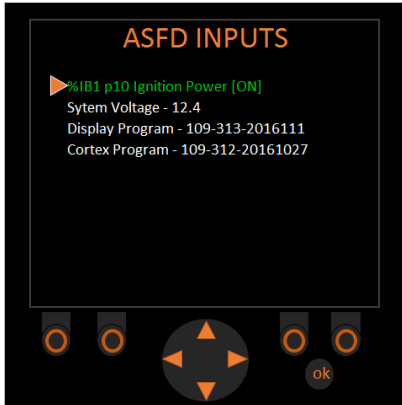


**Figure 101. Display Screenshot: Tank Option**

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### System Inputs

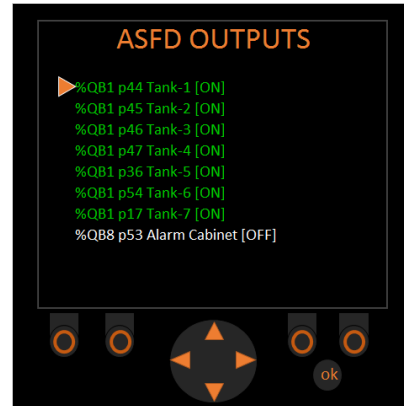
The display screenshot shown below (within the maintenance mode menu) is used for troubleshooting and maintenance to gather information for the current status of the Ignition Power (ON or OFF) and the system voltage being supplied to the Cortex Controller™. It also provides the software revisions of the Cortex Display and Cortex Controller programs.



**Figure 102. Display Screenshot: System Inputs**

### System Outputs

The display screenshot shown below (within the maintenance mode menu) is used for troubleshooting and maintenance to gather information for the current status of the Solenoids on each Tank (ON or OFF). It also provides the status of the System Alarm for the Cortex Controller.



**Figure 103. Display Screenshot: System Outputs**

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### Ignition Power OFF

The display notification shown in the figure below will only be displayed in the event that the InSight™ Diagnostic Display has Ignition Power and the Cortex Controller™ does not have Ignition Power. This Alarm can be beneficial in the event that all Tank Solenoids Valves have failed to open due to the loss of Ignition Power, which is required to open the Tank Solenoids Valves.



**Figure 104. Display Screenshot: Ignition Power**

### System Over Voltage

The display notification shown in the figure below will only be displayed in the event that the System Voltage is greater than 36 volts for 10 seconds, indicating that there is voltage too high to safely operate the Cortex Controller and Display.

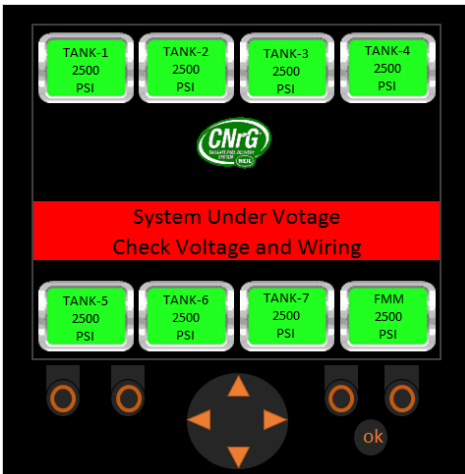


**Figure 105. Display Screenshot: System Over**

## HEIL CNrG™ SOLENOID SYSTEM OPTION (CONTINUED)

### System Under Voltage

The display notification shown in the figure below will only be displayed in the event that the System Voltage is less than 8 volts, indicating that there is voltage too low to safely operate the Cortex Controller and Display.



**Figure 106. Display Screenshot:  
System Under Voltage**

### Heil CNrG™ Solenoid System Defueling After Solenoid Failure

Perform this procedure for any tank solenoid in the Heil CNrG™ Solenoid System that has failed. This procedure is not needed for a system without solenoids. Refer to **Solenoid Failure Detection** [165] to help determine which solenoid has failed.

#### A. Preparation for Defueling

Follow the instructions below and then use one of the methods described in **CNG Fuel Module Defueling Methods** [172]. Ignition will have to be left ON to defuel all tanks with functioning solenoids.

1. Remove the relevant side access cover to access the 1/4 turn valve of the tank on which the solenoid has failed. This valve is the long-handled valve located next to the manual shut-off valve.
2. Open the 1/4 turn valve for only the tank on which the solenoid has failed. Now, that tank will be connected to the main supply line and the gas will have a pathway to defuel even if the solenoid failed to open.
3. Now you can defuel by using one of the methods described in **CNG Fuel Module Defueling Methods** [172].
4. Make sure that the display in the cab shows that all tanks and the system are completely depressurized before disconnecting any lines/fittings.

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**NOTES:**



## HEIL ENVIRONMENTAL WARRANTY STATEMENT

The Heil Co. d/b/a Heil Environmental ("Heil") warrants its solid waste collection equipment to be free from defects in material and workmanship under normal use for a period of one (1) year or 2000 hours of operation (whichever comes first) from the date of equipment In-Service or during the period of coverage offered by an extended warranty program, when proper service and maintenance as described in Heil Service Bulletins and Parts & Service Manuals are performed. The standard or extended equipment warranty is not transferable except for sales demonstration units.

This warranty is expressly limited to the repair or replacement of any component or part thereof, of any such refuse or recycling collection body manufactured by Heil that is proven to Heil's satisfaction to have been defective in material or workmanship. Such components or parts shall be repaired or replaced at Heil's option without cost to the standard purchaser for parts and labor provided such unit is returned to an authorized Heil Distributor for replacement or repair. The repair or replacement must be made during the standard or extended warranty coverage period. Before any warranty can be allowed on new equipment, a validated warranty registration form must be on file with Heil's Customer Service Department within sixty (60) days of the equipment's In-Service date. Wear items are excluded from warranty coverage.

All OEM service parts sold by Heil have a six (6) month warranty from the date of purchase. Aftermarket parts purchased from Heil are supported by a 90-day warranty. The parts warranty covers parts only, providing that factory inspection reveals a defect in material or workmanship. Labor, troubleshooting, equipment downtime, etc. is not covered under the parts warranty policy.

HEIL MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. HEIL DOES NOT ASSUME ANY LIABILITY OR ACCEPT CLAIMS FOR LOSS OF PROFITS, PRODUCT DOWN TIME OR ANY OTHER DIRECT, INCIDENTAL OR INDIRECT CONSEQUENTIAL LOSSES, COSTS, DAMAGES OR DELAYS.

Any improper use, operation beyond rated equipment or component capacity, substitution of parts that are not Heil-approved, or any alteration or repair by others in such a manner as in Heil's sole judgment affect the product operation or integrity shall void the warranty.

Other than the extension of the standard warranty period purchased under a supplemental Heil Extended Warranty Program, no employee or representative is authorized to modify this warranty in any way nor shall any other warranties be granted. No dealer-supplied warranty program is endorsed or supported by Heil.

Heil retains the right to modify its factory warranty program prospectively at any time.

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