Garwood International

OPERATION MANUAL
GARWOOD REAR LOADER

TABLE OF CONTENTS

INTRODUCTION

Your new ***GARWOOD*** Rear Loading Waste Collection system incorporates the very latest in waste management technology. Fitted with full width tailgate the units provide rear loading with efficient handling of a wide range of waste containers.

The ***GARWOOD*** Rear Loading units have been designed from the outset to outlast the original Cab/Chassis system. Moving the body to replacement vehicles is simple and quick. This is just one of many cost saving features of the ***GARWOOD*** Rear Loading Waste collection system that make it a very cost-effective investment for the astute purchaser.

All ***GARWOOD*** models are 100% Australian designed. The bodies are very robust and simple to maintain and operate. Fitment of container handling devices to handle all sizes of Mobile Garbage Bins, (MGB) up to 1,100 litre capacities is possible. Optional hydraulic winch system can be fitted to provide handling of steel front lift style bins.

To obtain the most effective use of the ***GARWOOD*** Rear Loading Waste Collection system, we strongly recommend the operator thoroughly read, understand and follow all the applicable information in this Manual, prior to and during the operation of this equipment.

Daily cleaning and strict adherence to the unit's routine maintenance schedules are major factors in keeping your unit in like-new condition. Ensuring both service personnel and operators become familiar with the information unique to this make and model of rear loading waste collection vehicle system will contribute to cost-effective operation along with many years of quality service.

Our goal at ***GARWOOD International Pty Ltd*** is to provide the best quality product with the best after sales service. Our aim is for 100% customer satisfaction. We are confident you will find this new rear loading waste collection vehicle to be the best built on the market, and it is backed by a Company with a customer service commitment that is second to none. If you require support or assistance please contact our service department.

Many improvements, modifications and updates to the ***GARWOOD*** waste collection systems have been conceived and driven by our customer base. If you have an idea or suggestion on how we might improve our products, let us know by calling our head office in Sydney on (02) 9756 3756 or alternatively send us an email to info@garwoodinternational.com.au.

Customer Assistance

GARWOOD International Pty Ltd is committed to providing customer satisfaction and maintains a full range of spare parts and accessories at our Wetherill Park, Sydney factory.

IF YOU NEED PARTS OR SERVICE, PLEASE CONTACT US AT:

Phone:	(02) 9756 3756
Fax:	(02) 9556 2031

Information to Assist Service

To ensure we can provide you with the best levels of service and accurate supply of parts or service, please have the following information ready when calling.

- System serial number (Located on left front of body)
- Type and serial numbers (VIN) for the chassis.
- Bin lifter serial number (Located on plate on bin lifter)

- The part number(s), description(s) and quantities required. (Please remember to tell us any relevant information such as the part is right or left, front or back.
- Dispatch instructions: Tell us how you would like to have your order sent:
  - Air Freight
  - Normal Freight
  - Overnight etc.
- What is the physical address for the parts to be sent.

For a replacement manual please quote the File Name: ***Operators Manual February 2018-04***

Every effort is made to send all in-stock parts on the day of order if placed before 12 noon. Orders received after this time are sent the next business day.

For your convenience, orders may be faxed at any time to the number listed above.

Warranty Information

Terms of Warranty

A. We will make good by repair, or at our option by the supply of a replacement, defects in goods manufactured by us, which under proper use, fair wear and tear excluded, appear in the goods within a period of 365 days after delivery date, and which arise solely from faulty design, materials or workmanship. In the case of goods manufactured or supplied thereof, **provided always that the defective items are delivered to our works at your expense.**

NOTE: "Proper Use" implies adequate maintenance i.e. lubrication and adjustments.

Liability under Warranty

B. Our liability under this clause shall be in lieu of any warranty or condition implied or imposed by law as to the quality of or imposed by law as to the quality of or fitness of any particular purpose or the goods and service as provided in part (A) hereof, we shall not be under any liability whether in contract, tort or otherwise in respect of defects in goods, delivered or for any injury, damage or loss resulting from such defects for from work done in connection therewith, and without derogating from the generality of the foregoing we shall not be liable for any damage for delay in delivery, breakdown or diminished performance of the goods or any form of consequential damage whatever.

IMPORTANT: Before any parts are returned for warranty credit, you must obtain **Return Authorisation** from an appropriate ***GARWOOD International Pty Ltd*** representative. When a return authorisation has been granted, the defective part **MUST** be returned to us. This process ensures efficient parts shipping and financial tracking.

ALL WARRANTY REPAIRS MUST BE AUTHORISED BY A GARWOOD INTERNATIONAL PTY LTD REPRESENTATIVE BEFORE ANY WORK CAN BEGIN.

All orders will be shipped COD unless prior arrangements have been made with our accounting department.

Shipments should be examined immediately for any shortage or damage. Please note any discrepancies in your order on the delivery docket **BEFORE** the parts are accepted from the carrier and notify ***GARWOOD International Pty Ltd*** immediately.

Should you require additional information regarding the service, maintenance, operation or troubleshooting of your rear loading waste collection system, you should contact us directly.

We at ***GARWOOD International Pty Ltd*** are fully committed to your complete satisfaction with our products and services. If you have suggestions for improvement of our service, please call us.

Disclaimer

All information provided in this manual has been presented in good faith. We have provided specifications and instructions we believe to be correct at the time of publication. Due to our policy of ongoing product development, ***GARWOOD International Pty Ltd***, its employees, suppliers, distributors and service providers accept no responsibility for omissions or errors that may have occurred in this manual.

Systems Included

This manual has been designed to provide information and resources for the following systems supplied by ***GARWOOD International Pty Ltd***.

1. BANTAM Rear Loader
2. COMPACT Rear Loader
3. POWAPACT Rear Loader
4. MAXIPACT Rear Loader

Due to ongoing product improvement ***GARWOOD International Pty Ltd*** reserves the right to change specification without further notice.

OWNER/VEHICLE INFORMATION SHEET

Delivery Information

Delivery Date: _____

Company Name: _____

Delivery Address: _____

Contact Name: _____

Contact Phone: _____

Vehicle Information

Cab/Chassis Make/Model: _____ _____

Chassis VIN: _____

Chassis Engine Number: _____

Body Serial Number: _____

Body Model and Size: _____

Hydraulic Pump Type: _____

Bin Lifter Serial Number: _____

Bin Lifter Make and Model: _____

List Options Fitted Below

Manufacturers Information

Manufacturer:	Garwood International Pty Ltd
Address:	3 Hexham Place, Wetherill Park NSW 2164
Postal:	
Phone:	(02) 9756 3756 Fax: (02) 9756 2031
Email:	info@garwoodinternational.com.au
Web:	www.garwoodinternational.com.au

CHAPTER 1 – SAFETY GUIDELINES

We have provided the following procedures as a guide to the safe and correct operation of the ***GARWOOD*** waste collection system referred to on the cover of this manual.

It is the responsibility of everyone to ensure the vehicle, operator and bystanders safety is maintained and monitored at all times.

The safe operation of the equipment relies on the adherence to all employer issued Occupational Health and Safety Guidelines and instructions, relevant State and Territory Occupational Health and Safety legislation, relevant State and Territory road laws in effect at the time and Normal duty of care responsibilities.

We strongly recommend that all operators, service personnel and supervisors read and understand the guidelines provided in this manual.

Pre-Start Checks

Conduct a visual inspection of the complete waste collection vehicle to ensure all doors, lifter systems, vehicle systems, including tyres and wheels are free from damage.

Check Vehicle fluid levels to reduce the potential for serious vehicle damage.

Check and adjust all mirrors to provide a clear view on both sides.

Check the correct operations of lights, indicators, stop lights and beacons.

Check and adjust the seat to provide a comfortable position whilst permitting easy access to all controls.

Perform any other Pre-Start Checks as may be required by your Company.

Report all faults with the vehicle to your supervisor, prior to starting your day.

GARWOOD STRONGLY RECOMMENDS THE SYSTEM SHOULD NOT BE OPERATED WITH FAULTY SAFETY SWITCHES OR DEVICES.

Operational Safety

Operating the Waste Collection Vehicle

Each driver, operator or assistant should be thoroughly instructed in the correct and safe operating procedure, and safety precautions to be exercised when working with or around the waste collection vehicle.

Only appropriately trained personnel should be permitted to operate the unit and a responsible person should be designated in the crew to be on alert for any misuse or improper operation of the system.

Operating the Refuse Hopper System

When loading refuse in the hopper area to be packed, be sure all refuse is completely inside the hopper before the start of the sweep and pack cycle. This will reduce the potential for injury or harm from broken glass, wood or other objects being ejected under pressure.

All persons should be instructed to stand clear of the hopper area when the packing cycle is being activated. This includes the operators and any bystanders who might be observing the operation.

Entering the Body or Tailgate

If for any reason, a person should have a need to enter into any portion of the tailgate assembly or the body of the unit, we recommend the following steps be undertaken: -

1. The ignition key should be removed from the vehicle.
2. All emergency stop button/s should be activated.
3. A person, not entering the vehicle cavities should be informed.
4. Provide a time estimate to this person on when you expect to be finished.
5. Any other steps as may be required by your Company.

These steps are intended to reduce the potential from being placed in a dangerous position should the vehicle be accidentally started and/or operated during the time the person is in harm's way.

Rear Tailgate is raised

When the tailgate assembly is in the raised position do not stand or permit anyone to stand beneath the tailgate.

If a person needs to walk underneath the raised tailgate for any reason, the safety props should be activated on the rear door lift rams.

Packing/Ejection Panel Obstruction

Do not permit refuse to collect behind the packing/ejection plate. This is not a common problem, but should be monitored to ensure maximum utilisation of the packing ability of the body can be realised.

This also reduces the potential of the possibility of refuse being broken during the retract cycle of the ejector plate and flying through the front opening on the body.

Maintenance and Service Adjustments

Only qualified mechanics should make adjustments to the hydraulic or electrical system of the body. The unit is tested and pre-set at the factory to provide the optimum service levels.

An inexperienced person may cause the engine speed to increase to provide better operational speed of the system. This will however lead to overheating of hydraulic fluids and premature wear and failure of system components.

CHAPTER 2 – OPERATING INSTRUCTIONS

General Information

The Garwood rear loader body has been designed for the collection of household, commercial and general waste. The body system is comprised of 4 major components: -

The Body

The rear loader body is a simple packing mechanism operated by manual or electric controls that activate a hydraulic system providing the power for packing, raising the tailgate and ejection of the load.

The system has been designed for simplicity and ease of use. With reasonable care and instruction, the operator should be capable of operating the unit in a safe and effective manner.

The body of the Garwood rear loader is designed to store waste that is collected from various locations and compacted, or pressed under some force, into the cavity on the vehicle.

The body capacity is designed to provide the maximum carrying capacity of truck system it is attached to. The Capacity of the body cavity, or load, can vary from day to day and is very dependent on the type of waste that is being collected.

The body design provides a storage area that reduces the potential for waste or associated liquids from escaping during the collection process and travel to the landfill or disposal station.

The Packer Panel

The packer panel is the large, horizontally, moving panel inside the body that enables the Garwood rear loader to capture and store the maximum loads possible.

This panel is extended to the rear of the body at the start of the collection process and as the amount of waste builds up during the day, the panel slowly retracts towards the front of the body. This slow process enhances the compaction rate of the system.

When the packer panel is fully retracted to the front of the body the system is full and needs to be emptied at the landfill or disposal station.

The packer panel then provides the forces necessary to empty or eject the waste.

Important: It is not recommended to "Back Pack" the truck, i.e. to drive the ejector out with the tailgate closed. This action may cause serious damage and will void warranty.

Tailgate Assembly

The tailgate assembly includes the rear door, Hopper and packer panel.

The rear door holds the collected waste inside the body as the vehicle collects waste.

The Hopper is the circular bowl across the rear of the vehicle that is the receptacle the garbage bin is emptied into.

The packer panel is the moving wall that squashes and packs the waste from the hopper into the body cavity.

The Bin Lifter System

The bin lifter system is the moving component at the rear of the vehicle that lifts and empties the Mobile Garbage Bin (MGB) into the hopper.

The Bin lifter can handle a wide range of different sizes and shapes of garbage bins.

The bin lifter is powered normally by hydraulics on the vehicle.

Overview

Outlined in the following sections are step by step instructions showing the proper sequence for packing, raising the tailgate and ejecting the load.

We have also included safety precautions that should be explained and demonstrated to each of the operators using this equipment.

If these instructions are followed, the system offers and safe, reliable unit for refuse collection and should provide many years of trouble free service.

Terms Explained

To help reduce misunderstanding and provide the maximum benefit from this manual we have included an explanation of the terms we use during the operation of the system. These terms are divided into two sections, Manual and Electric operations.

Some systems may have examples of both systems so we recommend you read both sections and familiarise yourself with their meanings.

General Terms

Term	Description
MGB	This is an industry abbreviation for the Mobile Garbage Bin
Refuse	This is another word for garbage.
Stream or Streaming	This term usually refers to waste that is sorted into different types, "Streams", such as recycling, composting etc.
General Waste	This term usually refers to waste that is not sorted or streamed for recycling etc.
Comingled	This term usually refers to waste that has mixed recyclable items. For example, paper, Carboard and Plastic containers.
Half Pack	Using the half pack system on the rear loader will allow the operator to cover the load in the hopper, without trying to move the waste into the body. This position provides the operator with a wind resistant cover for refuse in the hopper when the body is full and the vehicle needs to be emptied at land fill or transfer station.
Engaging (Engaged)	This term refers to making the PTO work on the vehicle. When the PTO is "Engaged", it means the hydraulics are now working.
Disengaging (Release)	This term refers to stopping the PTO working on the vehicle. When the PTO is "Disengaged", it means the hydraulics are not working.

Manual Systems

Term	Description
Push	When using hydraulic controls, the term push refers to pushing the lever or control away from your body.

Term	Description
Pull	When using hydraulic controls, the term pull refers to pulling the lever or control towards your body.
Depressing	Depressing is the term for pushing down, like putting your foot on the clutch pedal and pushing down.
Releasing	Releasing is the opposite to depressing, like lifting your foot off the clutch pedal.
Engine Ramp	Engine ramp is where the engine speed increases to a pre-set engine speed when required by the particular function.
P.T.O.	The PTO is the Power Take Off unit. In most cases this is mounted to the vehicle transmission and is operated via an electric switch mounted in the vehicle cabin.
Pump	The pump is the device that pushes, or pumps, hydraulic fluid around the system making the different operations possible. The pump used in the Garwood Rear Loading system is most commonly a "Gear Pump" A gear pump is a fixed displacement pump which can only pump a predetermined flow or oil, at a particular engine speed. EG. 35Litres at 1,000 RPM **NOTE:** Damage to the Gear pump can be caused by excessive engine speed. **NEVER REV THE ENGINE WITH THE PTO ENGAGED.**
Over Speed Protection	This system prevents the operator from accidentally over revving the engine when the PTO is engaged Over speed protection is normally activated by the truck manufacturer from within their Engine Control Unit (ECU).
Interlock (Safety)	The term interlock refers to a system or device that prevents operations from working unless certain conditions are met. **Example:** The vehicles transmission must be in neutral to make the PTO work.
Return to Neutral	This term refers to the control retuning to the original starting position automatically. **Example:** When releasing the lever on a hydraulic control valve the lever returns to the original position.

Electric Systems

Term	Description
Push	When using electric hydraulic controls, the term push refers to pushing the button or switch.
Rocker Switch	A rocker switch is a type of electrical switch that operates a function or control by being pushed on one side or the other.
Latching	Latching switches refer to a switch that remains in the position when pushed. **Example:** When you push a switch to turn on a light, the switch remains in the on position, and the light remain on until the switch is again pushed to switch the light off.
Momentary	Momentary switches refer to a switch that returns to neutral when released. **Example:** When you push a switch to sound a horn, the switch returns to the original position and the horn only sounds while the switch is held in the on position.
Rotary	A rotary switch moves in a circular direction. Some rotary switches can move in two directions, or in a complete circle. Rotary switches may be latching or momentary.
ON/OFF	An ON/OFF switch has only two positions. Either On or Off.
ON/OFF/ON	An ON/OFF/ON switch is normally in the OFF position in the central position. Pushing the switch in either direction will turn on or activate a device or control. ON/OFF/ON switches can be latching or momentary.
Proximity Switch	A proximity switch is a sensor able to detect the presence of nearby objects without any physical contact. The type of proximity switch on the Garwood Waste Collection Vehicle system will only detect metallic materials. I.E. Steel or metal.

Power Take Off Operations

Power Take Off (PTO)

In order to provide hydraulic power to operate the system a PTO is mounted the vehicle.

In the majority of systems, the PTO is mounted direct to the vehicle transmission and supplies the hydraulic power for the unit with engaged or switched on.

In a small number of systems, the PTO may be mounted directly to an engine outlet which means the PTO is working, or ready to work at any time the engine is running.

Engaging the PTO – Manual Transmission

If your truck is fitted with a manual transmission you should: -

1. Bring the vehicle to a complete stop.
2. Put the vehicle transmission into neutral.
3. Apply the handbrake or park brake.
4. Depress the clutch and hold it fully depressed.
5. Count to 5 slowly and Push the PTO button to engage the PTO.
6. Slowly release the Clutch and the PTO should now be engaged.
    a. The engine speed may increase slightly, and,
    b. An indicator light on the dash may light, and,
    c. A pilot light in the PTO switch may also illuminate.

Engaging the PTO – Automatic Transmission

If your truck is fitted with an automatic transmission you should: -

1. Bring the vehicle to a complete stop.
2. Put the vehicle transmission into neutral.
3. Apply the handbrake or park brake.
4. Push the PTO button to engage the PTO.
    a. The engine speed may increase slightly, and,
    b. An indicator light on the dash may light, and,
    c. A pilot light in the PTO switch may also illuminate.

Releasing the PTO – Manual and Automatic Transmission

To release the PTO on your vehicle you should: -

1. Switch the PTO to the Off position.
    a. The engine speed should return to idle, and,
    b. The indicator light on the dash will go out, and,
    c. The pilot light in the PTO switch will go out.

NOTE. When releasing the PTO in a manual transmission you should use the clutch to release the load on the transmission which will make the PTO release more readily.

Automated Manual Transmission (AMT)

The Automated Manual Transmission is a special, computer controlled, manual transmission that is now fitted to a growing number of vehicles available in Australia.

Engaging the PTO

To engage the PTO on the AMT transmission it is similar to the automatic transmission system.

1. Bring the vehicle to a complete stop.

2. Put the vehicle transmission into neutral
3. Apply the handbrake or park brake,
4. Push the PTO button to engage the PTO.
    a. The engine speed may increase slightly, and,
    b. An indicator light on the dash may light, and,
    c. A pilot light in the PTO switch may also illuminate.

Releasing the PTO

To release the PTO on your vehicle you should: -

1. Switch the PTO to the Off position.
    a. The engine speed should return to idle, and,
    b. The indicator light on the dash will go out, and,
    c. The pilot light in the PTO switch will go out.
2. Wait until the vehicle returns to normal operation with all the above conditions met.

NOTE: The AMT system requires that all the release conditions are met prior to driving off. Failure to follow these steps may lead to issues with the transmission not functioning correctly.

Engine Driven PTO System

If your vehicle is fitted with a "Direct from Engine" constant drive PTO follow the instructions below: -

Engaging the PTO

To provide hydraulic power to the systems: -

1. Switch on the electrical master switch fitted into the dash panel.
    a. A light will illuminate to indicate that hydraulic valve is active and the oil flow is being supplied to the body controls.

Releasing the PTO

After operation of the body or ancillary equipment: -

1. Switch off the control before driving to the next work area.
    a. The PTO pilot light will go out

Caution: *Leaving the control switch active may lead to overheating of the hydraulic oil and lead to premature failure of some components*.

Engine Ramping

This is only required on vehicle where there is insufficient engine power to operate the compactor functions correctly at idle.

No operator intervention is required for Engine Ramping. The system will send a signal to system for engine ramping if required. When the function is finished the engine, speed will return to normal speed with the PTO engaged.

The Engine Ramping is pre-set at the factory to provide appropriate oil flow and speed of operations on the system. Modifying this setting may lead to warranty issues, overheating of the hydraulic oil and premature failure of components.

Changing Engine Ramping Speeds

It is not recommended that the engine ramping speeds be modified.

If it is determined that the engine speed requires modifications, the truck manufacturer will need to be involved in most cases as this requires Engine Control Unit modifications.

Changes to Engine Ramping Speeds is outside of normal warranty work and may incur additional costs.

Manual System Operations

Safety System – All Functions

If, at any time the operator identifies a safety concern or operational issue, pushing the Emergency stop button will immediately stop all functions.

NB: ALL EMERGENCY STOP BUTTONS MUST BE IN THE "SAFE MODE" BEFORE THE HYDRAULICS WILL OPERATE.

UNDER NO CIRCUMSTANCES SHOULD ANYONE PLACE THEIR HANDS, ARMS OR ANY PART OF THEIR BODY NEAR THE HOPPER DURING A COMPACTION CYCLE.

IT IS THE RESPONSIBILITY OF THE PERSON OPERATING THE VALVE CONTROL LEVERS TO ENSURE EVERYONE REMAINS CLEAR OF THE HOPPER DURING A COMPACTION CYCLE.

It is also possible to reverse the cycle, for safety reasons, by operating the levers in the reverse, or opposing, directions as described in the following sections.

Ejection Panel System

Prior to commencement of waste collection operations correct placement of the ejector panel should be undertaken. The controls for this are situated at the front of the body, normally on the left-hand side.

Using this control at position move the ejector panel to towards the rear of the body cavity. Stop and release the control when the ejector panel is approximately 300 to 400 mm from the back end of the body.

The system is now ready to receive waste through the normal loading practices.

As the waste is loaded and packed through the rear hopper the ejector panel will progressively retreat back along the body. This system is automatic and needs not attention from the driver.

Bin Lifter System

The Garwood Waste Collection Vehicle System can be fitted with various waste container lifting devices, or Bin Lifters. Generally, all Bin lifter systems operate in the same manner as described below.

- Pulling the lever on the bin lifter control will cause the bin lifter to rise.
- Pushing the lever on the bin lifter control will cause the bin lifter to lower.
- Releasing the lever on the bin lifter control will cause the bin lifter to stop moving and remain in that position until the lever is again activated.
- When the bin lifter raises to a pre-set height the system will automatically operate the bin clamping system and lock the bin onto the bin lifter.
- When the bin lifter lowers to a pre-set height the system will automatically operate the bin clamping system and release the bin clamp allowing the operator to remove the bin when it is back on the ground.

Empty a Wheelie Bin

CAUTION: ***You should keep a lookout for other people near the system to reduce the potential for injuries during operations of the bin lifter system***.

To empty the refuse from a wheelie bin, you should: -

1. Pull the lever to raise the bin lifter from the travel position to a height that allows the front lip of the wheelie bin to be positioned over the comb.
2. Push the wheelie bin into position on the bin lifter comb,
    a. Ensuring the fingers on the comb line up with the sections of the wheelie bin.
3. Pull the lever to raise the wheelie bin until the bin lifter reaches the full tipping height and stops automatically.
    a. At a pre-set height the bin lifter may slow while the system closes the bin clamp to hold the bin in position on the bin lifter.
4. Release the Bin lifter control lever.

To lower the wheelie bin, you should: -

1. When all the waste in the bin has emptied into the loading hopper,
2. Push the bin lifter control lever, and the bin lifter will lower the bin back to the ground level.
    a. At a pre-set height the bin lifter may slow while the system opens the bin clamp to release the bin from the bin lifter.
3. When the bin lifter has lowered to a point where you can remove the bin, simply release the control lever.
    a. If there are no additional bins for collection from this location, hold the lever until the bin lifter returns to the travel position in the fully lowered state.
4. Remove the wheelie and return to collection point.

CAUTION: ***You should always lower the bin lifter to the travel position before moving the vehicle.***

Arrestor Bar

The Arrestor bar, shown at left is designed to stop or arrest the movement of the wheelie bin when it reaches the top of the bin lifter movement.

This reduces the potential for damage to the wheelie bin and assists in shaking loose any material that might be stuck in the bin.

The Arrestor bar can be moved up or down via the handle that is located on the side of the hopper window, normally on the left-hand side.

The Arrestor bar positioning is a predetermined height and this will be guided by the locking plate the handle is fitted fit on the particular unit.

Figure 1 Rear Loader Tailgate (General)

The electric unit uses buttons to change this height and moves the bar to a predetermined position automatically.

Packer System

The packer system on the GARWOOD R/L UNITS comprises of two separate moving

Components:

1. The packer blade, and,
2. The sweep panel.

The two systems can be operated independently or as a single system.

To operate the packer system, push the control lever handle and release. The handle will lock into place and the packer blade will start to move down to collect the waste and move it into the body cavity.

The system will automatically release the lever when the packing cycle is complete.

Half Pack System

The half pack system is a standard inclusion on Australian and Pacific Island systems.

To operate the packer system in Half Pack mode, you should: -

1. Push both handles forward, the levers will lock into the active position.
2. The first, outer lever, will return to the neutral position once the pack blade has descended fully.
3. The second, inner lever, will return to the neutral position once the sweep panel has lowered to cover the hopper area.
4. Pull both levers, the levers will lock into the active position.
5. The second, inner lever, will return to the neutral position once the sweep function is complete.
6. The first, outer lever, will return to the neutral position once the complete pack blade movement is completed.

Emptying the System

When the body is completely loaded to the point that the packing mechanism will not complete its cycle, and, the ejector panel is fully retracted towards the front of the body, the unit is ready for unloading.

CAUTION: NEVER STAND OR PERMIT ANYONE TO STAND UNDER THE RAISED TAILGATE ASSEMBLY, UNLESS THE RAM SUPPORT STANDS ARE CORRECTLY LOCATED AND LOCKED INTO PLACE ON BOTH SIDES OF THE VEHICLE.

To empty or unload the system, you should: -

1. Reverse up to the unloading area as determined by the site operations.
2. Check for appropriate clearance requirements,
    a. Behind the vehicle, to ensure sufficient area for the waste to be ejected from the vehicle, and,
    b. Above the vehicle, to ensure sufficient clearance is available to fully open the rear tailgate assembly to allow for waste ejection.
3. Engage the PTO, using the correct method for your vehicle.
4. Push the lever marked “Tailgate”, and hold while,
    a. The tailgate automatically unlocks, and,
    b. The tailgate opens completely until the hydraulic rams are fully extended.
5. Push the lever marked “Eject” and hold the engine advance button, if fitted, to increase the engine speed to a pre-set limit.

6. Hold the lever in this position until the ejection panel has travelled completed to the rear of the body.
7. Release the lever and the engine advance button.
    a. The ejection panel will stop moving and remain in that position, and,
    b. The engine speed will return to the idle speed.
8. Return the ejection panel to the start position, approximately 300 to 400MM from the rear of the body ready to start your next loading process.
9. When the unloading is complete, **CHECK THE REAR DOOR SEAL IS FREE FROM OBJECTS, DIRT AND MATTER THAT MAY CAUSE DAMAGE.**
10. Lower the tailgate assembly by pulling the lever marked, "Tailgate" and hold while,
    a. The tailgate lowers fully, and,
    b. The tailgate locks are correctly engaged.
11. Release the PTO, using the correct method for your vehicle.

N.B. DO NOT DRIVE THE VEHICLE WITH THE TAILGATE IN THE RAISE POSITION. SERIOUS DAMAGE TO THE TAILGATE LIFT CYLINDERS MAY RESULT. YOU WILL ALSO VOID WARRANTY ON YOUR SYSTEM.

Refuse Prevents Rear Door Closing

In some locations it may not be possible to place the vehicle in a position where the load ejects into a pit where the load will clear the rear of the vehicle.

N.B. IT IS VERY IMPORTANT TO ENSURE THERE ARE NO OBJECTS CAUGHT IN THE REAR DOOR SEAL.

When you check the rear of the body prior to closing the rear door and you notice the waste is piled up behind the vehicle and still blocking the back to the vehicle, you should: -

1. Leave the ejector panel fully extended to ensure all refuse is ejected from the body cavity.
2. Lower the rear tailgate assembly to approximately half way.
3. Slowly move the vehicle forward until it is clear of the waste pile.
4. Check the area at the rear of the vehicle is clear from obstruction.
5. Retract the ejector panel to the start position of approximately 300 to 400MM from the rear of the body.
6. Close and lock the rear tailgate assembly as per normal.

Electric System Operations

If your system is fitted with Electric controls for the operations of the bin lifter please refer to the section on Electric Control Symbols on page 43, for information on the meaning of each symbol.

If you are unsure of the terms used in this section, refer to Electric System Terms on page 16 for a brief explanation on how they are used in this manual.

Ejection Panel System

Prior to commencement of waste collection operations correct placement of the ejector panel should be undertaken. The controls for this are fitted to the front of the body, normally on the left-hand side. Controls are shown below at right.

Using the rotary button turn and hold the button in the correct position to move the ejector panel towards the rear of the body cavity. Release the button when the panel is approximately 300 to 400 mm from the back end of the body.

The system is now ready to receive waste through the normal loading process.

As waste is loaded and packed through the rear hopper the ejector panel will progressively retreat back along the body. The system is automatic and needs no action from the operator.

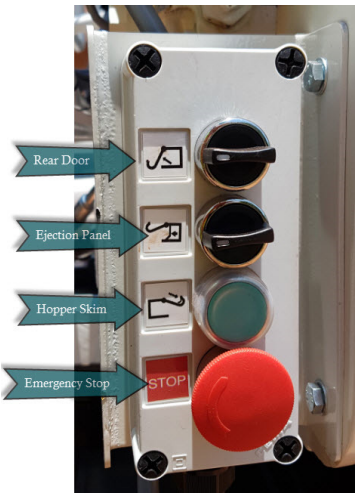


Figure 2 Front Control Box

Bin Lifter System

The Garwood Waste Collection Vehicle System can be fitted with various waste container lifting devices, or Bin Lifters. Generally, all bin lifter system will operate in a similar manner as described below.

Single Switch Lifters

- Pushing and holding the bin lifter up button will cause the bin lifter to rise.
- Pushing and holding the bin lifter down button will cause the bin lifter to lower.
- Releasing the button on the bin lifter control panel will cause the bin lifter to stop moving and remain in that position until the button is pressed again.
- When the bin lifter raised to a pre-set height the system will automatically operate the bin clamping system and lock the bin onto the bin lifter.
- When the bin lifter lowers to a pre-set height the system will automatically operate the bin clamping system and release the bin clamp allowing the operator to remove the bin when it is back on the ground.

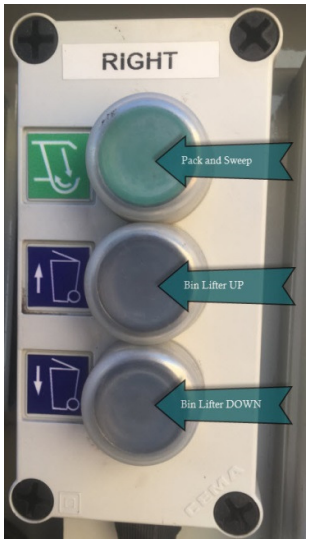


Figure 3 Bin Lifter Controls

Dead Man Switch System

In some system there is an additional safety switch that works in conjunction with the bin lifter up and down buttons.

This is called the “Deadman Switch.”

It is normally fitted to ensure the operator uses both hands to operate the bin lifter, preventing them from being in the lifter area should something fall from the MGB as it is being lifted and emptied.

To operate the system fitted with a dead man switch: -

- You must push and hold the dead man switch when using the bin lifter up or bin lifter down buttons.
- Failure to hold both buttons will cause the bin lifter system to stop moving and remain in that position.

Figure 4 Deadman Switch

Auto Compact System

Another time saving system that can be fitted to the electric REAR LOAD system is the Auto Compact system.

When this system is active, each time you raise and then lower the bin lifter, the sweep and pack panel will perform one complete sweep of the hopper.

Empty a Wheelie Bin

CAUTION: ***You should keep a lookout for other people near the system to reduce the potential for injuries during operations of the bin lifter system***.

To empty the refuse from a wheelie bin, you should: -

1. Push the bin lifter up button to raise the bin lifter from the travel position to a height that allows the front lip of the wheelie bin to be positioned over the comb.
2. Push the wheelie bin into position on the bin lifter comb.
    a. Ensure the fingers on the comb line up with the sections on the wheelie bin.
3. Push the up button to raise the wheelie bin until the bin lifter reaches the full tipping height and stops automatically.
    a. At a pre-set height the bin lifter may slow while the system closes the bin clamp to hold the bin in position.
4. Release the button when the lifter has reached the top of it's travel.

To lower the wheelie bin, you should: -

1. When all the waste in the bin has emptied into the loading hopper.
2. Push the bin lifter down button, and the bin lifter will lower the bin back onto the ground
    a. At a pre-set height the bin lifter may slow while the system opens the bin clamp to release the bin.
3. When the bin lifter has lowered to a point where you can remove the bin, simply release the button.
    a. If there are no additional bins for collection at this location, hold the button until the bin lifter returns to the travel position in the fully lowered state.
4. Remove the wheelie bin and return it to the collection point.

CAUTION: You should always lower the bin lifter to the travel position before moving the vehicle.

Arrestor Bar

The Arrestor bar, shown at left is designed to stop or arrest the movement of the wheelie bin when it reaches the top of the bin lifter movement.

This reduces the potential for damage to the wheelie bin and assists in shaking loose any material that might be stuck in the bin.

The electric unit uses buttons to change this height and moves the bar to a predetermined position automatically.

Figure 5 Rear Loader Tailgate (General)

Packer System

The packer system on the GARWOOD R/L UNITS comprises two separate moving

Components:-

1. The Packer Blade, and,
2. The Sweep Panel.

The two systems can be operated independently or as a single system.

To operate the packer system, push and release the Sweep and Pack button once. The system will automatically perform a full pack and sweep operation and return the system to the original position.

Half Pack System

The half pack system is a standard inclusion on the Australian and Pacific Island systems.

To operate the packer system in half pack mode, you should: -

1. Switch the half pack switch to "Half Pack" mode.
2. Pushing the sweep and pack button will cause the sweep panel to open and the packer blade to travel down.
3. When the packer blade reaches the end of its travel, the system will stop.

This process will place the sweep panel over any refuse still in the loading hopper and reduce the potential for waste to fall out or be blown around during travel.

To finish the pack and sweep process, you should: -

1. Press and release the pack and sweep button again and the system will complete the sweep and pack.

NOTE: *There is no requirement to change the button back to full pack at any time. The system will operate in Half-pack without problems for the full day of collection.*

NOTE: When you attempt to perform a hopper skim during unloading the sweep panel may not perform a full sweep of the hopper.

Emptying the System

When the body is completely loaded to the point the packing mechanism will not complete its cycle, and, the ejector panel is fully retracted towards the front of the body, the unit is ready for unloading.

CAUTION: NEVER STAND OR PERMIT ANYONE TO STAND UNDER THE RAISED TAILGATE ASSEMBLY, UNLESS THE RAM SUPPORT STANDS ARE CORRECTLY LOCATED AND LOCKED INTO PLACE ON BOTH SIDES OF THE VEHICLE.

To empty or unload the system, you should: -

12. Reverse up to the unloading area as determined by the site operations.
13. Check for appropriate clearance requirements,
    a. Behind the vehicle, to ensure sufficient area for the waste to be ejected from the vehicle, and,
    b. Above the vehicle, to ensure sufficient clearance is available to fully open the rear tailgate assembly to allow for waste ejection.
14. Engage the PTO, using the correct method for your vehicle.
15. Turn the Tailgate button in the up position, and hold while,
    a. The tailgate automatically unlocks, and,

b. The tailgate opens completely until the hydraulic rams are fully extended.

16. Turn the Ejection Panel button to extend and hold. The engine advance will automatically increase the engine speed to a pre-set limit.
17. Hold the ejection panel button in this position until the ejection panel has travelled completed to the rear of the body.
18. Release the button and the engine speed will return to normal.
    a. The ejection panel will stop moving and remain in that position, and,
    b. The engine speed will return to the idle speed.
19. Return the ejection panel to the start position, approximately 300 to 400MM from the rear of the body ready to start your next loading process.
20. When the unloading is complete, **CHECK THE REAR DOOR SEAL IS FREE FROM OBJECTS, DIRT AND MATTER THAT MAY CAUSE DAMAGE.**
21. Lower the tailgate assembly by turning the Tailgate button and hold while,
    a. The tailgate lowers fully, and,
    b. The tailgate locks are correctly engaged.
22. Release the PTO, using the correct method for your vehicle.

N.B. DO NOT DRIVE THE VEHICLE WITH THE TAILGATE IN THE RAISE POSITION. SERIOUS DAMAGE TO THE TAILGATE LIFT CYLINDERS MAY RESULT. YOU WILL ALSO VOID WARRANTY ON YOUR SYSTEM.

Refuse Prevents Rear Door Closing

In some locations it may not be possible to place the vehicle in a position where the load ejects into a pit where the load will clear the rear of the vehicle.

N.B. IT IS VERY IMPORTANT TO ENSURE THERE ARE NO OBJECTS CAUGHT IN THE REAR DOOR SEAL.

When you check the rear of the body prior to closing the rear door and you notice the waste is piled up behind the vehicle and still blocking the back to the vehicle, you should: -

7. Leave the ejector panel fully extended to ensure all refuse is ejected from the body cavity.
8. Lower the rear tailgate assembly to approximately half way.
9. Slowly move the vehicle forward until it is clear of the waste pile.
10. Check the area at the rear of the vehicle is clear from obstruction.
11. Retract the ejector panel to the start position of approximately 300 to 400MM from the rear of the body.
12. Close and lock the tailgate assembly as per normal

CHAPTER 3 – CONTROL SYSTEM SYMBOLS

This section provides a description for the symbols used on the Garwood Waste Collection Vehicles.

Depending on the type of system supplied, some symbols and switches may not be present on your vehicle.

Note: The tables below are divided into two areas, in cab switches and external switches. In the case of the cab switch operating a body system, the graphic may be different due to difficulty sources appropriate switch graphics

In Cab Switches

The symbols shown on the following pages are indicative of the switches fitted into the vehicle cabs.

Symbol	Description
	**Power Switch (System)** Switch Type: Rocker Operation: Latching Positions: ON/OFF Supplies electrical power to the systems on the Garwood Waste Collection System. Also referred to as Master Switch
	**Power Take Off (PTO)** Switch Type: Rocker Operation: Latching Positions: ON/OFF Engages and Releases the PTO on the system. Refer to page 17 for information on how to correctly operate the PTO system on your vehicle.
	**Revolving Light/s** Switch Type: Rocker Operation: Latching Positions: ON/OFF Operates the Revolving lights on the system.

Symbol	Description
	**Work Light/s** Switch Type: Rocker Operation: Latching Positions: ON/OFF Operates the work lights on the system. **NOTE:** Multiple work lights fitted to the system may have multiple switches.
	**Ejector Panel** Switch Type: Rocker Operation: Momentary Positions: ON/OFF/ON Press and hold the top of the switch to extend the ejection panel. Press and hold the bottom of the switch to retract the ejection panel Release the switch and ejection panel stops movement.
	**Hopper Clear** Switch Type: Rocker Operation: Momentary Positions: ON/OFF Press and release to clear the hopper when the rear tailgate assembly is raised. Provides a cleaning sweep of the hopper to remove any waste.
	**Tailgate Open/Close** Switch Type: Rocker Operation: Momentary Positions: ON/OFF/ON Opens and closes the rear tailgate assembly. Press and hold the top of the switch to open the tailgate. Press and hold the bottom of the switch to close the tailgate.
	**Dash Warning Lights** Switch Type: Pilot Light Operation: Light only Top light operates when the alarm button is pressed at the rear of the vehicle. Audible Alarm will sound as well. Bottom light indicates the tailgate assembly is not fully closed and locked.

External Switches – General

Symbol	Description
	**Emergency Stop** Switch Type: Plunger Operation: Latching Positions: ON/OFF The emergency stop button immediately stops all functions on the Garwood Waste Collection Vehicle System.

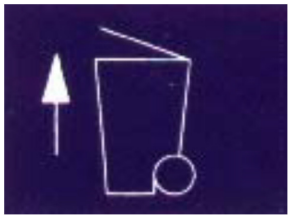
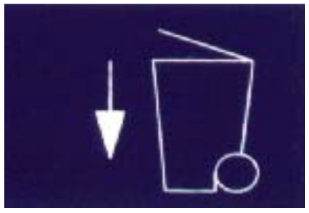
The Emergency Stop button may be located in multiple positions on the vehicle.
All Emergency Stop buttons must be in the "Safe Mode", for the system hydraulics to work.

External Switches – Front of Body

The symbols and switches shown below are located in a switch panel normally mounted on the left-hand front of the body.

Symbol	Description
	**Tailgate Open/Close** Switch Type: Rotary (Black) Operation: Momentary Positions: ON/OFF/ON Opens and closes the rear tailgate assembly
	**Ejection Panel** Switch Type: Rotary (Black) Operation: Momentary Positions: ON/OFF/ON Extends and retracts the ejection panel.
	**Hopper Skim** Switch Type: Push Button (Black) Operation: Momentary Positions: ON/OFF Operates the hopper skim when the tailgate assembly is in the fully raised position.

External Switches – Rear of Body

Symbol	Description
	**Auto Compaction Start** Switch Type: Rotary (Green – Pilot Light) Operation: Momentary Positions: ON/OFF Activates the Auto Compaction System. When the bin lifter lowers after tipping an MGB, the compaction system does a full sweep to empty the loading hopper.
	**Bin Lifter Up** Switch Type: Push Button (Black) Operation: Momentary Positions: ON/OFF Push and hold to raise bin lifter. Bin lifter stops moving when button is released. **N.B.** May incorporate a Deadman Switch.
	**Bin Lifter Down** Switch Type: Push Button (Black) Operation: Momentary Positions: ON/OFF Push and hold to lower bin lifter. Bin lifter stops moving when button is released. **N.B.** May incorporate a Deadman Switch.
	**Dead Man Switch** Switch Type: Push Button (Black) Operations: Momentary Positions: ON/OFF Push and hold this button in conjunction with the bin lifter up or down button to operate the bin lifter system. **N.B.** May be fitted as a safety interlock option.
	**Rescue Switch** Switch Type: Push Button (Yellow) Operations: Momentary Positions: ON/OFF Operates when Emergency Stop button is activated to reverse the sweep and pack operations. Can be used to release system when jammed or in over pressure situation.

Symbol	Description
	**Operator Alarm** Switch Type: Push Button (Black) Operations: Momentary Positions: ON/OFF Operator pushes to send signals to driver in cab. Operates an audible alarm and pilot light in cab.
	**Sweep and Pack** Switch Type: Push Button (Green) Operations: Momentary Positions: ON/OFF Push to operate pack and sweep blade. Push and release will automatically do a full hopper clear.
	**Emergency Stop** Switch Type: Plunger (Red) Operations: Latching Positions: ON/OFF Push to stop all hydraulic functions. Turn clockwise to release. **N.B.** The Rescue switch is the only function working when active.
	**Half Pack** Switch Type: Rotary (Black) Operations: Latching Positions: ON/OFF Changes the mode of the sweep and pack panel from full hopper clear to Hopper cover only. **N.B. May interfere with hopper skim when rear door is open**
	**Hopper Skim** Switch Type: Push Button (Blue) Operations: Momentary Positions: ON/OFF Causes the sweep panel to operate at any time during the pack and sweep operations. Can be used to clear the loading hopper in stages.

Symbol	Description
	**Bin Arrestor Bar** Switch Type: Rotary (Black) Operations: Latching Positions: ON/OFF Changes the height of the bin arrestor bar to suit the size of the MGB's being loaded.
	**Auto Bin Lift – Option** Switch Type: Push Button (Green) Operations: Momentary Positions: ON/OFF Press and release button to activate the automatic bin detector system on the Bin lifter.
	**Auto Bin Lift – Pilot Light – Option** Switch Type: Pilot Light (Green) Positions: ON/OFF Green pilot light turns on when the automatic bin detector system is active.
	**Inside Bin Wash – Option** Switch Type: Push Button (Blue) Operations: Momentary Positions: ON/OFF Push and hold to operate the bin wash jet stream on the inside of the loading hopper.
	**Outside Bin Wash – Option** Switch Type: Push Button (Blue) Operations: Momentary Positions: ON/OFF Push and hold to operate the bin wash jet stream on the outside of the loading hopper.

CHAPTER 4 – OPTIONAL EQUIPMENT

High Pressure Washing System

The high pressure washing system consists of: -

1. Hydraulically driven water pump with pressure settings of up to 1,500 PSI and flow rates of approximately 9 litres per minute.
2. Aluminium water reservoir mounted to the chassis rails of the vehicle. Capacity of this tank varies with customer requirements, available space on the vehicle chassis.
3. Retractable high-pressure hose reel, mounted to the vehicle chassis.
4. Trigger operated Gun/Lance attached to the high pressure hose, and secured in a holder fitted to the vehicle chassis.
5. Optional detergent or disinfectant supply can also be added to the system.

Operating the HP Washing System

To operate the system correctly: -

1. The vehicle engine must be running.
2. The vehicle transmission must be in neutral.
3. The vehicle handbrake or park brake must be applied.
4. The PTO system must be engaged. Refer to page 17 for information on how to correctly engage the PTO system on your vehicle type.
5. Using the Engine Idle Speed Controller fitted to your vehicle, advance the engine speed to 1,000 RPM.
6. Remove the Washer Gun/Lance from its securing system.
7. Ensure the hose reel can turn freely to release hose as required.
8. Operate the hydraulic valve marked “Water Blaster.”
9. Pulling the trigger on the Washer Gun/Lance will start the high-pressure water stream.

WARNING: SYSTEM DAMAGE MAY RESULT IS THE HIGH-PRESSURE PUMP IS PERMITTED TO RUN FOR LONGER THAN 30 SECONDS WITHOUT THE TRIGGER BEING ACTIVATED.

N.B. Hold the pressure washer lance securely before pulling the trigger.

CAUTION: NEVER DIRECT THE HIGH-PRESSURE WATER STREAM AT ANY PERSON, ELECTRICAL CONTROL BOXES ON THE VEHICLE, OR FRESHLY PAINTED SURFACES.

Stopping the HP Washing System

To correctly stop and store the system: -

1. Close the hydraulic valve marked “Water Blaster”
2. Release the gun/lance trigger after all pressure in the hose has been drained.
3. Reel the hose back into the hose reel.
4. Store and secure the Gun/Lance securely
5. Switch off the Engine Idle Speed Controller.
6. Disengage the PTO.

Maintenance on HP Washing System

Maintenance for the High pressure washing system is simple and easy.

1. Check water levels in reservoir – NEVER ALLOW THE PUMP TO RUN DRY.

2. Check oil levels within the pump system at least monthly if not used and more often if used frequently.
3. Inspect and clean the filter to ensure no blockages occur in the line.
4. Inspect hose for any cuts, nicks, abrasions or kinks. Replace hose if required.

Your high pressure washing system should provide a long and trouble-free service life if maintained and service regularly.

If you do require parts of service please contact or service centre on (02) 9756 3756

Suction Unit

The Suction Unit consists of: -

1. Hydraulically driven high-speed impeller fan.
2. Pick up hose and nozzle
3. Delivery hose into the body cavity of the Garwood Waste Collection Vehicle.

Operating the Suction Unit

To operate the Suction unit correctly: -

1. The vehicle engine must be running.
2. The vehicle hand brake or park brake must be applied.
3. The vehicle transmission must be in neutral.
4. The vehicle PTO must be engaged. Refer to page 17 for information on how to correctly engage the PTO system on your vehicle type.
5. The ejection panel should be fully retracted to the front wall of the system.
6. The Compactor mechanism should be in the fully packed position to ensure waste remains in the body cavity.
7. Connect the hoses and preferred suction ends to the system.
8. Operate the hydraulic valve marked "Suction Unit." This is a detent type valve and will remain in the "On" position until released.
9. Using the Engine Idle Speed Controller fitted to your vehicle, advance the engine speed to 1,000 RPM.
10. Use the hose system to collect waste and have it deposited in the body cavity.

N.B. The ejection panel must be fully retracted to ensure the waste material collected with the suction unit goes into the body cavity and not behind the ejection panel.

Stopping the Suction Unit

1. Switch off the Engine Idle Speed Controller and allow the engine to return to Idle.
2. Disengage the PTO.
3. Disconnect the hose and preferred suction ends.
4. Store hoses and suction tools correctly.

Maintenance on the Suction Unit

Maintenance on the suction unit is simple and easy.

1. Check the hose is in good condition without holes, tears, kinks etc.
2. Grease the bearing block for the fan at least monthly, or more often if the system is used frequently.
3. Monitor the system for hydraulic leaks etc.

Your high pressure washing system should provide a long and trouble-free service life if maintained and service regularly.

CHAPTER 5 – OPERATIONS AND RISK ASSESSMENT

Important Information

BEFORE OPERATING THE REAR LOADING REFUSE COMPACTOR, THE FOLLOWING IMPORTANT INFORMATION SHOULD BE STUDIED BY ALL OPERATORS.

During the operation of the equipment, please ensure that all of the following instructions are adhered to: -

- ✓ Understand and obey all safety Instructions and Safety Labels.
- ✓ Understand the unit's correct operational procedures.
- ✓ Understand the Function and Operation of all Safety Equipment.
- ✓ Ensure **NO** operator is under the influence of Alcohol or Drugs.
- ✓ Be aware that **NO** bystanders are near the unit whilst it is being operated.

Safety Restrictions

Before using the equipment, all personnel should become familiar with the Correct and Safe Operation of all systems fitted to the equipment.

Safety is the PRIME RESPONSIBILITY for Each and Every Operator.

Adhere to all Safety Instructions and Labels.

Your appropriate Attention should be given to the following: -

- ☆ Please always consider your own safety and well as fellow workers and bystanders.
- ☆ Ensure that **NO** bystanders are around the unit when it is being emptied.
- ☆ Operations should only occur while you are in sight of your driver to reduce the potential for injury caused by confusion.
- ☆ Do not attempt to clear an object from the mechanism unless it is safe to do so.
- ☆ Under **NO** circumstances should you place hands or limbs near the container lifter whilst it is operating.
- ☆ Do not enter the hopper area unless the engine is switched off,
  - The ignition key has been removed, and
  - All Emergency stop buttons activated.
- ☆ Do not run across the road in front of the vehicle.
- ☆ Make sure the area is clear before raising and lowering the tailgate.
- ☆ When operating the Compactor always shift the transmission into Neutral and apply the handbrake.
- ☆ Wash the Compactor unit every day.
- ☆ Do not walk under the raised tail gate unless it is supported by the correct safety props.

Hazard and Risk List

This list of Hazards and Risks considers all risks and hazards which, at the time of printing, are known in the field of waste collection vehicle operation.

Not mentioned are risks and hazards due to Vehicle Chassis, Public Traffic, General Misuse, Hazards arising from the type of waste collected or loaded into the rear compactor vehicle such as Toxic of Flammable materials.

Notes:

1. All Risks shown in Column "Risk" are related to operators standing on the ground or the rear steps of the Compactor.
2. The term "Trapping" includes Crushing and/or Shearing actions.
3. This Hazards and Risks list should be used in conjunction with your Company policies and identified Work Practices.
4. Enquiries and further clarification should be directed to your nominated Workplace Health and Safety Representative.

1. Trapping/Hitting

No.	Risk	Risk Area	Hazard	Injury	Type
1.1		Compactor System	Falling into Hopper during operation Operators hand, arm or foot caught by waste being compacted	Injuries by crushing operator Damage to limb and/or body	Fatal Serious to Fatal
1.1.1		Static Body	Trapping between Compaction mechanism and hopper floor or rave rail. Trapping between compaction mechanism and hopper floor during cleaning cycle when tailgate is slightly raised.	Injuries caused by crushing operator. Damage to hand or arm.	Serious to Fatal Minor to Serious
1.1.2		Body	Trapping between tail gate and body (not using props during routine maintenance)	Damage to limb or body.	Minor to Serious
1.2		Discharge System	Trapping between tail gate and body when tail gate is being lowered.	Injuries by hitting or crushing of operator.	Serious to Fatal
			Cleaning of waste from the vehicle when the compactor mechanism is in operation.	Damage to limb	Serious
			Crushing of or shear trap when behind or in front of the ejection blade whilst discharging mechanism is moving.	Damage to limb.	Serious to Fatal
			Failure of System controls raising or lowering tailgate.	Damage to limb.	Serious to Fatal

No.	Risk	Risk Area	Hazard	Injury	Type
			Broken locks or hinges causing unintentional movement of tailgate.	Injuries due to hitting of operator.	Minor to Serious
1.3		Lifting Device	Trapping between lifting device or waste container and ground during lowering operation.	Injury by crushing operators' foot.	Minor to Serious
			Trapping between lifting device and tailgate.	Injury to hand or head.	Serious to Fatal
			Trapping between parts of the lifting device.	Injury to hand.	Minor to Serious
			Trapping between waste container and lifting device.	Injuries by catching operators hand or clothing.	Minor to Serious
			Accidental operation of button of lever.	Injury due to hitting by lifting device or waste container.	Minor
1.4		Rear Steps	Vehicle hits solid object whilst reversing	Injuries by crushing operator on step.	Serious to Fatal
			Rear Collision	Injuries by crushing operator on step	Serious to Fatal

2. Ejection or Hydraulic fluid under high pressure

No.	Risk	Risk Area	Hazard	Injury	Type
2.0		Lifting device body work	Hitting of high pressure oil jet caused by loose or broken hoses.	Operator hit by oil injected.	Serious to Fatal

3. Ejection of waste or waste containers falling off.

No.	Risk	Risk Area	Hazard	Injury	Type
3.1		Compactor Mechanism	Waste ejected from hopper.	Injuries by impact of waste	Minor to Serious
3.2		Lifting Device	Waste container not locked safely on lifting device.	Injuries due to waste container	Minor to Serious

No.	Risk	Risk Area	Hazard	Injury	Type
				falling onto operator.	
			Waste container incorrectly positioned on the lifting device.	Injuries due to waste container falling onto operator.	Minor to Serious
			Mechanism not working correctly due to damage.	Injuries due to waste container falling onto the operator.	Minor to Serious
			Winch cable breaks due to failure of winch device.	Injuries due to waste container falling onto operator.	Minor to Serious

4. Falling of Operator

No.	Risk	Risk Area	Hazard	Injury	Type
4.1		Steps	Falling from Steps during reversing of vehicle	Injuries due to falling from rear loader.	Serious to Fatal
			Falling or slipping from steps during forward motion of vehicle.	Injuries due to falling or by being run over by oncoming traffic.	Serious to Fatal

5. Noise

No.	Risk	Risk Area	Hazard	Injury	Type
5.1		Rear Loader	Too high sound pressure level	Hearing irreversibly affected.	Minor to Serious
			Noise level hinders oral communication and/or hearing of traffic signals.	Diverse	Minor to Fatal

6. Explosion

No.	Risk	Risk Area	Hazard	Injury	Type
6.1		Compactor Mechanism	Explosion within tail gate of rear loader whilst compacting.	Injuries due to impact by components of Rear Loader	Serious to Fatal

No.	Risk	Risk Area	Hazard	Injury	Type
				falling off or lifting device waste container thrown away.	

7. Insufficient Lighting

No.	Risk	Risk Area	Hazard	Injury	Type
7.1		Compactor System	Falling into Hopper during operation Operators hand, arm or foot caught by waste being compacted	Injuries by crushing operator Damage to limb and/or body	Fatal Serious to Fatal

8. Maintenance

No.	Risk	Risk Area	Hazard	Injury	Type
8.1		Area underneath Tail gate	Person hit by tail gate or crushed between body and tailgate	Crushing of limbs or body injuries due to impact.	Serious to Fatal
8.2		Inside body	Crushing or shredding by ejector plate.	Injuries to body and limbs.	Serious to Fatal
8.3		Inside tail gate.	Crushing by components of compactor mechanism due to gravity.	Crushing or body and limbs	Serious to Fatal

9. Various Risk

No.	Risk	Risk Area	Hazard	Injury	Type
9.1	Road traffic accident	Rear of Rear Loader	Impact with vehicle or road	Various injuries	Minor to Fatal
9.2	Unintended operation of the mechanism	Areas covered previously for risk due to mechanism	Unauthorised modification of controls/control circuit.	Various Injuries	Minor to Fatal
			Accidental use of control switches or levers.	Various Injuries	Minor to Fatal
			Machine movement unintentionally started or emergency device out of operation caused by	Various Injuries	Minor to Fatal

No.	Risk	Risk Area	Hazard	Injury	Type
			short circuiting due to moisture in the system due to lack of electronic maintenance.		
			Unintentional starting or failure to stop functions due to failure of controls/control circuit.	Various Injuries	Minor to Fatal
9.3		Batteries	Short circuit on batteries.	Burns	Minor to Serious
9.4		Working around Rear Loader	Tipping over due to lack of stability	Various Injuries	Serious to Fatal
9.5		Instruction	Insufficient clear instruction for operating maintenance and repair.	Various Injury	Minor to Serious
9.6	Cutting Toxic biological fire or explosion from the waste.	Working area around Rear Loader and inside the body.	Various	Various Injury	Minor to Fatal

Work Health & Safety and Rehabilitation Systems

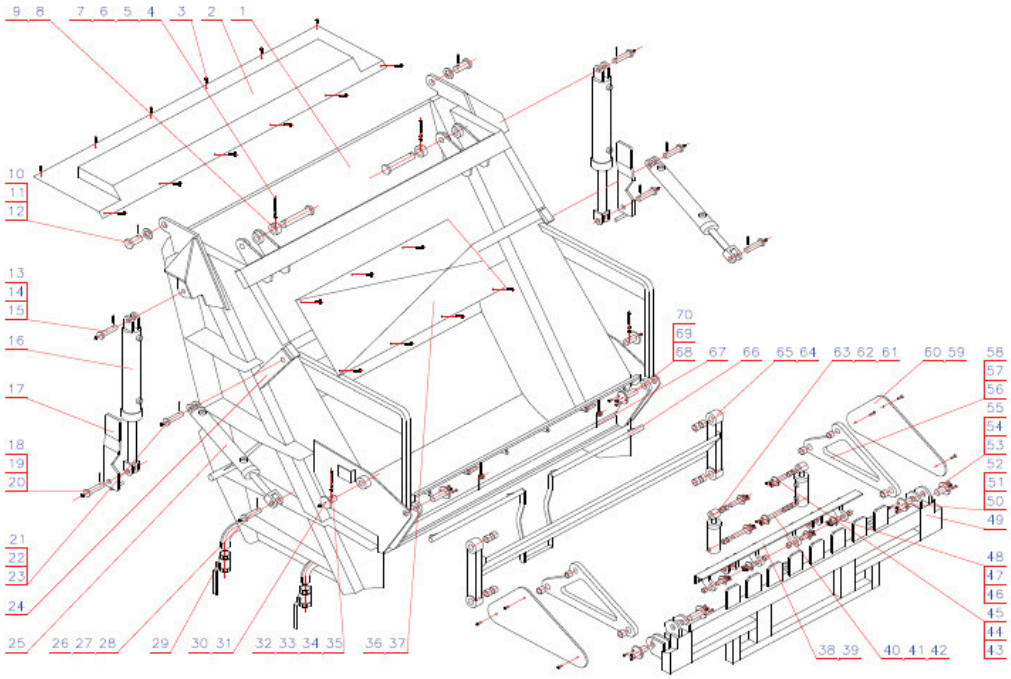
Basic Job Steps	Safe Job Procedures	Potential Hazards
To operate unit please read appropriate manuals.	To understand all facets of the unit and its capabilities of operation.	Damage – danger to life, limb and property
The unit is suitable for collection of commercial, household and green waste.	Do not allow loading of refuse subject to regulations. Check with authorities first.	Damage – danger to life, limb, property and the environment.
Switches and safety devices. Do not remove if found to be inoperable – do not use unit.	To be replaced, repaired or checked by authorised personnel only.	Damage – danger to life, limb and property.
The unit not to be started or operated unless all clear is given.	Remove ignition key from vehicle when working on unit.	Damage – danger to life, limb and property.

Basic Job Steps	Safe Job Procedures	Potential Hazards
Personnel to ride on approved steps only.	Do not operate the lifter unless rear area of unit is clear and safe.	Damage – danger to life and limb.
To operate the unit's lifter.	Do not operate the lifter unless rear area of unit is clear and safe.	Damage – danger to life, limb and property.
Collect MGB's and attach to lifter	Use lift and lower procedure, be alert and stand well clear when lifting and lowering bin lifter.	Damage – danger to life, limb and property.
Return of MGB.	Check area for passing traffic or persons, if all clear proceed.	Damage – danger to life, limb and property.
Operate compaction cycle if unit has no continuous cycle.	Whilst returning MGB, unit will complete sweep and pack cycle and clear hopper.	By engaging cycle whilst returning MGB minimal injury to operators.
Travel to meet MGB.	To ride only on serviceable and approved steps/platform.	Damage – danger to life, limb and property.
Alights from steps and platform.	Be aware of passing traffic and make sure the area is clear and safe.	Damage – danger to life, limb and property.
Travel to tip site.	All personnel to travel in cabin. Do not travel on steps of platform.	Damage – danger to life, limb and property.
Raise rear door/tail gate and discharge load.	Be aware of the area around you. If it is clear, raise door using appropriate safety measures and proceed to discharge load.	Damage – danger to life, limb and property.
Check hydraulic and electrical systems.	Work to be performed by qualified and appropriately trained personnel. Use safety procedures.	Damage – danger to life, limb and property.
Check complete compaction unit.	Work to be performed by qualified and appropriately trained personnel. Use safety procedures.	Damage – danger to life, limb and property.
Check for oil leaks and low oil level.	Use appropriate/approved material for mopping up oil spills. Proceed with caution to rectify the problem is found.	Oil spills could cause damage/accident to the environment.

Basic Job Steps	Safe Job Procedures	Potential Hazards
	Works to be performed by qualified and appropriately trained personnel.	
Checks to perform following repair works or general maintenance work.	Using safety procedures, make sure all features, functions and operations of the unit are performing in a satisfactory manner.	Damage – danger to life, limb and property.

CHAPTER 6 – PARTS LISTING - BANTAM

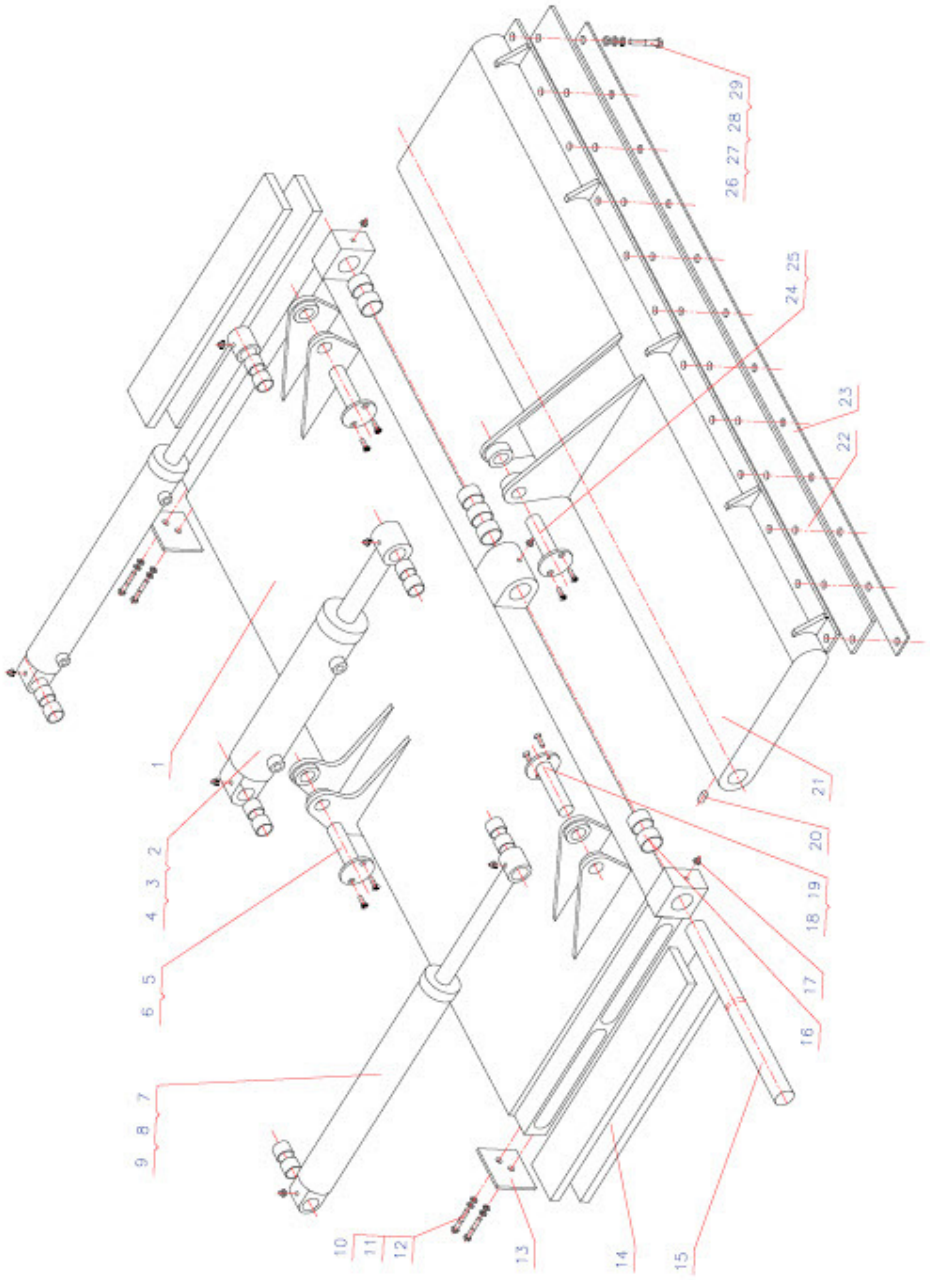
6.1 Tailgate Assembly



Item	Drawing No.	Description	Qty
1	B5	Tailgate	1
2	B5-09	Top Cover	1
3		TEK Screw	12
4	M8x70	Socket Head Cap Screw	2
5	Ø8	Washer	2
6	Ø8	Spring Washer	2
7	M8	Nut	2
8	B5-10	Clevis Pin	2
9	C3-05	Pin Bush	2
10	B5-18	Hinge Pin	2
11	B5-19	Hinge Pin Spacer	2
12	5x60	Split Pin	2
13	B5-16	Clevis Pin	2
14	5x60	Split Pin	2
15		Grease Cup	2
16		Tailgate Lift Cylinder	2
17	C4.5	Safety Prop	2
18	C4-20	Clevis Pin	2
19	5x60	Split Pin	2
20		Grease Cup	2
21	C8-11	Clevis Pin	2
22	5x60	Split Pin	2
23		Grease Cup	2
24	C8-11	Clevis Pin	2

Item	Drawing No.	Description	Qty
25		W.C.L. Cylinder Mounting	2
26	C8-10	Clevis Pin	2
27	5x60	Split Pin	2
28		Grease Cup	2
29		Ball Valve 1.1/2"	4
30	B8-01	Clevis Pin	2
31		Grease Cup	2
32	M8x70	Socket Head Cap Screw	2
33	Ø8	Washer	2
34	Ø8	Spring Washer	2
35	M8	Nut	2
36	B5-08	Back Cover	1
37		TEK Screw	12
38	B8.2	Pack Panel	1
39	Ø20xØ23x15	LFB Bush	4
40	B8-07	Clevis Pin	2
41	M6x12	Lock Screw	4
42		Grease Cup	2
43	B8-06	Clevis Pin	2
44	M6x12	Lock Screw	4
45		Grease Cup	2
46	B8-05	Clevis Pin	4
47	M6x12	Lock Screw	8
48		Grease Cup	4
49	B8.1	W.C.L. For Bantam	2
50	B8.04	Clevis Pin	2
51	M6x12	Lock Screw	4
52		Grease Cup	2
53	B8-03	Clevis Pin	2
54	M6x12	Lock Screw	4
55		Grease Cup	2
56	B8-09	Triple Plate	2
57	Ø30xØ34x25	LFB Bush	2
58	1"x1.1/8"x25	LFB Bush	2
59		Safety Prop	2
60		TEK Screw	8
61		G Park Cylinder	2
62		Grease Cup	4
63	Ø20xØ23x20	LFB Bush	8
64	B8-7	Link Bar	1
65	Ø30xØ34x25	LFB Bush	8
66	B8.4	Spring Rod	1
67	B8-08	Spring	2
68	B8-02	Clevis Pin	2
69	M6x12	Lock Screw	4
70		Grease Cup	2

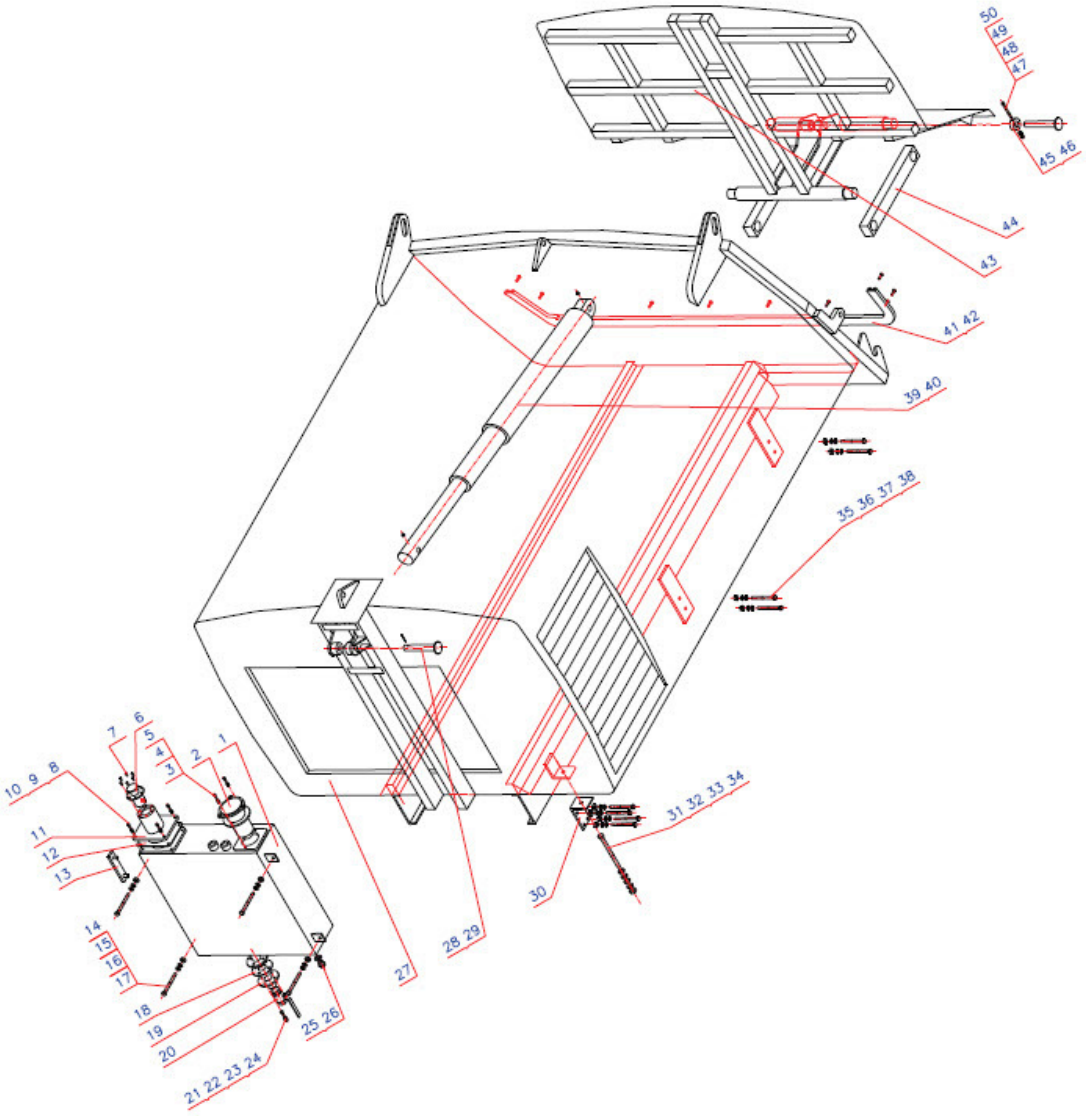
6.2 Pack & Sweep Panels



Item	Drawing No.	Description	Qty
1	B6	Bantam Pack Panel	1
2		Sweep Cylinder	1
3	Ø30xØ34x30	LFB Bush	4
4		Grease Cup	2
5	B6-06	Clevis Pin	1
6	M6x12	Lock Screw	2
7		Pack Cylinder	2
8	Ø30xØ34x30	LFB Bush	8

Item	Drawing No.	Description	Qty
9		Grease Cup	4
10	M12x25	Hi-Tensile Bolt	4
11	Ø12	Washer	4
12	Ø12	Spring Washer	4
13	B6-02	Wear Strips Retainer	2
14	B6-01	Wear Strips	4
15	B7-06	Pivot Pin	1
16	Ø40xØ44x25	LFB Bush	7
17		Grease Cup	3
18	B6-10	Clevis Pin	2
19	M6x12	Lock Screw	4
20	M12x20	Lock Screw	1
21	B7	Bantam Sweep Panel	1
22	B7-09	Rubber Flap	1
23	B7-10	Keeper Strip	1
24	B7-04	Clevis Pin	1
25	M6x12	Lock Screw	2
26	M10x30	Bolt	12
27	Ø10	Washer	12
28	Ø10	Spring Washer	12
29	M10	Nut	12

6.3 Body Parts

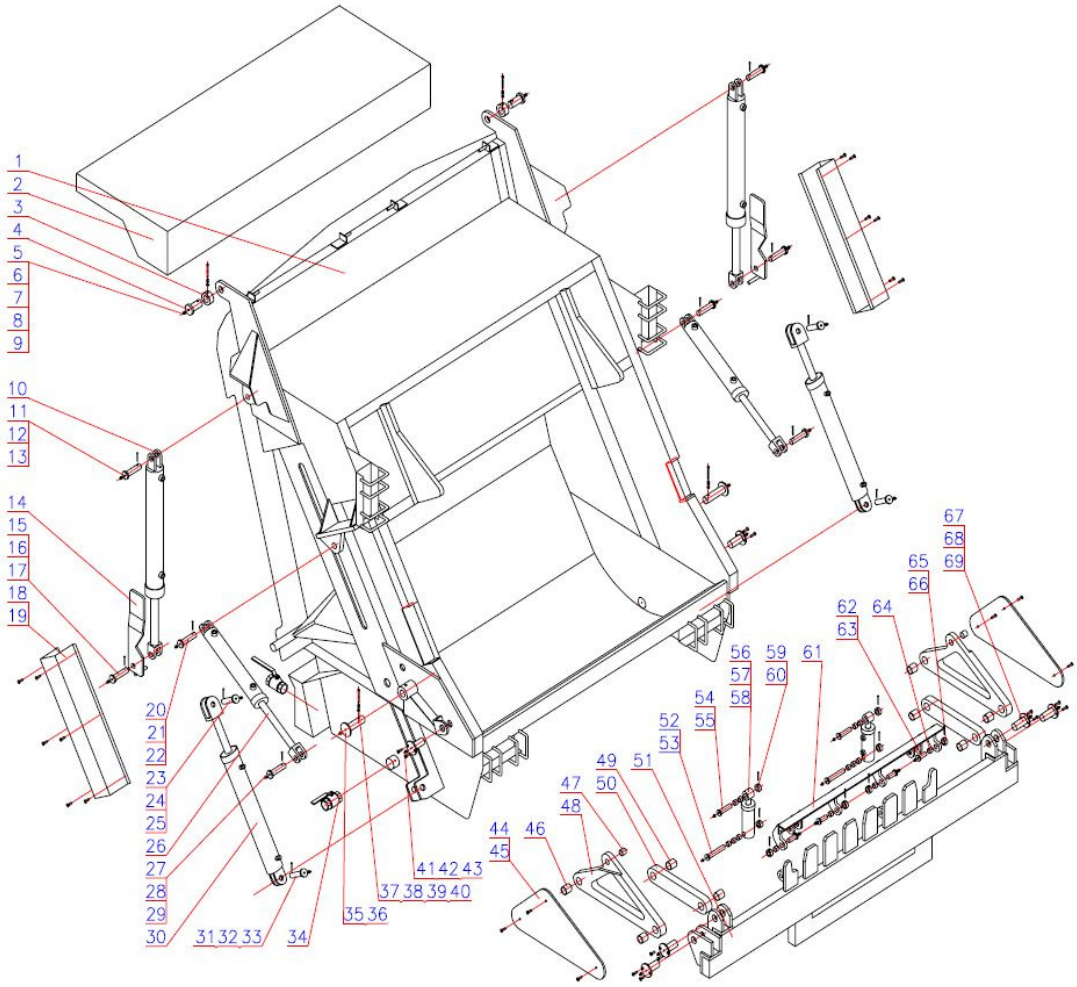


Item	Drawing No.	Description	Qty
1	B2	Hydraulic Tank	1
2	OMTF85	Return Line Filter	1
3	M6x12	Bolt	2
4	Ø6	Washer	2
5	Ø6	Spring Washer	2
6	SESS3-S	Filler Breather	1
7	M5x10	Screw	6
8	M8x25	Bolt	6
9	Ø8	Washer	6
10	Ø8	Spring Washer	6
11	B2.1	Filler Adapter	1
12	B2-01	Gasket	1
13	No.SNA.Size2	Fluid Level Gauge	1

Item	Drawing No.	Description	Qty
14	M8x25	Bolt	4
15	Ø8	Washer	4
16	Ø8	Spring Washer	4
17	M8	Nut	4
18	B2-09	Gasket	1
19	B2-07	Stop Cock Adapter	1
20		Ball Valve 1.1/2"	1
21	M12x35	Bolt	4
22	Ø12	Washer	4
23	Ø12	Spring Washer	4
24	M12	Nut	4
25	M22x1.5	Male Plug	1
26	Ø22	Seal	1
27	B4	Bantam Body	1
28	B4-01	Clevis Pin Ejector	1
29	5x60	Split Pin	1
30	B4.2	Truck Mounting	2
31	M16x80	Hi-Tensile Bolt	2
32	Ø16	Washer	2
33	Ø16	Butterfly Washer	To Suit
34	M16	Nyloc Nut	2
35	M12x30	Hi-Tensile Bolt	16
36	Ø12	Washer	16
37	Ø12	Spring Washer	16
38	M12	Nut	16
39		Ejector Cylinder	1
40		Grease cup	3
41		Body Seal	1
42		TEK Screw	12
43	B3	Ejector	1
44	B3-07	Bearing Block	2
45	C3-05	Pin Bush	1
46	B3-03	Clevis Pin	1
47	M8x70	Socket Head Cap Screw	4
48	Ø8	Washer	4
49	Ø8	Spring Washer	4
50	M8	Nut	4

CHAPTER 7 – PARTS LISTING – POWAPACT

7.1 Tailgate Assembly



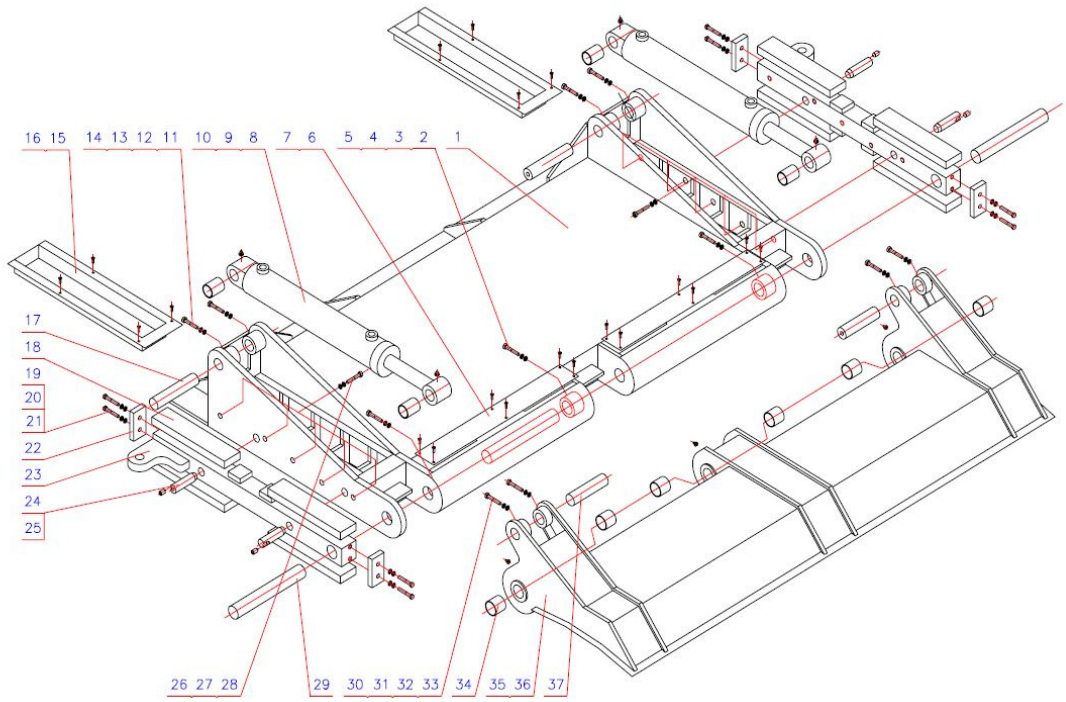
Item	Drawing No.	Description	Qty
1	C5	Tailgate	1
2	C5, 4—3	Top Cover	1
3	C5 – 15	Pin Bush	2
4	C5 – 16	Hinge Pin	2
5		Grease	2
6	M8x70	Socket Head Cap Screw	2
7	ø8	Washer	2
8	ø8	Spring Washer	2
9	M8	Nut	2
10		Tailgate Lift Cylinder	2
11	C5 – 18	Clevis Pin	2
12		Grease	2
13	5x60	Split Pin	2

Item	Drawing No.	Description	Qty
14	C4.5	Safety Prop	2
15	C4 – 20	Clevis Pin	2
16		Grease	2
17	5x60	Split Pin	2
18	C5 – 20	Pack Cylinder Cover	2
19	M6x12	Screw	10
20	C8 – 11	Clevis Pin	2
21		Grease	2
22	5x60	Split Pin	2
23	C6 – 11	Clevis Pin	2
24		Grease	2
25	5x60	Split Pin	2
26		W.C.L. Lift Cylinder	2
27	C8 – 10	Clevis Pin	2
28		Grease	2
29	5x60	Split Pin	2
30		Pack Cylinder	2
31	C4 – 20	Clevis Pin	2
32		Grease	2
33	5x60	Split Pin	2
34		2" Ball Valve	4
35	C8 – 07	Clevis Pin	2
36		Grease	2
37	M8x90	Socket Head Cap Screw	2
38	ø8	Washer	2
39	ø8	Spring Washer	2
40	M8	Nut	2
41	C8 – 09	Clevis Pin	2
42		Grease	2
43	M6x12	Screw	4
44		Safety Prop	2
45	M6x12	Screw	12
46	ø35xø39x40	LFB Bush	4
47	1"x1.1/8"x1"	LFB Bush	2
48	C8 – 02	Triple Plate	2
49	ø35xø39x40	LFB. Bush	4
50	C8 – 01	Link Bar	2
51	C8.2	W.C.L.	1
52	C8 – 03	Clevis Pin	2
53		Grease	2
54	C8 – 04	Clevis Pin	2
55		Grease	2
56		Comb Cylinder	2
57	ø20xø23x15	LGB. Bush	10
58		Grease	4
59	C8 – 06	Pin Bush	4
60	4x50	Split Pin	4

Item	Drawing No.	Description	Qty
61	C8.1	Comb	1
62	C8 – 05	Clevis Pin	4
63		Grease	4
64	ø20xø23x15	LFB. Bush	4
65	C8 – 06	Pin Bush	4
66	4x50	Split Pin	4
67	C8- 08	Clevis Pin	4
68		Grease	4
69	M6x12	Screw	8

Due to ongoing product improvement, ***Garwood International Pty Ltd*** reserve the right to change specification without notice.

7.2 Pack and Sweep Panels

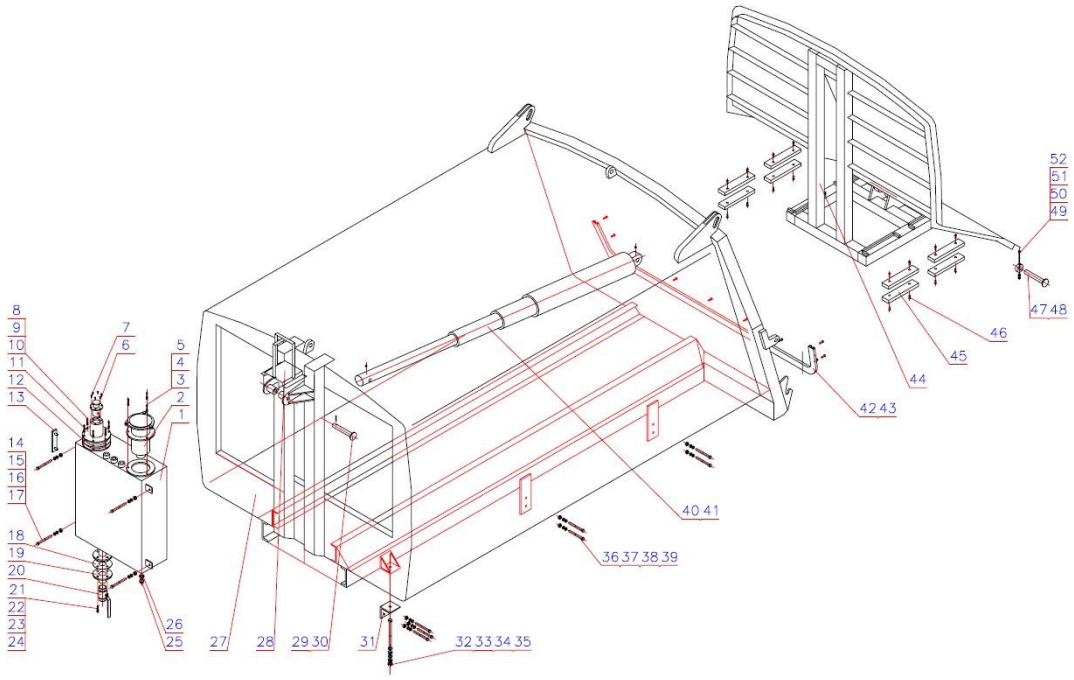


Item	Drawing No.	Description	Qty
1	C6A	Pack Panel (H-T/G)	1
2	M8x70	Socket Head Cap Screw	3
3	ø8	Washer	3
4	ø8	Split Washer	3
5	M8	Nut	3
6	C6.1A-1	Cover Plate	2
7		Tec Screw	12
8		Sweep Cylinder	2
9	ø35xø39x30	LFB. Bush	8
10		Grease	4
11	M8x70	Socket Head Cap Screw	4
12	ø8	Washer	4
13	ø8	Split Washer	4
14	M8	Nut	4
15	C6A – 01	Cover	2
16		Tec Screw	8
17	C6A – 08	Clevis Pin	2
18	C6.3 – 2	Wear Strips	8
19	M10x30	Hi-Tensile Bolt	8
20	ø10	Washer	8
21	ø10	Split Washer	8
22	C6.3 – 1	Wear Strips Retainer	4
23	C6.2A	Pivot Bar	2
24	C6 – 12	Lock Pin	4
25	M12x20	Lock Screw	4

Item	Drawing No.	Description	Qty
26	M16x1.5x45	Hi-Tensile Bolt	10
27	ø16	Washer	10
28	ø16	Split Washer	10
29	C6 – 15	Pack To Sweep Pin	3
30	M8x70	Socket Head Cap Screw	4
31	ø8	Washer	4
32	ø8	Split Washer	4
33	M8	Nut	4
34	ø40xø44x40	LFB Bush	6
35	C7A	Sweep Panel	1
36		Grease	3
37	C7 – 07	Clevis Pin	2

Due to ongoing product improvement, ***Garwood International Pty Ltd*** reserve the right to change specification without notice.

7.3 Body Parts



Item	Drawing No.	Description	Qty
1	C2	130 Litre Hydraulic Tank	1
2	OMTF 150AN	Return Line Filter	1
3	M10x20	Bolt	3
4	ø10	Washer	3
5	ø10	Split Washer	3
6	SESS3 – S	Filler Breather	1
7	M5x10	Screw	6
8	M8x25	Bolt	6
9	ø8	Washer	6
10	ø8	Spring Washer	6
11	C2.1	Filler Adaptor	1
12	C2 – 01	Gasket	1
13	SNA. Size 12	Fluid Level Gauge	1
14	M8x25	Bolt	4
15	ø8	Washer	4
16	ø8	Spring Washer	4
17	M8	Nut	4
18	C2 – 12	Gasket	1
19	C2 – 10	Stop Cock Adaptor	1
20	1.1/2"	Ball Valve	1
21	M12x35	Bolt	4
22	ø12	Washer	4
23	ø12	Spring Washer	4
24	M12	Nut	4
25	M22x1.5	Bolt	4
26	ø22	Seal	1

Item	Drawing No.	Description	Qty
27	C4	Body	1
28	C4.1	Beacon	1
29	C4 – 01	Clevis Pin	1
30	5x60	Split Pin	1
31	C4.4	Truck Mounting	2
32	M16x80	Hi-Tensile Bolt	2
33	ø16	Washer	2
34	ø16	Bellevue Washer	To Suit
35	M16	Nyloc Nut	2
36	M12x40	Hi-Tensile Bolt	24
37	ø12	Special Washer	24
38	ø12	Spring Washer	24
39	M12	Nut	24
40		Ejector Cylinder	1
41		Grease Cup	2
42		Body Seal	1
43		Tec Screw	12
44	C3	Ejector Panel	1
45	C3 – 06	Wear Block	8
46	M8x25	Cap Screw	16
47	C3 – 04	Clevis Pin	1
48	C3 – 05	Pin Bush	1
49	M8x70	Bolt	1
50	ø8	Washer	1
51	ø8	Spring Washer	1
52	M8	Nut	1

Due to ongoing product improvement, ***Garwood International Pty Ltd*** reserve the right to change specification without notice.

CHAPTER 8 – PARTS LISTING – ELECTRICAL COMPONENTS

8.1 Control Switches

Control Name	12 Volt	24 Volt
Cab Controls		
Power Switch (System)		RSAGAR-04
Power Take Off (PTO)		RSA2-1-36
Revolving Light/s		RSA2-1-19
Work Light/s		RSA2-1-3
Ejector Panel		RSAGAR-02
Hopper Skim		RSAGAR-03
Tailgate Open/Close		RASGAR-01
Dash Warning Lights		SWR002-GAR
External Switches - Safety		
Emergency Stop		P9CER4RN
Rescue Switch		P9CPNGG
Operator Alarm		P9CPNNG
Dead Man Switch		P9CPNNG
External Switches - General		
Tailgate Open/Close		P9CSMDON
Ejection Panel		P9CSMDON
Hopper Skim		P9CPNLG
Auto Compaction Start		P9XSLDOV
Bin Lifter UP		P9CPNLG
Bin Lifter DOWN		P9CPNLG
Sweep and Pack		P9CPNVG
Half Pack		P9CSMDON
Hopper Skim		P9CPNLG
Bin Arrestor Bar		P9CSMDON
Auto Bin Lift – OPTION		P9XSLDOV
Inside Bin Wash – OPTION		P9CPNLG
Outside Bin Wash – OPTION		P9CPNLG
Pilot/Warning Lights		
Auto Bin Lift -		

8.2 Labels/Stickers

Sticker/Label Name	Part Number
Tailgate Open/Close	Decal – Tailgate
Ejection Panel	Decal – Ejector
Hopper Skim	Decal – Hopper Clear
Auto Compaction Start	Decal – Auto Comp Start
Bin Lifter UP	Decal – Lifter Up
Bin Lifter DOWN	Decal – Lifter Down
Dead Man Switch	Decal – Dead Man
Rescue Switch	Decal – Rescue
Operator Alarm	Decal – Alarm
Sweep and Pack	Decal – Sweep/Pack

Sticker/Label Name	Part Number
Tailgate Open/Close	Decal – Tailgate
Emergency Stop	Decal – Arrestor Bar
Half Pack	Decal – Half Pack
Hopper Skim	Decal – Hopper Skim
Arrestor Bar	Decal – Arrestor
Auto Bin Lift	Decal – Auto bin Lift
Auto Bin On	Decal – On/Off
Inside Bin Wash	Decal – Bin Wash
Outside Bin Wash	Decal – Bin Wash

8.2 Hydraulic Controls

Control Name	12 Volt	24 Volt
Control Valve System		
Section Solenoid		
Solenoid – Hershman Plug		
Proximity Switch		IMN18-P80-02

8.3 Lighting

Control Name	12 Volt	24 Volt
Work Light (LED)		WL0601
Work Light		CONTACT
Revolving Light (LED)		BF180-00
Revolving Light		RB39
Clearance Light – Side (LED)		91602N
Tail Lights (LED)		250ARWM

CHAPTER 9 – MAINTENANCE

The most important aspect of the maintenance of your system is correct application and type of lubrication.

Greasing

It is necessary to lubricate all pivot points fitted with grease nipples frequently – at least twice per week, or more frequently where system is in use more than five hours per day. Normal good quality chassis grease should be used.

The compactor panel slides in the compactor tailgate assembly are fitted with eight (8) removable wear pads made from high molecular density polythene. The slide channels are lined with steel wear strips.

The wear pads are intended to act as sacrificial element, in that wear is confined to these replaceable components. Frequent greasing will greatly add to the service life of these pads.

We recommend the use of Castrol TCX Compound Grease, or its equivalent.

Wear Pad Maintenance

Replacing the wear pads is quite simple. At the top and bottom of the carriage assembly at each side of the hopper is a bolt-on retaining plate. When removed the pads can be pulled out by hand and replaced with new units.

Excessive wear of the pads is indicated when the carriage moves sideways in a pronounced manner during the compactor cycle. Up to 15 millimetres of movement is acceptable. Beyond this the pads must be changed or damage will occur to non-replaceable components of the tailgate.

With proper lubrication and maintenance, the wear pads should last for several years.

Sweep Panel Maintenance

The sweep panel pivot shafts are replaceable as are the Teflon bushes. An inspection panel, secured by bolts, is located on each end of the carriage assembly inside the hopper area. To remove either the shaft and/or bushes remove this panel to reveal the inner ends of the shaft. Operate the packer carriage until the outer end of the shaft lines up with the 45-millimetre hole drilled through the outer sidewall of the tailgate. It is then possible to push the shaft and bush through into the inspection hatch area and remove them from the tailgate.

Under normal circumstances and with proper lubrication and maintenance, the bush and shaft should last for several years.

Hydraulic System Maintenance

The hydraulic oil filter element should be replaced after the first 100 hours of operation, thereafter at every 500 hours of operation.

Change the hydraulic oil every year.

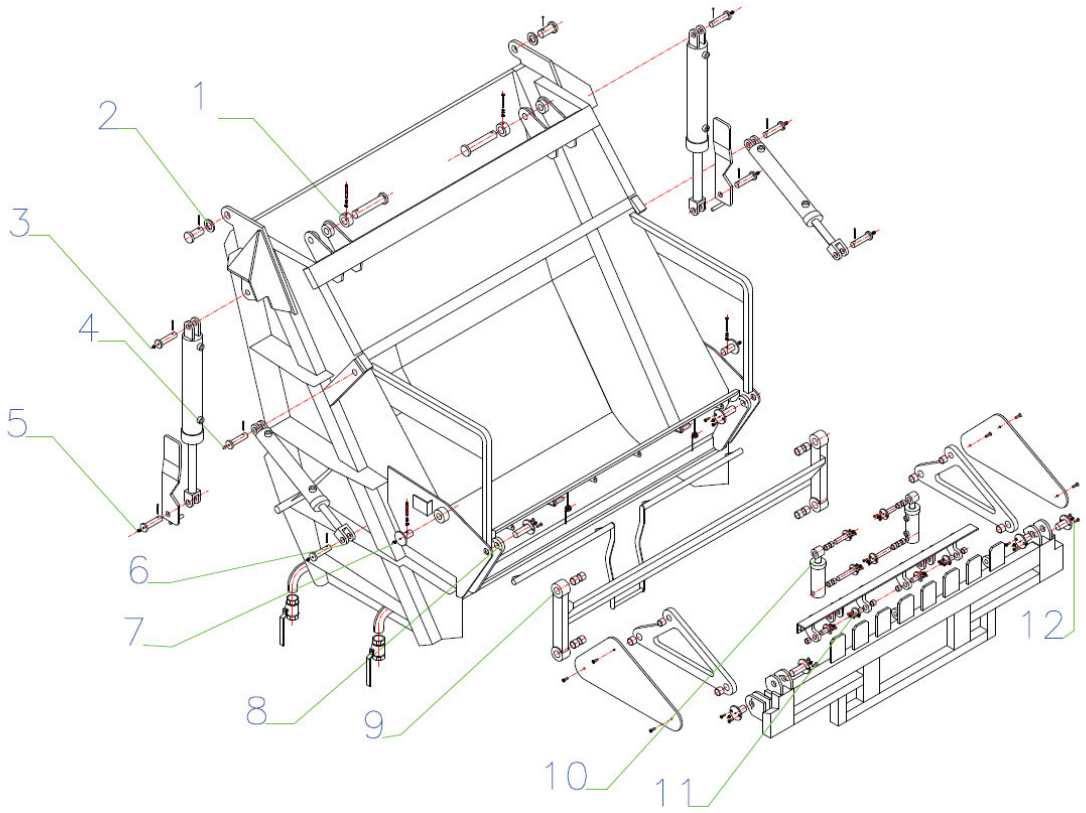
Clean out the suction strainer each time the oil is replaced.

Hydraulic Filler Cap should be changed when the oil is replaced.

Oil should be replaced sooner is discolouration is noticed in the system.

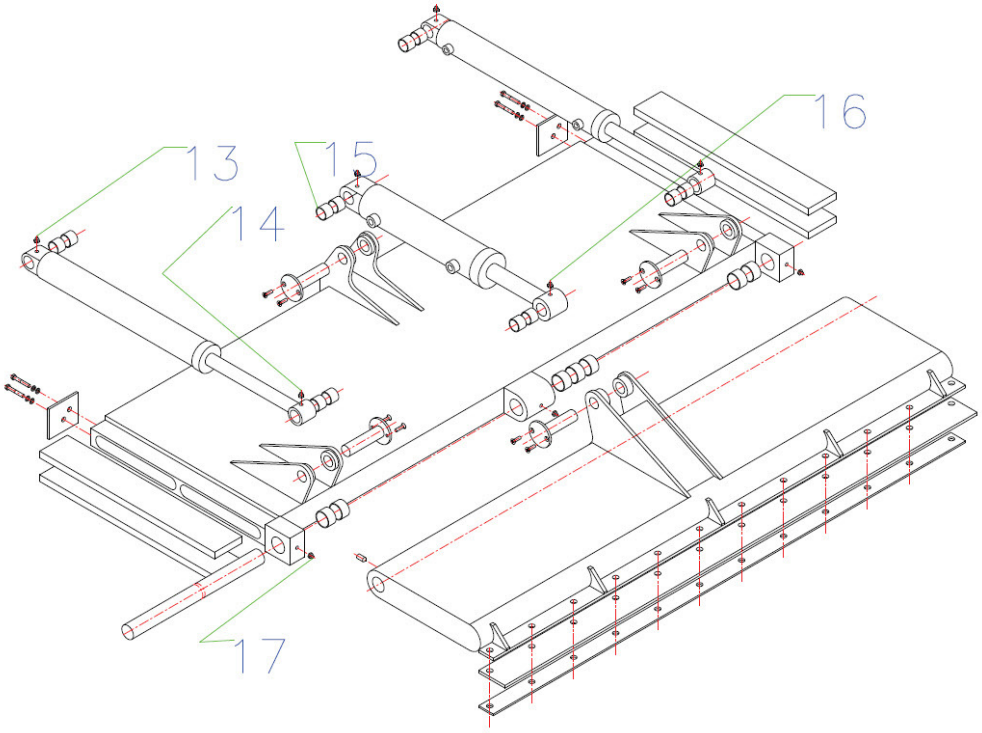
Lubrication Chart - Bantam

9.1 Tailgate Assembly



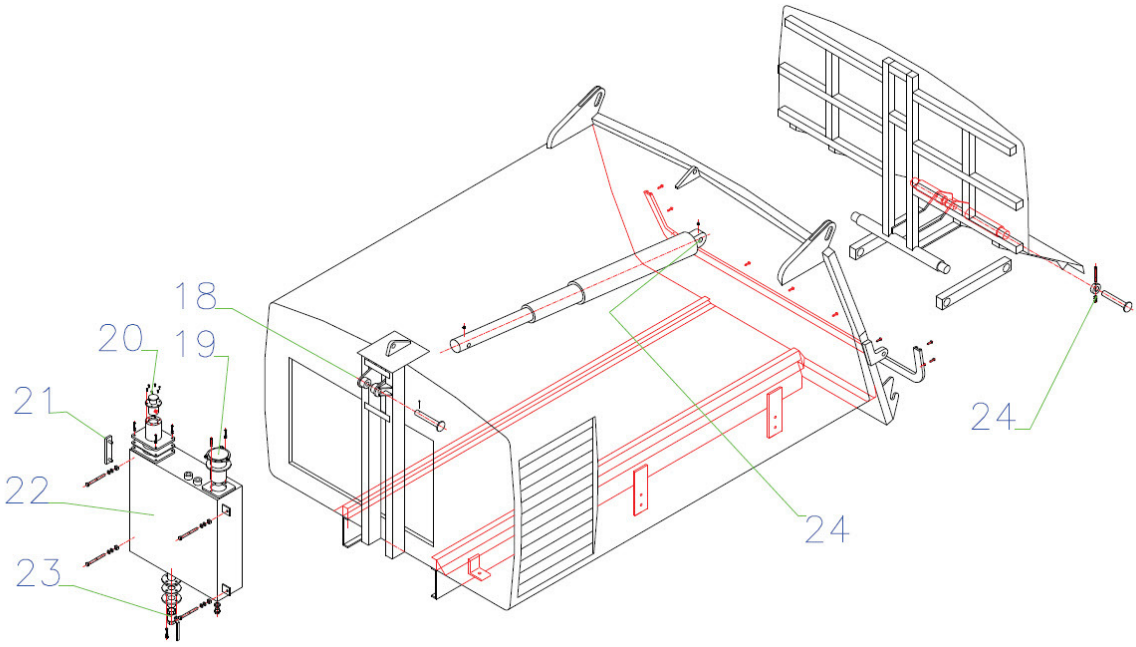
Number	Lube Point	Quantity	Frequency Per Week
1	Clevis Pin	2	1
2	Hinge Pin	2	1
3	Tailgate Lift Cylinder Top Clevis Pin	2	1
4	W.C.L. Cylinder Top Clevis Pin	2	2-3
5	Tailgate Lift Cylinder Bottom Clevis Pin	2	2-3
6	W.C.L. Cylinder Bottom Clevis Pin	2	2-3
7	Clevis Pin	2	2-3
8	WCL Pivot Pin	2	2-3
9	Link Bar	4	2-3
10	Clamping Cylinder (Top & Bottom)	4	2-3
11	Clamp Hinge	4	2-3
12	Comb Pivot	2	2-3

9.2 Sweep and Pack System



Number	Lube Point	Quantity	Frequency Per Week
13	Pack Cylinder Top Clevis Pin	2	2-3
14	Pack Cylinder Bottom Clevis Pin	2	2-3
15	Sweep Cylinder Top Clevis Pin	1	2-3
16	Sweep Cylinder Bottom Clevis Pin	1	2-3
17	Pack & Sweep Panel Hinge Pins	3	2-3

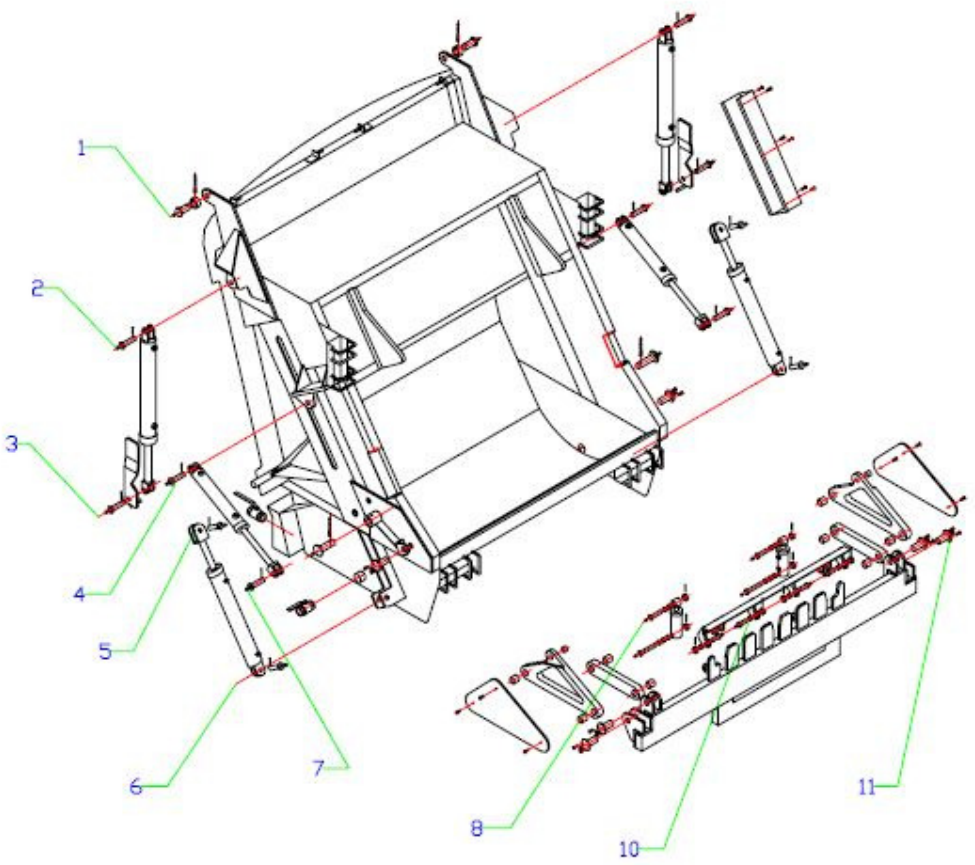
9.3 Body and Hydraulic Tank



Number	Lube Point	Quantity	Frequency Per Week
18	Ejector Cylinder Top Clevis Pin	1	1
19	Return Line Filter	1	Check Regularly
20	Filler Breather	1	N/A
21	Fluid Level Gauge	1	Check Regularly
22	70L Hydraulic Tank	1	N/A
23	Hydraulic Feed System	1	N/A
24	Ejector Cylinder Bottom Clevis Pin	1	1

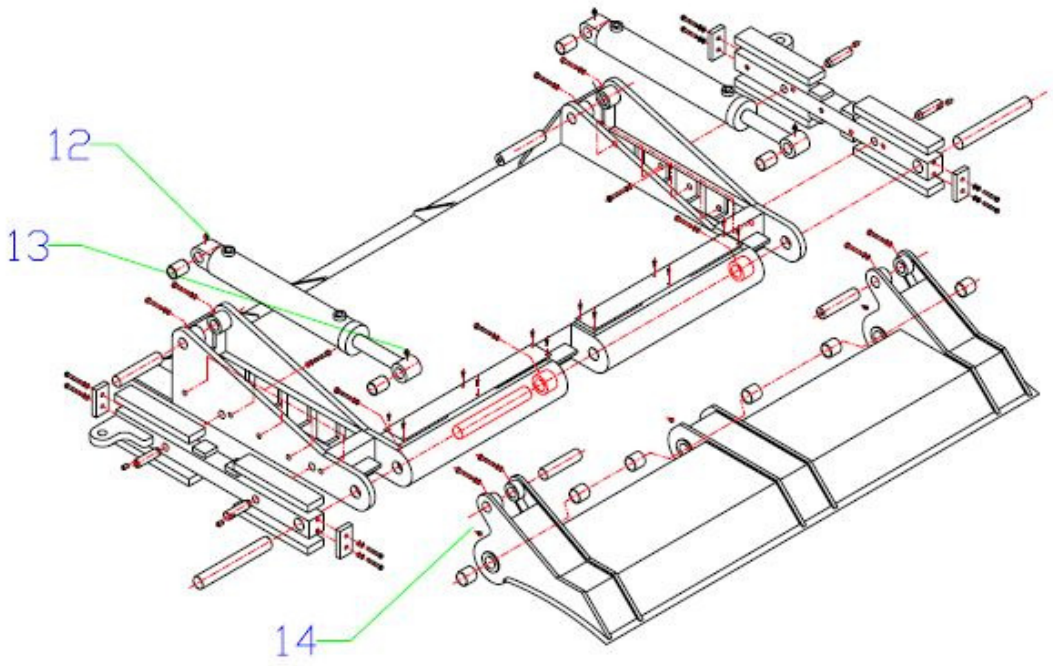
Lubrication Chart – Compact

9.4 – Tailgate Assembly



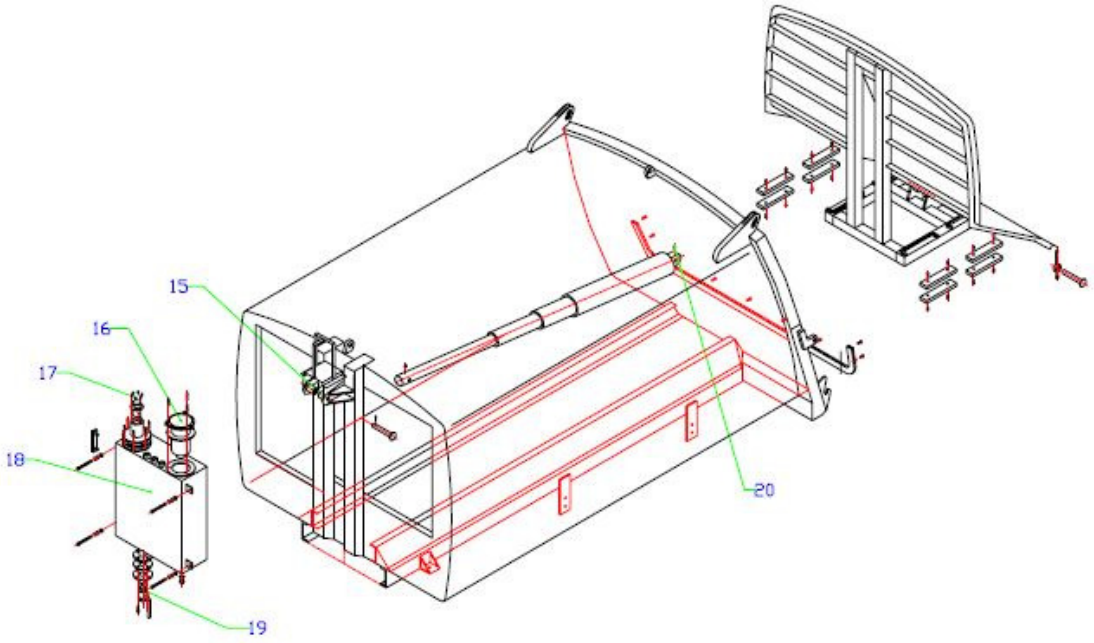
Number	Lube Point	Quantity	Frequency Per Week
1	Hinge Pin	2	1
2	Tailgate Lift Cylinder Top Clevis Pin	2	1
3	Tailgate Lift Cylinder Bottom Clevis Pin	2	1
4	W.C.L. Clylinder Top Clevis Pin	2	2-3
5	Compaction Cylinder Top Clevis Pin	2	2-3
6	Compaction Cylinder Bottom Clevis Pin	2	2-3
7	W.C.L. Cylinder Bottom Clevis Pin	2	2-3
8	Clamping Cylinder (Top and Bottom)	4	2-3
10	Clamp Hinges	4	2-3
11	Comb Pivot	2	2-3

9.5 Sweep and Pack System



Number	Lube Point	Quantity	Frequency Per Week
12	Sweep Cylinder Top Clevis Pin	2	2-3
13	Sweep Cylinder Bottom Clevis Pin	2	2-3
14	Pack and Sweep Panel Hinge Pins	3	2-3

9.6 Body and Hydraulic Tank



Number	Lube Point	Quantity	Frequency Per Week
15	Ejector Clyinder Top Clevis Pin	1	1
16	Return Line Filter	1	Check Regularly
17	Filler Breather	1	N/A
18	Hydraulic Tank	1	Check Regularly
19	Hydraulic System Feed	1	N/A
20	Ejector Cylinder Bottom Clevis Pin	1	1

CHAPTER 10 – SERVICE SCHEDULES

Garwood International recommends the following service and maintenance schedules for your Garwood rear loader system.

Following this schedule will provide better service life and may reduce your overall cost of ownership in your system.

This schedule applies to the following systems.

BANTAM, COMPACT, POWAPACT, MAXIPACT rear loading systems.

100 Hour Service

- Change hydraulic oil filter element. (Return Line Filter)
- Clean suction strainer.
- Check unit as a whole. (Including Bin Lifter System)
- Operate Unit.
- Check all functions are working correctly.
- Top up hydraulic Oil .
- Check hydraulic system pressures.
- Grease Unit. (Including bin lifter and ejector panel pins)
- Check/Clean/Replace Pressure filter elements.

250 Hour Service

- Check unit as a whole (Including Bin Lifter)
- Inspect all components.
- Check all mounting bolts.
- Check bolts on keep plates.
- Operate unit.
- Check all functions are working correctly.
- Grease unit. (Including Bin Lifter and Ejector Pivot Pins)

500 Hour Service

- Check unit as a whole. (Including Bin Lifter)
- Change hydraulic oil filter element. (Return Line Filter)
- Clean suction strainer.
- Check/Clean/Replace pressure filter elements.
- Top up oil.
- Operate unit.
- Grease unit. (Including Bin Lifter and Ejector Pivot Pins)
- Check bolts on keeper plates.

750 Hour Service

- Check unit as a whole. (Including Bin Lifter)
- Inspect all Components.
- Operate Unit.
- Check all functions are working correctly.
- Grease Unit. (Including Bin Lifter and Ejector Panel Pins)
- Check bolts on keeper plates.

1,000 Hour Service

- Check unit as a whole. (Including Bin Lifter)
- Inspect wear strips and pivot pints on ejector plate and sweep/pack mechanism.
- Change hydraulic oil filter element. (Return Line Filter)
- Check pins on sweep/pack cylinders.
- Check bolts on keeper plates.
- Check all mounting bolts.
- Check/Clean/Replace pressure filter elements.
- Clean suction strainer.
- Top up oil.
- Grease Unit. (Including Bin Lifter and Ejector Pivot Pins).

** Repeat procedures for subsequent hours.

General Notes

1. Under normal operation conditions **REPLACE** wear strips in sweep/pack and ejector panel mechanism every 10,000 Hours.
2. Replace pins and bushes on bin lifter every 4,000 hours approximately.
3. In order to prolong the life span of the wide comb lifter and sweep/pack mechanism please grease every 2 days.
4. In order to prolong the life span of the unit as a whole, please grease at weekly intervals.

❖ Do not operate the unit with misaligned or damaged components.

❖ Do not operate the unit unless safety switches are operating correctly.

Caution

If any components of the unit are in doubt for safe operation please replace or repair if required or contact supplier.

Hydraulic oil changes to be carried out every 5,000 hours providing oil filters are changed at the appropriate intervals and hydraulic oil contaminated is negative.

**** Use Grade 32/46 oil of a quality brand name.**

The before mentioned replacement hours should be viewed by owners/operators as a guide only as operation application may vary.

To allow continuing improvements to product we reserved the right o change specifications without notice.

CHAPTER 11 – FREQUENTLY ASKED QUESTIONS

This section provides simple troubleshooting suggestions to some of the more common questions customers seek assistance with.

The chapter is broken down into sections that deal with questions involving: -

- General Operation of the System
- Hydraulics
- Electrics
- Safety Systems
- Miscellaneous

General Operation

What licence do I need?

In most states and territories in Australia you will need, at a minimum and Light Rigid licence to operate the smaller systems.

When the vehicle has two rear axles you will need, at a minimum a Heavy Rigid Licence.

Rubbish Types

The standard Garwood Waste Collection vehicles have been designed to collect normal household waste streams and some Commercial waste streams.

Garwood Waste Collection vehicles can also be “upgraded” to do hard waste collection if required.

If you are not sure of the type of vehicle you have, please consult your supervisor, or contact Garwood International Service and they will be happy to confirm the waste collection types suited to your vehicle.

Is training really necessary?

Your Garwood Waste Collection Vehicle make look and operate a lot like other waste collection vehicles you have seen or even operated.

However, there are always variations and differences in each of the types of vehicles you operate. Garwood International highly recommend that you undertake appropriate training on your system prior to operating the vehicle.

We also recommend that at intervals, best determined by your employers, that refresher training in the correct and safe operations of the system be provided to all operators.

Hydraulic Questions

How do the hydraulics work?

Your Garwood Waste Collection vehicle is fitted with a Power Take Off (PTO) system that provides power to the hydraulic pump to drive all your hydraulic systems.

Refer to the Section in this manual that describes PTO operations on page 17 to learn more about your system.

Can I change the pressure settings for the hydraulic controls?

The hydraulic systems fitted to the Garwood Waste Collection vehicle have adjustable pressure valves that protect the system from damage of over pressurisation of the hydraulic circuits.

The pressures for each circuit have been pre-set at the factory to provide the most effective and efficient pressures and speeds for the system to operate safely.

These pressure settings also promote long trouble-free operations with reduced potential for ram seal failure, excessive heat build up in the system and hose service life.

We do not recommend any change to these pressure settings as incorrect settings may create a safety hazard.

The bin lifter will not work

The bin lifter system fitted to your Garwood Waste Collection vehicle is operated by hydraulic power from the vehicle. Check to make sure the PTO on the vehicle has been engaged as per your vehicle requirements.

The Garwood Waste Collection vehicle has been designed to provide a safe working environment for the operator and all bystanders. The system is fitted with a number of Emergency Stop Buttons that will stop all hydraulic functions from working.

To learn how the Emergency, stop buttons work on your system please refer to the Emergency Stop Buttons section on page 70.

The Rear door will not open

The Garwood Waste Collection vehicle has been designed to provide a safe working environment for the operator and all bystanders. The system is fitted with a number of safety systems, or interlocks, that provide a high level of safety. Both for the operator and the vehicle.

The rear door will not open until the ejection panel is fully retracted into the front of the body.

The Rear door will not close

The Garwood Waste Collection vehicle has been designed to provide a safe working environment for the operator and all bystanders. The system is fitted with a number of safety systems, or interlocks, that provide a high level of safety. Both for the operator and the vehicle.

The rear door will not close until the ejection panel is fully retracted into the front of the body. Using the control buttons fitted to the front of the system move the ejection panel fully to the front of the body.

The rear door should now close.

Electrical Questions

Emergency Stop Buttons

The Garwood Waste Collection vehicle is fitted with a number of Emergency Stop buttons to provide a safe working environment for the operators and potential bystanders. Activating the emergency stop button will immediately stop all hydraulic functions from operating, including any functions that are currently in operation.

Activate Emergency Stop

To activate the Emergency Stop button on your vehicle simply press the "RED" button in firmly. This stop button will latch, or remain in the activated position.

Release Emergency Stop

To release the Emergency Stop button on your vehicle rotate the "RED" button to the right, clockwise, and release. The stop button will now release and the hydraulic systems will function normally.

Multiple Emergency Stop Buttons

The Garwood Waste Collection vehicle is fitted with multiple Emergency Stop buttons. It is important to know that **ALL EMERGENCY STOP BUTTONS MUST BE RELEASED BEFORE THE SYSTEM WILL OPERATE.**

What is a Rescue Switch?

When operating the Garwood Waste Collection vehicle, it is possible that, in some instances the system may experience a jam or overload event. This can be when the vehicle is full, or something becomes jammed in the system.

The Rescue Switch has been included in the system to allow the operator to "Reverse" the operation and release the jam.

Safety Systems

Who is responsible for Safety?

It is the responsibility of everyone that operates or works near the Garwood Waste Collection vehicle. This includes the operator, bystanders, drivers and assistants.

It is the primary responsibility of the operator to ensure the safety of all workers and bystanders, including themselves, while operating the system.

Miscellaneous Questions

What can't I put in the system

The Garwood Waste Collection vehicle is designed to collect a wide range of waste material in a safe and controlled environment. Attempting to place incorrect material or objects in the system may lead to potential vehicle damage or personal injury.

As a general rule you should only collect waste that would normally be found in a household wheelie bin.

You should **NOT** collect: -

- Hazardous materials
- Flammable materials
- Concrete Products
- Steel or Metal products
- Oil or other fluids in containers
- Materials that may cause damage to the vehicle.

If you are unsure consult your supervisor for guidance on company policy for waste collection materials.

APPENDIX A: BODY CAVITIES SAFETY

The information included here is sourced from Worksafe Victoria publication, "NON-HAZARDOUS WASTE AND RECYCABLE MATERIALS." To view the full version of this document you should contact Worksafe Victoria.

FOLLOWING ARE PRODCEDURES FOR REDUCING HEALTH AND SAFETY RISKS ASSOCIATED WITH WORKING IN COMPACTOR AREA CAVITIES.

1. Before entering the "Sump Area":
    a. An inspection is required to ascertain whether internal "sumping out" is required.
    b. External "sumping out" points [where fitted] are to be used at all times for ther removal of free flowing materials.
2. Before entering the compactor body to clean the 'Sump Area': -
    a. Fully open the top door
    b. Fully extend the blade
    c. Switch off the engine
    d. Remove ignition key and retain on person
    e. Ensure appropriate PPE is available and used
    f. Open any interlocked sump access door
    g. Perform sumping out process.
3. Before entering the compactor body to undertake maintenance or the 'sump area': -
    a. Fully open the top door
    b. Fully extend the blade
    c. Switch off the engine
    d. Remove the ignition key and retain on person
    e. Open interlocked sump access door
    f. Thoroughly clean the area to be repaired
    g. Provide fan-forced circulation through the opening at the front of the compactor body
    h. Ensure appropriate PPE is available and used.
4. Before entering the compactor body to undertake general maintenance: -
    a. Fully open the top door
    b. Fully retract the blade
    c. Switch off the engine
    d. Remove ignition key and retain on person
    e. Fully open the rear door and install safety props
    f. Thoroughly clean the area to be repaired
    g. Provide fan-forced circulation via the opened rear door
    h. Ensure appropriate PPE is available and used.
    i. Perform maintenance task.

Important Note:

These are recommended steps employers must undertake in consultaion with employees in addition to a risk assessment for each individual circumstance. These recommendations must be read in conjunction with AS28675.

INDEX

S

T

V

W