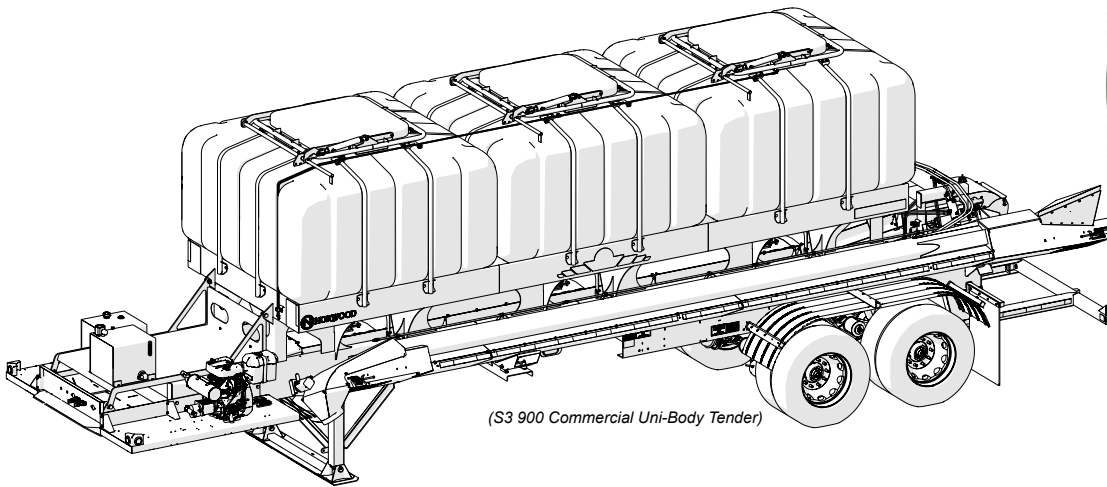
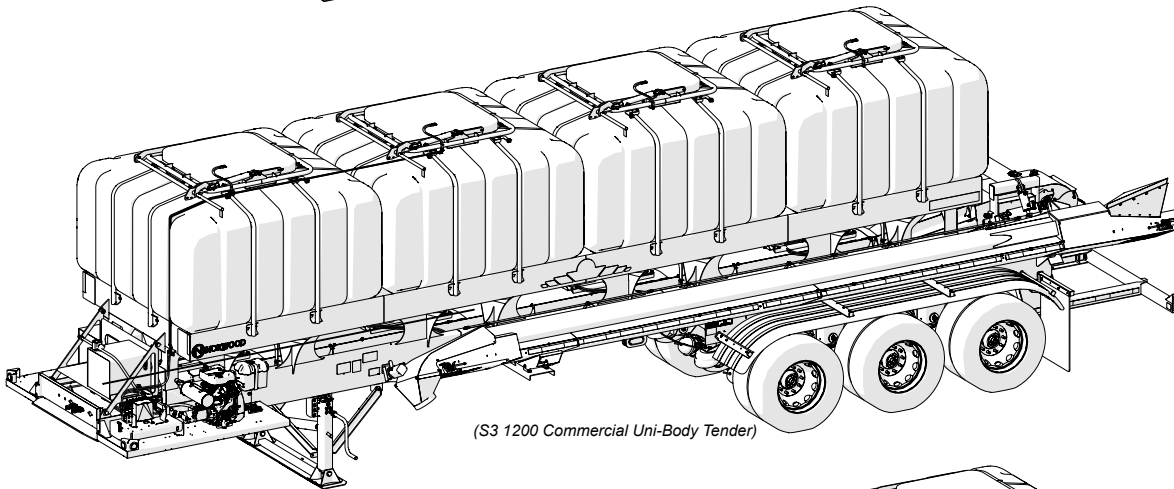
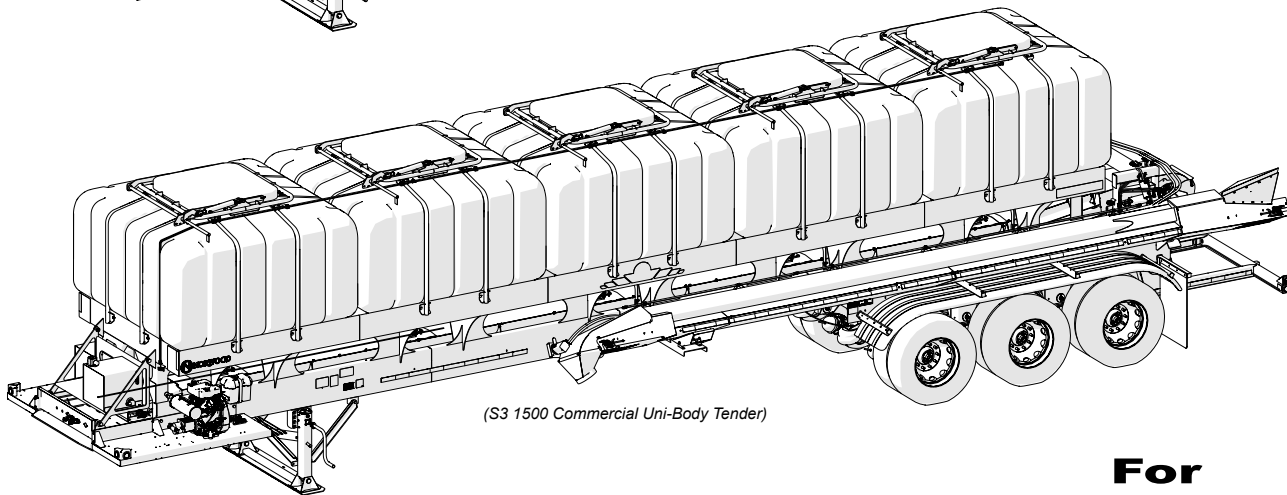




(S3 900 Commercial Uni-Body Tender)



(S3 1200 Commercial Uni-Body Tender)



(S3 1500 Commercial Uni-Body Tender)

Commercial Uni-Body Tender

**For
Granular
Or Liquid
Fertilizer &
Seed**

Operator's Manual

Models: S3 900 / S3 1200 / S3 1500

Disclaimer

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all systems. Norwood Sales Inc. assumes no obligation of notice to holders of this document with respect to changes subsequently made.

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Read and Understand

 WARNING

Read and follow all instructions and safety precautions in this manual and all other manuals for products associated with this machine as well as in all on-product warning decals. Failure to do so could result in death or serious injury, or property damage. Contact your Norwood Uni-Body Commercial Tender dealer if any of your decals are missing or illegible or you have questions.

Preface:

This manual is intended for use with the following; Uni-Body Commercial Tenders S3 900, S3 1200, & S31500

Revision History

Issue	Date	Reasons for Change
40-5-00048	March 23rd 2025	Initial Release
	July 16th 2026	Revision

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1 - GENERAL INFORMATION

Note to the Owner

This manual contains important information about the safe operation, adjustment and maintenance of your Uni-Body Commercial Tender. Refer to the contents at the beginning, and index at the end of this manual for locating specific items about your machine.

DO NOT operate or permit anyone to operate or service this machine until you or the other persons have read this manual. Use only trained operators who have demonstrated the ability to operate and service this machine correctly and safely.

All persons who will be operating this machine shall possess a valid local vehicle operating permit and/or other applicable local age work permits.

This Uni-Body Commercial Tender, with standard equipment and authorized attachments, is intended to be used for granular or liquid fertilizer & seed.

DO NOT use this machine for any purpose or in any manner other than as described in the manual, decals, or other product safety information provided with the machine. These materials define the machine's intended use.

Use only approved accessories and attachments designed for your machine.

Consult your dealer on changes, additions or modifications that may be required for your machine.

Do not make any unauthorized modifications to your machine.

This operator's manual is to be stored in the "Operators Manual Canister" on the right fender side (curb side) for reference during field operation. (See Fig. # 1-1) Make sure this manual is complete and in good condition. Contact your dealer to obtain additional manuals and approved service parts. Your dealer has technicians with special training that know the best methods of repair and maintenance for your Uni-Body Commercial Tender.

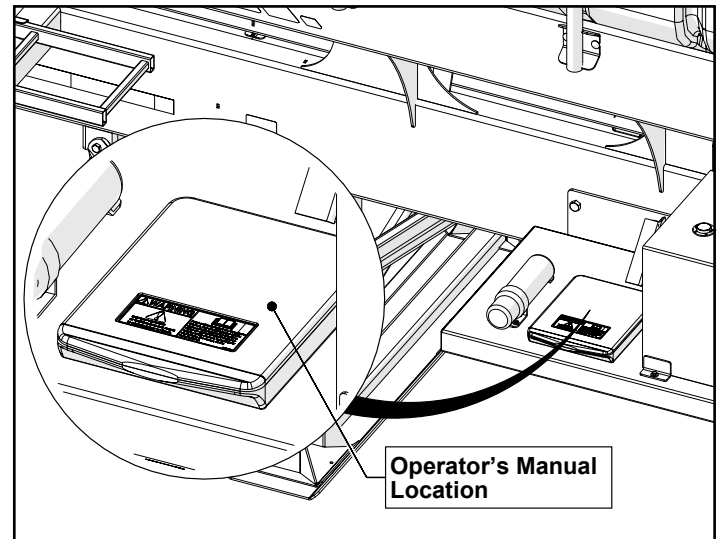


Fig. # 1-1 Operators Manual Location

Your Uni-Body Commercial Tender dealer can instruct you in the general operation of your new equipment. Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of your machine.

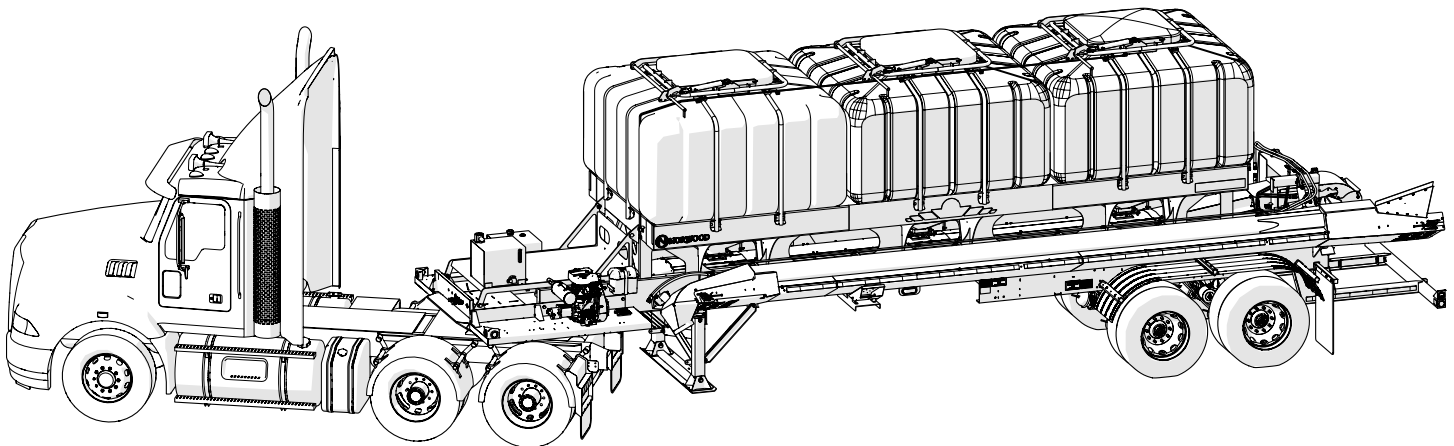


Fig. # 1-2 S900 Uni-Body Commercial Tender Shown

Uni-Body Commercial Tender V.I.N. Location

Always give your authorized Uni-Body Commercial Tender dealer the V.I.N. of your Uni-Body Commercial Tender product when ordering parts, requesting service, or any other information to provide the most efficient service.

The V.I.N. decal is identified in (See Fig. # 1-3) below.

Make a copy of the number below and keep in a safe place. If the machine is stolen, report the numbers to your local law enforcement agency.

Write the V.I.N. on the line provided.

V.I.N. _____

MANUFACTURED BY: NORWOOD SALES, INC.				
DATE	GVWR			COLD INFL. PRESSURE
	GAWR	TIRE	RIM	
FR				
MR				
RR				
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE				
V.I.N.			TYPE	

Fig. # 1-3 V.I.N Decal

The V.I.N is located where indicated below. (See Fig. # 1-4)

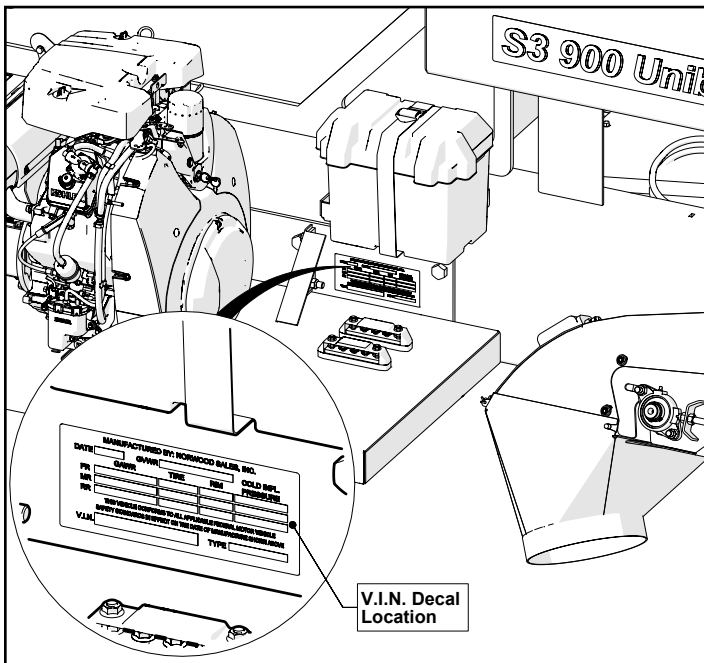


Fig. # 1-4 V.I.N. Decal Location

Determining Left and Right Side of the Machine

Operator Orientation - When you are behind the machine, looking forward toward the kingpin, the directions **Front** ①, **Back** ②, **Left** (Street Side) ③, and **Right** (Curb Side) ④ as mentioned throughout the manual, are determined when standing at the rear of the machine and looking toward the forward direction of travel.

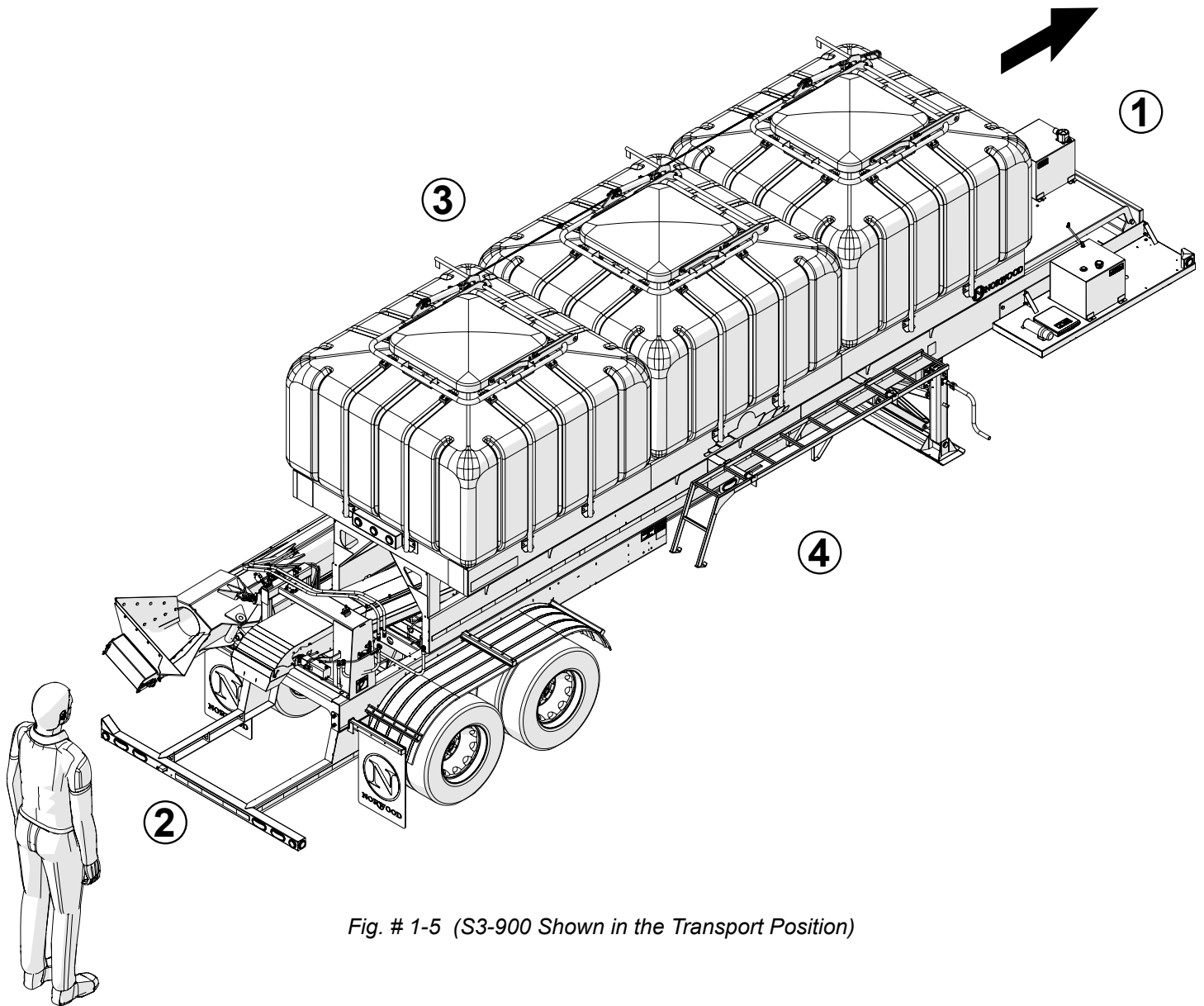


Fig. # 1-5 (S3-900 Shown in the Transport Position)

Determining Orientation Using Directional Arrows

The symbols shown below, may be illustrated on certain pages in this manual, and where indicated, determine the front of the machine.



Machine Components (Page 1 of 2)

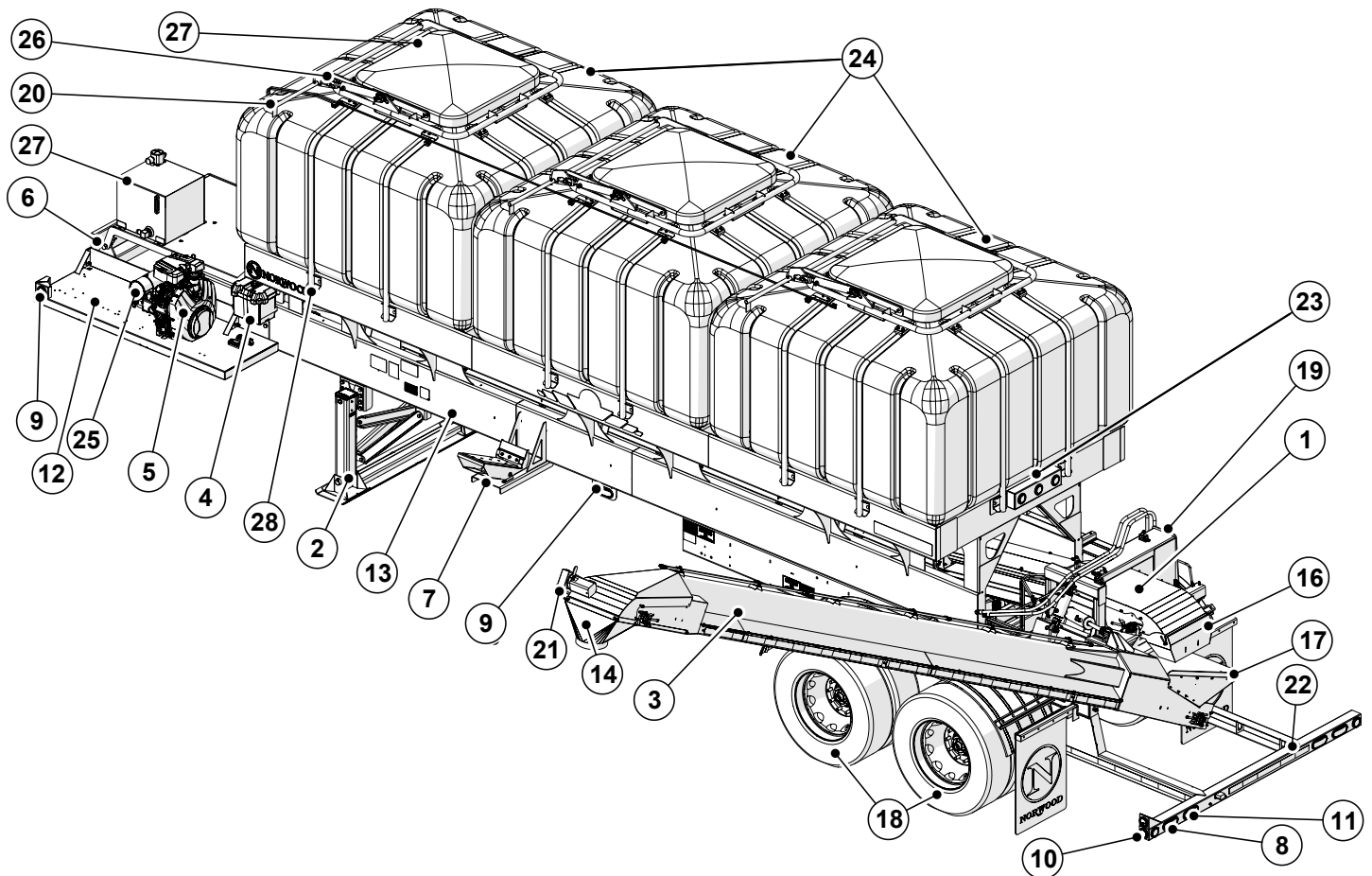


Fig. # 1-6 Machine Components, (Shown in Field Position)

Item	Description	Item	Description
1	Underbin Conveyor	15	Hydraulic Valve Controls (Not Shown)
2	Landing Gear	16	Underbin Conveyor Discharge End
3	Swing Conveyor	17	Swing Conveyor Intake End
4	Engine Battery (Option)	18	Wheel Axle Assembly
5	Engine (Option)	19	Swing Base
6	Input Control Bulkhead	20	Indicator Flag
7	Swing Conveyor Rest	21	Swing Conveyor Drive Assy.
8	Turn Signal Light	22	Rear Bumper
9	Clearance Light	23	Wide Vehicle Marker Lights
10	ABS Indicator Light	24	25 Gallon SS Hydraulic Fluid Reservoir
11	Brake Light	25	Oil Tank
12	Driver (Roadside) Side Fender	26	Tank Cover open/Close Cylinder
13	Integrated Frame	27	Hydraulic-Actuated Tank Cover
14	Swing Conveyor Discharge End	28	Tank Cover Brace

Machine Components (Page 2 of 2)

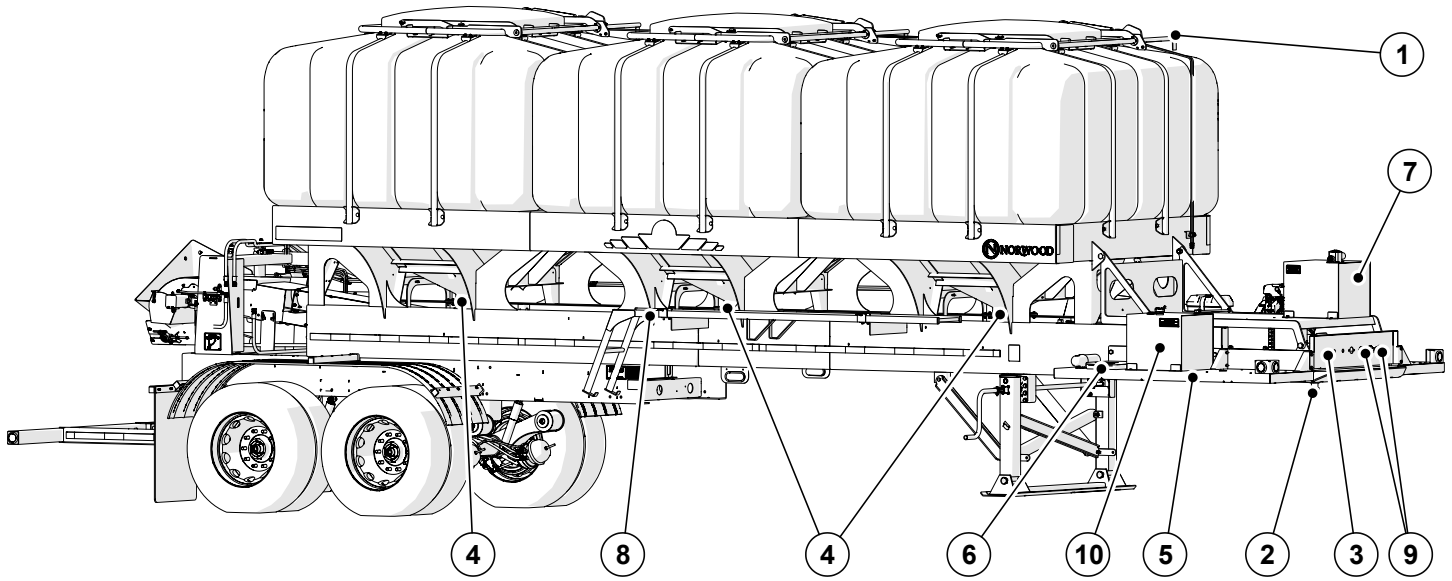


Fig. # 1-7 Machine Components, (Shown in Transport Position)

Item	Description	Item	Description
1	Indicator Flag	6	Owners Manual Canister
2	Kingpin	7	25 Gallon SS Hydraulic Fluid Reservoir
3	Input Control Bulkhead	8	Detachable Ladder
4	Hopper Discharge Gates	9	Gladhands
5	Passenger (Curbside) Side Fender	10	Fuel Tank

Machine Components Contd.

The Uni-Body Commercial Tender is available in three sizes.

The S3-900 has three 300-cubic-foot non-corrosive poly tanks, for a total of 900 cubic feet.

The S3-1200 has four 300 cubic foot non-corrosive poly tanks for 1200 cubic feet.

The S3-1500 has five 300 cubic foot non-corrosive poly tanks for 1500 cubic feet total.

Each tank can store 2,000 gallons of H₂O, 300 cubic feet of dry fertilizer, 300 units of seed or 240 bushels, or 2,000 gallons of liquid fertilizer.

A self-contained hydraulic power pack is mounted on the side and consists of an engine, fuel tank, hydraulic pump, oil reservoir, and associated plumbing.

An optional remote control is used to set and operate the unit. Each hopper gate can be opened or closed individually.

The main components are shown above and on the previous page in this manual.

* Some options are shown that may not be available on all models.
* The position of components may vary depending on the model

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2 - SAFETY INFORMATION

Safety Rules And Signal Word Definitions

Personal Safety:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Read and understand all the safety messages in this manual and associated equipment manuals before you operate or service the machine. Obey all safety messages that follow this symbol to avoid possible death or serious injury.

Throughout this manual and on machine decals, you will find the signal words **DANGER**, **WARNING**, and **CAUTION** followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

DANGER

DANGER; Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The color associated with **DANGER** on the machine decals is **RED**.

WARNING

WARNING; Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with **WARNING** on the machine decals is **ORANGE**.

CAUTION

CAUTION; Used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. **CAUTION** may also be used to alert against unsafe practices associated with events which could lead to personal injury. The color associated with **CAUTION** on the machine decals is **YELLOW**.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine Safety:

NOTICE

Notice indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Notice on the machine decals is BLUE.

IMPORTANT

Important indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Important on the machine decals is WHITE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Informational:

NOTE

Note indicates additional information which clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety Rules

Read Entire Section Before Use.

Understand that your safety and the safety of other persons is measured by how you service and operate this machine. Know the positions and operations of all controls before you try to operate. **MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.**

READ THIS MANUAL COMPLETELY AND MAKE SURE YOU UNDERSTAND THE CONTROLS. All equipment has a limit. Make sure you understand the stability and load characteristics of this machine before you start to operate.

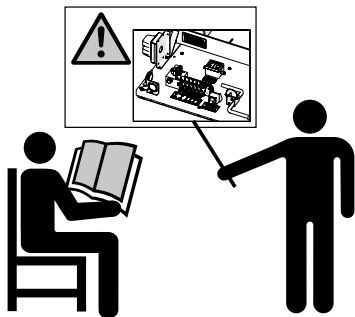
NOTE: Safety messages in this section point out specific safety hazards which can be encountered during the normal operation and maintenance of your machine. These safety messages also give possible ways of dealing with these conditions.

The safety information given in this manual does not replace safety codes, insurance needs, federal, state and local laws. Make sure your machine has the equipment required by the local laws and regulations.

Owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.

The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.

A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.



Additional safety messages are used in the text of the manual to indicate specific safety hazards. See your dealer for more information if you have any questions.

⚠ General Safety ⚠

Do not operate the machine on slopes.

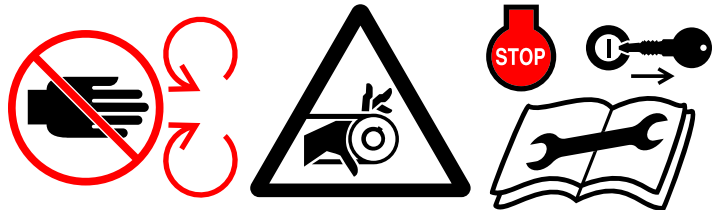
A raised swing conveyor, a partially full or full conveyor belt, and other loads will change the machine's center of gravity. The machine can tip or roll over when near ditches, embankments, or uneven surfaces.

Never permit anyone to ride on any part of the machine.



Some illustrations in this manual will show shields or cover panels removed for purposes of clarity. **DO NOT** operate this machine with any of the shields or cover panels removed.

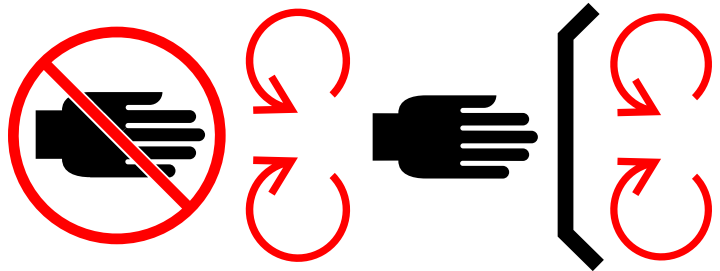
Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.



Never operate the machine under the influence of alcohol, drugs or while otherwise impaired.

DO NOT attempt to remove material from any part of the machine while it is being operated or components are in motion.

Make sure all guards and shields are in good condition and properly installed before operating the machine. Never operate the machine with shields removed. Always close access doors or panels before operating the machine.



Wear personal protective equipment (PPE) when appropriate.
[“See Personal Protective Equipment \(PPE\)” on page 2-7](#)

DO NOT attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.



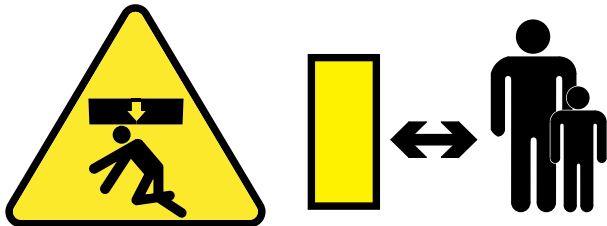
A person or bystanders within the operating area of a machine can be struck or crushed by the machine or its equipment. **DO NOT** allow anyone untrained with the machine to enter the work area.

DANGER

Crushing Hazard!

A raised swing conveyor can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath a raised swing conveyor during operation.

Failure to comply could result in serious injury or death.



Never operate the engine in enclosed spaces as harmful exhaust gases may build up and cause asphyxiation. Operate the machine only in a well ventilated area.

If natural ventilation is not possible, install ventilators, fans, exhaust extension pipes or other venting devices.



Before you start the machine, be sure that all controls are in neutral position.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing death or serious injury, or infection.

DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.

Stop engine, remove key and relieve the pressure before connecting or disconnecting fluid lines.

Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.

If hydraulic fluid or diesel penetrates the skin, seek medical attention immediately.

Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Review this manual and any other associated manuals before each season of use.

Never allow anyone unfamiliar, untrained, or complacent to operate the machine.

Use extreme care when cleaning, filling, or adjusting the machine.

DO NOT enter hoppers unless another person is present.

DO NOT work around rotating equipment. Loose clothing, rings, watches, etc. may get caught and cause death or serious injury..

Operating Safety

Machine operation should be restricted to those who have read the instructors manual carefully, and who understand machine safety features. Children should never be allowed to operate the machine. Untrained operators or failure to follow instructions can cause serious injury or death.

Operators should:

- Read and understand the Operator's Manual and all safety decals before using.
- Know how to operate the machine safely and be familiar with the location and purpose of all controls.
- Wear personal protective equipment.
- Load, unload, and turn on level ground.
- Do not allow riders on or in the machine. Never use the machine for a work platform.
- Watch for overhead power lines when raising the swing conveyor.
- Never place your hands, feet, or other parts of your body

between the frame and the swing conveyor, swing base and underbin conveyor discharge end, swing conveyor Intake end, swing conveyor discharge end, and a grain truck or other machine, cylinders, or any other moving part on the equipment. The sizes of these gaps change when the machine moves and a person could suffer severe injury or death. Never do it. Keep away, keep others away.

- Before you move the machine, you must be certain that no one will be endangered.
 - You can get familiar with the machine operation while operating the machine slowly in an open area, check for proper operation of all controls and all protective devices.
 - Avoid any conditions that can lead to tipping the machine. The machine can tip when it is steered sharp to the left or right at higher speeds. It can also tip when working on hills, banks, and slopes or when crossing ditches, ridges, or other unexpected obstacles.
 - Avoid operating the machine across the slope. When possible, operate the machine up the slopes and down the slopes.
 - Maintain control of the machine. Do not overload the machine beyond the machine capacity.
 - This machine is designed to operate in the ambient temperature range of -20 °F (-28 °C) to 110 °F (43 °C).
 - Only use attachments and implements that are approved by Norwood Sales for use on S3 machines. If you are in doubt about the compatibility with your machine, consult your Norwood Sales dealer.
 - A well trained operator that follows the instructions in the Operator's Manual has the greatest impact on stability. Operator training provides a person with the following abilities:
 - Observation of working and environmental conditions.
 - Feel for the machine, identification of potential hazards.
 - Operating the machine safely by making appropriate decisions.
 - Gas engine drives: Place all controls in neutral by disengaging hydraulic levers, stop the engine, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging any area of the machine.
 - Hydraulic drives: Park on a level surface, stop the engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging any area of the machine.
 - Clear the area of bystanders, especially children, before starting.
 - Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting.
- Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
 - Operate the equipment away from overhead obstructions and power lines during operation and transporting. Electrocutation can occur without direct contact.
 - Remove any material, i.e. seed or fertilizer, from the underbin conveyor or swing conveyor before transporting the machine.
 - Always shut off tow vehicle and shift to park or set brakes when leaving tow vehicle. Remove key when leaving tow vehicle unattended.
 - Establish a lock-out or tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out or tag-out all power sources before servicing the unit or working around loading/unloading equipment.

Gas Engine Safety

BEFORE STARTING ENGINE, READ AND UNDERSTAND THE OPERATING AND MAINTENANCE INSTRUCTIONS THAT CAME WITH YOUR ENGINE.

WARNING: DO NOT

1. **DO NOT** run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.
2. **DO NOT** place hands or feet near moving or rotating parts.
3. **DO NOT** store, spill, or use gasoline near an open flame, or devices such as a stove, furnace, or water heater which use a pilot light or devices which can create a spark.
4. **DO NOT** refuel indoors where area is not well ventilated. Outdoor refueling is preferred.
5. **DO NOT** fill fuel tank while engine is running. Allow engine to cool for 5 minutes before refueling. Store fuel in approved safety containers.
6. **DO NOT** remove fuel tank cap while engine is running.
7. **DO NOT** operate engine if gasoline is spilled. Move machine away from the spill and avoid creating any until the gasoline has evaporated.
8. **DO NOT** smoke when filling fuel tank.
9. **DO NOT** run engine at excessive speeds. This may result in injury.
10. **DO NOT** tamper with governor springs, governor links or other parts which may increase the governed engine speed.
11. **DO NOT** tamper with the engine speed selected by the original equipment manufacturer.

12. **DO NOT** check for spark with spark plug or spark plug wire removed. Use an approved tester.
13. **DO NOT** crank engine with spark plug removed. If engine is flooded, place throttle in "FAST" position and crank until engine starts.
14. **DO NOT** strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. Use proper tools to service engine.
15. **DO NOT** operate engine without a muffler. Inspect periodically and replace, if necessary. If engine is equipped with muffler deflector, inspect periodically and replace, if necessary, with correct deflector.
16. **DO NOT** operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.
17. **DO NOT** touch hot muffler, cylinder or fins because contact may cause burns.
18. **DO NOT** run engine with air cleaner or air cleaner cover removed.

In the State of California do not use this engine on any forest covered, brush covered, or grass covered unimproved land unless a spark arrester is installed on the muffler. The above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

Refueling Safety

1. Handle fuel with care. It is highly flammable.
2. Allow engine to cool for 5 minutes before refueling. Clean up spilled fuel before restarting engine.
3. Do not refuel the machine while smoking or when near open flame or sparks.
4. Fill fuel tank outdoors.
5. Prevent fires by keeping machine clean of accumulated trash, grease and debris.

WARNING: DO

1. **ALWAYS DO** remove the wire from the spark plug when servicing the engine or equipment. **TO PREVENT ACCIDENTAL STARTING.** Disconnect the negative wire from the battery terminal if equipped with a 12 volt starting system.
2. **DO** keep cylinder fins and governor parts free of grass and other debris which can affect engine speed.
3. **DO** examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
4. **DO** use fresh gasoline. Stale fuel can gum carburetor and cause leakage.
5. **DO** check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

Fire And Explosion Prevention

Fuel or oil that is leaked or spilled on hot surfaces or electrical components can cause a fire.

Crop materials, trash, debris, bird nests, or flammable material can ignite on hot surfaces.

Always have a fire extinguisher on or near the machine. Make sure that the fire extinguisher(s) is maintained and serviced according to the manufacturer's instructions.

At least once each day, and at the end of the day, remove all trash and debris from the machine especially around hot components such as the engine, transmission, exhaust, battery, belts, bearings, pulleys, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.



Inspect the electrical system for loose connections and frayed insulation. Repair or replace loose or damaged parts.

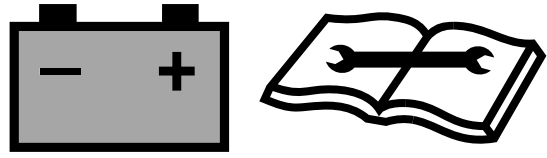
Do not store oily rags or other flammable material on the machine.

Do not weld or flame cut any items that contain flammable material. Clean items thoroughly with non-flammable solvents before welding or flame-cutting.

Do not expose the machine to flames, burning brush, or explosives.

Promptly investigate any unusual smells or odors that may occur during operation of the machine.

General Battery Safety



Always wear eye protection when you work with batteries.

Do not create sparks or have open flame near a battery.

Ventilate the area when you charge a battery or use a battery in an enclosed area.

Disconnect the negative (-) terminal first and reconnect the negative (-) terminal last.

When you weld on the machine, disconnect both terminals of the battery.

Do not weld, grind, or smoke near a battery.

When you use auxiliary batteries or connect jumper cables to start the engine, use the procedure shown in the operator's manual. Do not short across terminals.

Follow the manufacturer's instructions when you store and handle batteries.

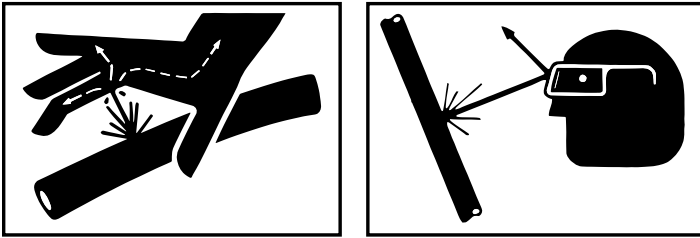
Battery post, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.

Battery acid causes burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Keep out of reach of children and other unauthorized persons.

⚠ Hydraulic Safety ⚠

Hydraulic oil leaking under pressure can penetrate the skin causing serious injury or death, or infection.



DO NOT use your hand to check for leaks. Use a piece of cardboard or plywood.

Before you connect or disconnect any rear implement hydraulic hoses, relieve the residual hydraulic pressure by following the next steps. (*See "Stopping Procedure" on page 2-7*)

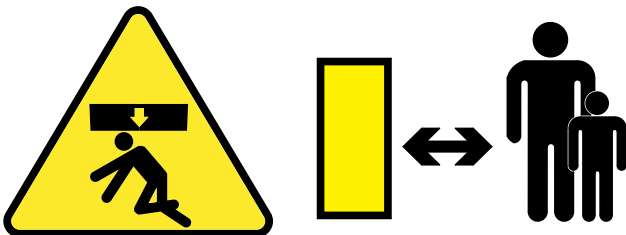
Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.

Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

Replace any worn, cut, abraded, flattened or crimped hoses.

If hydraulic fluid penetrates the skin, seek medical attention immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.



Avoid serious injury or death while working under a raised implement. Hydraulic hoses between the lift cylinders and hydraulic lockup valves should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Worn or damaged hose assemblies can malfunction during use and should be replaced immediately.

See your Norwood dealer for replacement hoses.

Watch Out For Hazardous Working Conditions

- Do not enter areas where there is soft ground. Operating on soft ground could cause the machine to tilt under its own weight, resulting in a machine tipping over or sinking into the ground. Do not operate on soft surface such as a back-filled ground.

⚠ Prepare for Emergencies ⚠



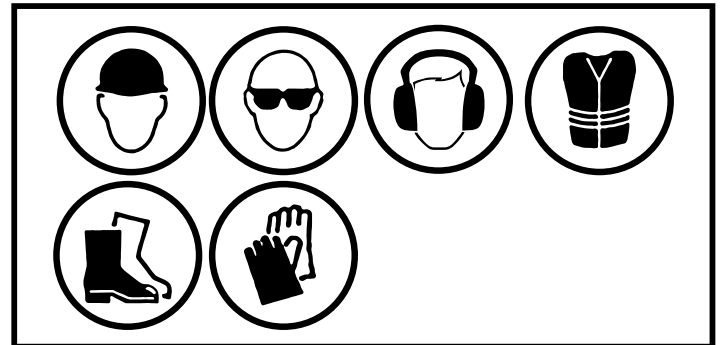
Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

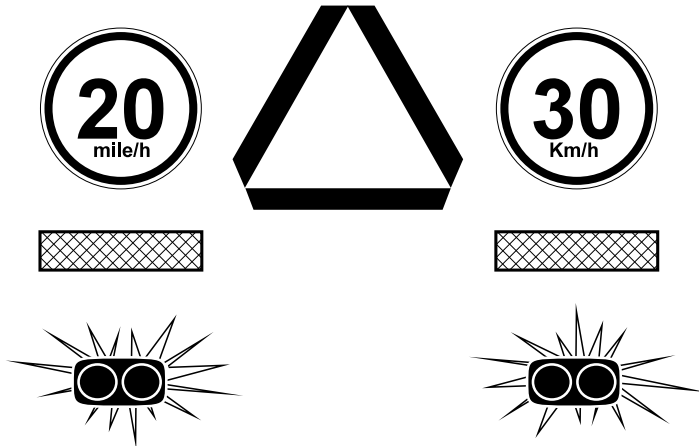
⚠ Personal Protective Equipment (PPE) ⚠

Wear personal protective equipment. This list Includes but is not limited to:



- A hard hat
- Protective shoes with slip resistant shoes
- Safety glasses or goggles
- Heavy gloves
- Hearing protection
- Protective clothing
- A face shield (when grinding)

⚠ Reflectors and Warning Lights ⚠



Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads.

Frequently check for traffic from the rear, especially in turns, and use turn signal lights. Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order.

Replace or repair lighting and marking that has been damaged or lost. A SMV safety lighting kit is available from your Norwood dealer.

⚠ Use a Signal Person ⚠



Use a signal person to direct movement of the machine whenever the operator's view is obstructed.

Designate one individual as the signal person. Always have signal person stand in clear view. Be sure that signal person stays a safe distance away from the machine when it is moving.

Before starting the machine, discuss hand signals and what each signal means to avoid misunderstandings and confusion, which could result in a serious injury or fatal accident for someone.

Keep all bystanders away whenever the machine is moved.

⚠ Lock-Out Tag-Out Safety ⚠

Lockout/Tagout is a critical safety procedure designed to protect workers from hazardous energy during the maintenance or servicing of machinery and equipment. It ensures that equipment is properly shut off and cannot be restarted until the work is safely completed.

Before you start servicing the machine:

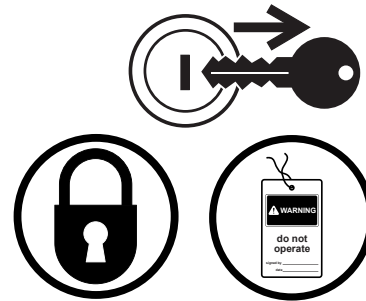
1. Park the machine on a firm, level surface.
2. Discharge any remaining material, lower the swing conveyor and attach it to the swing conveyor rest.
3. Discharge any remaining material, slow and stop the underbin conveyor.
4. Place all controls in the neutral position.
5. Bring the engine to low idle speed.

⚠ WARNING

Some components may continue to run down after you disengage drive systems. Make sure all drive systems are fully disengaged. Failure to comply could result in serious injury or death.

7. Turn off the engine and remove the key.
8. Wait for all moving parts to stop before leaving towing vehicles cab.
9. Exit the machine.
10. Chock wheels and use safety stands to prevent movement.

Attach a "Do Not Operate" warning tag to the machine in an area that will be visible.



11. Establish a formal Lock-Out Tag-Out program for your operation.
12. Train all operators and service personnel before allowing them to work around the area.
13. Provide tags on the machine and a sign-up sheet to record tag out details.

⚠ Electrical Storm Safety ⚠

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab or operator's platform. Do not make contact with the ground or objects outside the machine.

⚠ WARNING

Electro-Magnetic Compatibility (EMC)

Interference may arise as a result of add-on equipment which may or may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- The maximum power of emission equipment (radios, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine.
- The electro-magnetic field generated by the add-on system should not exceed 24 V/m at any time and at any location in the proximity of electronic components.

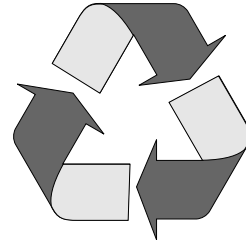
⚠ Working at Heights (if applicable) ⚠

When the normal use and maintenance of the machine requires working at heights: Correctly use installed steps, ladders and railings. Never use ladders, steps or railings while the machine is moving. Do not stand on surfaces which are not designed as steps or platforms.

Do not use the machine as a lift, ladder or platform for working at heights.

⚠ Decommissioning: Proper Recycling and Disposal of Fluids and Components ⚠

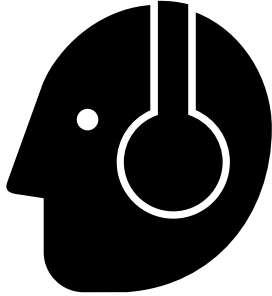
Safety and environmental measures must be taken into account when decommissioning a machine and/or component. These measures include the following:



- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your Norwood dealer for information on the proper way to recycle or dispose of waste.

Noise Level Safety

Exposure to loud noises can cause hearing damage. Always wear hearing protection when operating noisy equipment or when working in a noisy environment.



Decommission Safety

When the machine is taken out of service because it is damaged beyond repair or has reached the end of its useful life, disassembly, scrapping and/or recycling of components, fluids, etc. must be performed only by a qualified technician using service instructions and in compliance with local laws and regulations.

Chemical Safety and the Environment

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances which are required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

NOTICE: *The following are recommendations which may be of assistance:*

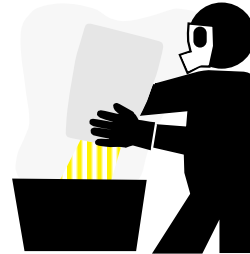
- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

Helpful Hints

- Avoid spillage when draining off used gearbox and hydraulic oils, etc. Do not mix drained fluids with lubricants. Store drained fluids safely until they can be disposed of properly to comply with local legislation and available resources.
- Repair any leaks or defects in the hydraulic system immediately.

- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of hydraulic fluid.

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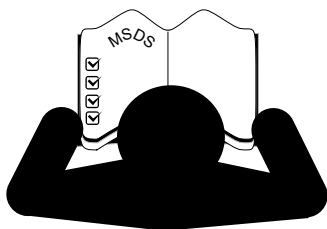
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- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc. with regard to their effect on man and nature and how to safely store, use and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

Helpful Hints

- Avoid filling tanks using cans which may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances which may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when draining off used gearbox and hydraulic oils, etc. Do not mix drained fluids with lubricants. Store drained fluids safely until they can be disposed of properly to comply with local legislation and available resources.
- Repair any leaks or defects in the hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of hydraulic fluid.

Handle Hazardous Chemical Products Safely **Remove Paint Before Welding or Heating**



Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Norwood equipment include such items as lubricants, fluids, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

(See your Norwood dealer for MSDS's on chemical products used with Norwood equipment.)

Workplace Hazard Areas

1. Review the following pages illustrating “**Workplace hazards**” before working with, maintaining or operating the S3.



Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 4 in. (100 mm) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.
- **Do Not** use a chlorinated solvent in areas where welding will take place.
- **Do** all work in an area that is well ventilated to carry toxic fumes and dust away.
- Dispose of paint and solvent properly.

Avoid Heating Near Pressurized Fluid Lines

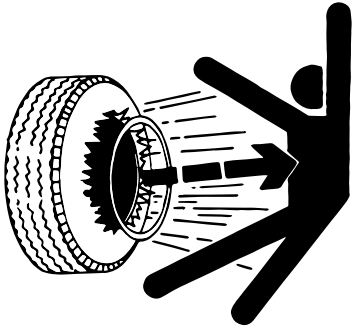


Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.

⚠ Wheel and Tire Safety ⚠

Make sure tires are correctly inflated. Do not exceed recommended load or pressure. Follow instructions in the manual for proper tire inflation.

Always have a qualified tire technician service the tires and rims. If a tire has lost all pressure, take the tire and rim to a tire shop or your dealer for service. Explosive separation of the tire can cause serious injury or death.



- **DO NOT** attempt to mount a tire unless you have the proper equipment and experience to do the job. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosive separation, which may result in serious injury or death.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never under-size the replacement tire.
- **DO NOT** weld on the tire rim with the tire mounted on the rim. The heat can cause an increase in air pressure, resulting in a tire explosion which could result in serious injury or death. Also welding can structurally weaken or deform the wheel.



- Inflate tires to the manufacturer's recommended pressure.
- Tires should not be operated at speeds higher than their rated speed.
- Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the wheel. Have the tire and wheel closely inspected for damage before remounting.

⚠ Avoid Overhead Power Lines ⚠

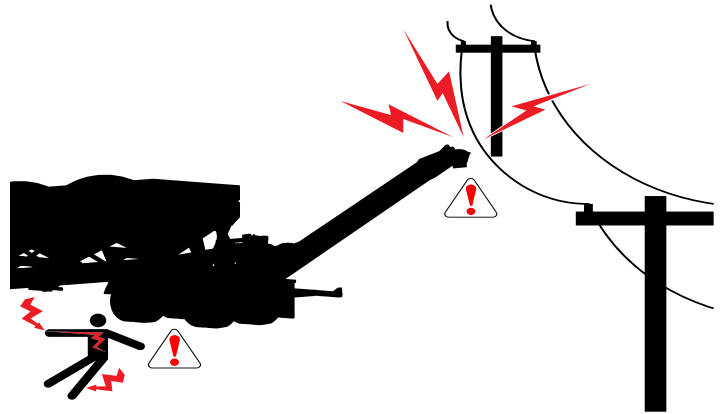
⚠ CAUTION

Avoid swing conveyor contact with overhead power lines. Serious injury or death can result. Proceed cautiously under overhead power lines and around utility poles. Know the working height of your machine. Electrocuting can occur without direct contact with overhead power lines.

Stay away from overhead obstructions and power lines. Approach areas with caution where overhanging power lines are present. Electrocuting can occur without direct contact.

Serious injury or death by electrocuting can result if the machine or any of its attachments are not kept a safe distance from high-voltage electric power lines. Maintain a distance of 20 ft (6 m) between the machine, loader boom arms, and any power line carrying up to 50,000 volts or less.

If state/province, local, or job site regulations require even greater safety distances than stated above, adhere strictly to these regulations for personal protection.



Should a contact between the machine and an electric power source occur, the following precautions must be taken:

Stop the machine movement immediately.

Apply the park brake, stop the engine.

Check if you can safely leave the vehicle's cab or your actual position without contacting the electrical wires. If not, stay in your position and call for help.

If you can leave your position without touching lines, jump clear of the machine to make sure you do not make contact with the ground and the machine at the same time.

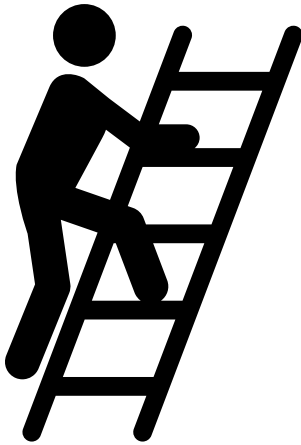
Do not permit anyone to touch the machine until power has been shut off to the power lines.

⚠ Detachable Ladder Safety ⚠

⚠ WARNING

Fall Hazard!

- Use caution when attaching the detachable ladder. Make sure the detachable ladder mates to the hopper side before climbing ladder.



- Always face the ladder when climbing up and down.
- One person on the ladder at a time.
- Raise and lock the ladder when not in use.
- Stow the detachable ladder onto the ladder support bracket and install transport locks before transporting.
- Jumping on or off the machine could cause an injury. Use the handrails and steps of the ladder, and get on or off slowly. Maintain a three-point contact to avoid falling: both hands on the handrails and one foot on the step, or one hand on the handrail and both feet on the steps.
- Never permit anyone to ride on any part of the machine, including the bulk hopper loader and platform.

Failure to comply could result in serious injury or death.

Detachable Ladder

The hoppers can be accessed with a detachable ladder. The detachable ladder can be attached to the left side & right side of the machine on the hopper lid frame. (See Fig. # 2-8)

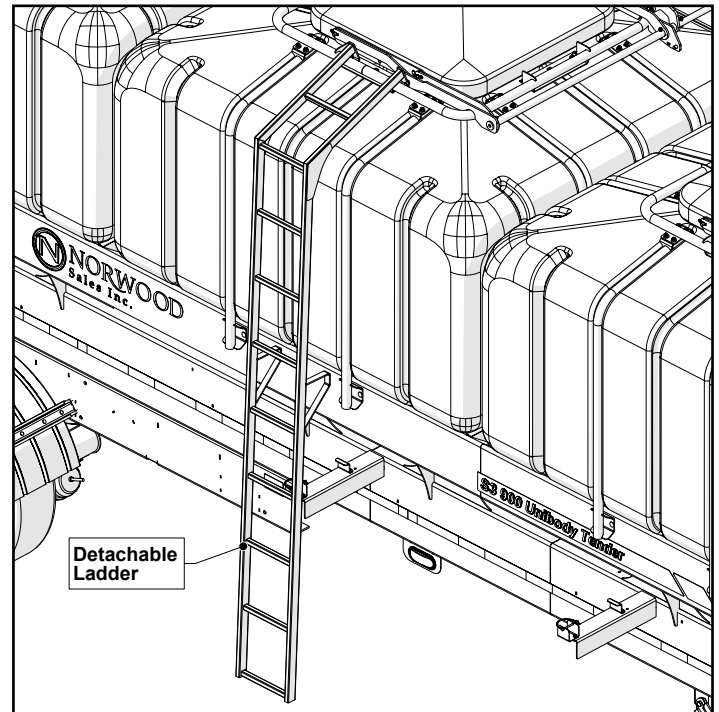


Fig. # 2-8 Detachable Ladder

The detachable ladder has a designated stowed position on the frame. The detachable ladder **MUST** be returned in the stowed position before the machine is transported. (See Fig. # 2-9)

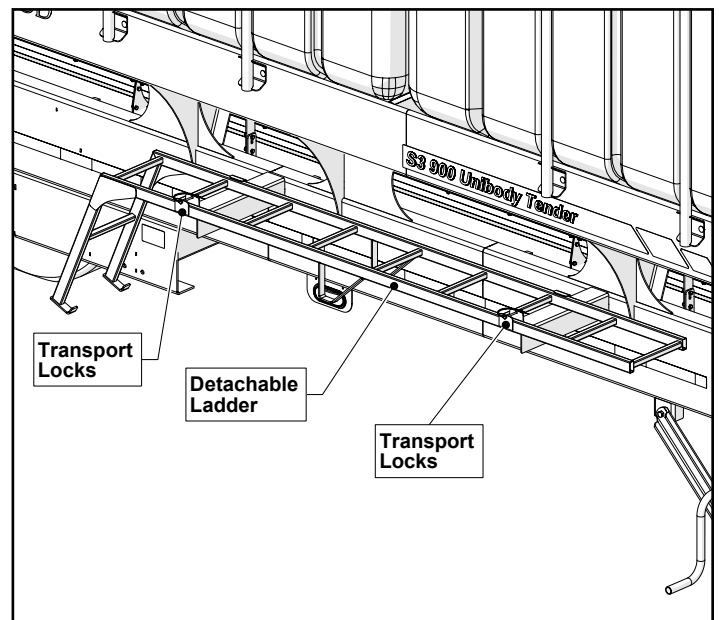


Fig. # 2-9 Detachable Ladder Stowed Position

Safety Decals

The following safety decals are placed on your machine as a guide for your safety and for those working with you. Walk around the machine and note the content and location of these safety decals before operating your machine.



Keep safety decals clean and legible. Clean safety decals with a soft cloth, water, and a gentle detergent. Do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove safety decals.

Replace all safety decals that are damaged, missing, painted over, or illegible. If a safety decal is on a part that is replaced, make sure the safety decal is installed on the new part. See your dealer for replacement safety decals.



Safety decals that display the "Read Operator's Manual" symbol are intended to direct the operator to the operator's manual for further information regarding maintenance, adjustments, or procedures for particular areas of the machine. When a safety decal displays this symbol, refer to the appropriate page of the operators manual.

NOTE: Replacement decals are available from your Uni-Body Commercial Tender dealer.

Safety Decal Locations

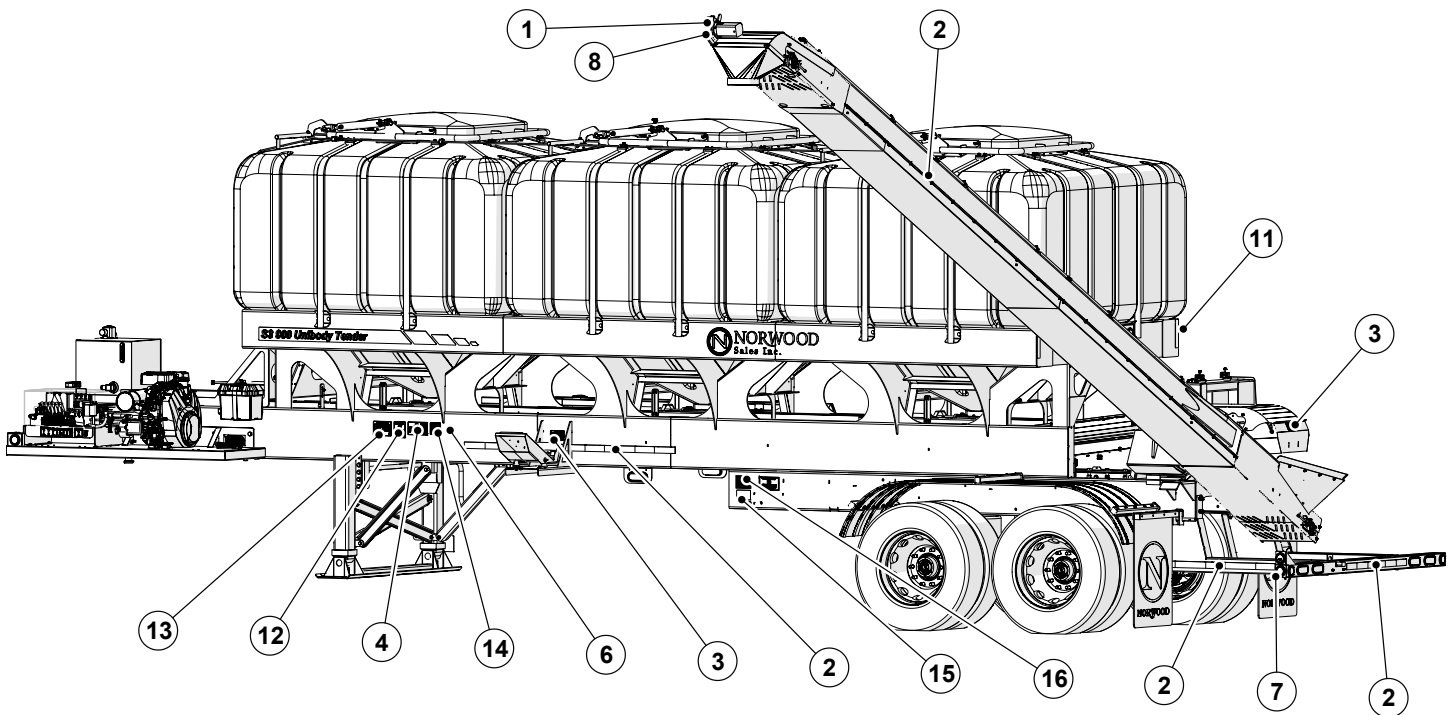


Fig. # 2-10 Safety Decal Locations

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
1	90-44-0167	Decal, Rotating Parts Hazard Decal	4	10	90-44-0267 *	Decal, Unleaded Gasoline Only (87 Oct)	1
2	90-44-0282	Decal, Conspicuity Tape Red/White Roll -2" X 150'	729"	11	90-44-0617	Decal, White Conspicuity Tape (2 x 12)	4
3	90-44-0283	Decal, Crush Hazard Do Not Enter	2	12	90-44-0284	Decal, Warning - Ladder Safety	2
4	90-44-0286	Decal, Danger - Electrocution Hazard	1	13	90-44-0285	Decal, Warning - Machine Safety	1
5	90-44-0268*	Decal, Hydraulic Oil Only (AW32)	1	14	90-44-0173	Decal, Warning-Hyd Fluid	1
6	90-44-0266	Decal, Important Electrical Drain	1	15	90-44-0290	Decal, Wheel End Torque	2
7	90-44-0287	Decal, Notice ABS	1	16	90-44-0703	Decal, RideWell RAR-266 Trailer Susp Torque	1
8	90-44-0021*	Decal, Danger Missing Guard (2 x 3.5)	2	17	90-44-0295	Decal, Warning - Read and Understand - Manual Holder	1
9	90-44-0410	Decal, Reflector, Yellow-2x9	4				

* Not shown in this view

Safety Decal Locations Cont...

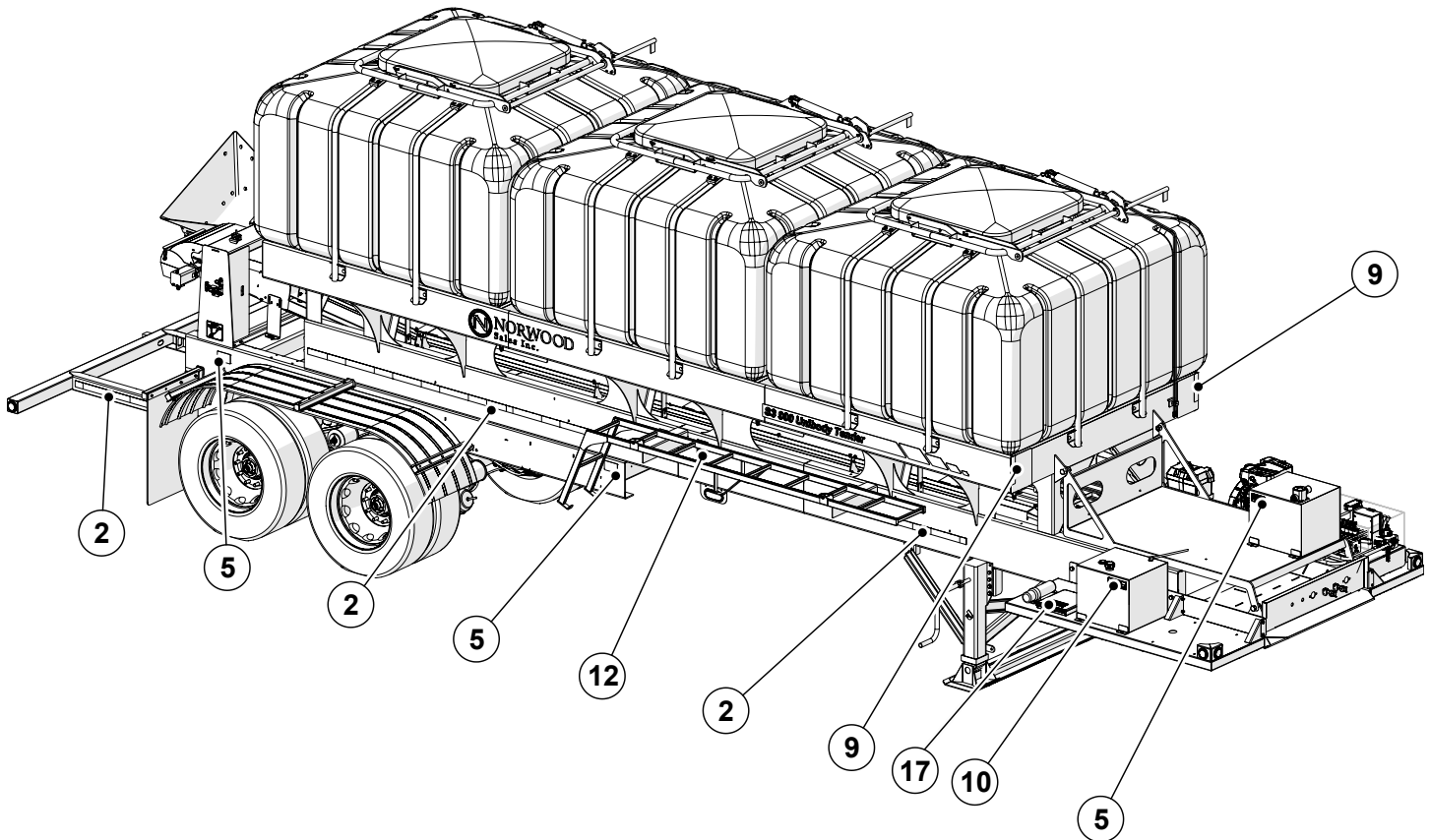


Fig. # 2-11 Safety Decal Locations

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
1	90-44-0167	Decal, Rotating Parts Hazard Decal	4	10	90-44-0267 *	Decal, Unleaded Gasoline Only (87 Oct)	1
2	90-44-0282	Decal, Conspicuity Tape Red/White Roll -2" X 150'	729"	11	90-44-0288	Decal, Warning - Cush	1
3	90-44-0283	Decal, Crush Hazard Do Not Enter	2	12	90-44-0284	Decal, Warning - Ladder Safety	2
4	90-44-0286	Decal, Danger - Electrocution Hazard	1	13	90-44-0285	Decal, Warning - Machine Safety	1
5	90-44-0268*	Decal, Hydraulic Oil Only (AW32)	1	14	90-44-0284	Decal, Warning-Hyd Fluid	1
6	90-44-0266	Decal, Important Electrical Drain	1	15	90-44-0290	Decal, Wheel End Torque	2
7	90-44-0287	Decal, Notice ABS	1	16	90-44-0703	Decal, RideWell RAR-266 Trailer Susp Torque	1
8	90-44-0021*	Decal, Danger Missing Guard (2 x 3.5)	2	17	90-77-0295	Owners manual	1
9	90-44-0410	Decal, Reflector, Yellow-2x9	4				

* Not shown In this view



WARNING

Before operating machine, read operator's manual and ALL SAFETY instructions.

If manual is missing, contact your dealer or service department.

1. Before starting engine or operation, clear area of bystanders.
2. Disengage drives, stop engine, wait for all movement to stop before leaving operator's position.
3. Keep all shields in place. Keep hands, feet, clothing and hair away from moving parts.
4. Keep riders off machines.
5. Never adjust, lubricate, clean or unplug machine with engine running.

Failure to comply could result in death or serious injury.

90-44-0285



Fig. # 2-12 Warning Decal Qty 1 Per Machine P/N 90-44-0285

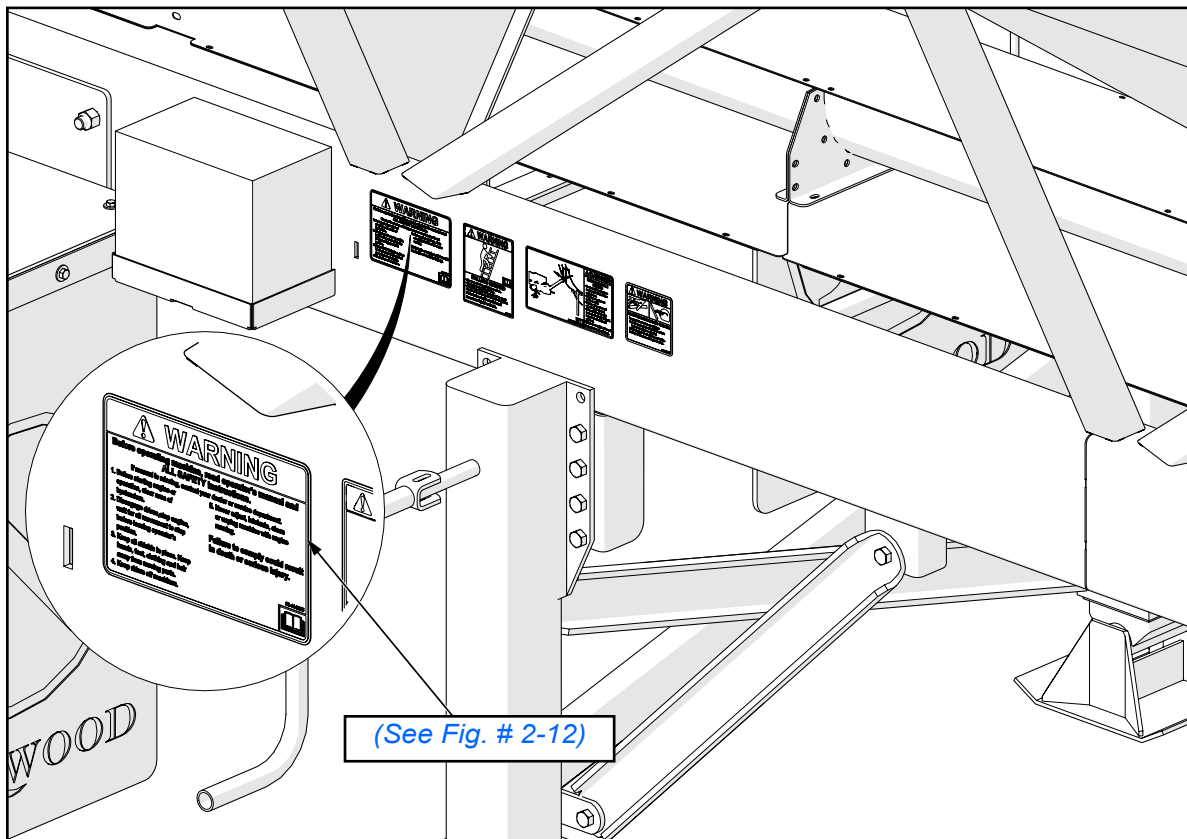
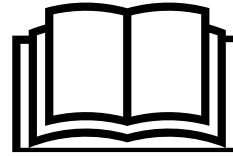


Fig. # 2-13 Safety Decal Location

! WARNING

**Improper operation
or maintenance can result
in serious injury or death.**



Read and understand the Operator's Manual, and all safety signs before using or maintaining the machine. If you do not understand the information in the manual, consult your supervisor, the owner, or the manufacturer.

90-44-0295

Fig. # 2-14 Warning Decal Qty 1 Per Machine P/N 90-44-0295

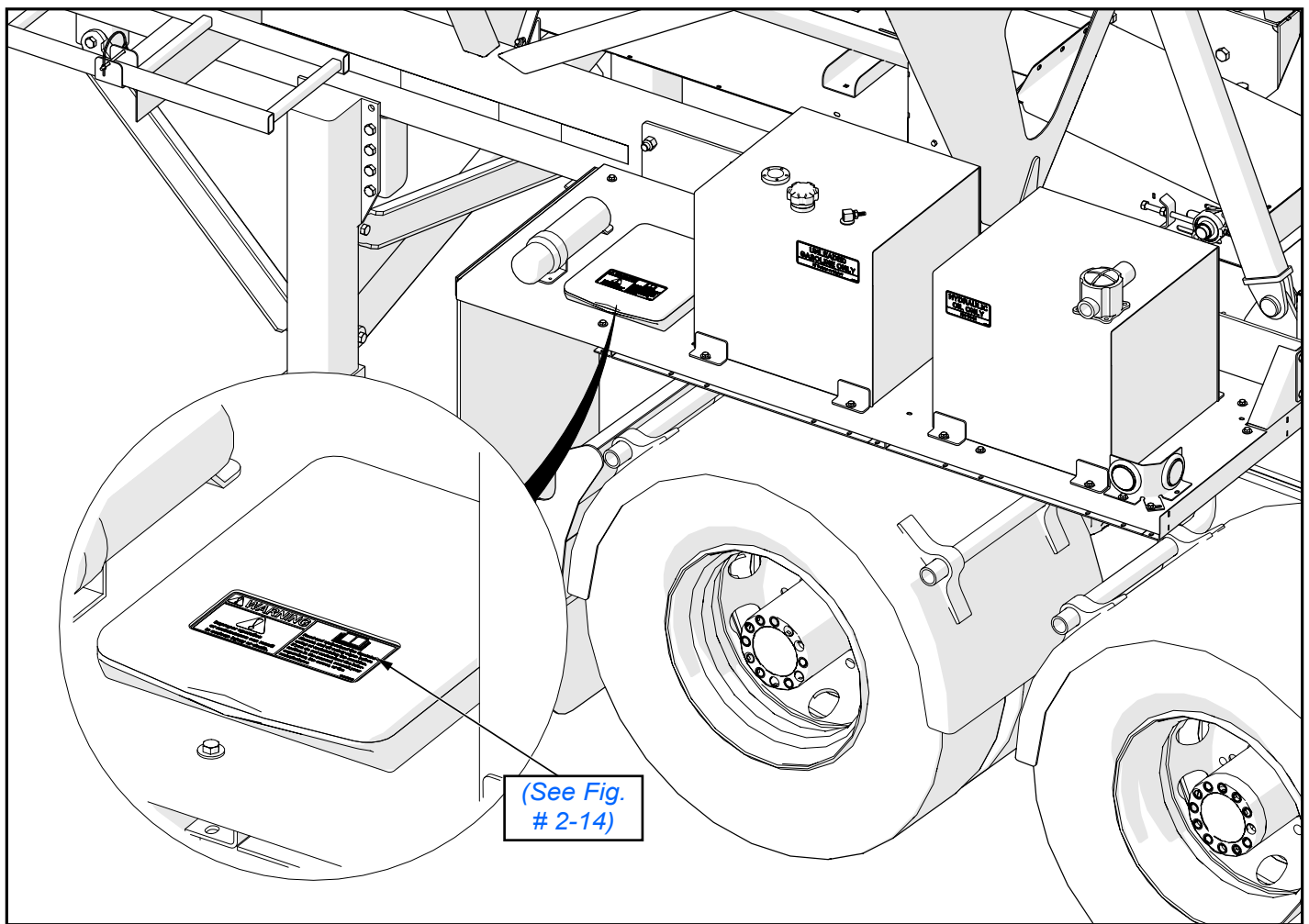


Fig. # 2-15 Safety Decal Location

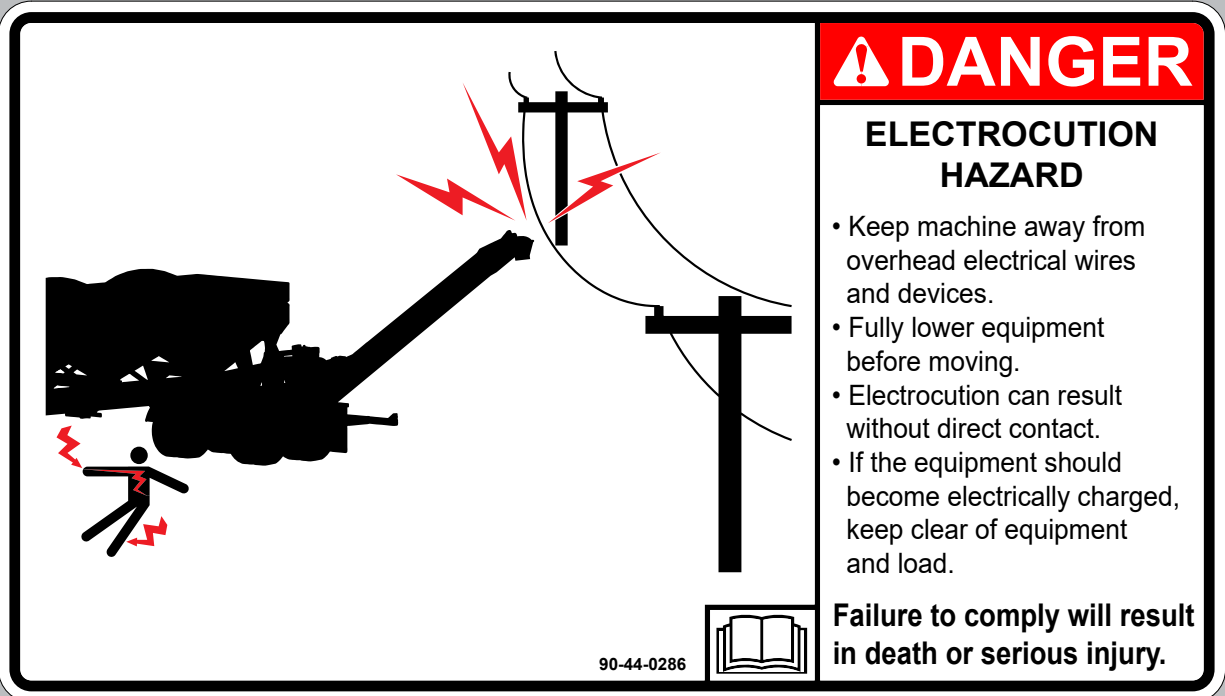


Fig. # 2-16 Danger Decal Qty 1 Per Machine P/N 90-44-0286

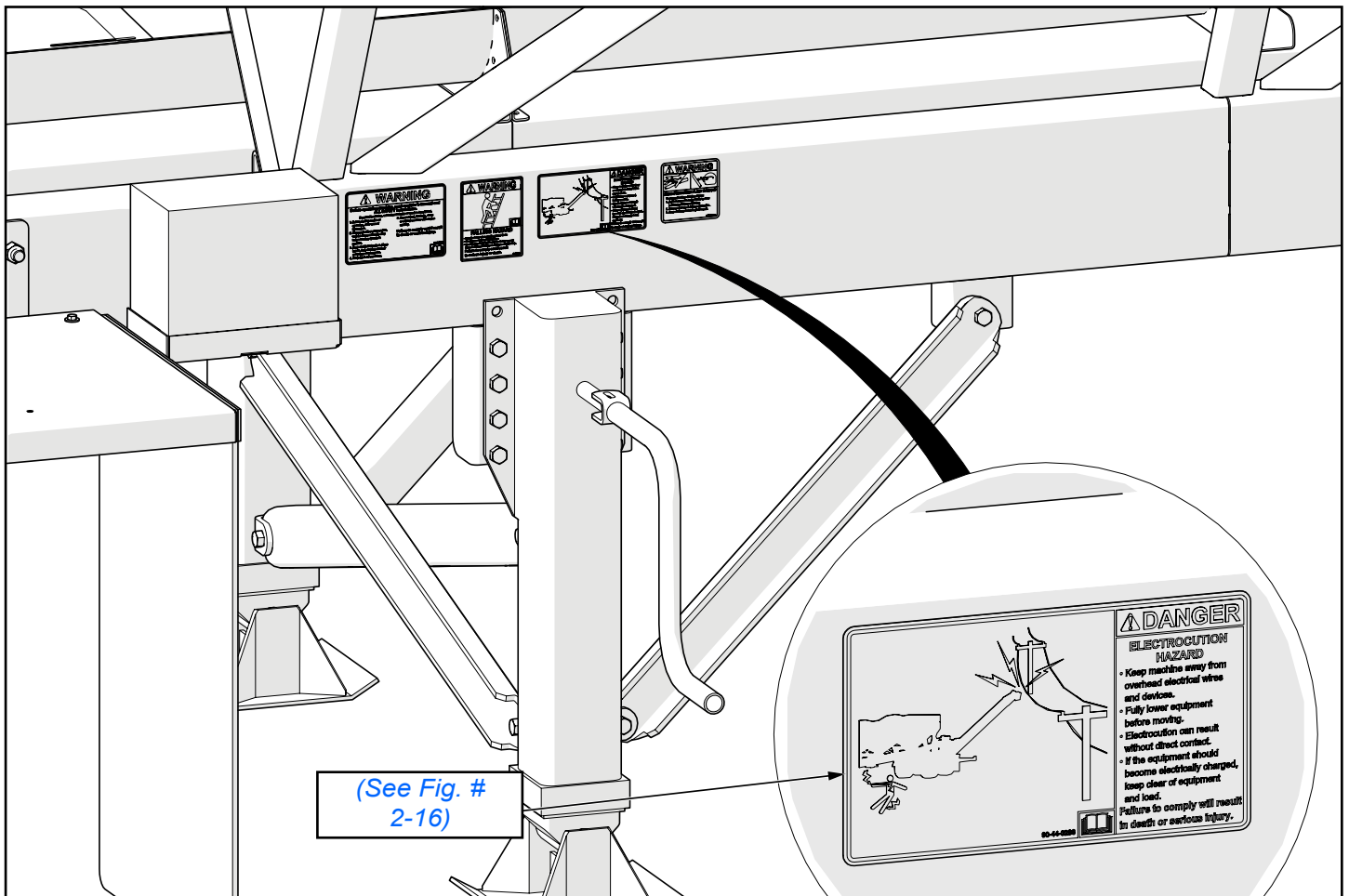


Fig. # 2-17 Safety Decal Location

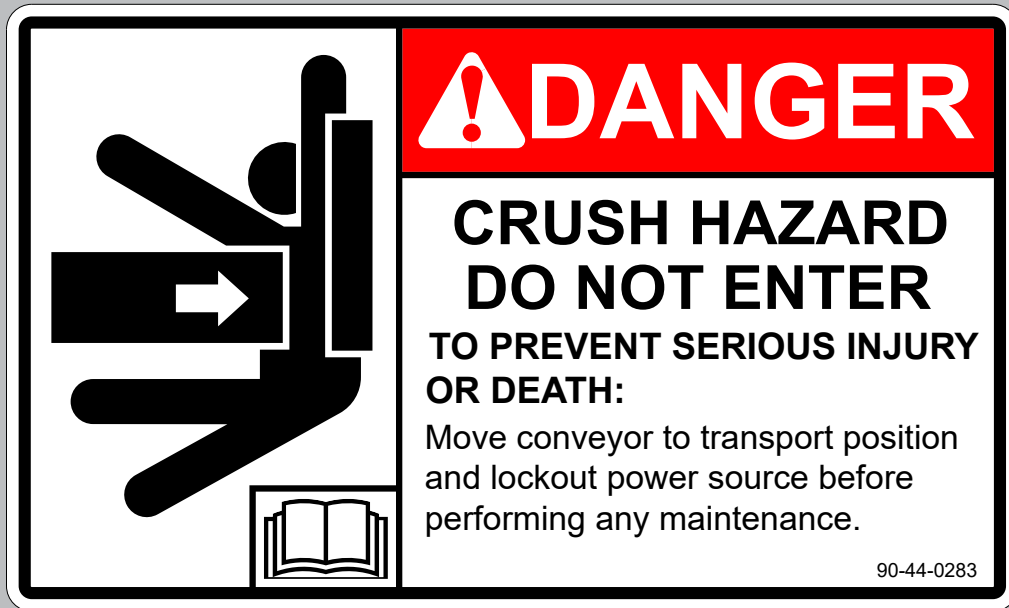


Fig. # 2-18 Danger Decal Qty 2 Per Machine P/N 90-44-0283

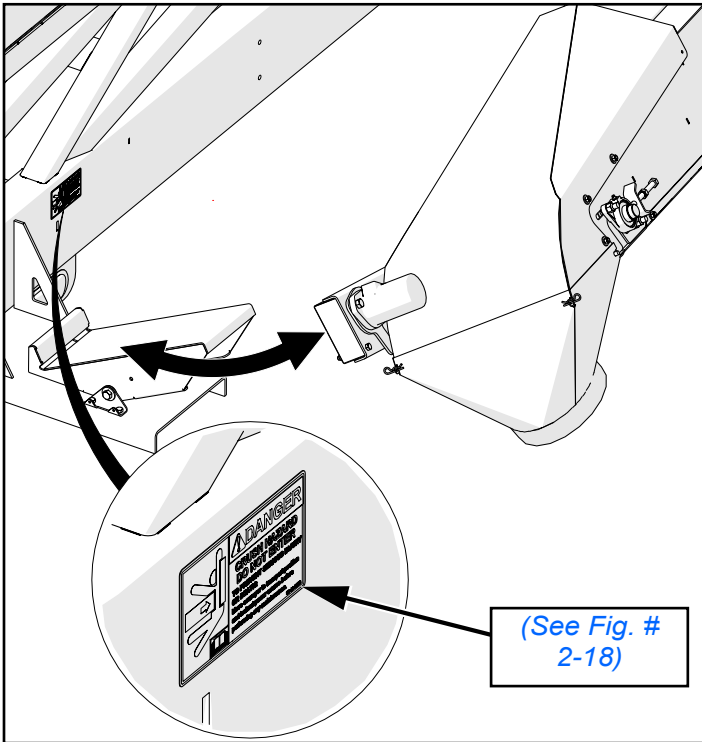


Fig. # 2-19 Safety Decal Location

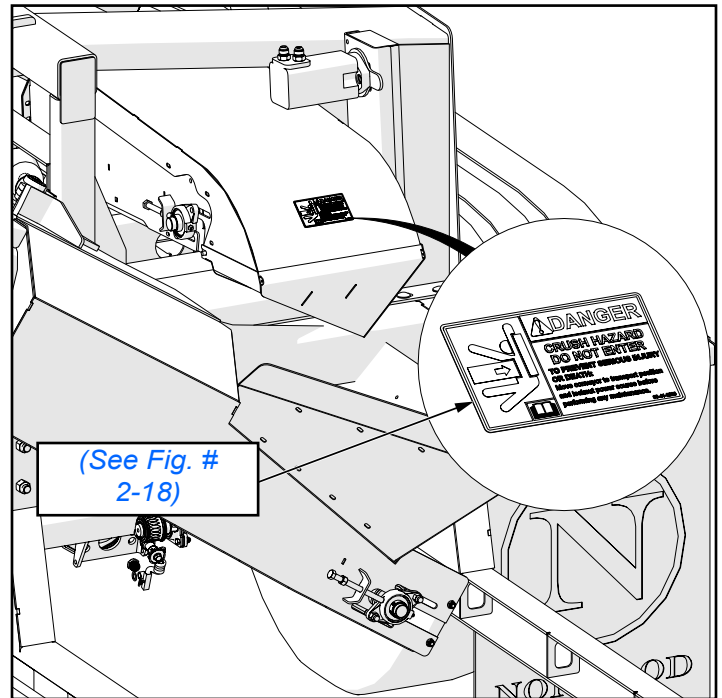


Fig. # 2-20 Safety Decal Location



Fig. # 2-21 Warning Decal Qty 1 Per Machine, P/N 90-44-0173

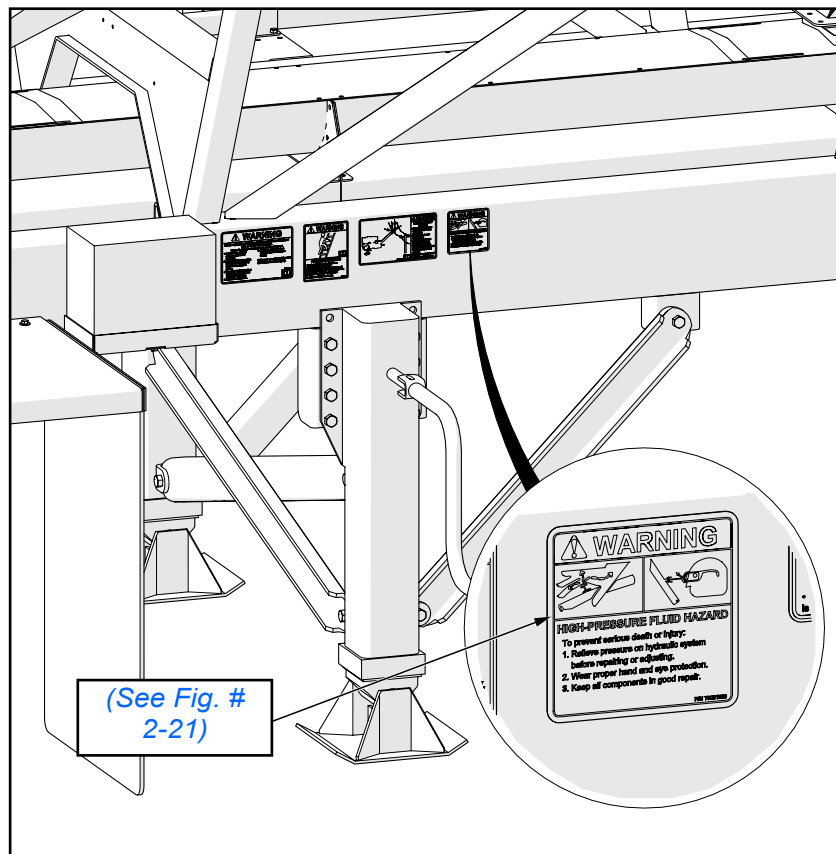


Fig. # 2-22 Warning Decal Located on Left Side Main Frame



Fig. # 2-23 Warning Decal Qty 2 Per Machine, P/N 90-44-0284

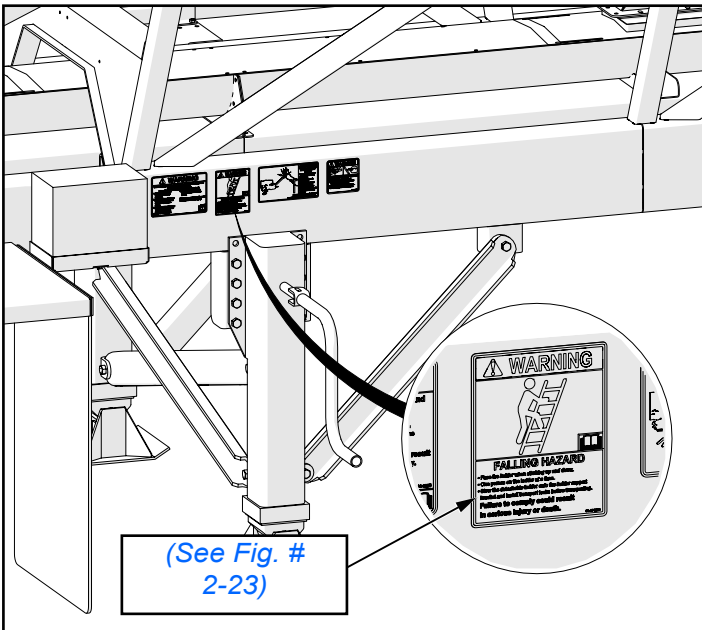


Fig. # 2-24 Ladder Safety Decal Location

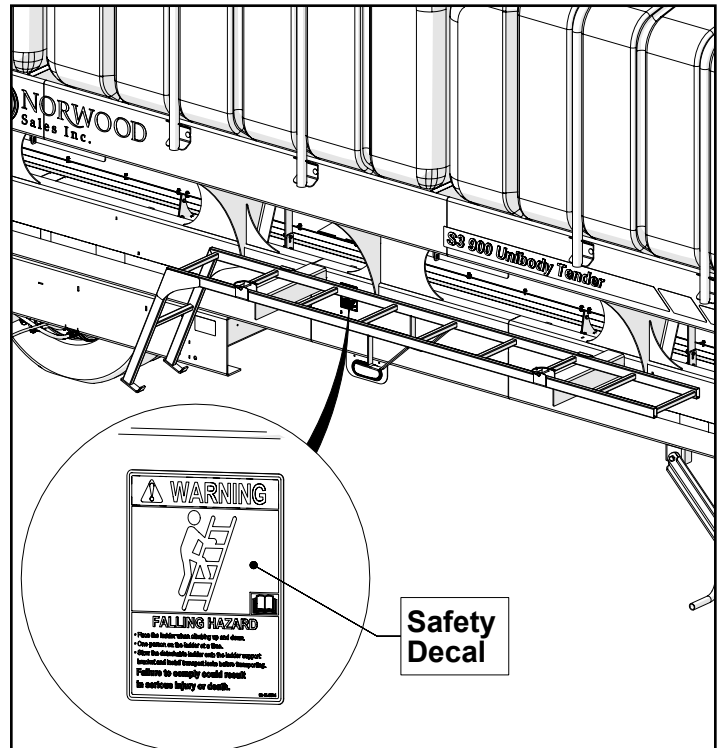


Fig. # 2-25 Ladder Safety Decal Location



Fig. # 2-26 Warning Decal Qty 2 per machine P/N 90-44-0167

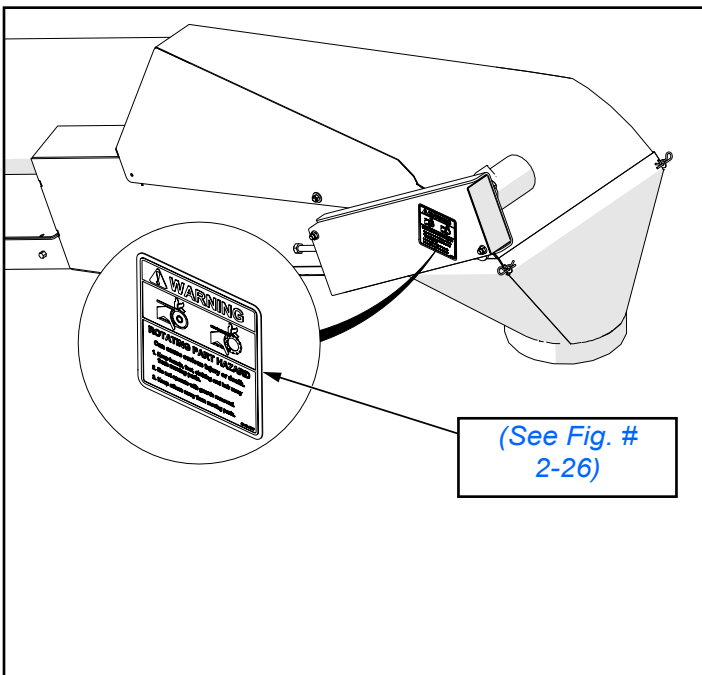


Fig. # 2-27 Safety Decal Location

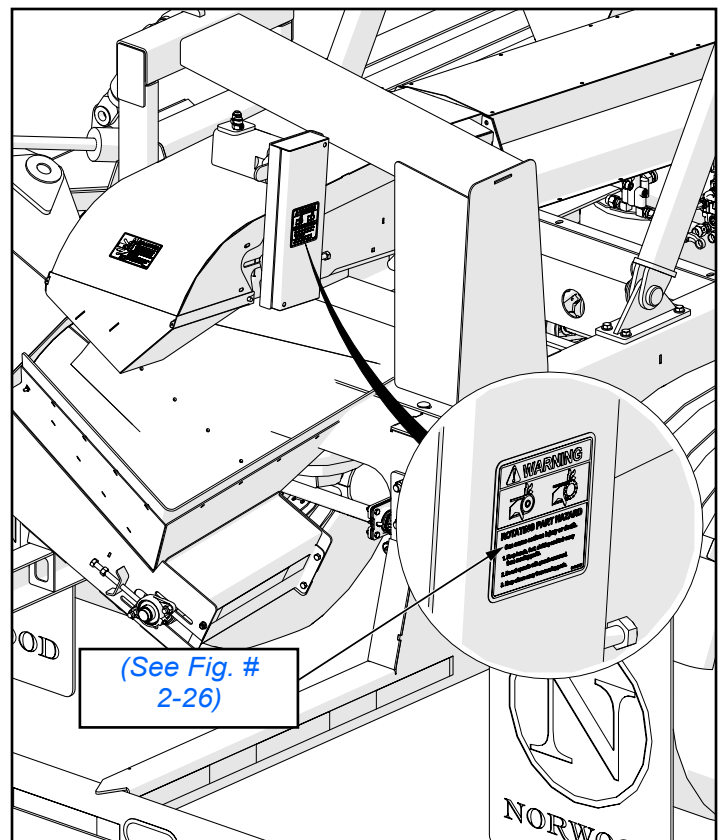


Fig. # 2-28 Safety Decal Location

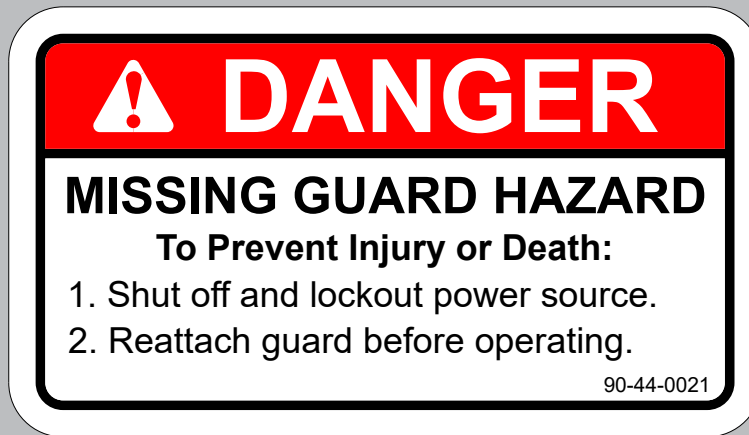


Fig. # 2-29 Danger Decal Qty 2 per Machine P/N 90-44-0021

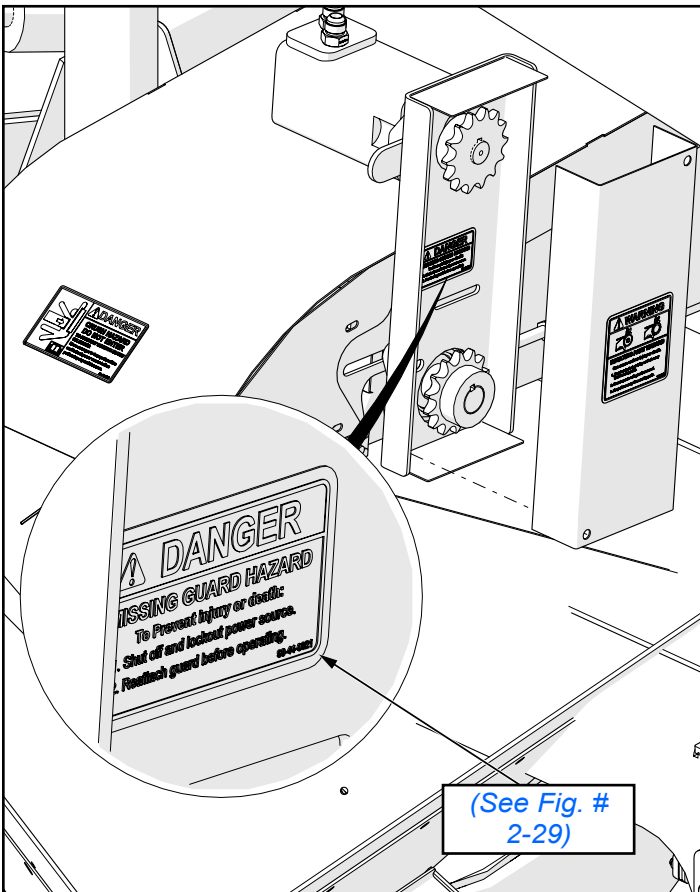


Fig. # 2-30 Safety Decal Location on Underbin Conveyor Drive End

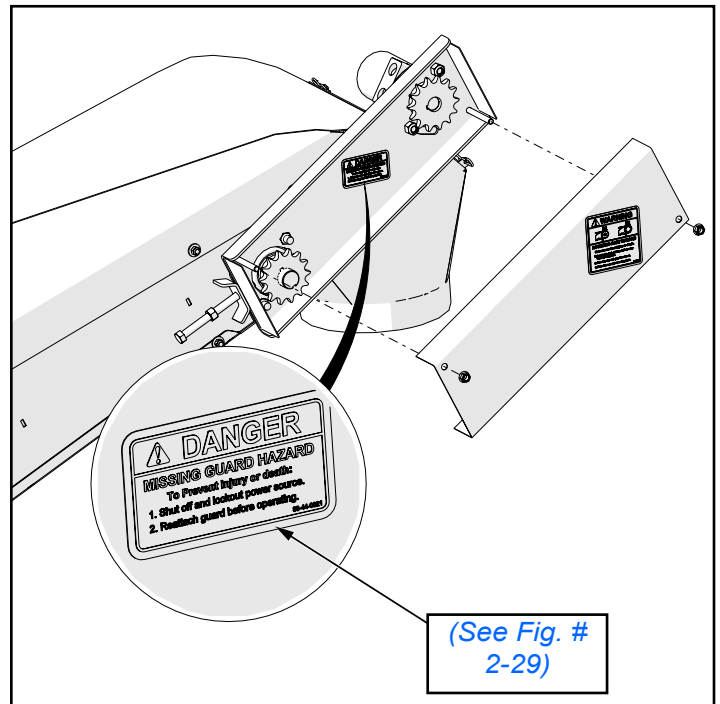


Fig. # 2-31 Safety Decal Location on Swing Conveyor Drive End



Load Sensing Axle System

WARNING!!

Stand Clear OF Axle - It May Move At Any Time!

This trailer is equipped with a load sensing axle system. It is designed to prevent axles from lifting when a load is present. Do not tamper with the valve trigger setting without consulting the trailer manufacturer.

Sealco Commercial Vehicle Products

215 East Watkins Street Phoenix, Arizona 85004 602/253-1007 www.sealcocvp.com

Fig. # 2-32 Caution Decal Qty 2 Per Machine (Standard Equipment on S3 1200 & 1500 Model) P/N 90-44-0360

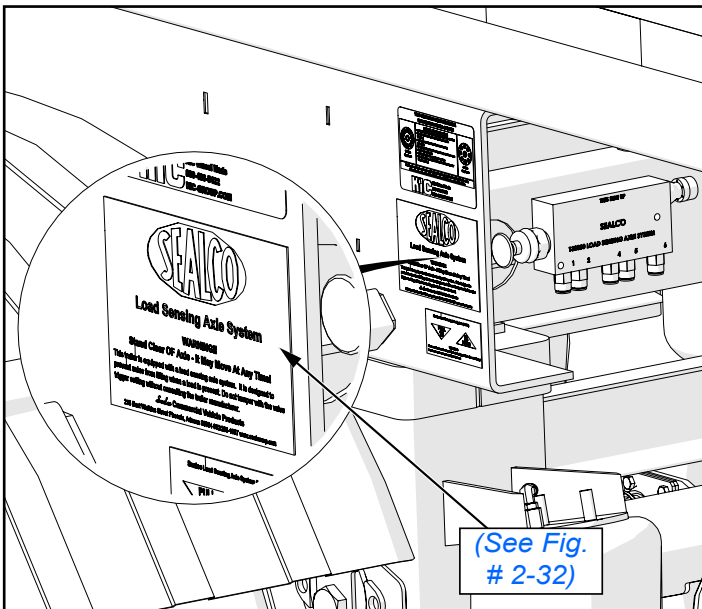


Fig. # 2-33 Safety Decal Location on Suspension Frame Right Side

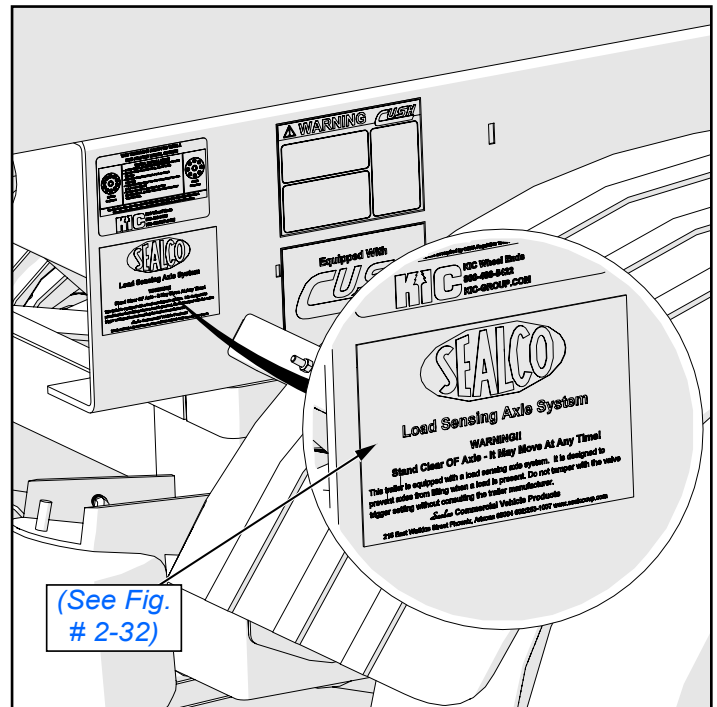


Fig. # 2-34 Safety Decal Location on Suspension Frame Left Side

Sealco Load Sensing Axle System (LSAS)

PULL
Drop
Axle

Lift
Axle
PUSH

WARNING

Be sure axle travel is clear before changing position. Do not attempt to raise the axle when the trailer is loaded!

Fig. # 2-35 Caution Decal Qty 1 Per Machine (Standard Equipment on S3 1200 & 1500 Models) P/N 90-44-0361

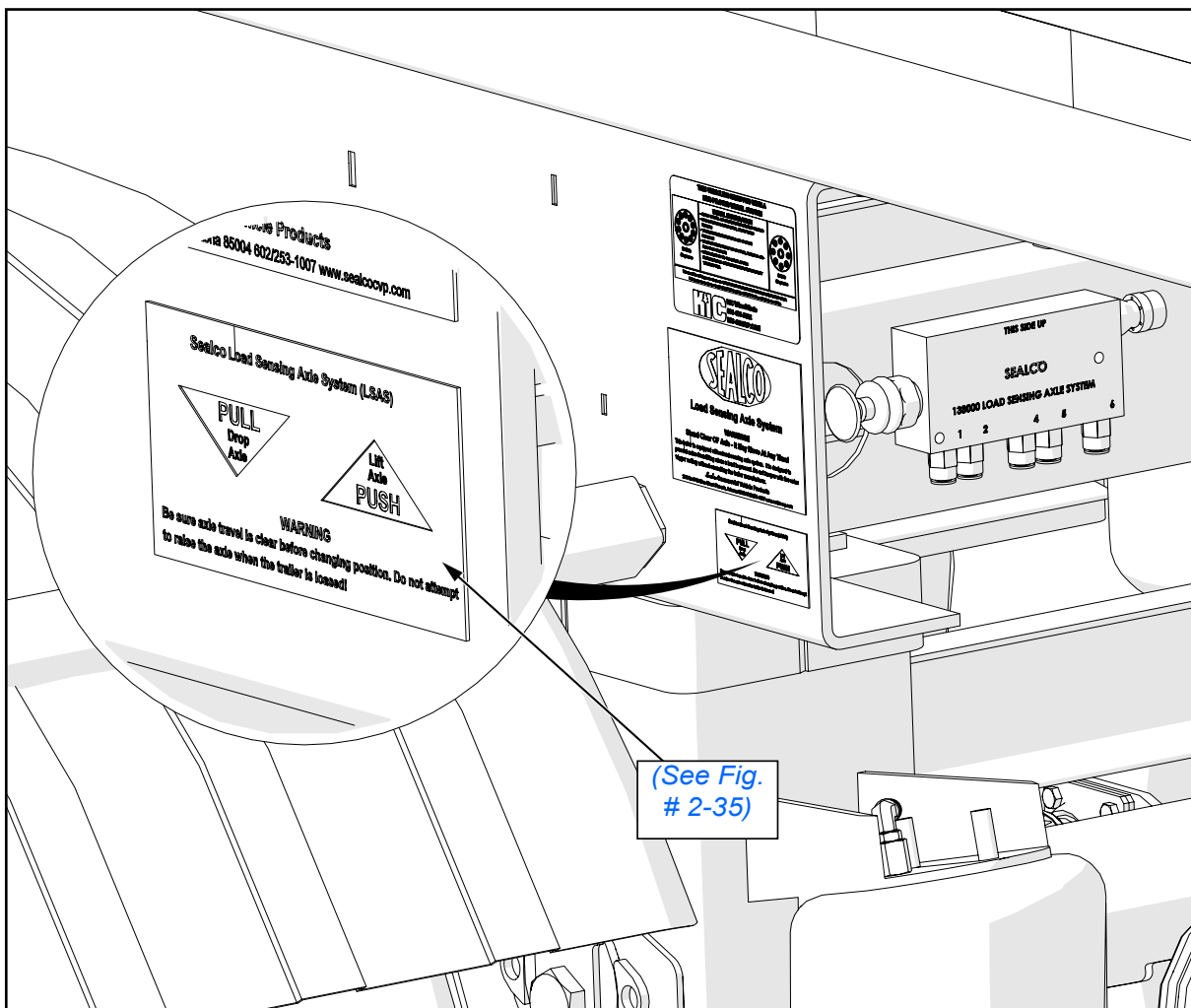


Fig. # 2-36 Safety Decal Location on Suspension Frame Right Side

Important, Notice & Informative Decal Locations



**RIDEWELL
SUSPENSIONS**

RAR-266

Trailer Suspension

1990048-RevB

ITEM	SIZE	TORQUE
Pivot Bolt (Shear-Type) Pivot Nut (Lock Nut)	7/8"-9NC	See Below
Lock Nut-(Shock Absorber)	3/4"-10NC	200-230 ft-lb 271-312 N•m
Lock Nut- (Air Spring, Upper)	3/4"-16NF	45-50 ft-lb 61-68 N•m
Lock Nut - (Air Spring, Lower)	1 1/2"-13NC	45-50 ft-lb 61-68 N•m
Bolt- (Air Spring)	1/2"-13NC	20-25 ft-lb 27-34 N•m

Tighten pivot bolt using a 1"-drive impact wrench and RW #6100054 E-20 Torx® socket (or equivalent) until Torx® head shears off.

Suspension fasteners to be re-torqued initially at 6,000 miles and at 50,000 mile increments thereafter. Do not re-torque pivot fasteners.

See service manual for details.

Ridewell Suspensions • Springfield, MO USA • 800.641.4122 • www.ridewellcorp.com

Fig. # 2-37 Warning Decal Qty 1 Per Machine P/N 90-44-0703



Fig. # 2-38 Informational Decal Located On Left Suspension Frame

UNLEADED GASOLINE ONLY

Fuel must meet these requirements:

- 87 Octane or higher.
- Maximum 10% of ethanol content.
- Never use gasoline with ethanol content higher than 10%. The use of gasoline with ethanol content higher than 10% can damage the engine and the fuel system and will void the manufacturer's warranty.
- DO NOT use E15, E20 or E85, they are not approved and should not be used.

90-44-0267

Fig. # 2-39 Informational Decal Qty 1 Per Machine P/N 90-44-0267

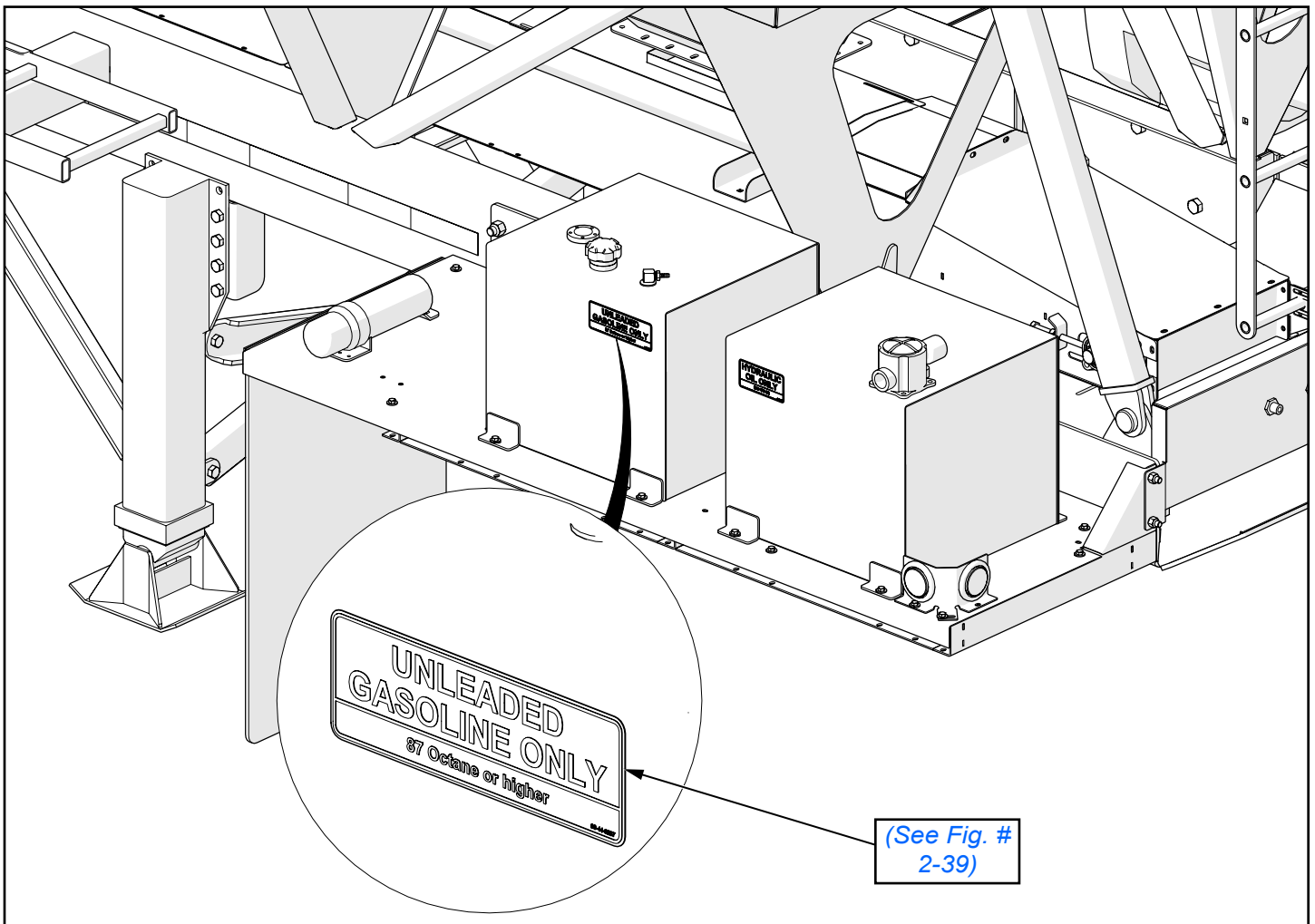


Fig. # 2-40 Informational Decal



Fig. # 2-41 Informational Decal Qty 1 Per Machine P/N 90-44-0268

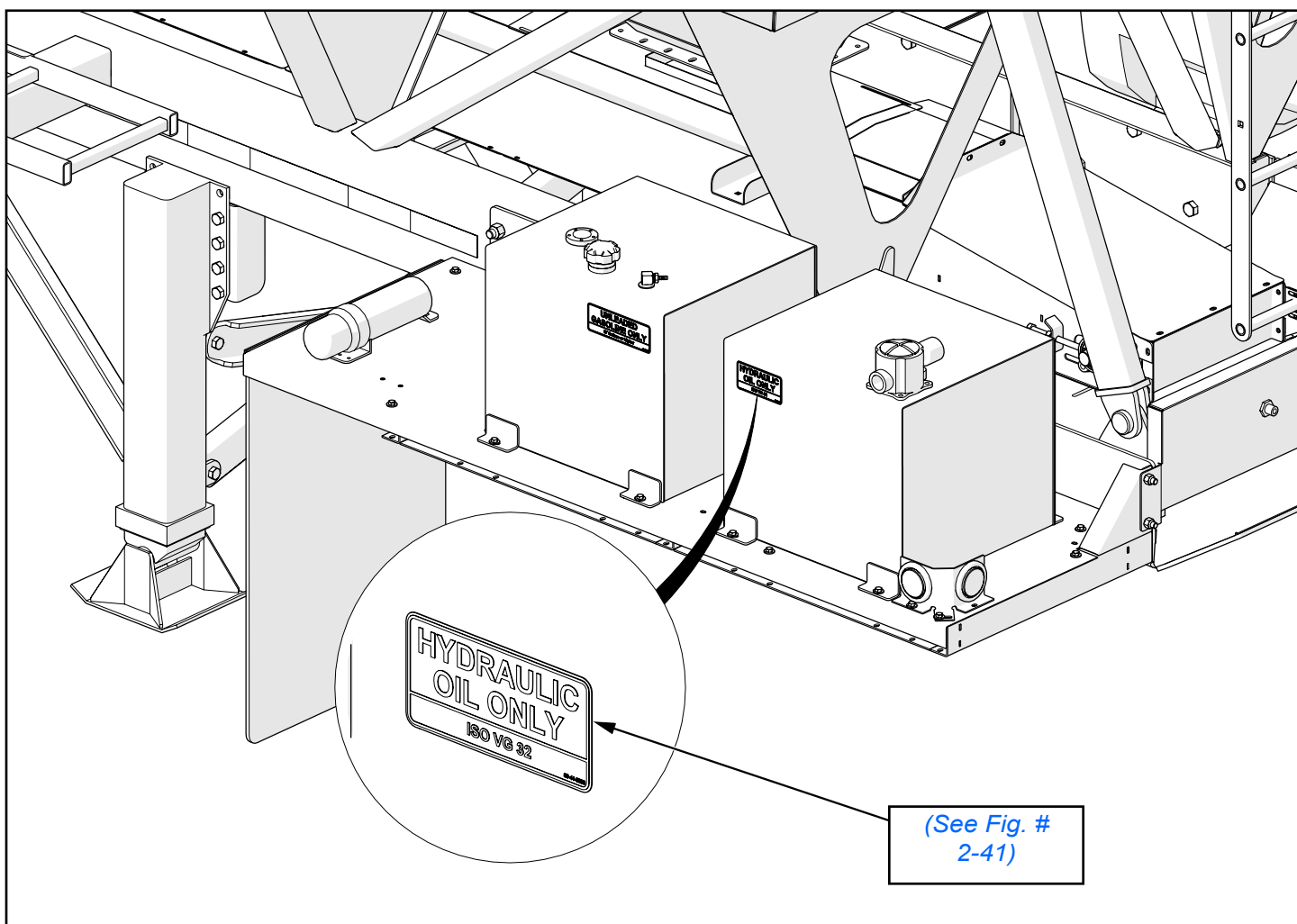


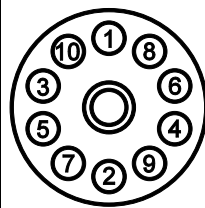
Fig. # 2-42 Informational Decal Qty 1 Per Machine

IMPORTANT Wheel End Lug Nuts

Wheel lug nuts must be torqued to a specific sequence and range to function correctly:
450 - 500 lb ft (610 - 678 N·m)

Failure to torque the lug nut bolts correctly will result in improper function and cause damage to the machine and property.

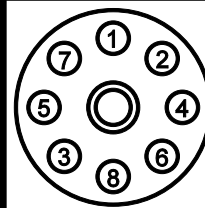
THIS VEHICLE IS EQUIPPED WITH A HUB PILOTED WHEEL SYSTEM



10-Hole
Sequence

WHEEL INSTALLATION

- AVOID WHEEL OR BRAKE DRUM BINDING ON HUB
- USE 2-PIECE FLANGE NUTS, RIGHT HAND THREAD
- TORQUE SEQUENCE PER 8 OR 10 HOLE DIAGRAM
- TIGHTEN NUTS FIRST TO 50 FT-LB, THEN TO 450-500 FT-LB TORQUE
- RETORQUE 50 TO 100 MILES AFTER INSTALLATION. CHECK TORQUE PERIODICALLY THEREAFTER.



8-Hole
Sequence

Wheel and tire servicing can be dangerous ALWAYS REMOVE ALL AIR FIRST BEFORE DEMOUNTING TIRES. Follow proper procedures as required by OSHA Regulation 1910.177 for tire and rim / wheel servicing.

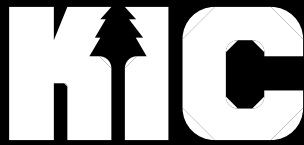


Fig. # 2-43 Important Decal Location - On Suspension Frame Left and Right Sides Qty 1 Per Machine P/N 90-44-0290

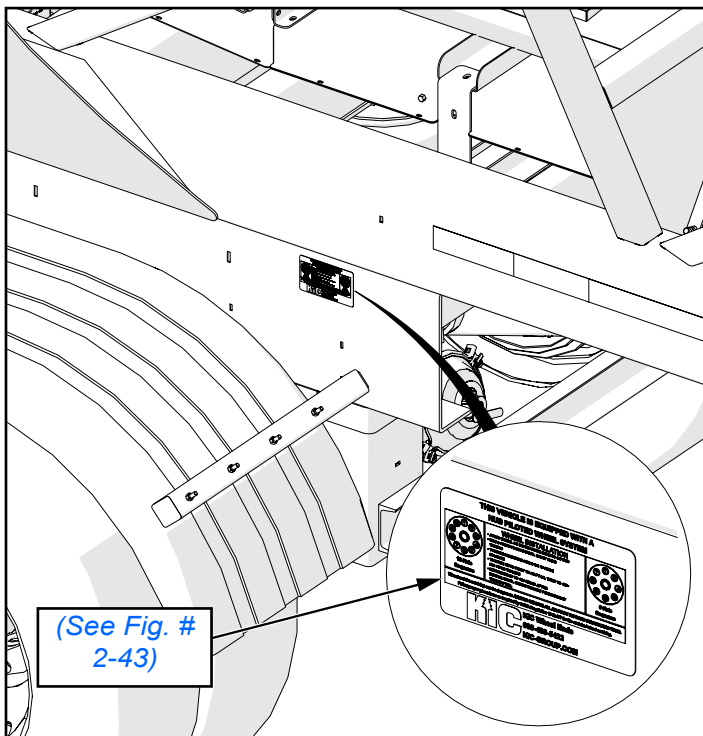


Fig. # 2-44 Important Decal Location - Wheel Lug Nut Torque

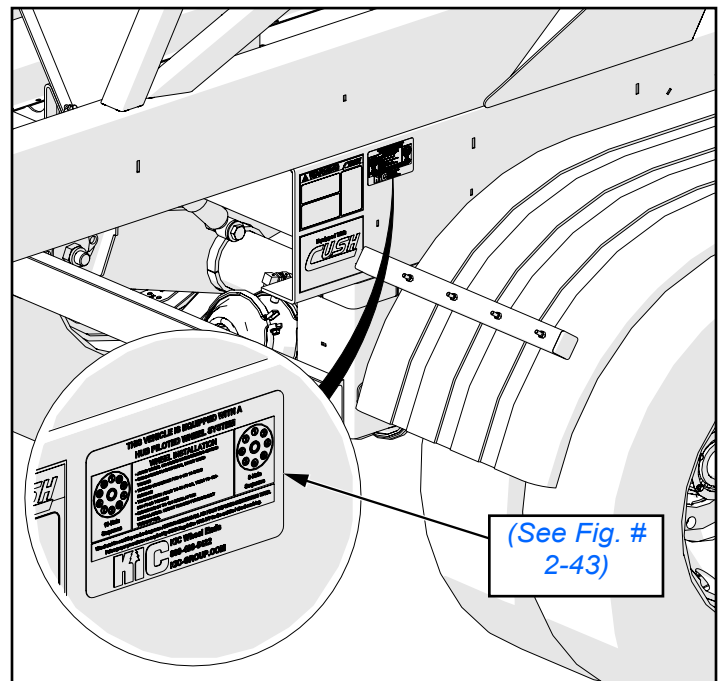


Fig. # 2-45 Important Decal Location - Wheel Lug Nut Torque

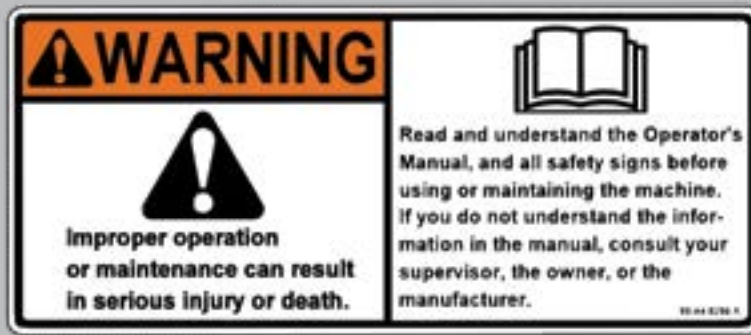


Fig. # 2-46 Important Decal Qty 1 Per Machine, P/N 90-44-0266

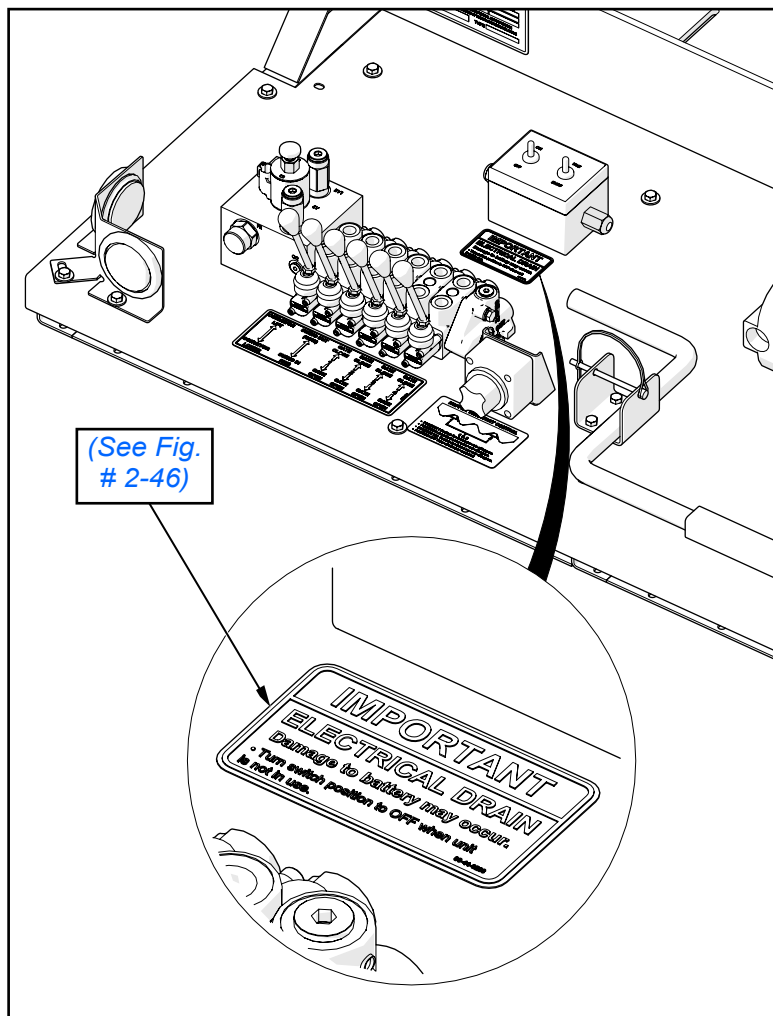


Fig. # 2-47 Important Decal Located Front Left Fender

NOTICE

If the ABS indicator lamp comes on and stays on when you apply the brakes to a **moving** vehicle, the trailer ABS is not working properly. The ABS must be serviced as soon as possible upon completion of your trip to ensure full anti-lock braking capability.

TP-95172 **MERITOR WABCO** Rev. 11/15

Fig. # 2-48 Notice Decal Qty 1 Per Machine, P/N 90-44-0287



Fig. # 2-49 Notice Decal Located on Left Rear Bumper

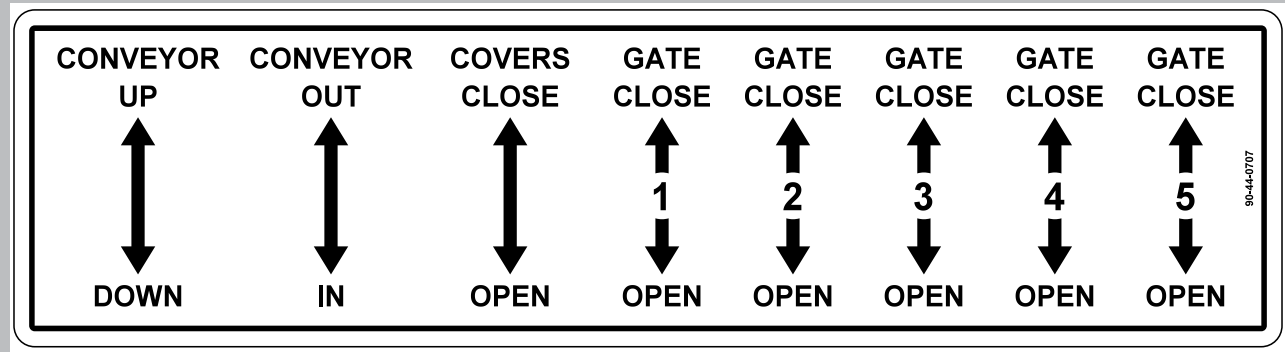


Fig. # 2-50 Informational Decal Qty 1 Per Machine, (Optional Equipment) P/N 90-44-0707

- For machines with 7 levers/banks, the replacement decal is P/N 90-44-0257
- For machines with 8 levers/banks, the replacement decal is P/N 90-44-0256
- For machines with 9 levers/banks, the replacement decal is P/N 90-44-0255

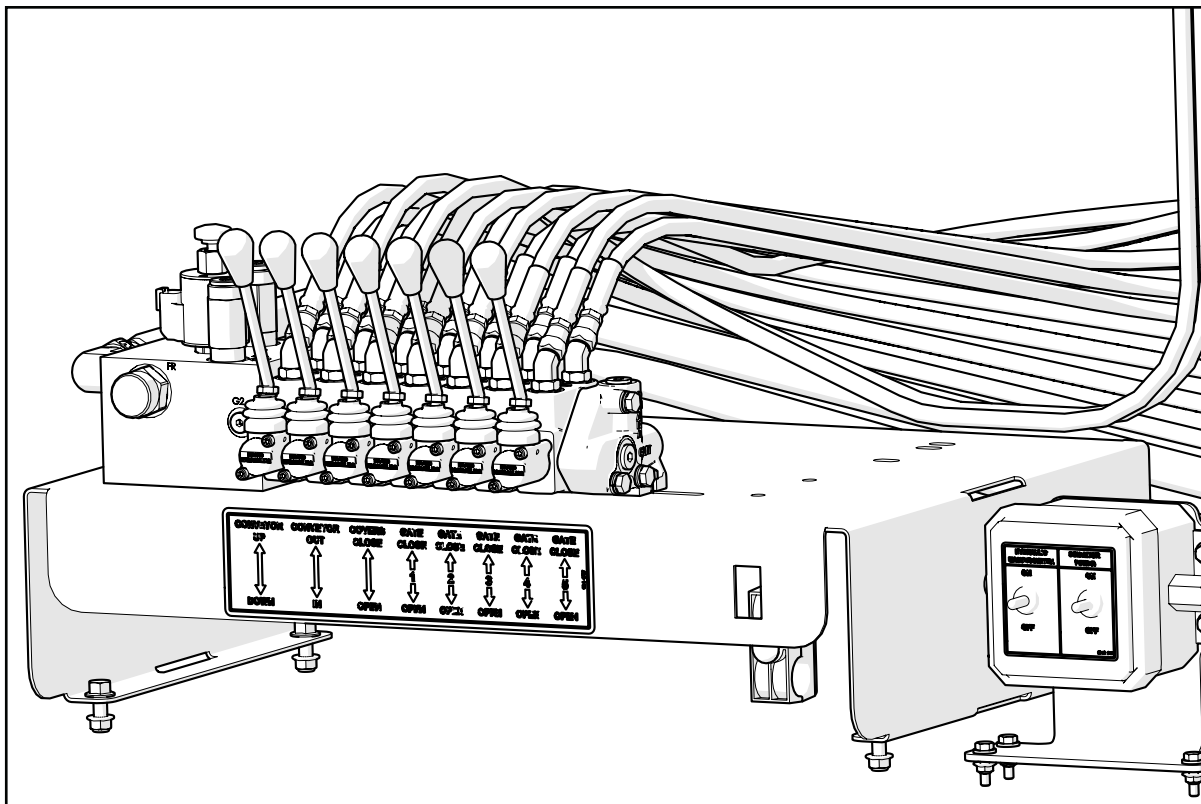


Fig. # 2-51 Informational Decal Located on Left Front Fender.

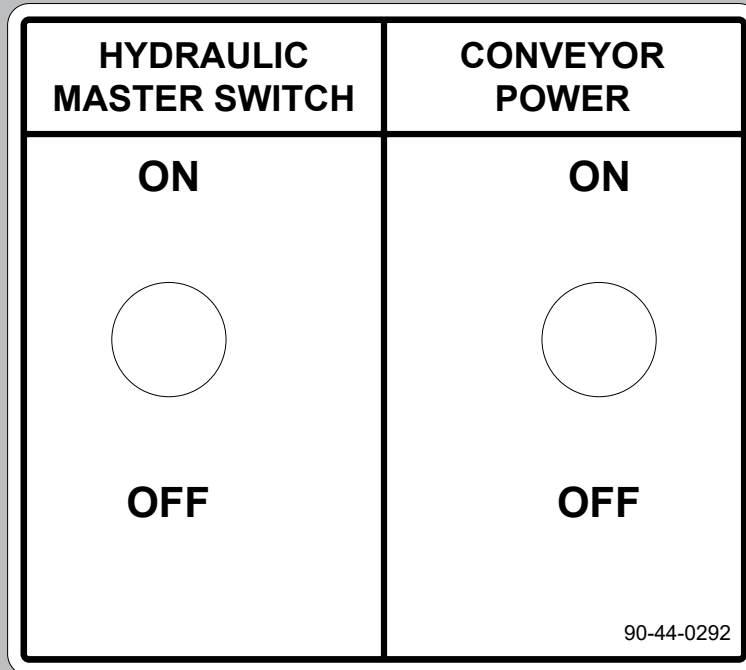


Fig. # 2-52 Informational Decal Qty 1 Per Machine, P/N 90-44-0292



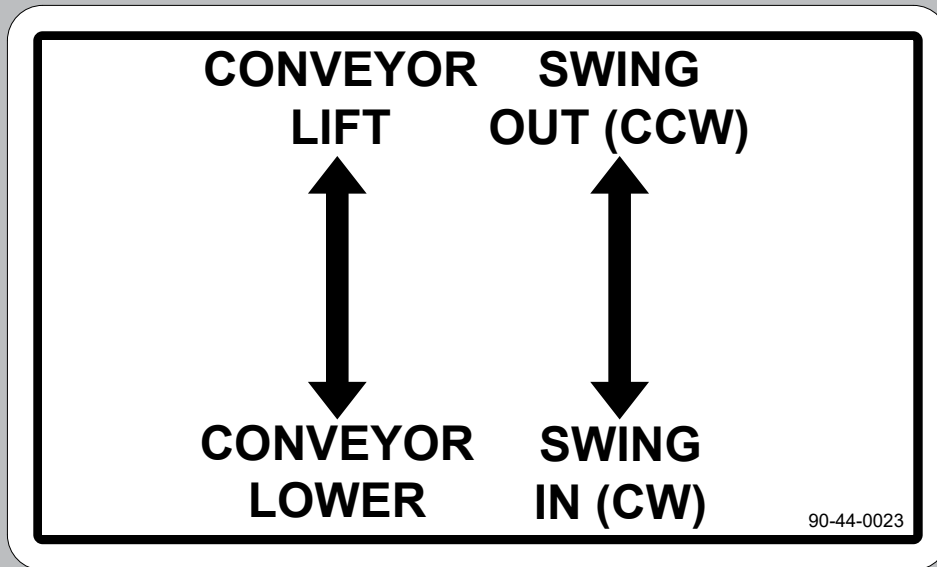
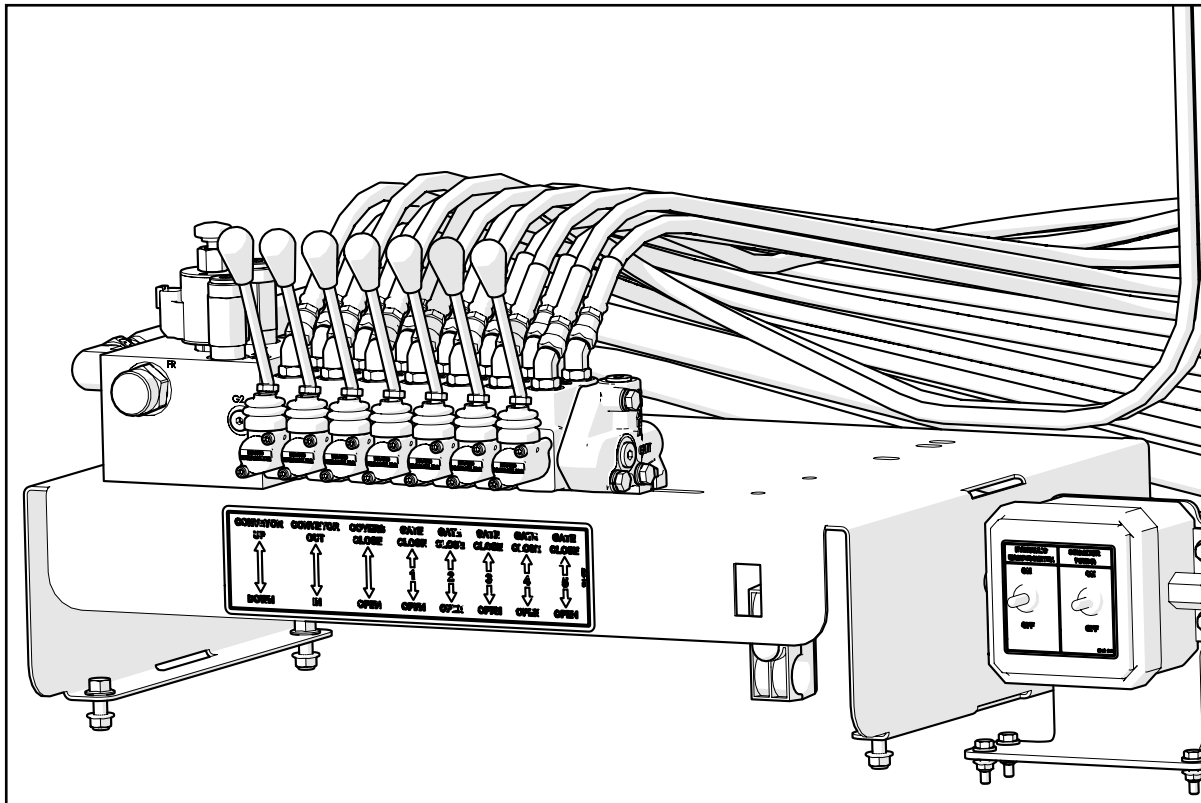


Fig. # 2-53 Informational Decal Qty 1 Per Machine, (Optional Equipment) P/N 90-44-0023



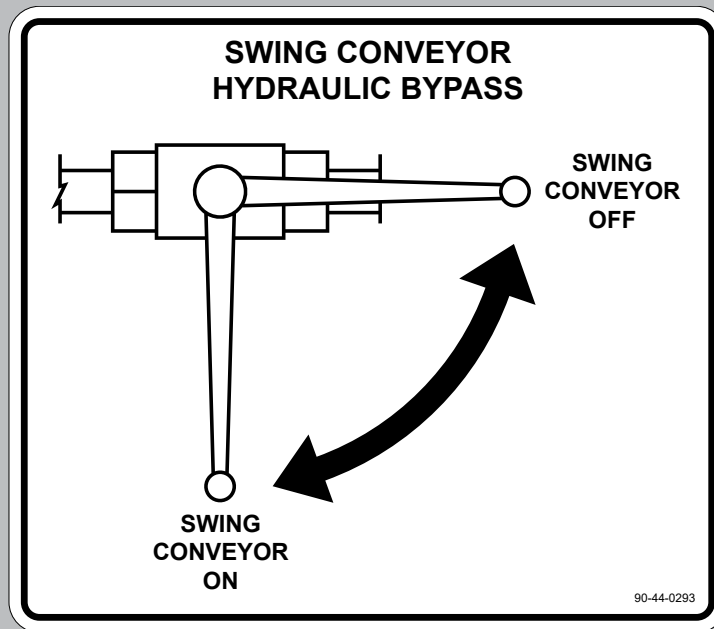


Fig. # 2-54 Informational Decal Qty 1 Per Machine, P/N 90-44-0293



3 - TRAILER LIGHTING & HYDRAULIC CONNECTIONS

Road Transport

Transporting on Public Roads

⚠ WARNING

Transport hazard!

Collision of high speed road traffic and slow moving machines can cause death or personal injury.

Obey all local transport laws.

Failure to comply could result in death or serious injury.

⚠ WARNING

Hazard to bystanders!

Be sure all persons and pets are standing clear during folding and unfolding swing conveyor and filling of hoppers.

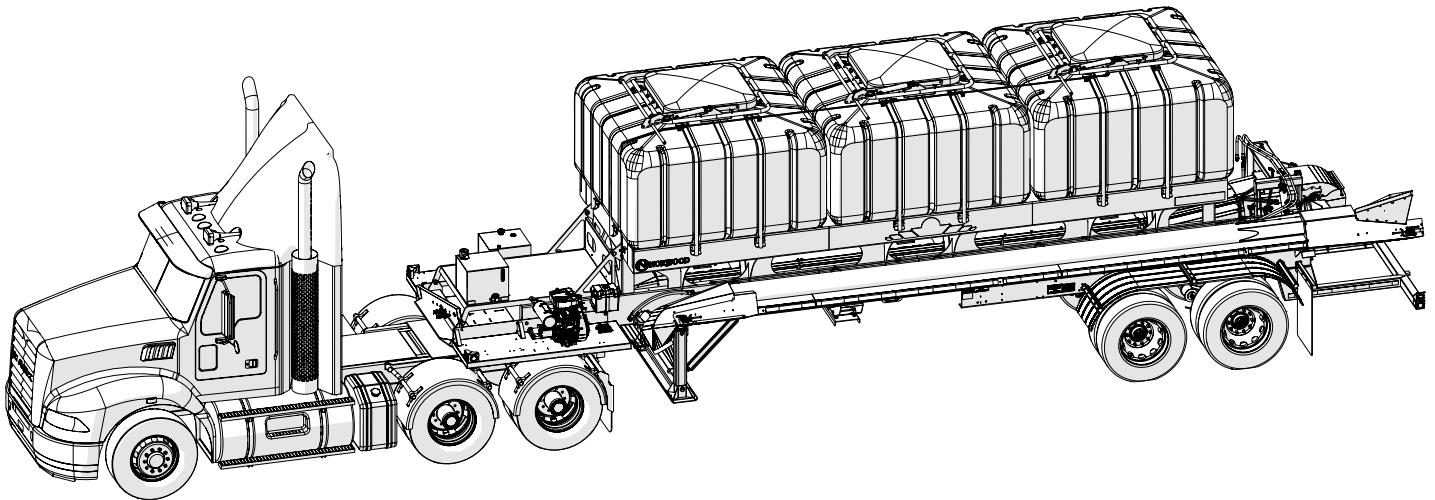
Failure to comply could result in death or serious injury.

⚠ WARNING

Unexpected movement!

When cylinders are connected to the machine hydraulic system, cycle the hydraulic circuits several times to remove air from the cylinder and hose. Air in the system can cause erratic operation or can cause equipment to drop unexpectedly.

Failure to comply could result in death or serious injury.



For safe transportation of the Uni-Body Commercial Tender on public roads and to prevent damage to the Uni-Body Commercial Tender during transport, do the following:

1. Comply with your state and local laws governing highway safety regulations.
2. Maintain complete control of the tractor and Uni-Body Commercial Tender at all times.
3. Make sure all safety lights and reflectors are clean and clearly visible.
4. Make sure the swing conveyor is fully resting on the swing conveyor rest before transporting.
5. Ensure clearance of any hydraulic, vacuum hoses, and jack.
6. Check clearance before going under electric lines, on bridges or into buildings.

NOTICE: When filling, do not overfill hoppers, which in turn could overload the axles to their Gross Axle Weight Rating (GAWR). This must be corrected before operation of trailer.

Tractor Requirements

Hydraulic Flow Requirement

A 16 GPM @ 2700 PSI hydraulic system is required. When equipped with wet kit option.

Electrical System

The tractor must have a 12 V DC electrical system with a 7-pin connector socket for safety lighting.

Electrical Connections

Connect the 7-pin tractor lighting connector (1) to the auxiliary power outlet at the front of the Uni-Body Commercial Tender.

Ref:	Description:
1	7-Pin Lighting Connector
2	Gladhand Fitting, 3/8" (Service)
3	Gladhand Fitting, 1/2" Emergency)

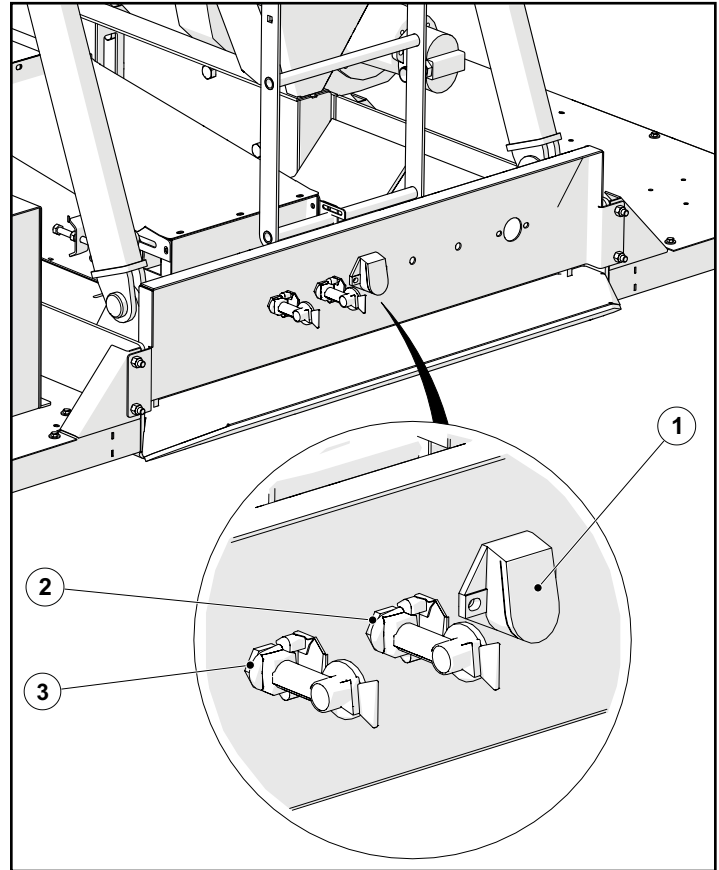


Fig. # 3-1 7-Pin Connector on Input Control Board

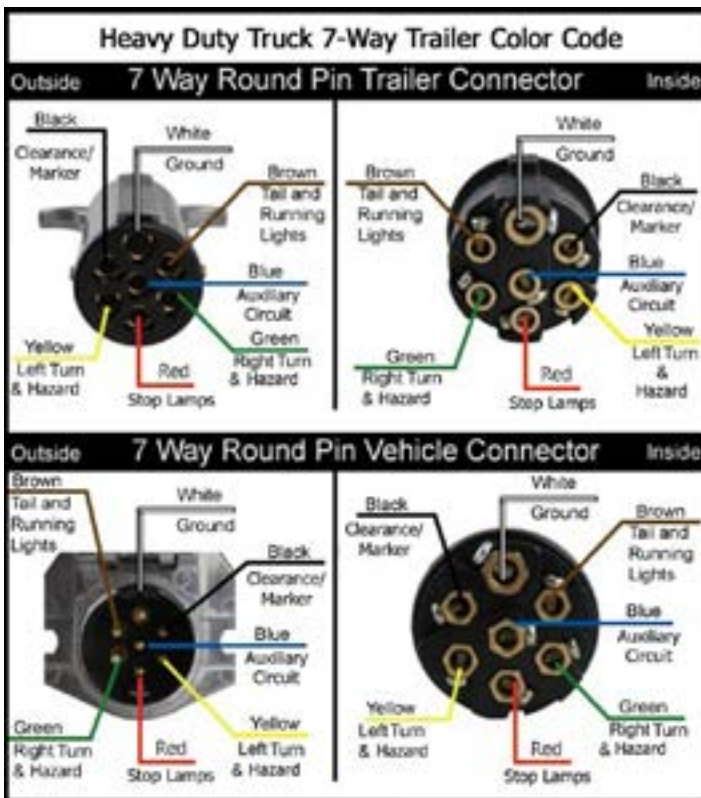


Fig. # 3-55 Trailer Color Code

Check The Operation Of All Lights

The S3 Uni-Body Commercial Tender should follow the pattern indicated in the table below. The S3 Uni-Body Commercial Tender features a combined tail light and brake light with two filaments: the bright light is the brake, the normal light is the tail light or clearance light. If S3 Uni-Body Commercial Tender lighting does not follow the pattern from the table, contact your S3 Uni-Body Commercial Tender dealer.

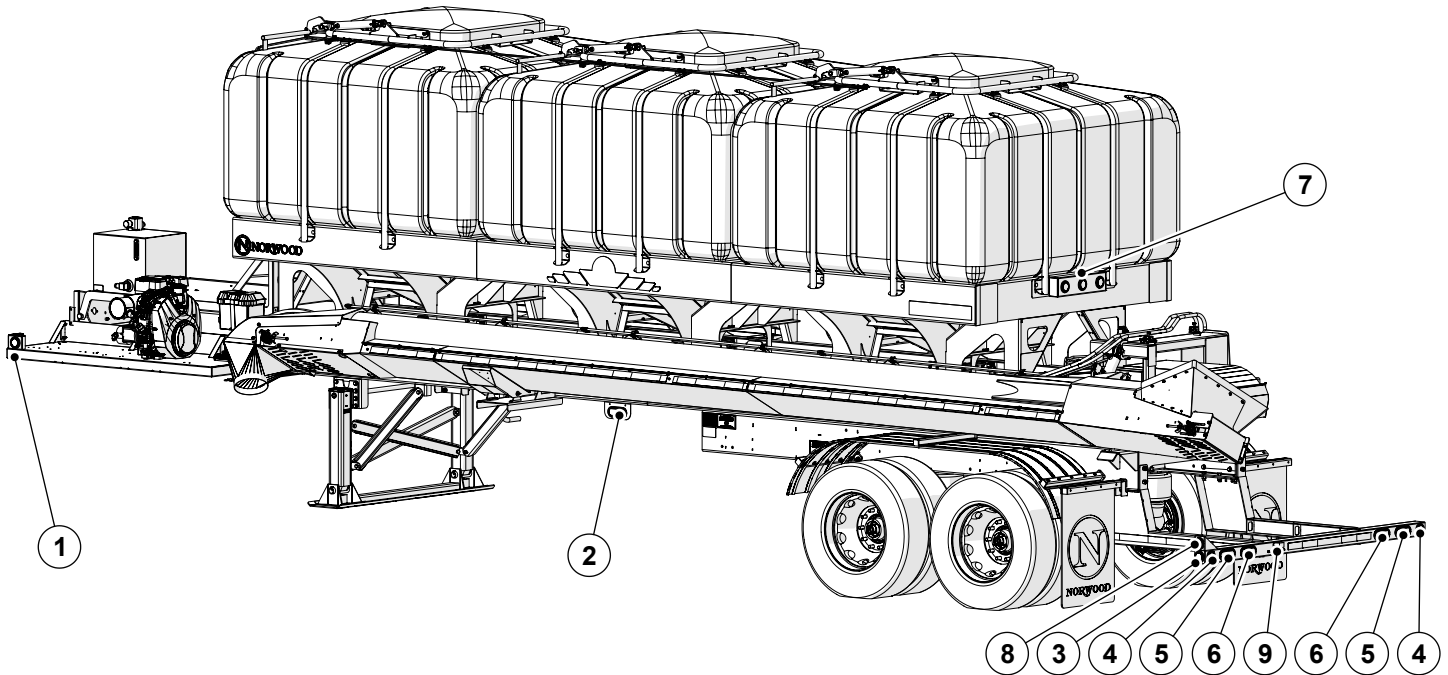


Fig. # 3-2 Lighting

Item	Tractor Function	Lights OFF	Road Lights On						
	Signal Lamps		Left Turn		Brakes Only	Right Turn		Hazard Lights	
	Brake Lamps		No Brakes	With Brakes		No Brakes	With Brakes	No Brakes	With Brakes
1	Front Clearance Amber	OFF	ON	ON	ON	ON	ON	ON	ON
2	Middle Side Clearance Amber	OFF	BLINK	BLINK	ON	BLINK	BLINK	BLINK	BLINK
3	Rear Side Clearance Red	OFF	ON	ON	ON	ON	ON	ON	ON
4	Rear Clearance Red	OFF	ON	ON	ON	ON	ON	ON	ON
5	Rear Signal Red	OFF	BLINK	BLINK	ON	BLINK	BLINK	BLINK	BLINK
6	Rear Brake Red	OFF	ON	BRAKE LIGHT	BRAKE LIGHT	ON	BRAKE LIGHT	BRAKE LIGHT	BRAKE LIGHT
7	Rear Middle Clearance Red	OFF	ON	ON	ON	ON	ON	ON	ON
8	ABS Amber	ON When there is a malfunction (Reference ABS Module Manual)							
9	License Plate Light	OFF	ON	ON	ON	ON	ON	ON	ON

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4 - WORKING OPERATIONS

OPERATING SAFETY

- Read and understand the Operator's Manual, and all safety decals, before using. Review safety related items annually.
- Place all controls in neutral, stop the engine, remove ignition key. Wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Clear the area of bystanders, especially children, before starting. If anyone enters hazard areas, shut down machine immediately. Clear the area before restarting.
- Install and secure all guards before starting. Do not operate machine when any guards are removed.
- Use care when using the stationary, or detachable ladder. Prevent slipping or falling.
- Do not allow riders on the machine when transporting.
- Stay away from overhead obstructions and power lines during operation. Electrocution can occur without direct contact.
- Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
- Do not place hands, arms or body between compartment and Folding Conveyor frame to prevent pinching or crushing. Components can move unexpectedly.
- Keep hydraulic components in good condition.
- Keep working area clean and free of debris to prevent slipping or tripping.
- Establish a look-out, tag-out policy for the work site. Train all personnel in, and follow all procedures. Lock-out, tag-out all power sources before servicing the unit or working around loading/unloading equipment.

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the tender. Follow all safety instructions exactly. It is everyone's business. By following recommended procedure, a safe working environment is provided for the operator, bystanders and the area around the work site. The design and configuration of this tender includes safety decals and equipment. Hazard controls and accident prevention are dependent upon the personnel operating and maintaining it.

Their awareness, concern, prudence and proper training are crucial. Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely. There are instructions on how to set it, to provide maximum efficiency. By following the operating instructions, in conjunction with a good maintenance program, your Uni-Body Commercial Tender will provide many years of trouble free service.

Pre-Trip Inspection

DANGER

The Uni-Body Commercial Tender shall not be operated if any of the following conditions exist.

- Damage to the lighting fixtures, wiring, or electrical conduits, or inoperative lights.
- Leaking or malfunctioning equipment.
- Damage to the tractor or Uni-Body Commercial Tender, including, but not limited to, interior damage
- Inoperative brake systems (primary or parking).

Failure to correct or repair any of these conditions may result in extensive property damage and/ or serious personal injury, including death

DANGER

Unexpected machine movement!

Air in the hydraulic system could cause unexpected machine movement. Purge the air from the hydraulic system after any hydraulic system maintenance or repair.

Failure to comply will result in death or serious injury.

Before each trip, for your safety and that of the motoring public, your Uni-Body Commercial Tender should be inspected by a person trained and familiar with the operations and functions of the Uni-Body Commercial Tender and, to insure proper and safe operation, proper corrective action should be taken in all of the following areas:

1. **INTERIOR CLEANLINESS** - Ensure the trailer interior (including air lines, product lines, discharge tees ,etc.) Meet all the customers specific product requirements.
2. **TIRES** - Check for cuts, bruises, tread wear, and improper air pressure.
3. **RIMS AND WHEELS** - Check for cracks and deformation.
4. **BRAKE SYSTEM** - Check for air leakage with and without service brakes applied. Check for damaged, worn or cracked brake hoses and drums.
5. **LANDING GEAR** - Ensure all braces are intact and the gear is operable in the event it is needed due to breakdown en route.
6. **EQUIPMENT SECURITY** - Ensure the spare tire, hoses, tools, fittings, and emergency equipment are properly secured in their respective compartments with chains, latches, etc., in good restraining condition.
7. **LIGHTING SYSTEM** - Ensure all lights perform their proper function and are clearly visible.
8. **UPPER 5TH WHEEL** - Ensure the 5th wheel plate is properly lubricated and is free of measurable thinning, gouges, or unusual distortion. Ensure tightness of the bolts fastening the plate assembly to the frame.
9. **KINGPIN** - Check the kingpin for wear. Do not exceed allowable wear.
10. **TRACTOR ELECTRICAL CABLE AND AIR HOSES** - Ensure electrical cable and air hoses are free of cuts and abrasions.
11. **ELECTRICAL RECEPTACLE** - Check tractor cable receptacle for good electrical contact and mechanical security.
12. **TRACTOR WIRING** - Ensure the tractor is wired per T.T.M.A. RP14-84, dated 8/20/84.

HOOKING THE TRACTOR TO THE Uni-Body

Commercial Tender

Prior to backing the tractor under the Uni-Body Commercial Tender, check the following items:

- Trailer brakes are set or wheels blocked to prevent the machine from rolling.
- Upper 5th wheel is at approximate height or lower 5th wheel of the tractor.
- Latch on lower 5th wheel is in the "OPEN" position.
- Adequate clearance exists between the tractor frame and all parts of the tank.
- All personnel are clear of the area.

Then proceed as follows:

1. Back the tractor under the trailer, aligning the king pin with the slot in the lower 5th wheel. When the latch "SETS" around the king pin, check the hookup by attempting to pull forward.
2. Turn off the engine, apply the parking brake, ensure it's proper operation.
3. Double check the latch on the 5th wheel to ensure it is fully engaged.
4. Connect the tractor supply and brake hoses to the glad hands on the Uni-Body Commercial Tender.

WARNING

Proper operation of the Uni-Body Commercial Tender primary brake system is essential for safe operation of the vehicle. A functional system check is necessary each time the Uni-Body Commercial Tender is put into service.

5. Connect the electrical connector to the receptacle on the trailer.
6. Raise the landing gear legs (see the Jost Operating Manual in the owners kit).
7. Check the brakes and lights for proper operation.

DRIVING INSTRUCTIONS

When driving a tractor and Uni-Body Commercial Tender, the overall length of the unit must be kept in mind while passing other vehicles and while turning. Because the unit is "hinged in the middle", turning, parking, and sight range are affected.

DANGER

Like any other vehicle, Uni-Body Commercial Tenders can tip or slide out of control if turns are negotiated at too high a speed, or when making violent maneuvers such as abrupt lane changes. Such unsafe and improper operation may cause serious personal injury, including death, to the operator, handlers, and bystanders.

TURNING INSTRUCTIONS

When turning corners, remember that the Uni-Body Commercial Tender has a larger turning radius than the tractor. To make a right turn at a road intersection, it is necessary for the tractor to continue forward to about the center of the crossroads and then turn sharply to the right to allow for the larger turning radius of the Uni-Body Commercial Tender. If the Uni-Body Commercial Tender is to be backed to the right, the steering wheel of the tractor should be turned to the left, or counterclockwise. The front of the Uni-Body Commercial Tender will be pushed to the left and the Uni-Body Commercial Tender wheels will steer to the right.

STOPPING INSTRUCTIONS

In normal operation, the brakes of the tractor and those of the Uni-Body Commercial Tender are applied at the same time. Brake pressure should be applied gradually and smoothly.

PARKING INSTRUCTIONS

When the tractor-with-trailer combination is to be parked and left unattended, set the parking brake on the tractor firmly.

UNHOOKING THE MACHINE FROM TRACTOR**⚠ WARNING**

If the Uni-Body Commercial Tender is to be uncoupled in mud, snow, or sand, use extra shoring to provide an adequate base for the landing gear support pads.

1. Disconnect the tractor supply and control brake hoses from the gladhands on the machine. The machines spring brakes will set automatically when the supply (emergency) air brake hose is uncoupled.
2. Drain any water from the air reservoir by pulling the cord attached to the drain valve at the bottom of the air reservoir.
3. Disconnect the electrical cable from the receptacle on the machine.
4. Lower the landing gear legs. (See below).
5. Release the machines kingpin from the tractor's 5th wheel latch.
6. Pull the tractor out from under the Uni-Body Commercial Tender, allowing the trailer to lower slowly until the landing gear shoes are firmly on the ground.

CRANK OPERATED LANDING GEAR

Refer to the Jost Operating, Maintenance and Repair Procedures for LT300 Landing Gear P/N 40-5-00051 located in the Owners Kit.

RELEASING A LOADED TRAILER EQUIPPED WITH AIR RIDE SUSPENSION

Unhitching from a loaded trailer equipped with air ride suspension and setting it primarily on the landing legs may cause damage to the trailer. Due to the loss of air pressure in the air bags the trailer will slowly move forward over a period of time applying lateral pressure on the landing gear therefore potentially serious structural damage to the trailer. To avoid this occurrence, the air springs must be fully deflated before removing the truck from the trailer 5th wheel (hitch) when the trailer is loaded. (See Fig. # 4-1)

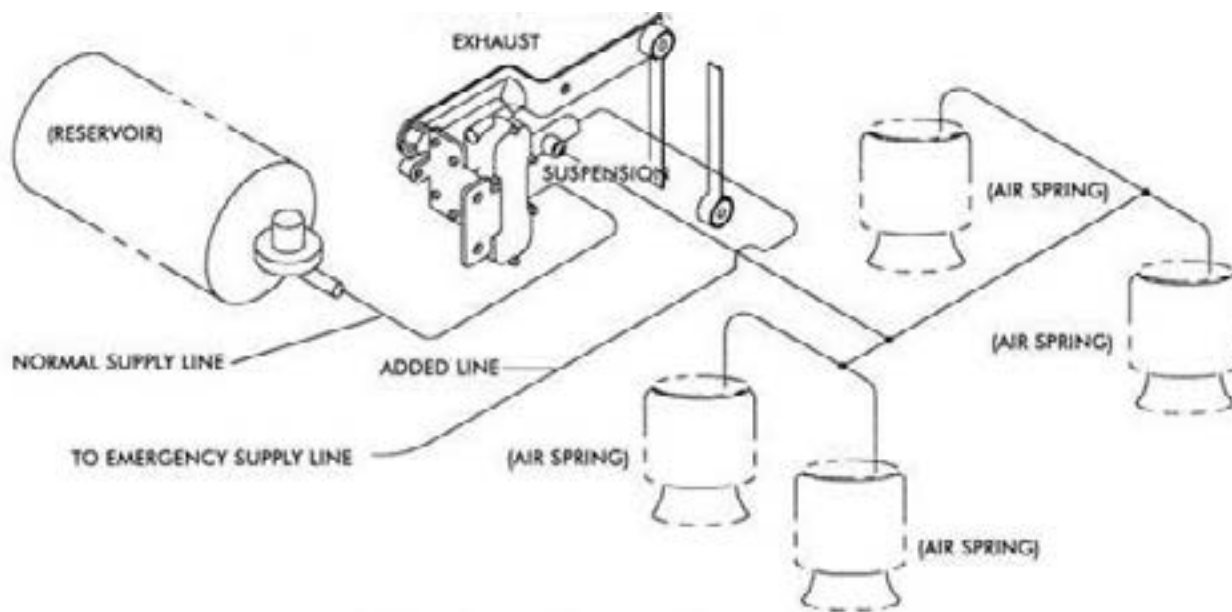


Fig. # 4-1 Automatic Dump Valve System

⚠ DANGER

Mechanical un-caging of the spring brakes is not recommended. Under no circumstances should a trailer with a mechanically uncaged spring brake be transported. Such unsafe and improper operation may cause serious personal injury, including death, to the operator, handlers, and bystanders.

COMPONENTS AND CONTROLS

Before starting to work, all operators should familiarize themselves with the location and function of the controls.

Kohler ECH980 Command Pro (Optional Equipment)

For safety, starting, operation, maintenance, and troubleshooting the Kohler Command Pro gas engines. See the Kohler ECH980 Operator's Manual in the Owner's Kit. Norwood (P/N 40-5-00052) (See Fig. # 4-2)

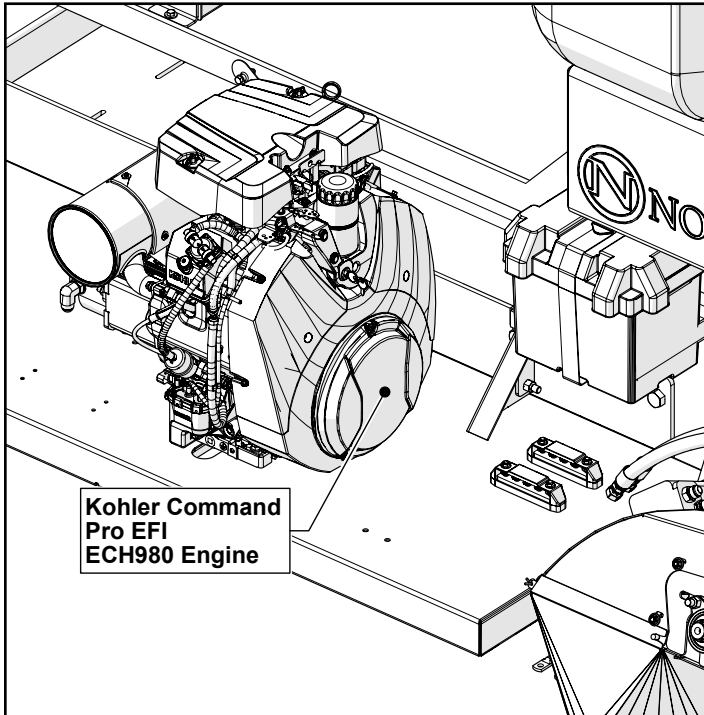


Fig. # 4-2 Kohler Command Pro EFI ECH980 Gas Engine

Jost LT300 Landing Gear

For safety, operation, maintenance, troubleshooting, and parts for the Jost LT300 Landing Gear. See the Jost LT300 Landing Gear Operator's Manual in the Owner's Kit. Norwood P/N 40-5-00051. (See Fig. # 4-3)

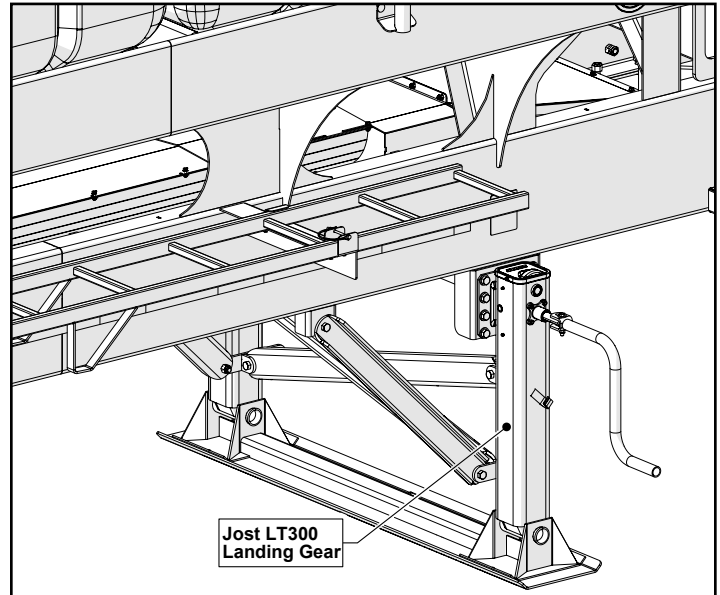


Fig. # 4-3 Jost LT300 Landing Gear

IMPORTANT

Always operate the gas engine at full throttle to allow the hydraulics to operate at maximum performance.

Ridewell Suspension System

For safety, operation, maintenance, and troubleshooting the Ridewell Suspension System. See the Ridewell Service Manual in the Owner's Kit. P/N (40-5-00035) / or Ridewell P/N 9710104 Revision N. (See Fig. # 4-4)

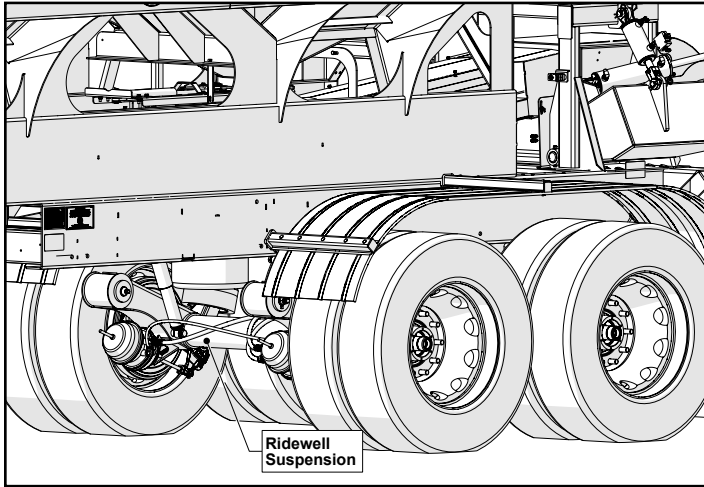


Fig. # 4-4 Ridewell Suspension System

Swing Conveyor Hydraulic Bypass

The machine comes standard with a hydraulic bypass for the swing conveyor. The hydraulic bypass stops flow of hydraulic fluid to the swing conveyor motor that is located on the discharge end of the swing conveyor. The operator, can then discharge material directly from the underbin conveyor discharge spout to whichever equipment necessary.

To turn the swing conveyor bypass on, follow the next steps.

1. Stop the flow of material, by closing the hopper gates.
2. Wait for all material to be discharged from the swing conveyor.
2. Return the swing conveyor to the transport position.
3. If necessary, remove the underbin discharge deflector. (See Fig. # 4-5) (See Fig. # 4-6)

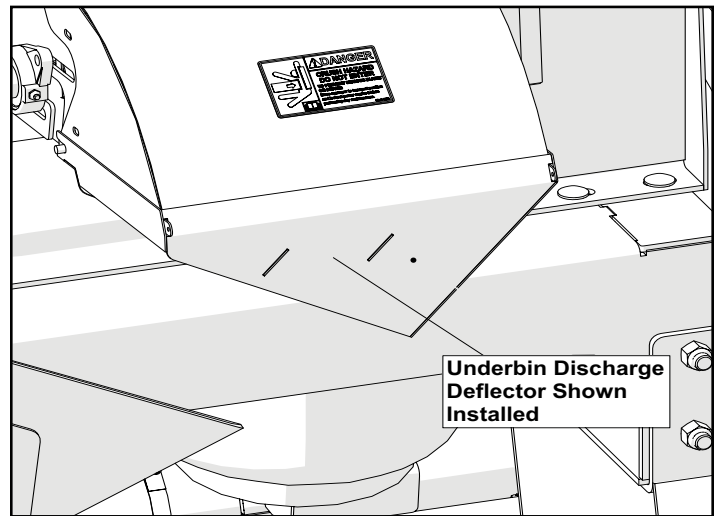


Fig. # 4-5 Underbin Discharge Deflector (Shown Installed)

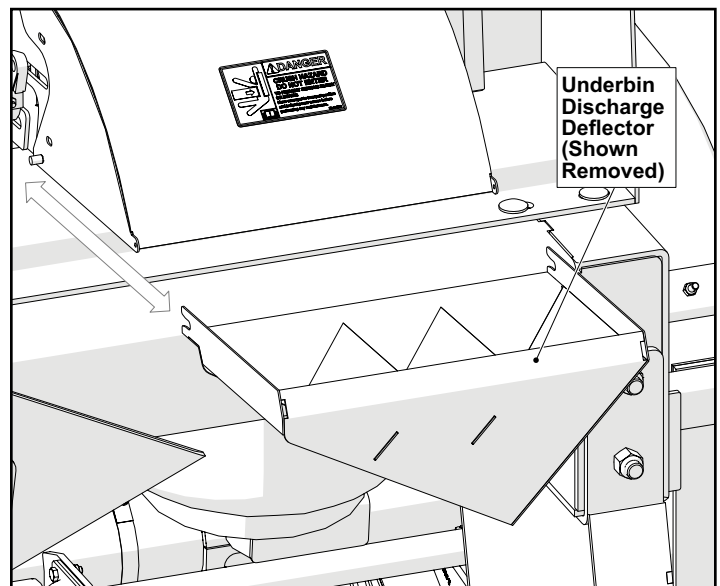


Fig. # 4-6 Underbin Discharge Deflector (Shown Removed)

4. Move the bypass lever to the "Swing Conveyor Off" position to stop the power to the swing conveyor.

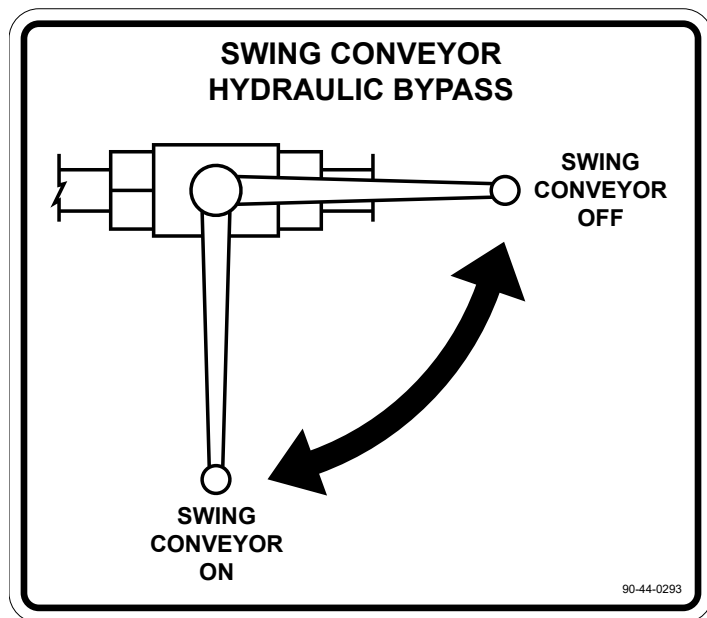


Fig. # 4-7 Swing Conveyor Hydraulic On/Off Lever

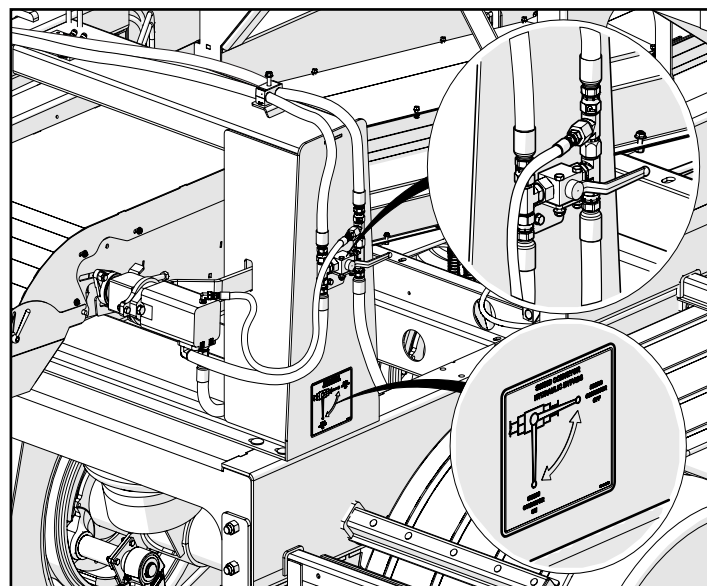


Fig. # 4-8 Swing Conveyor Hydraulic On/Off Lever Location

5. Start the conveyor.
6. Open the hopper gates.
7. Discharge the desired amount of product from the under-pin conveyor.
8. Close the gates.
9. Wait for the conveyor to discharge the last remaining product.
10. Return deflector back to mounted position.

Swing Conveyor Manual Hydraulic Valve Controls

The S3 Uni-Body Commercial Tender comes standard with hydraulic valve controls for the swing conveyor. The hydraulic valve controls allow the operator to move the swing conveyor from the transport position, to the desired unloading position up to 90 degrees perpendicular to the machine. Additionally the operator can raise the swing conveyor up to 30 degrees.

IMPORTANT

The swing conveyor discharge capacity will be reduced at angles steeper than 30° or more.

The swing conveyor hydraulic valve controls are located on the left side fender as shown in (See Fig. # 4-9).

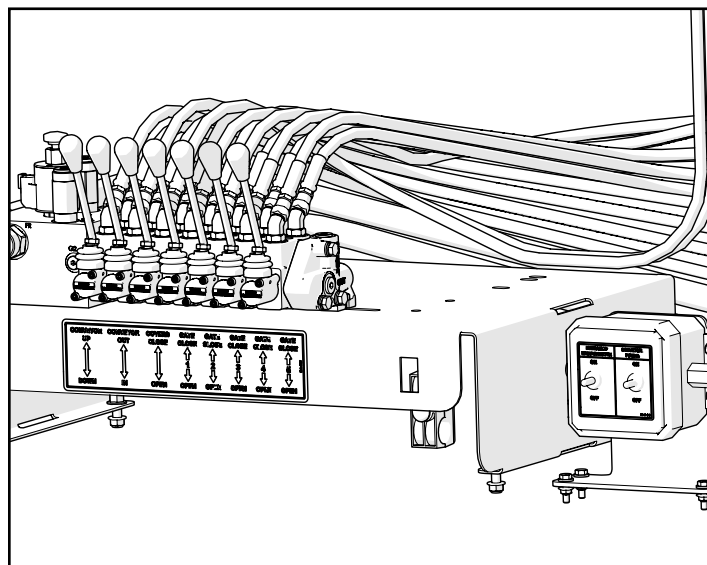
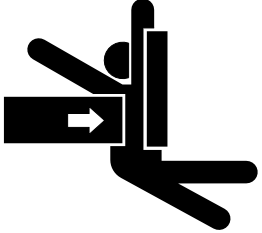


Fig. # 4-9 Swing Conveyor Hydraulic Controls

UNFOLDING THE SWING CONVEYOR



DANGER



CRUSH HAZARD

• Stand clear of machine when folding to transport position, or unfolding to filling position.
Failure to comply could result in death or serious injury.

To operate the swing conveyor, follow the next steps.

1. Turn the hydraulic power on. (See Fig. # 4-10)



Fig. # 4-10 Turn on Hydraulic Power

2. Push the **“CONVEYOR LIFT”** lever to move the swing conveyor discharge end up to clear the swing conveyor rest. (See Fig. # 4-9) (See Fig. # 4-11) (See Fig. # 4-12)

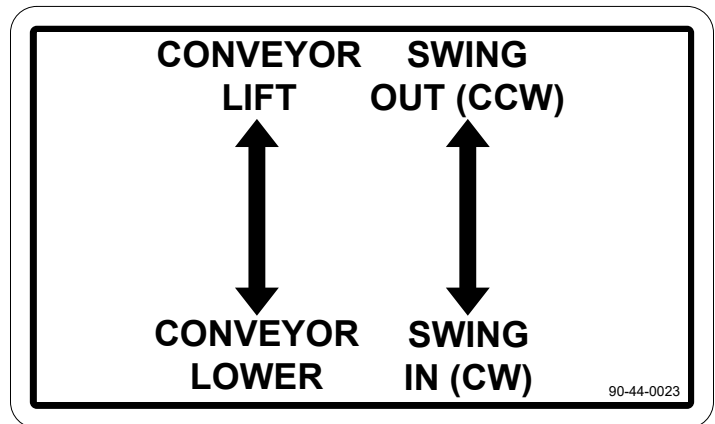


Fig. # 4-11 Swing Conveyor Directional Control Information

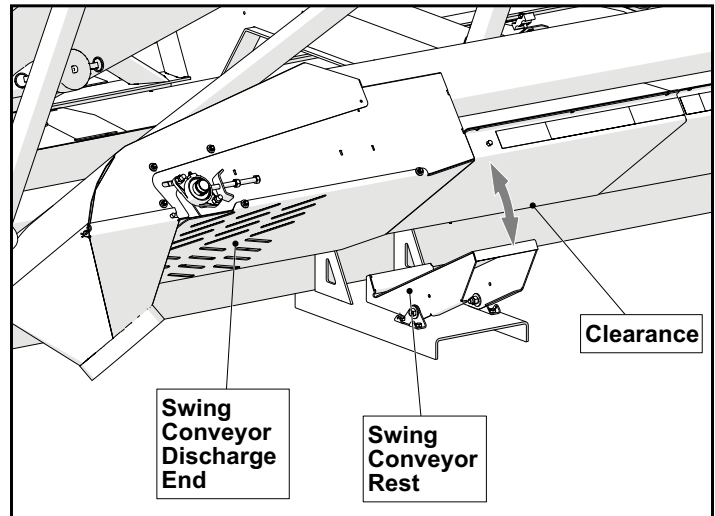


Fig. # 4-12 Swing Conveyor Clearance From Rest

3. Push the **“SWING OUT (CCW)”** lever to rotate the swing conveyor at the desired angle up to 90 degrees. (See Fig. # 4-13), the figure # shown is with the swing conveyor rotated 45 degrees.)

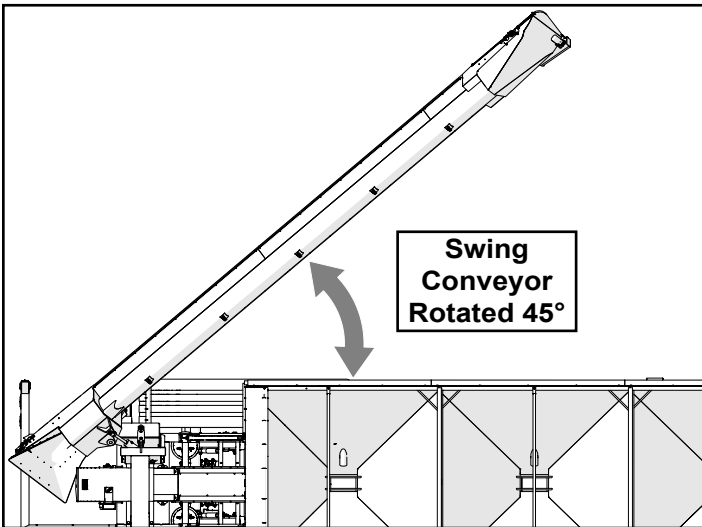


Fig. # 4-13 Swing Conveyor Rotation

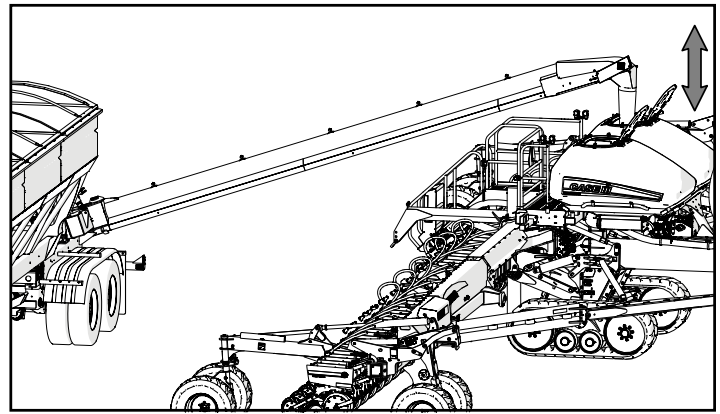


Fig. # 4-16 Raise or Lower Swing Conveyor

3. Pull the **"CONVEYOR LOWER"** or push the **"CONVEYOR LIFT"** lever to raise or lower the swing conveyor to the desired height. (See Fig. # 4-14) (See Fig. # 4-15) (See Fig. # 4-16)

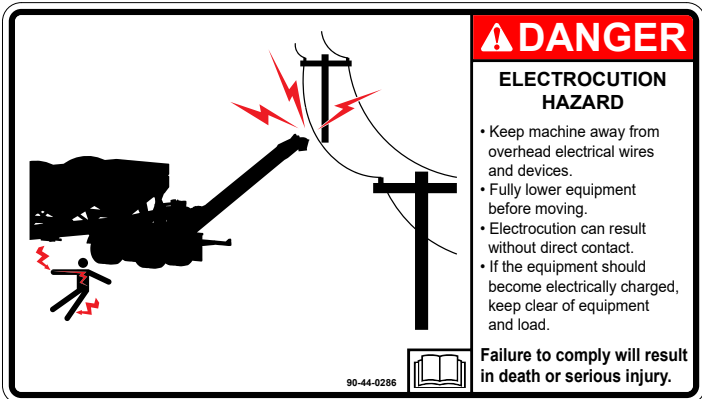


Fig. # 4-14 Keep Machine Away From Power Lines

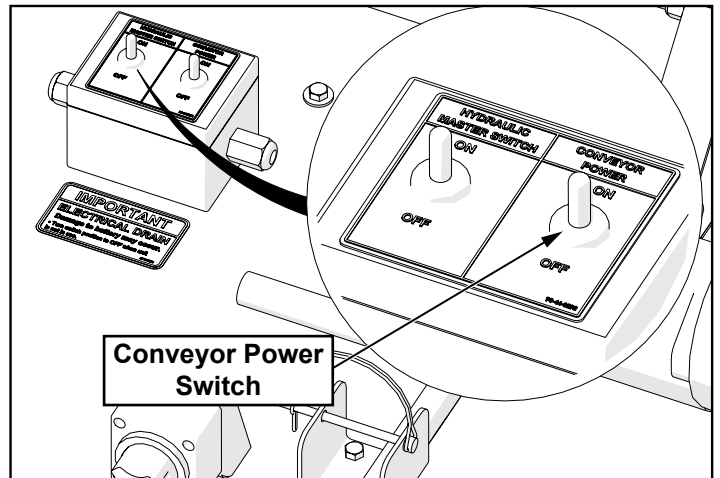


Fig. # 4-17 Turn on Conveyor Power

2. Alternatively, you can turn the **"CONVEYOR POWER"** **"ON"** with the Conveyor Power Key Fob. (See Fig. # 4-18)

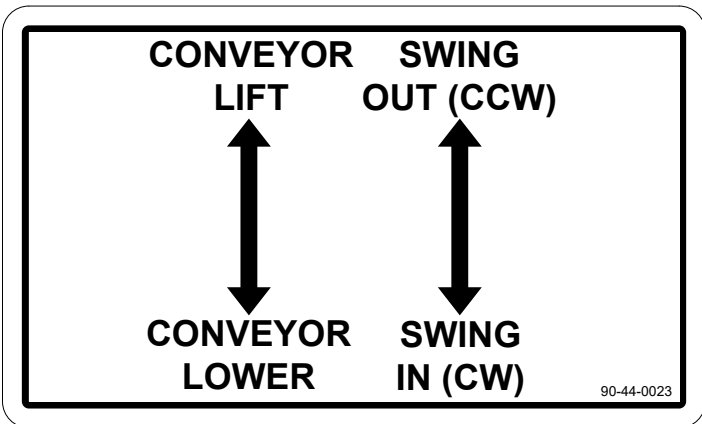


Fig. # 4-15 Raise or Lower Swing Conveyor

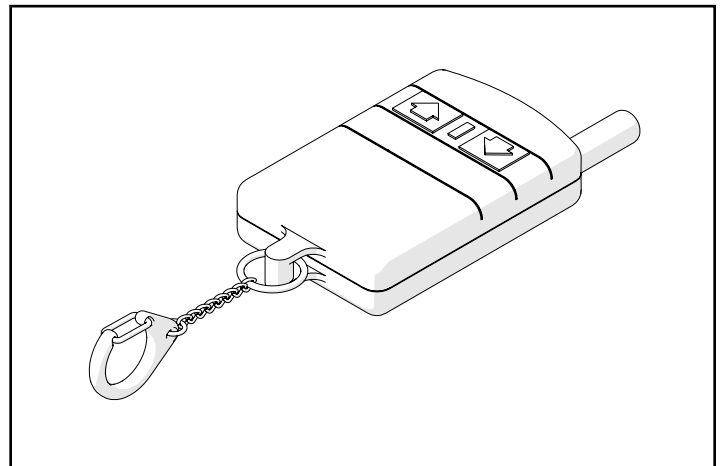


Fig. # 4-18 Conveyor Power Key Fob

3. Discharge the desired amount of material

FOLDING THE SWING CONVEYOR

1. After discharging material is complete, turn the **“CONVEYOR POWER”** switch **“OFF”**. Then rotate the swing conveyor to clear the equipment by pulling the **“SWING IN”** lever to rotate the swing conveyor **“CW”** back towards the machine. Before moving you will need to make sure the conveyor is fully raised prior to swinging the conveyor in. Stop when the swing conveyor is approximately 45 degrees from reaching the machine (See Fig. # 4-19) (See Fig. # 4-20)

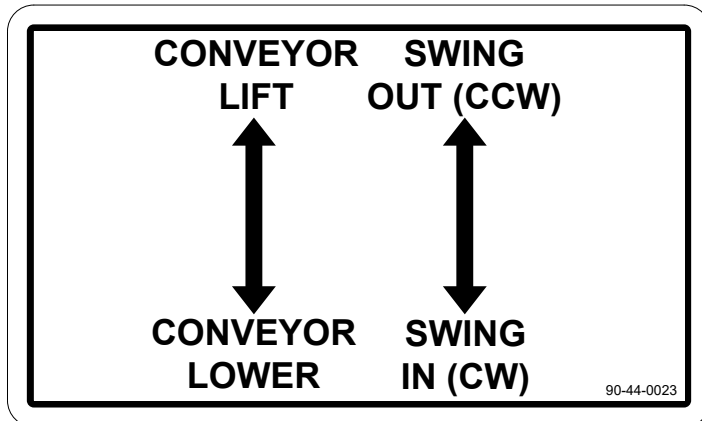


Fig. # 4-19 Raise or Lower Swing Conveyor

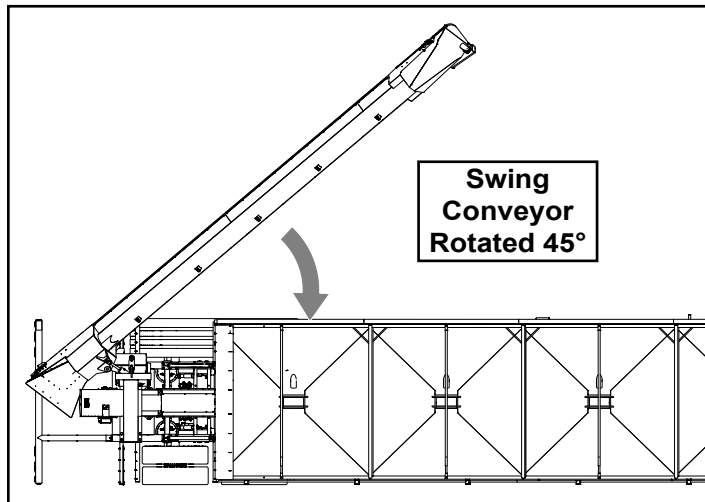


Fig. # 4-20 Rotating the Swing Conveyor CW

IMPORTANT

The swing conveyor foot can damage the swing conveyor foot rest, and other possible damage may result, if the folding instructions are not followed.

2. While folding the swing conveyor, observe the contact of the **“Swing Conveyor Foot”** and the **“Swing Conveyor Foot Rest”**. Avoid any interference that may result from folding. (See Fig. # 4-21)

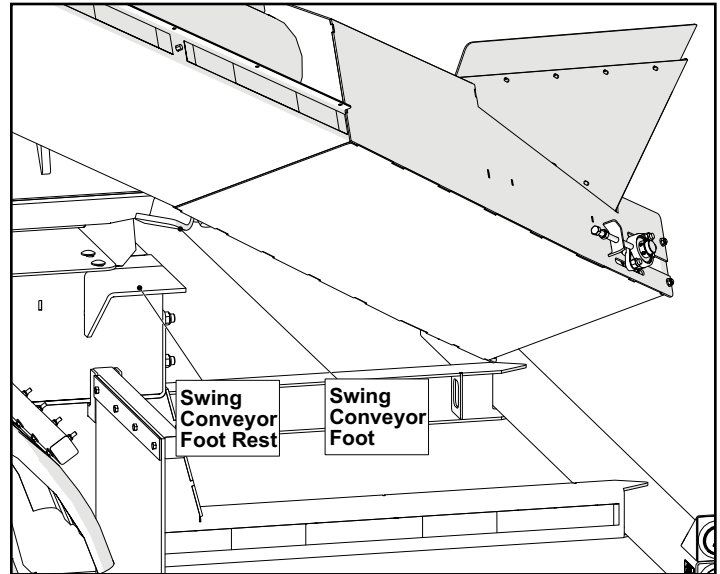


Fig. # 4-21 Swing Conveyor Foot and Foot Rest

3. Rotate the swing conveyor **“CW”**, by pulling the **“SWING IN (CW)”** lever to a level just above the **“Swing Conveyor Rest”**. Avoid any interference from the swing conveyor foot and rest that may result from folding. (See Fig. # 4-19) (See Fig. # 4-20) (See Fig. # 4-21) (See Fig. # 4-22) (See Fig. # 4-23)

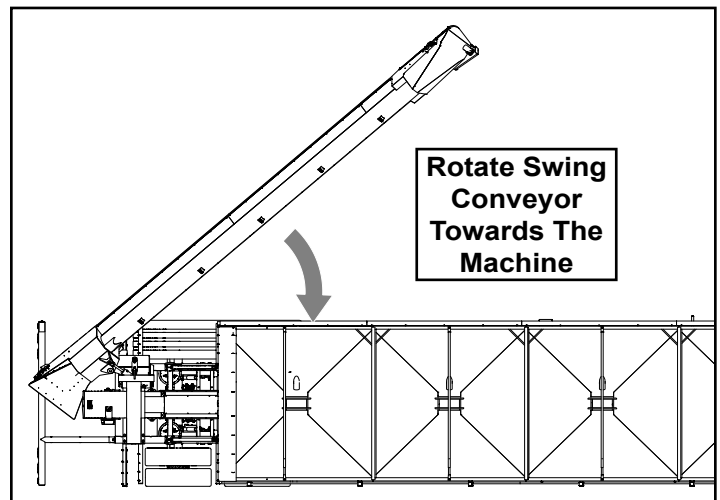


Fig. # 4-22 Rotating the Swing Conveyor CW

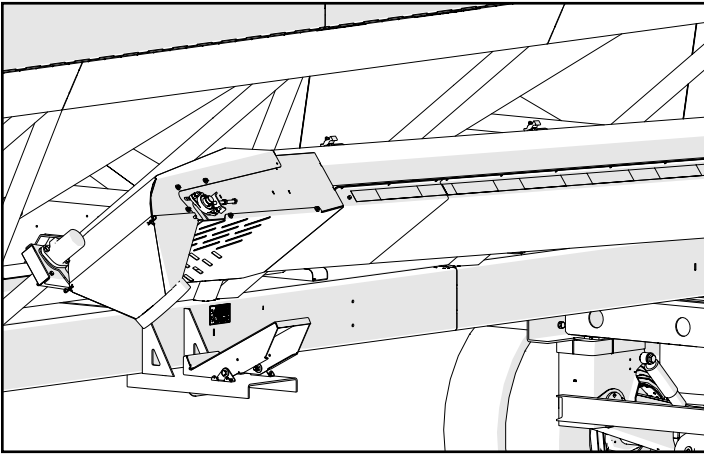


Fig. # 4-23 Swing Conveyor Above Swing Conveyor Rest

4. Lower the swing conveyor by pulling the “**CONVEYOR LOWER**” lever to rest the discharge end of the Swing Conveyor on the “Swing Conveyor Rest”. (See Fig. # 4-24)

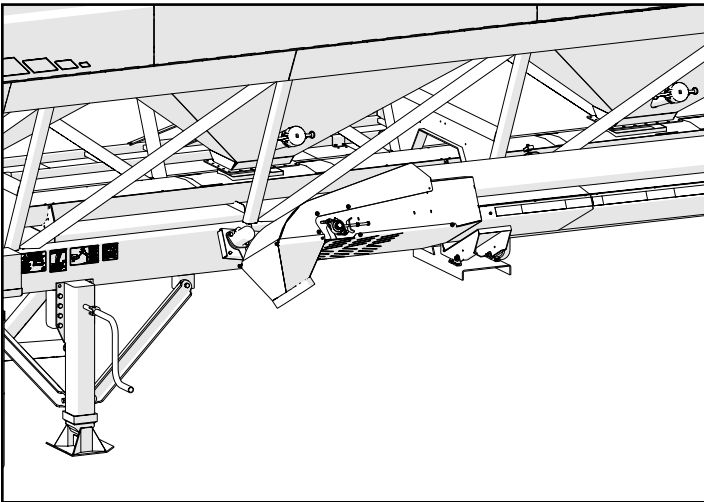


Fig. # 4-24 Swing Conveyor Above Swing Conveyor Rest

5. Folding of the Swing Conveyor is now complete.

Hydraulic Hopper Gate Controls

The Uni-Body Commercial Tender can be ordered with an optional “Hydraulic Hopper Gate Control”. The Hydraulic Hopper Gate Control allows the operator to open and close the hopper gates (See Fig. # 4-27) remotely.

The “Hydraulic Hopper Gate Controls” are located on the left side fender as shown in (See Fig. # 4-25) (See Fig. # 4-26). Only the 4 levers on the right side of the hydraulic bank are used for the gates.



Fig. # 4-25 Hydraulic Hopper Gate Controls

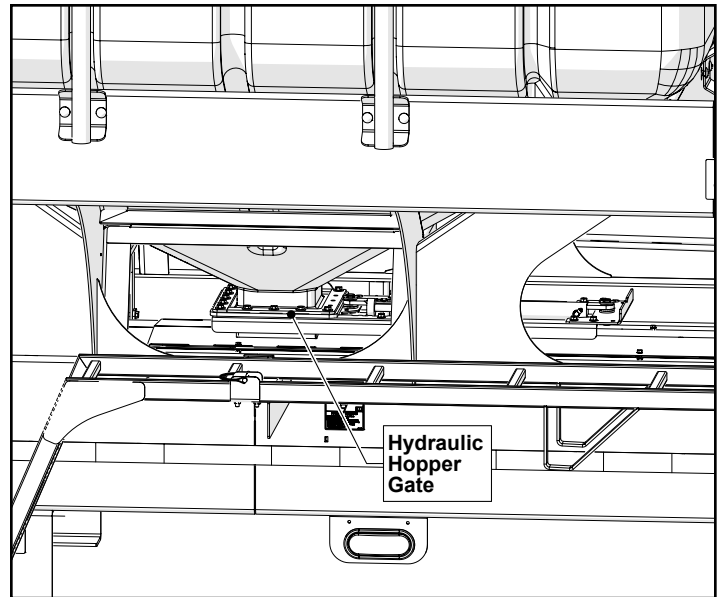


Fig. # 4-26 Hydraulic Hopper Gate

1. Select a hopper to unload from. Hoppers and gates are numbered from front to rear, the front hopper being # 1 hopper and gate.
2. Pull the # 1 lever to open the # 1 hopper gate.

IMPORTANT

Plugging Hazard:

Open one hopper at a time to minimize the chance of plugging the unit.

3. Push the # 1 lever to close the # 1 hopper gate.

4. Close the gate to the empty hopper, before opening the next one.
5. Be sure to close all gates to the hoppers when finished.
6. Turn the conveyor off.
7. Reduce engine speed to idle.
8. Turn the engine OFF. Remove ignition key.

Hopper Lid Operation

Located at the top of the bins there are indicator flags for each of the plastic bins. There is two positions that they can be located in the lower or facing down position which would be as indicated in Fig. #4-27. When they are in this position that indicates that the Hopper lids are in the closed position. To indicate that the lid is open the flag will show in the upright position and can be indicated on one or all of the lids based on the location of the flag.



Fig. #4-27 Indicator Flag positions

Gama Remote Control System (Standard Equipment)

The remote control functions of the Gama Remote Control FOB (See Fig. # 4-29) correspond to the conveyor power On/Off. The conveyor power can be turned ON, only after the hydraulic power switch is turned on. (See Fig. # 4-30)



Fig. # 4-29 Gama Remote Control FOB



Fig. # 4-30 Turn on Hydraulic Power

Press the **UP Arrow** on the Gama Remote Control FOB to turn the conveyor power **ON**. Press the **DOWN Arrow** on the Gama Remote Control FOB to turn the conveyor power **OFF**. While operating the Gama Remote Control System, refer to pages 4-9 through 4-10 for operating the machine.

Gama Remote Control System Programming Instructions

Each Gama Remote Control FOB has its own unique internal address. The Gama Remote Control Receiver needs to be programmed to respond only to the specific Gama Remote Control FOB that it is intended to operate with. The following steps are for configuring the Gama Remote Control Receiver to operate with a particular Gama Remote Control FOB or Gama Remote Control FOB's.

The Gama Remote Control FOB and Gama Remote Control Receiver are configured for latching operation.

Latching operation is defined as follows: When the operator presses the **UP Arrow** button, the conveyor power stays on until the **UP Arrow** or **DOWN Arrow** button is pressed.

In the event the Gama Remote Control FOB loses its connection to the Gama Remote Control Receiver, follow these steps:

1. To open the case locate the lower half of the case opposite of the butt hinge (See Fig. # 4-31)

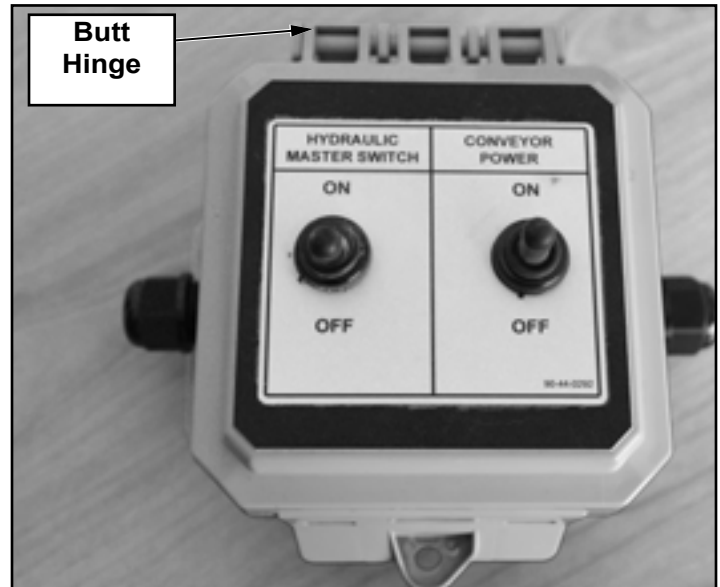


Fig. # 4-31 Remove the Screws and Cover

2. Locate the pushbutton switch on the Gama Remote Control Receiver as shown. (See Fig. # 4-32).

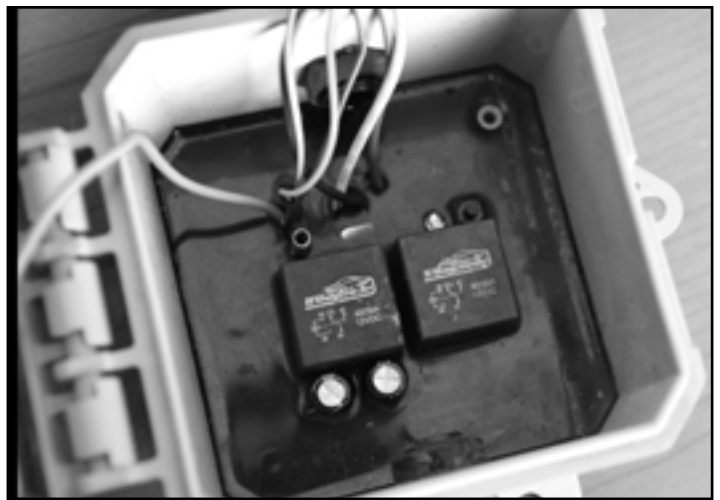


Fig. # 4-32 Locate the Programming Switch

3. Press and hold this pushbutton switch until the programming Indicator LED light next to the programming pushbutton switch illuminates **"RED"** (hold approximately 3

seconds). The Gama Remote Control Receiver is now in the transmitter program mode, release the pushbutton switch. At this point all previously programmed transmitter addresses are erased from the receiver's memory.

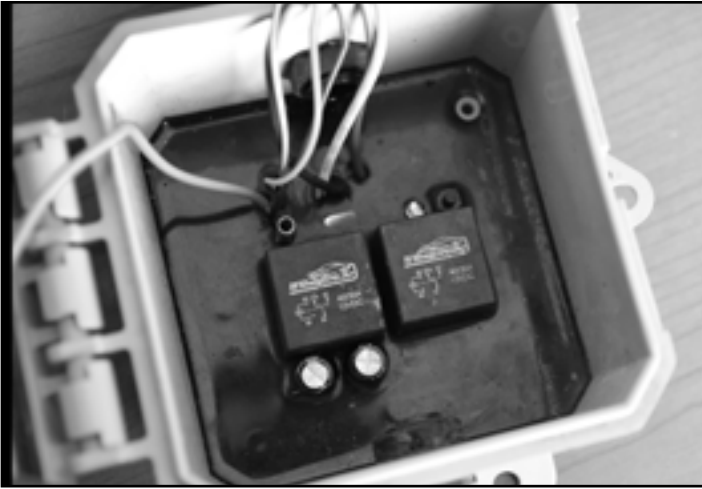


Fig. # 4-33 Programming Indicator LED Light

4. Press the **▲ UP Arrow** on the Gama Remote Control FOB. The red programming indicator LED on the Gama Remote Control Receiver will blink once. Press the **▲ UP Arrow** on the Gama Remote Control FOB a second time, the programming indicator LED will flash on and off.
5. Repeat previous step for additional Gama Remote Control FOB's that you desire the Gama Remote Control Receiver to respond to.
6. The Gama Remote Control Receiver will return to normal mode if no Gama Remote Control FOB buttons are pressed for 5-seconds. The programmin indicator LED on the Gama Remote Control Receiver will flash and then turn off. The Gama Remote Control Receiver is now in the normal mode of operation.

This completes the programming instructions. The Gama Remote Control Receiver will retain all of its programming even when power is removed.

Kar-Tech Mega Remote Control System (Optional Equipment)

The remote control functions of the Kar-Tech Mega Remote (See Fig. # 4-34) correspond the valve bank on the left side front fender of the Uni-Body Commercial Tender. (See Fig. # 4-35) The remote control receiver is mounted on left side fender. (See Fig. # 4-3)

Refer to the Kar-Tech Mega Remote Control's instruction manual for more detailed instructions. See the Kar-Tech Owners Manual in the Owner's Kit. Norwood P/N 40-5-00014 or Kar-Tech P/N 3A2481CJ.

While operating the Kar-Tech Mega Remote Control System, or the 10 Function Control Box (See Fig. # 4-36) while operating the Uni-Body Commercial Tender, unfolding, & folding the swing conveyor, refer to pages 4-8 through 4-12.

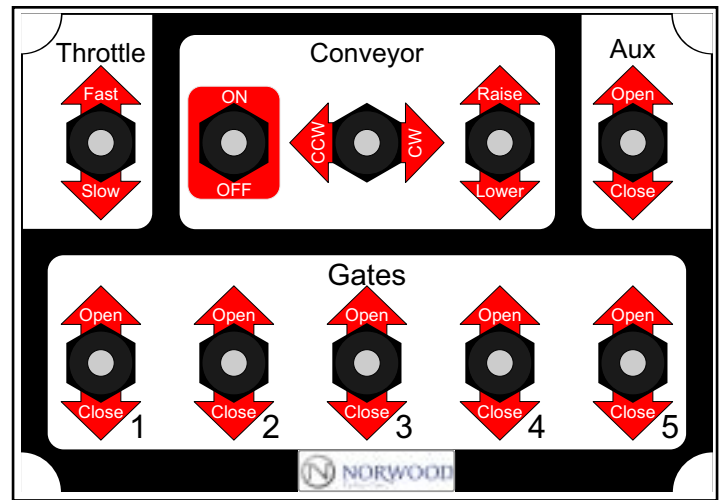


Fig. # 4-36 10 Function Control Box Detail

Detachable Ladder

The hoppers can be accessed with a detachable ladder. The detachable ladder can be attached to the left side & right side of the machine on the hopper lid frame. (See Fig. # 4-37)

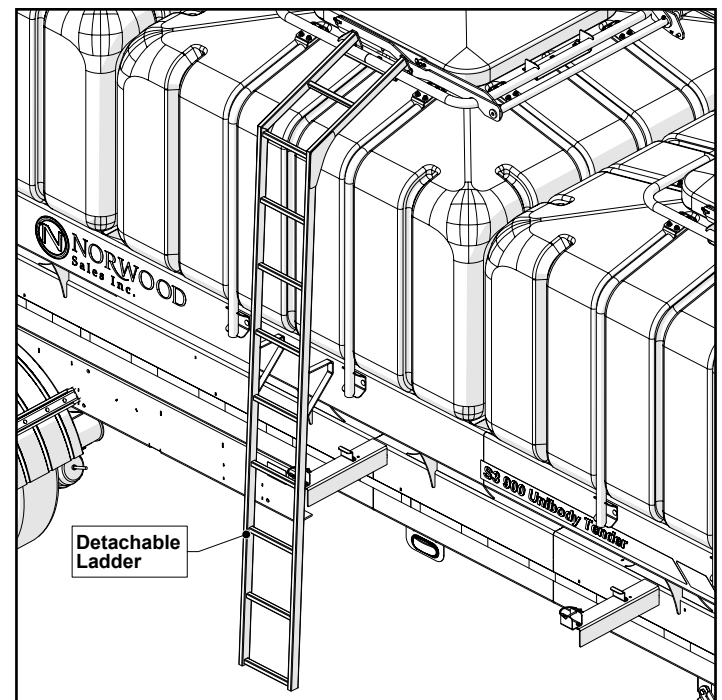


Fig. # 4-37 Detachable Ladder

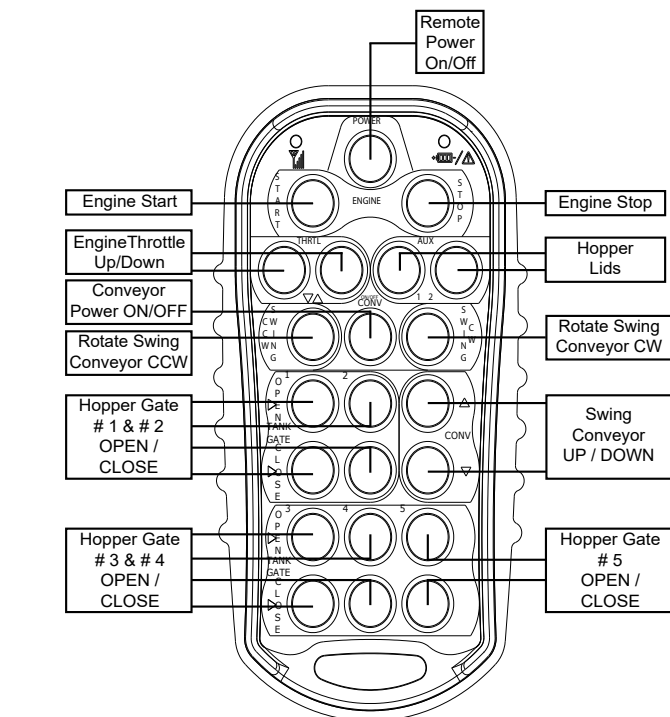


Fig. # 4-34 Kar-Tech Mega Remote Control

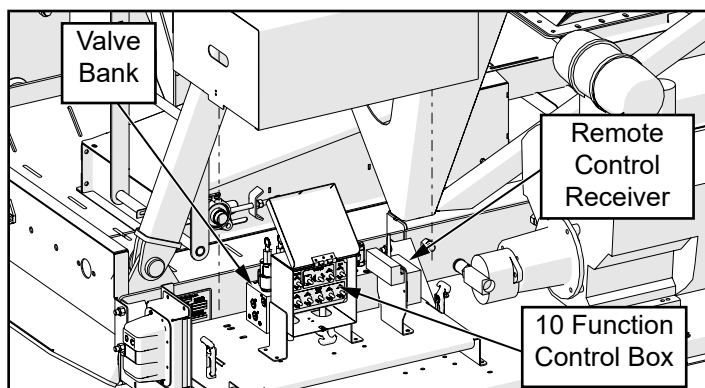


Fig. # 4-35 Left Side Front Fender Components

The detachable ladder has a designated stowed position on the frame. The detachable ladder MUST be returned in the stowed position before the machine is transported. (See Fig. # 4-38)

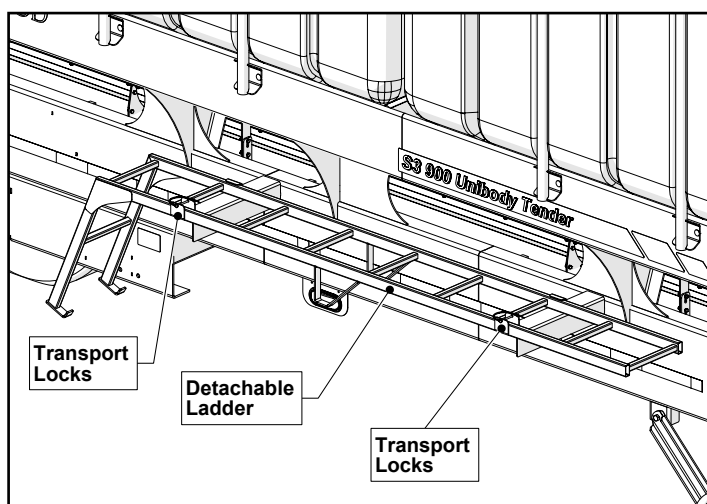


Fig. # 4-38 Detachable Ladder Stowed Position

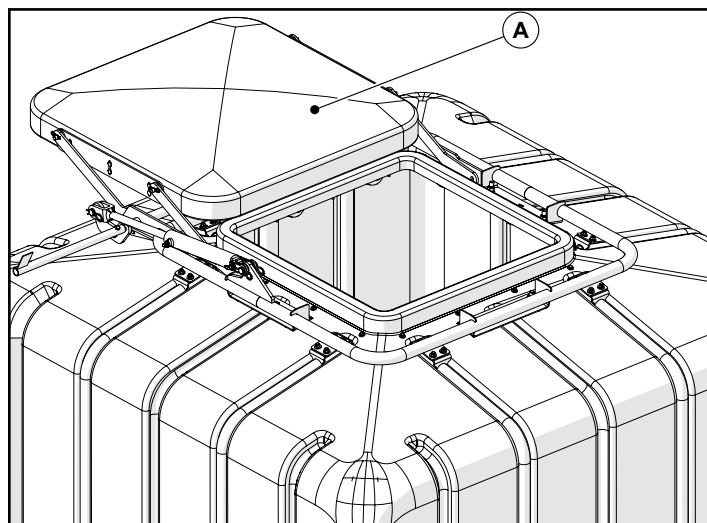


Fig. # 4-39 Open Hydraulic Hopper Lids

Liquid Conversion Kit

The Norwood Liquid Conversion Kit can equip the S3-900, S3-1200, or S3-1500 tender to handle and apply liquid products, such as liquid fertilizer or seed treatments, in addition to or instead of dry seed. This is achieved through the installation of the Liquid Conversion Kit and it enables the tender to safely store, transport, and dispense liquid materials.

Installation Overview

Installing a liquid conversion kit on a seed tender allows you to handle both seed and liquid fertilizer with the same trailer, increasing versatility and efficiency. Follow the next steps to install the Liquid Conversion Kit

1. Preparation

Before starting work *“See Lock-Out Tag-Out Safety” on page 2-8*

2. Kit Components

Verify that you have all the components of the kit by checking the quantity of parts to the parts list.

3. Open Hopper Lids

Open **“Hydraulic Hopper Lids”** **(A)**. *“See Hopper Lid Operation” on page 4-12* for proper operation of the hydraulic hopper lids. *(See Fig. # 4-40)*

4. Installation Step #1

Insert the **“Liquid Bulkhead Weldment”** **(B)** into the hopper as shown. *(See Fig. # 4-39)*

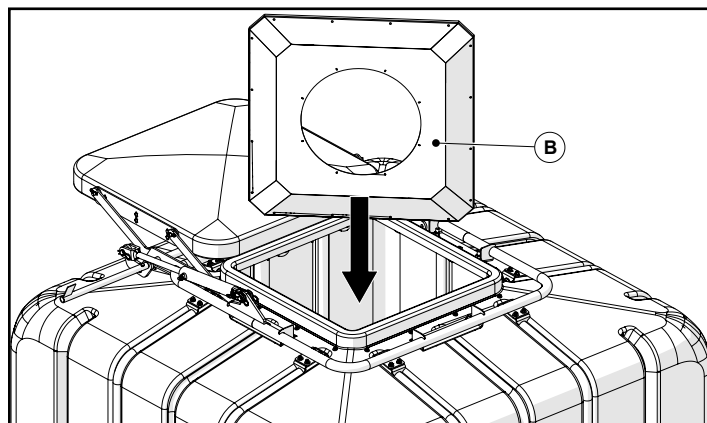


Fig. # 4-40 Insert the Liquid Bulkhead Weldment into the Hopper

5. Installation Step #2

From inside the hopper, position the **“Liquid Bulkhead Weldment”** **(B)** as shown with the pyramid shape upward. Transfer marks for drilling with a marker through the (Qty. 16) **“5/16” Mounting Holes”** **(C)**. *(See Fig. # 4-40)*

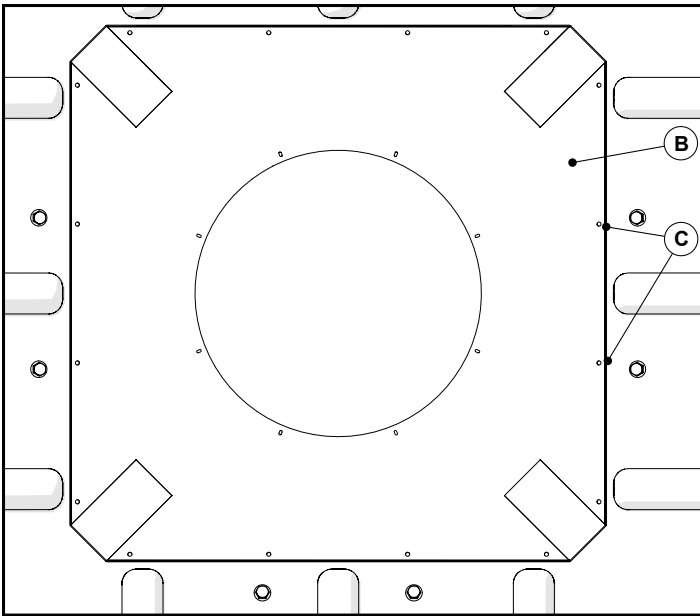


Fig. # 4-41 Mark the (Qty. 16) 5/16" Holes

6. Installation Step #3

Drill the (Qty. 16) "5/16" Mounting Holes" (C) with a Ø5/16" drill bit.

7. Installation Step #4

Prepare the (Qty. 16) 5/16"-18 X 1-1/4" bolts (E), (Qty. 32) 5/16" Flat Washers (F), & (Qty. 16) 5/16"-18 Nuts (G). (See Fig. # 4-42)

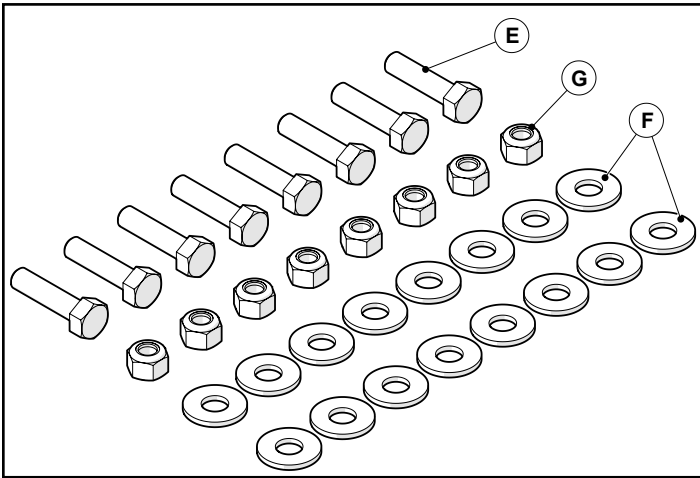


Fig. # 4-42 Prepare Hardware For Assembly

8. Installation Step #5

Caulk the perimeter of the "Liquid Bulkhead Weldment" (B) with a Ø5/16" bead of 100% Silicone Caulking (D). (See Fig. # 4-43)

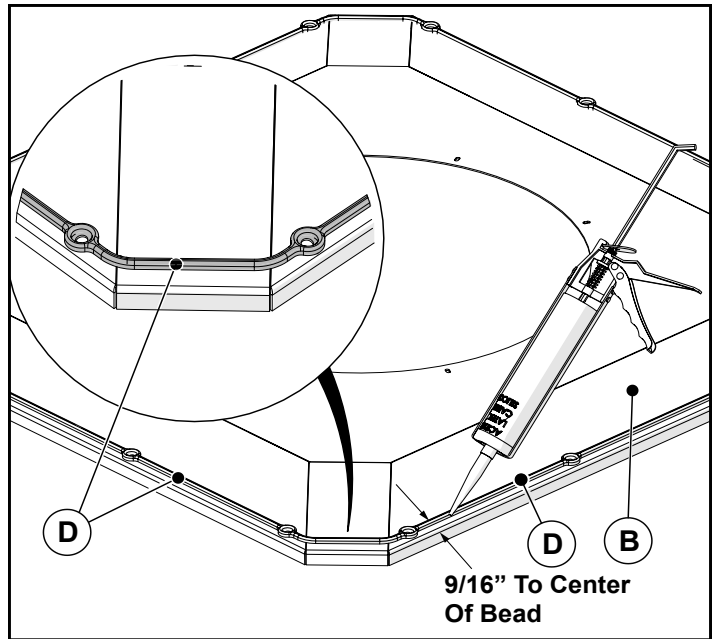


Fig. # 4-43 Caulk the Perimeter of the Liquid Bulkhead Weldment

9. Installation Step #6

Assemble the "Liquid Bulkhead Weldment" (B) to the hopper using the (Qty. 16) 5/16"-18 X 1-1/4" bolts (E), (Qty. 32) 5/16" Flat Washers (F), & (Qty. 16) 5/16"-18 Nuts (G). (See Fig. # 4-44)

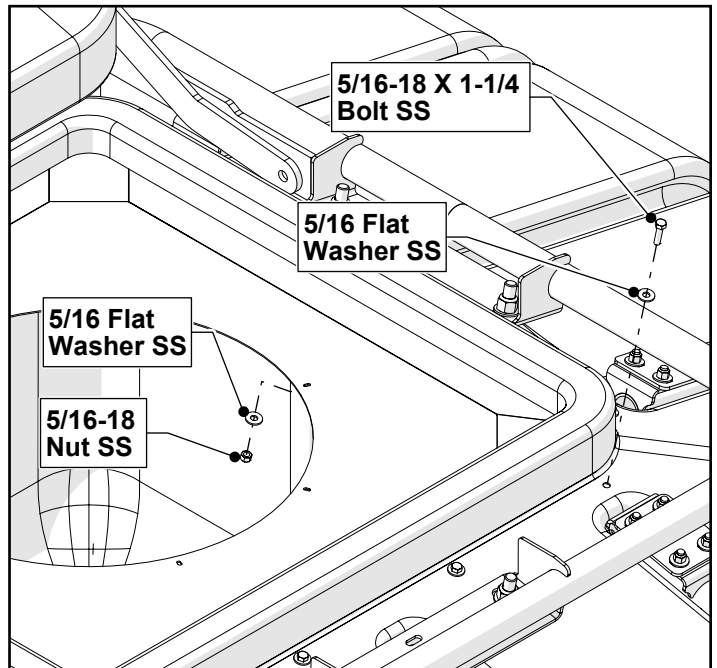


Fig. # 4-44 Assemble Liquid Bulkhead With 5/16" Hardware

10. Installation Step #7

The “**Liquid Bulkhead Weldment**” **(B)** assembly is now complete. (See Fig. # 4-49)

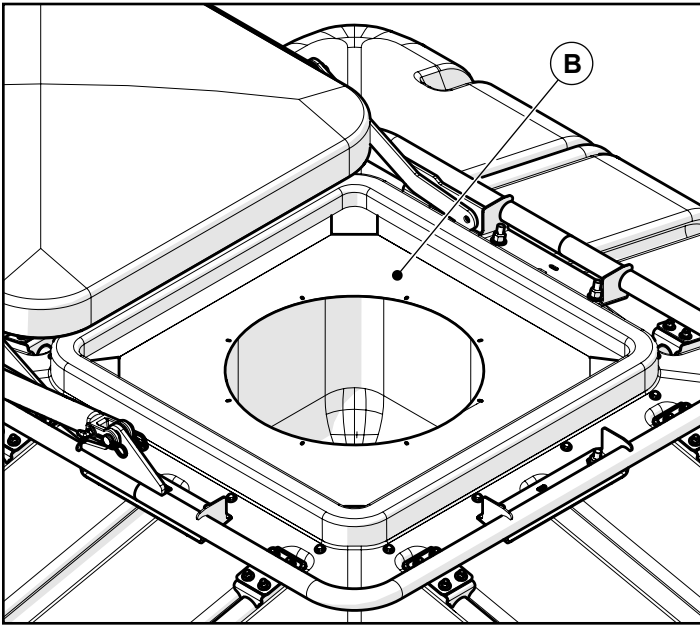


Fig. # 4-45 The “Liquid Bulkhead Weldment” Assembly is Complete

11. Installation Step #8

Prepare the (Qty.8) 8-32 x 1” Phillips Drive Pan Head SS Screws **(H)** (Qty.8) #8 SS Flat Washers **(I)** (Qty. 8) #8-32 SS Nylock Nut **(J)** for installation. (See Fig. # 4-47)

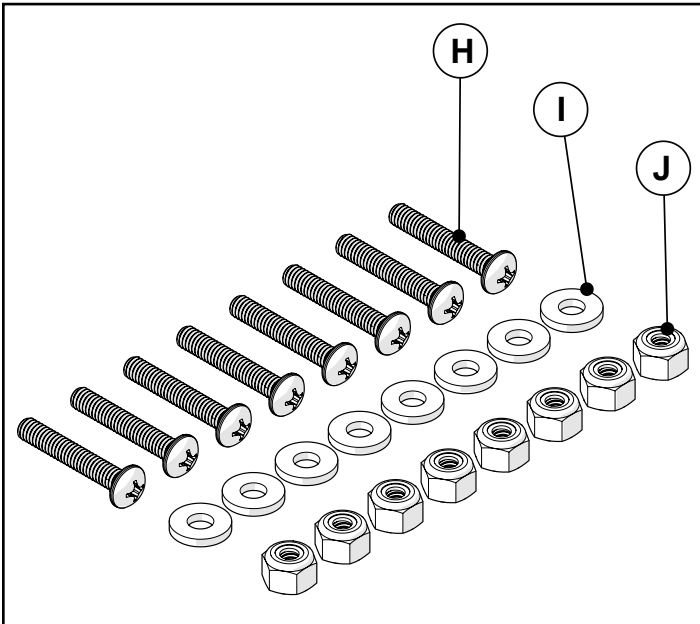


Fig. # 4-46 Prepare Hardware For Assembly

12. Installation Step #9

Caulk the perimeter of the “**22” Plastic Lid**” **(K)** with a “**Ø5/16” bead of 100% Silicone Caulking**” **(L)**. (See Fig. # 4-48)

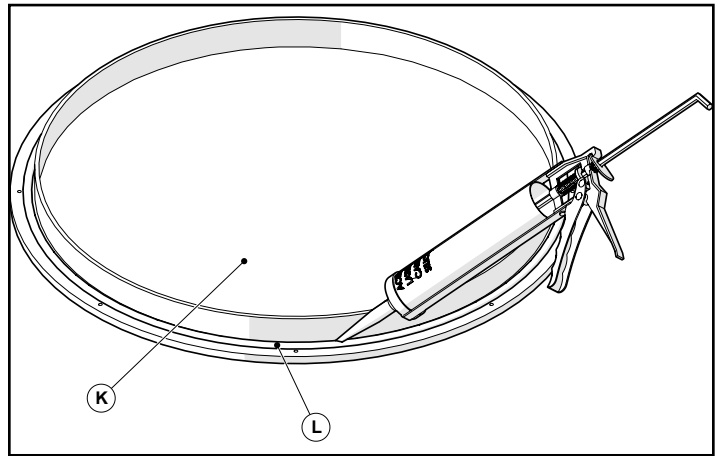


Fig. # 4-47 Prepare Hardware For Assembly

13. Installation Step #9

Assemble the “**22” Plastic Lid**” **(K)** to the “**Liquid Bulkhead Weldment**” **(B)** using the (Qty.8) 8-32 x 1” Phillips Drive Pan Head SS Screws **(H)**, (Qty.8) #8 SS Flat Washers **(I)**, & (Qty. 8) #8-32 SS Nylock Nut **(J)**. (See Fig. # 4-48)

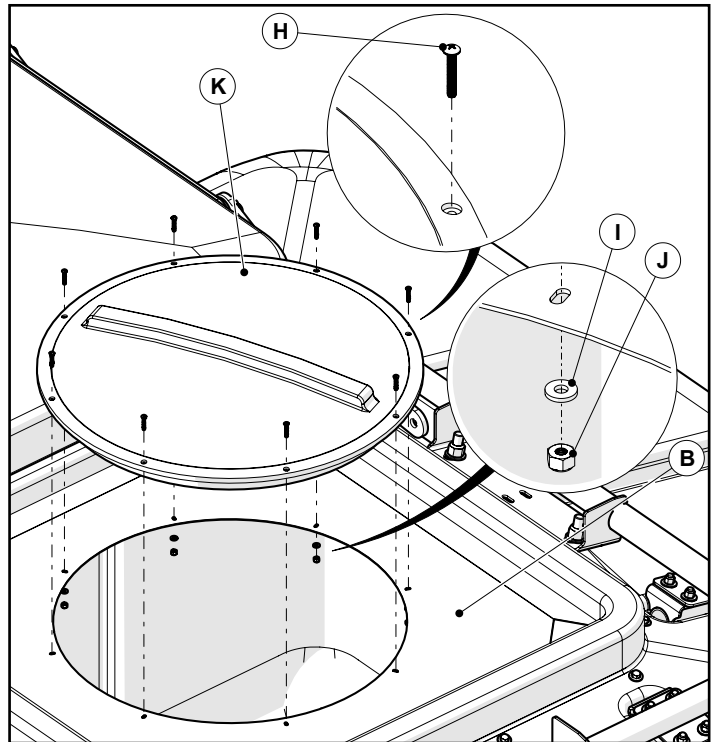


Fig. # 4-48 Assemble the “22” Plastic Lid” to the “Liquid Bulkhead Weldment

14. Installation Step #10

The 22” plastic Lid assembly is complete. (See Fig. # 4-49)

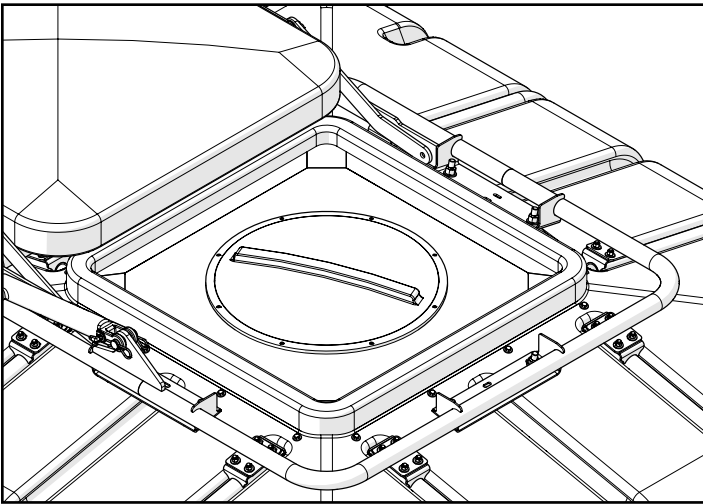


Fig. # 4-49 22 Inch Plastic Lid Assembly Complete

15. Installation Step #11

Relieve hydraulic pressure from the system. Disconnect hydraulic lines and cap ends.

16. Installation Step #12

Support the hydraulic gates with wooden blocks or equivalent

17. Installation Step #13

Remove the “3/8-16 x 1 Hex Bolts” (B), and “3/8-16 Nylock Nuts” (C) from the “Hydraulic Gate Support” (A) securing the “Hydraulic Gate” (G) to the frame. (See Fig. # 4-51)

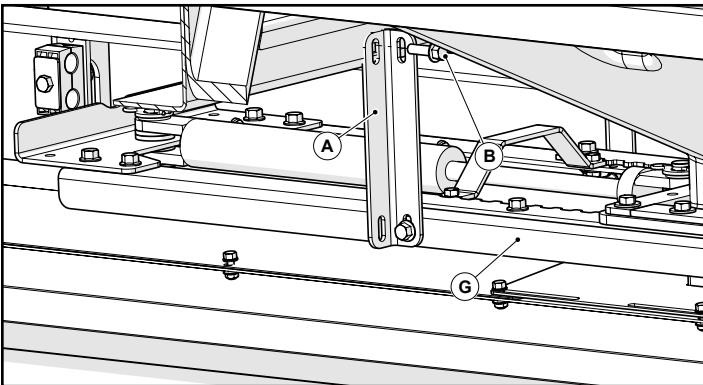


Fig. # 4-50 Dis-Connect Hydraulic Gates Support

18. Installation Step #14

Remove the (Qty. 13) “3/8-16 x 1-3/4 SS Hex Bolts” (C), (Qty. 26) “3/8 SS Flat Washers” (D), & (Qty. 13) “3/8-16 SS Nylock Nuts” (E) Securing the (Qty. 2) “Stiffener Plates” (F) to the “Hopper Flange” (H). (See Fig. # 4-52)

19. Installation Step #15

With the hardware removed, now remove the “Stiffener Plates” (F) from the “Hopper Flange” (H). (See Fig. # 4-52)

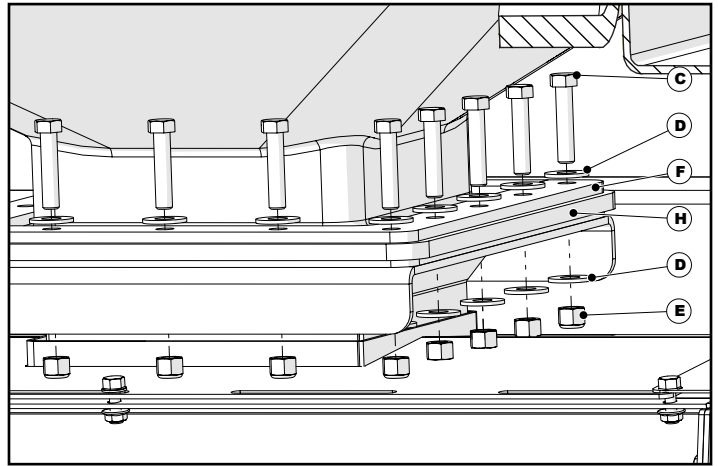


Fig. # 4-51 Remove Hydraulic Gates Hardware

20. Installation Step #16

With the hopper flange open you will remove the under hopper cover and the hardware to fully expose the empty tank.

21. Installation Step #17

Add the new bulkhead adapter (see 40-2-00398) this is the start of the reassembly of the liquid conversion. You will be reusing (C) (D) (F) and (E) (See Fig. #4-51)

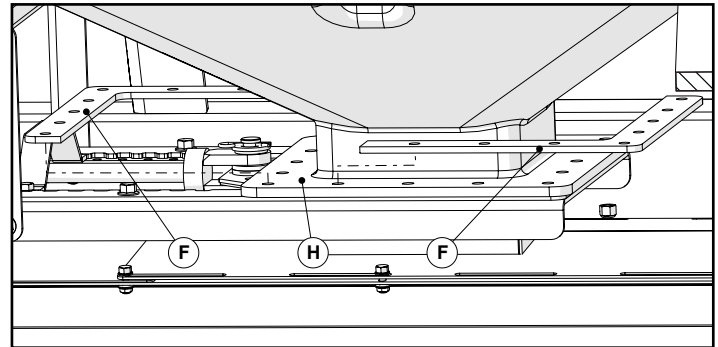
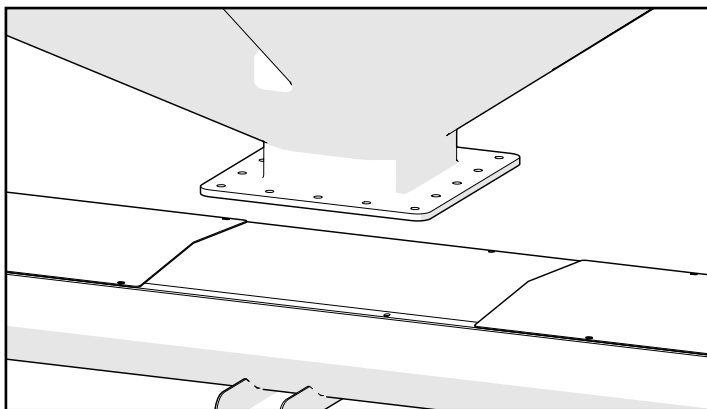


Fig. # 4-52 Remove (Qty. 2) The Stiffeners

22. Installation Step #18

To start the addition of the parts you will first place the Stiffener plates (qty. 2) to the top of the Hopper Flange as seen in Fig. #4-52.



23. Installation Step #19

Use “**3/8-16 x 1-3/4 SS Hex Bolts**” (C), (Qty. 26) “**3/8 SS Flat Washers**” (D), & (Qty. 13) “**3/8-16 SS Nylock Nuts**” then attach “**Gasket**” (I), “**Liquid Bulkhead Weldment**” (J) (See Fig. # 4-53) use “**SS Flat Washers**” (D) and “**3/8-16 SS Nylock Nuts**” (E) to connect all parts to the Hopper Flange. Use the order of placement from Fig. # 4-53.

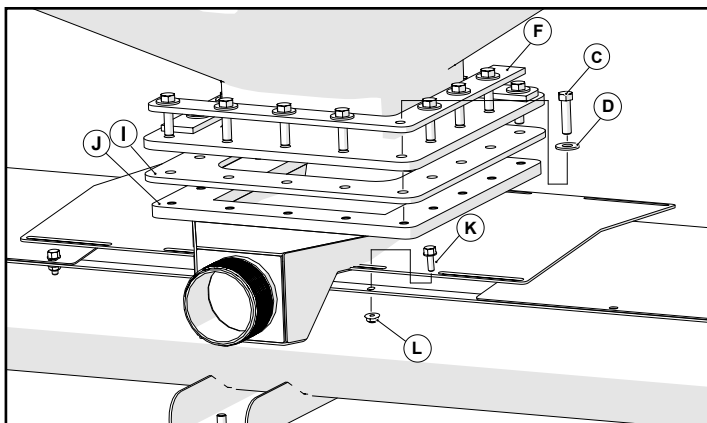


Fig. #4-53 Arrangement of conversion

24. Installation Step #20

Now that the liquid bulkhead has been attached to the bottom of the hopper you will need to attach the metal plate to ensure no chemical or fertilizer will fall below. Attach the metal plate using hardware “**Flanged 1/4-20 x 3/4 Bolt**” (K), and “**Flanged Nylock 1/4-20 Nut**” (L) (See Fig #4-53).

25. This will complete the process for one of the Hoppers please note that you will have to purchase one kit per Hopper for the Liquid Conversion.

5.0 MAINTENANCE

General Maintenance Safety

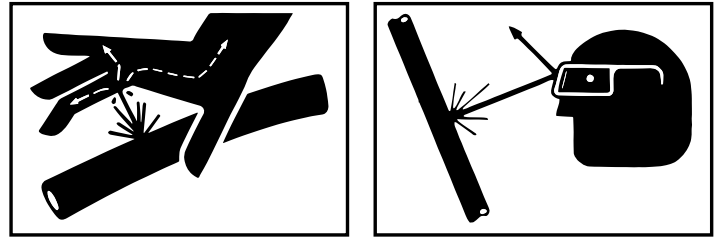
1. Review the Operator's Manual and all safety items before working with, maintaining or operating the S3 Tender.
2. Place all controls in neutral or off, stop engine or motor, remove ignition key or disable power source and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Chock wheels
4. Do not attempt to clean, lubricate, clear obstructions or make adjustments to the machine while it is in motion or while the engine is running.
5. Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
6. Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
7. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.



8. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.
9. Place stands or blocks under the frame before working beneath the machine.
10. Before resuming work, install and secure all guards when maintenance work is completed.
11. Keep safety signs clean. Replace any sign that is damaged or not clearly visible.
11. Always make sure working area is clear of tools, parts, other persons and pets before you start operating the machine.

Hydraulic Safety

Hydraulic oil leaking under pressure can penetrate the skin causing serious injury or death, or infection.



DO NOT use your hand to check for leaks. Use a piece of cardboard or plywood.

Before you connect or disconnect any rear implement hydraulic hoses, relieve the residual hydraulic pressure by following the next steps. ([See "Stopping Procedure" on page 5-1](#))

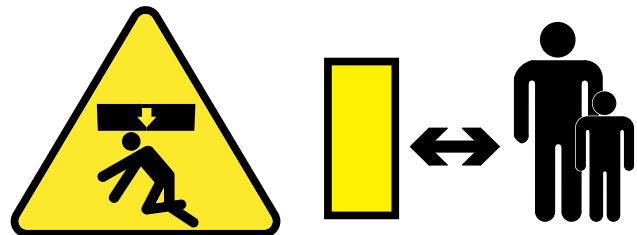
Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.

Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

Replace any worn, cut, abraded, flattened or crimped hoses.

If hydraulic fluid penetrates the skin, seek medical attention immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.



Avoid serious injury or death while working under a raised implement. Hydraulic hoses between the lift cylinders and hydraulic lockup valves should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Worn or damaged hose assemblies can malfunction during use and should be replaced immediately.

See your Norwood dealer for replacement hoses.

Replace Hydraulic Hoses

⚠ WARNING

**Avoid hazards due to escaping fluid under pressure.
See Avoid High-Pressure Fluids in the Safety section.**

Inspect all hydraulic hoses between the cylinders and hydraulic valves frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Replace worn or damaged hose assemblies immediately. See your Machine dealer for replacement hoses.

⚠ WARNING

If an incorrectly rated hose is used, injury or death could occur due to uncontrolled machine movement.

IMPORTANT

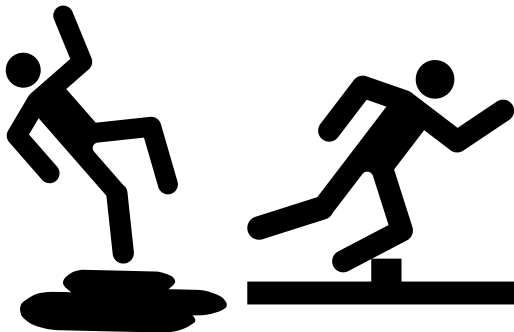
If an incorrectly rated hose is used, machine damage could occur due to uncontrolled machine movement.

If hoses are to be fabricated, ensure that hoses are rated at no less than 82 737 kPa (827 bar) (12 000 psi) burst pressure according to SAE standard J517, 100R17 hose specification.

Incorrect hose length or routing can increase chance of hose wear or damage. Use old hose as a guide for length and hose routing.

Incorrect fittings can damage mating parts or cause leaks. Make sure to use steel fittings approved for use with the hose manufacturer. When replacing hoses, use fittings of the correct size and thread to prevent leaks.

Practice Safe Maintenance



Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing away from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

Work in Clean Area

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



FLUIDS AND LUBRICANTS

Hydraulic Oil:

Use an ISO VG (Viscosity Grade) AW 32 hydraulic oil for all operating conditions.

Storing Lubricants:

Your machine can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

Make certain that all containers are properly marked to identify their contents.



Grease:

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable, SAE multipurpose lithium based grease.

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB
- ISO-L-X-BDHB 2 or DIN KP 2 N-10 Lithium Complex-Non-Synthetic Base Oil (100 to 220 mm²/s @ 40°C)

Greasing

Use the **Maintenance Chart** provided on page [“See MAINTENANCE CHART” on page 5-6](#) to keep a record of all scheduled maintenance.

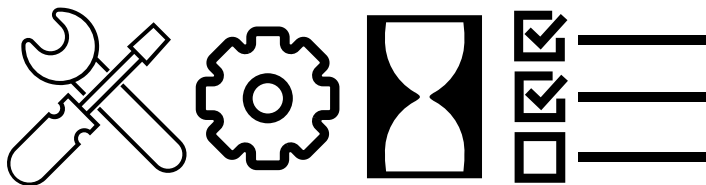
1. Use only a hand-held grease gun for all greasing. An air-powered greasing system can damage the seals on bearings and lead to early failures.



2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. Do not grease plastic bearing slides or hammer mast rails.

SERVICING INTERVALS

Make sure your machine is ready to go to the field when you are. Perform the service and maintenance procedures that are recommended in this section to prepare for the next season. Careful maintenance preparation will save time and expense as you enter the busy season.



The periods recommended on page [“MAINTENANCE CHART” on page 5-3](#) are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication and oil changes.

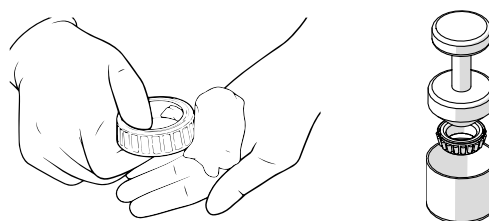
Schedules may vary depending on equipment options contained in the present unit.

Lubrication Symbols

Lubricate at the hourly interval indicated on symbol. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance. SAE multi-purpose lithium-based grease is also acceptable.



Repack bearings at the hourly interval indicated on symbol. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance. SAE multi-purpose lithium-based grease is also acceptable.

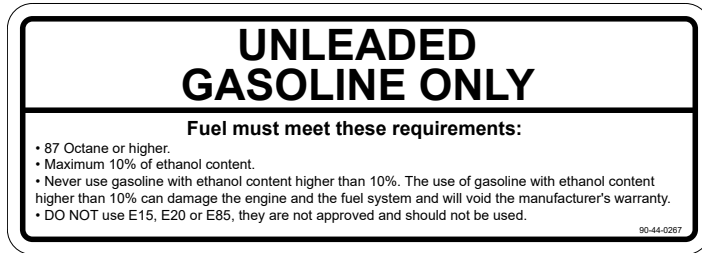


Pack bearings by hand or with a bearing packer machine

FUELS, FLUIDS AND LUBRICANTS

Fuel & Engine Oil:

Refer to the engine manual, for specific instructions. The fuel tank capacity is 25 US Gal. (95 Liters). Do not use more than 10% of ethanol content. Do not store fuel more than 30 days that will be used in the Uni-Body Commercial Tender Engine.



Hydraulic Oil:

Use an ISO grade 32 hydraulic oil for all operating conditions (Hydrex MV32 or comparable). The Oil Reservoir capacity is: 25 US Gal. (95 Liters)



Wheel and Tire Safety

WARNING

Insufficient mounting torque can cause rim slippage, resulting in broken valves, worn parts, and damaged tires. Excessive mounting torque can cause damage by stripping studs, collapsing spacer bands or forcing rims into an out of round condition.

WARNING

Insufficient mounting torque can cause wheel shimmy, resulting in damage to wheel and axle parts and extremely excessive tire tread wear. Excessive mounting torque can cause studs to break and discs to crack in the stud hole area.

DANGER

When using a two piece rim, always deflate the tire prior to removal from the S3 Tender. The rim and ring may come apart with explosive force, causing serious personal injury, including death.

 WARNING

Some substances being loaded or unloaded may be hazardous. Know what you are dealing with and where to acquire first aid in case of an emergency.

 WARNING

Never set a loaded S3 Uni-Body Commercial Tender on landing legs that are not Intended for this purpose. Never set a multiple compartment Uni-Body Commercial Tender with only the front compartment loaded on landing legs.

 DANGER

The Uni-Body Commercial Tender shall not be operated if any of the following conditions exist:

- Damage to the lighting fixtures, wiring, or electrical conduits, or inoperative lights.
- Leaking or malfunctioning equipment.
- Damage to the tractor or Uni-Body Commercial Tender, including, but not limited to, interior damage.
- Inoperative brake systems (primary or parking).

Failure to correct or repair any of these conditions may result in extensive property damage and / or serious personal injury, including death.

 WARNING

Proper operation of the Uni-Body Commercial Tender primary brake system is essential for safe operation of the vehicle. A functional system check is necessary each time the Uni-Body Commercial Tender is put into service.

 CAUTION

Never discharge a payload into a storage facility of unknown contents or capacity. Check to insure the storage facility will accept the total payload.

 WARNING

Uneven distribution of product may cause the rear axles to become overloaded to the point where the Gross Axle Weight Rating (GAWR) may be exceeded, even though the GAWR may not be, and must be corrected before continued operation of the trailer.

MAINTENANCE CHART

				Replace					
				Cleaning			Change Fluid		
				Adjust			Drain Fluid		
				Check			Grease		
Interval	Page #	Maintenance Action	# of Pts.						
FIRST 1 HOUR	5-7	Underbin & Swing Conveyor Belt Tension	4		X				
	5-8	Underbin & Swing Conveyor Belt Alignment	4		X				
EVERY 10 HOURS OR EACH DAY	5-9	Drain Any Water From Air Reservoir	1			X			
	3-3	Check The Operation Of All Lights			X				
	8****	Check The Brake Operation			X				
	5-9	Check The Tires For Damage	8		X				
	5-10	Check The Ladder Bolt Tightness			X				
	5-9	Visually Check All Bolts For Tightness			X				
	28*	Low-Profile Pre-cleaner							X
50 HOURS	5-9, 4***	Oil Level On The Axles	4		X				
	5-11	Check Lug Nut Torque	40		X		X		
	5-10	Check Swing Base Grease Zerks	2	X					
	5-10	Check Underbin Conveyor Grease Zerks	4	X					
	5-12	Grease Hydraulic Gate Cylinder Rod End	4	X					
	5-10	Grease Swing & Underbin Drive Chain	2	X					
	42	Tighten Any Loose Fasteners			X		X		
100 HOURS	5*	Change Engine Oil	1					X	
150 HOURS	5*	Heavy-Duty Air Cleaner Element	1		X				
	5*	Fuel Filter	1						X
	5*	Oil Cooler Fans, Clean As Necessary	1		X				
	5-11	Check All Supports And Braces			X				
200 HOURS	5*	Engine Oil Filter	1						X
300 HOURS	5*	Heavy-Duty Air Cleaner Element	1						X
500 HOURS	5*	Spark Plugs And Set Gap	1						X
	5*	Have Crankshaft Splines Lubricated	1	X					
600 HOURS	5*	Heavy-Duty Inner Air Cleaner Element	1						X
EVERY 3 MONTHS	4**	Lubricate Landing Gear			X				
	4**	Inspect Hardware			X				
	4**	Inspect Alignment			X				
5,000 Miles	10****	Adjust The Brakes				X			
	5***	Suspension Bolt Torque			X				
	11****	Grease Fitting On The Axle Camshaft		X					
	7****	Axle Alignment To The King Pin			X				
	5-11	Grease Upper 5th Wheel	1	X					
10K - 25K Miles	10****	Inspect Slack Adjusters, Linings, And Air Brake			X				
	13****	Free Up The Brake Shoes And Anchor Pins				X			
	5-12, 7****	Check Wheel Bearings			X				
Every Year	5-14	Change Hydraulic Oil and Filter	1						X

* Consult your Kohler Command Pro Owner's Manual
 ** Consult your Jost Owners Manual
 *** Consult your Ridewell Owners Manual
 **** Consult your AXN Owners Manual

First 1 Hour

Underbin & Swing Conveyor Belt Tension

Adjusting your conveyor belt for proper tension helps to ensure trouble-free operation and long belt life. A conveyor belt only needs to be tight enough to eliminate slipping on the drive roller. If the belt is too loose, it will slip on the drive roller making smoke or a noticeable sound, with the belt slowing down. To correct belt slippage and set proper tension on the belt, follow the steps below.

1. Clear area of bystanders.

IMPORTANT

The swing conveyor belt tension must be checked with the swing conveyor fully raised off of the swing conveyor rest and folded.

2. Remove ignition key or lockout power source.
3. Loosen bearing bolts and jam nut at tightening roller.
4. Tighten adjustment bolts equally, and tighten in small increments.
5. Tighten bearing bolts and jam nuts.
6. Check belt tension by running conveyor for one (1) minute. If belt is not slipping, then proceed to next step, otherwise repeat previous steps.
7. If belt tracks to either side abruptly, then the belt is too loose.
8. If belt is not slipping, but is running to one side gradually, the tensioned roller needs to be realigned. See **“Underbin & Swing Conveyor Belt Alignment”** section to correct this problem.
9. Ensure that all covers and guards are securely in place before operation.

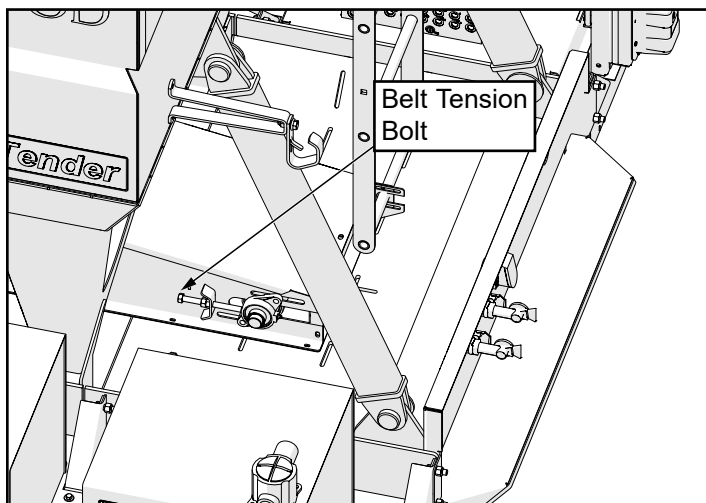


Fig. # 5-1 Underbin Conveyor Intake End Belt Tension Location

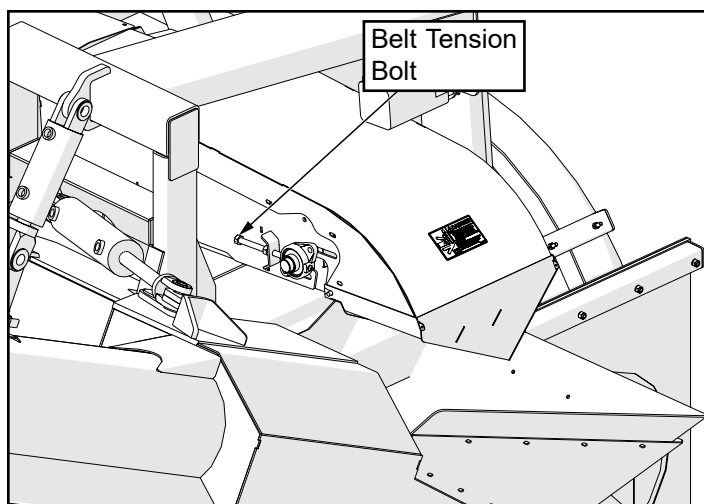


Fig. # 5-2 Underbin Discharge End Belt Tension Location

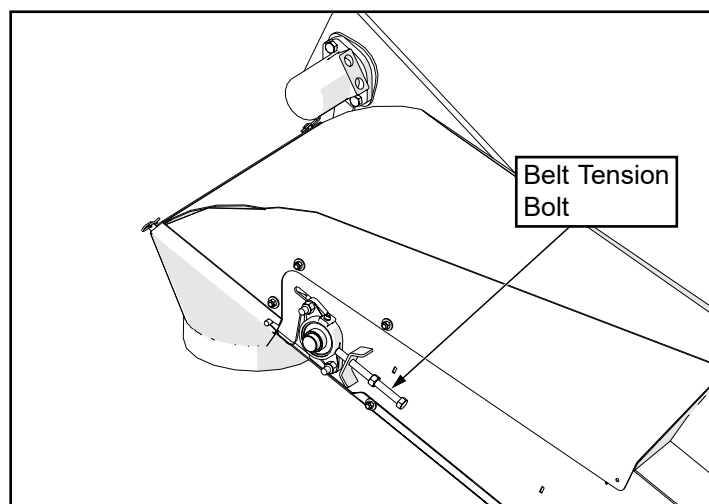


Fig. # 5-3 Swing Conveyor Discharge End Belt Tension Location

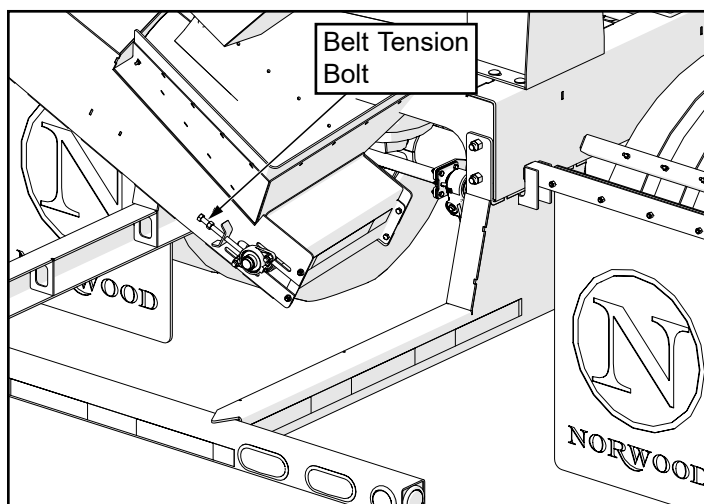


Fig. # 5-4 Swing Conveyor Intake End Belt Tension Location

First 1 Hour

Underbin & Swing Conveyor Belt Alignment

The Uni-Body Commercial Tender Underbin, and Swing Conveyor Belts should be checked during the first hour of operation, then weekly to ensure it is properly aligned. If the belt is tracking to one side, use the following steps to correct the problem.

⚠ WARNING

- **Hydraulic Drive Option:** Engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.
- Keep body, hair, and clothing away from moving conveyor belt and rollers.
- Do not operate with any guards removed or modified. Keep guards in good working order. Failure to comply could result in death or serious injury.

1. Clear area of bystanders.
2. Ensure the conveyor is completely empty of all product.

IMPORTANT

The swing conveyor belt tension must be checked with the swing conveyor fully raised off of the swing conveyor rest.

3. Remove ignition key or lockout power source.
4. Loosen bearing bolts and jam nuts if equipped.
5. Start checking the alignment at the hopper end followed by the discharge end.

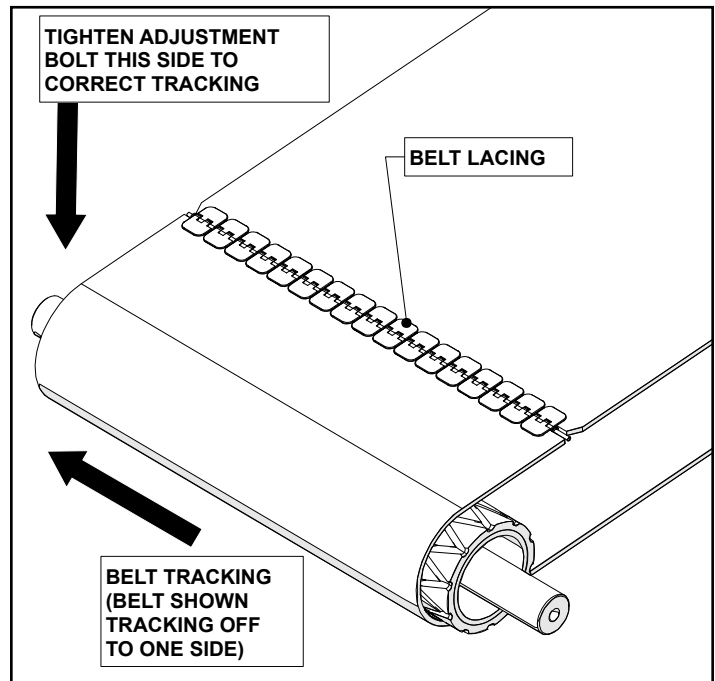


Fig. # 5-5 Belt Alignment

6. If belt is not centered, adjust the bearing on the side the belt is moving toward. The bearing should be moved in the direction which would tighten the belt. (See Fig. # 5-5) (See Fig. # 5-6)

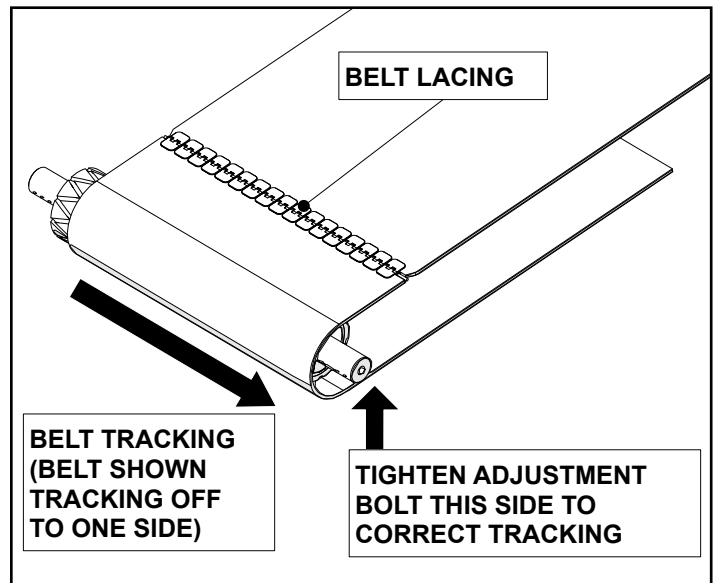


Fig. # 5-6 Conveyor Belt Tracking To One Side

7. Start the conveyor and run empty for one (1) minute.
8. Stop conveyor, remove ignition key or lockout power source.
9. If belt is centered continue to the next step, if not repeat alignment process.

Note

The conveyor belt is properly aligned when it runs in the center of all rollers.

If a conveyor belt is out of alignment, it will move to the loose side. Tighten the loose side of the conveyor belt or loosen the tight side of the conveyor belt.

10. Tighten bearing bolts and jam nuts if equipped.
11. Replace any covers or guards that may have been removed.

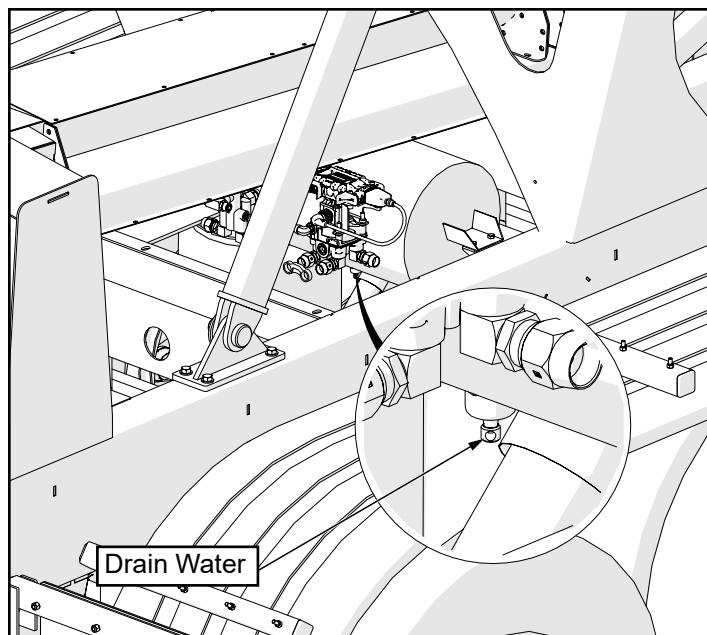


Fig. # 5-7 Drain Any Water From Air Reservoir

Every 10 Hours Or Each Day Drain Any Water From Air Reservoir

The Uni-Body Commercial Tender will accumulate water in the air tank reservoir and should be drained as frequently as possible. In time, because of the pressure, water vapor condenses and water accumulates inside the air tank.

1. Disconnect the tractor supply and control brake hoses from the gladhands on the Uni-Body Commercial Tender.
2. Before drainage, make sure that the air tank is not pressurized. If drainage is done while there is still pressure in the air tank, drainage of waste water will be pressurized and water will spread.
3. Always use personal protective devices such as safety glasses, gloves and hearing protection, when performing any service or maintenance.
4. Wastewater contains a variety of materials such as oil, welding powder, water, dust and bacteria. It is not considered a suitable to discharge the wastewater to the environment directly.
5. Place an empty container under the drain outlet to catch the expelled waste water.
6. Drain any water from the air reservoir by pulling the cable attached to the drain valve at the bottom of the air reservoir. (See Fig. # 5-7)
7. Dispose of the drained waste water properly.

Every 10 Hours Or Each Day Check The Tires For Damage

Proper tire inflation and correct installation of the rims and wheels is essential to the safe, economical, trouble free operation of the Uni-Body Commercial Tender.

Check the tire pressures daily. Recommended inflation pressure is imprinted on the tires and rims. DO NOT over inflate the tires. This is a common cause of rim failures and accidents. NEVER run your vehicle on one tire of a dual wheel assembly. This practice excessively overloads the other tire in the dual set.

When checking tire pressures, visually check the studs and rim for looseness, cracks, or other damage. Inspect the tires for uneven wear, cuts, cracks, etc., which would render the tire unfit for further service. If any doubts as to the tires durability exist, replace the tire immediately.

Visually Check All Bolts For Tightness

Visually inspect the entire Uni-Body Commercial Tender for loose bolts daily.

Every 50 Hours Swing Base Grease Zerks

Grease the 2 points on the Swing Base every 50 hours of use. Use Case IH AkcelA Multi-Purpose Grease 251H EP or equivalent.

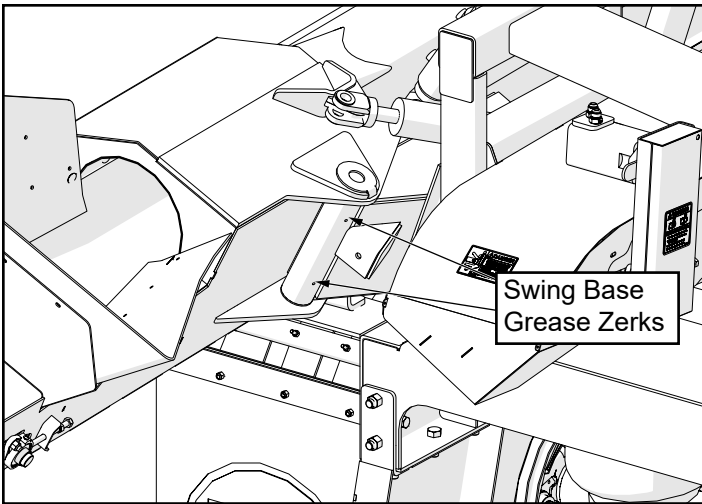


Fig. # 5-8 Grease The Swing Base Grease Zerks

Every 50 Hours

Check Swing Conveyor Grease Zerks

Grease the 4 points on the Swing Conveyor discharge and intake ends every 50 hours of use. Use Case IH AkcelA Multi-Purpose Grease 251H EP or equivalent.

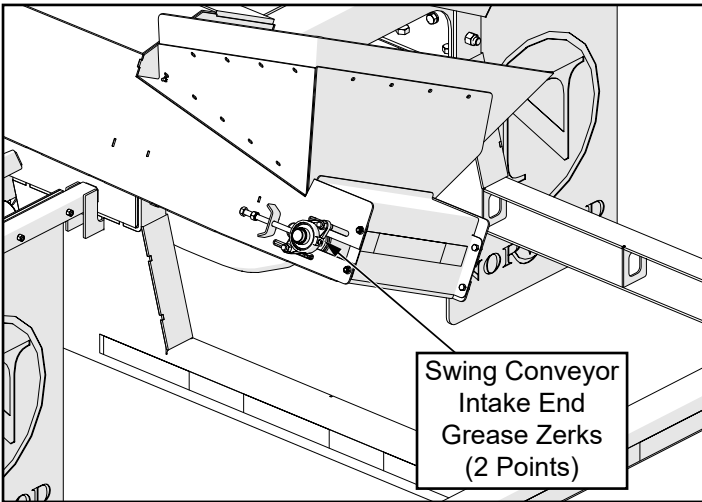


Fig. # 5-9 Swing Conveyor Grease Zerks Intake End

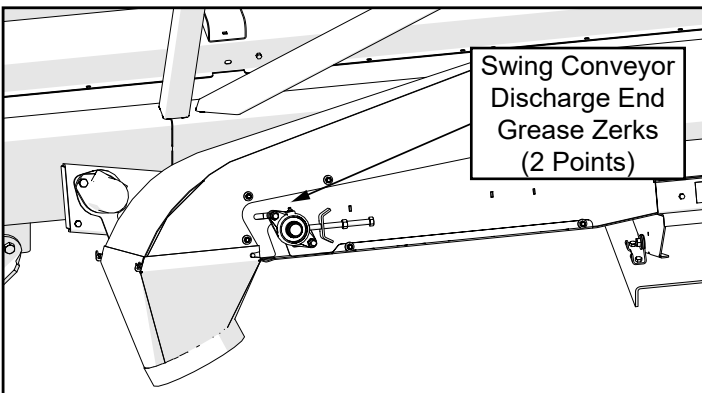


Fig. # 5-10 Swing Conveyor Grease Zerks Discharge End

Check Underbin Conveyor Grease Zerks

Grease the 4 points on the Underbin Conveyor discharge and intake ends every 50 hours of use. Use Case IH AkcelA Multi-Purpose Grease 251H EP or equivalent.

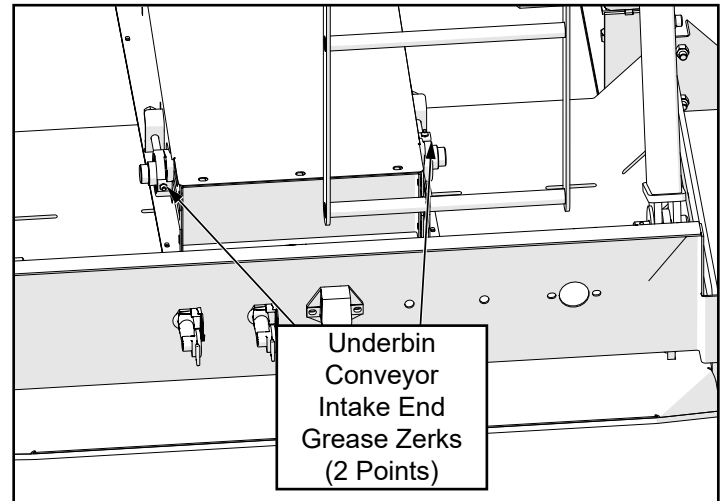


Fig. # 5-11 Underbin Conveyor Grease Zerks Intake End

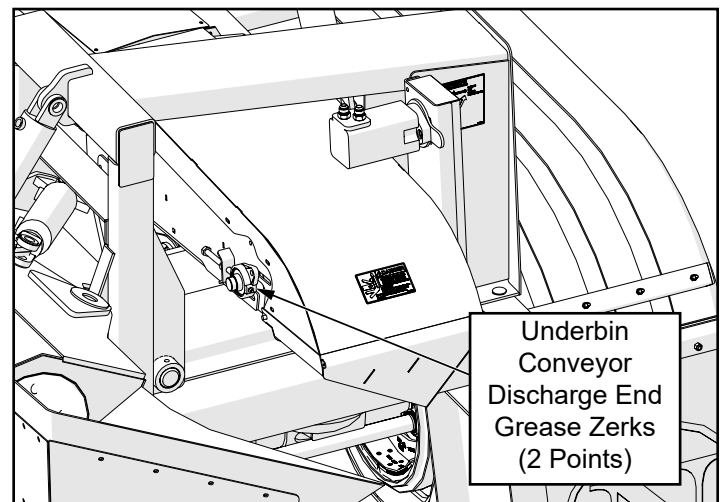


Fig. # 5-12 Underbin Conveyor Grease Zerks Intake End

Grease Swing & Underbin Drive Chain

Grease the 2 points on the Swing & Underbin Drive Chains every 50 hours of use. To maintain the chain use chain wax such as Maximum chain wax.

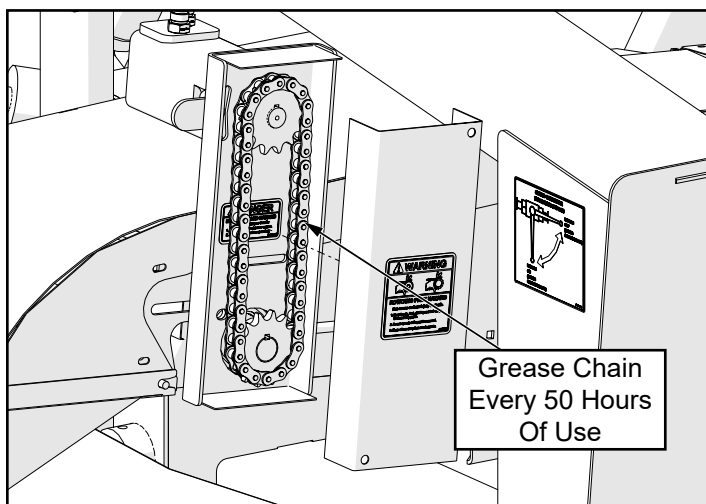


Fig. # 5-13 Underbin Conveyor Drive Chain Lubrication

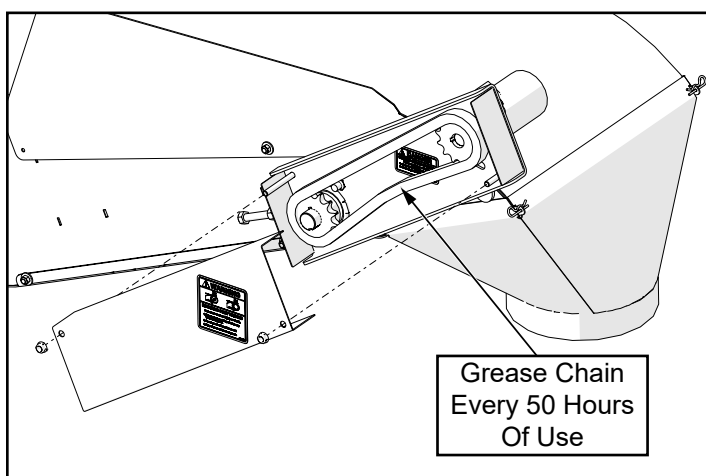


Fig. # 5-14 Swing Conveyor Drive Chain Lubrication

Every 50 Hours Check Lug Nut Torque

Check the wheel lug nut torques at least once a week. Recommended dry torque for all lug nuts on wheels is 450 - 500 lb ft (610 - 678 N·m).

IMPORTANT

Failure to torque the lug nut bolts correctly will result in improper function and cause damage to the machine and property.

THIS VEHICLE IS EQUIPPED WITH A HUB PILOTED WHEEL SYSTEM

10-Hole
Sequence

WHEEL INSTALLATION

- AVOID WHEEL OR BRAKE DRUM BINDING ON HUB
- USE 2-PIECE FLANGE NUTS, RIGHT HAND THREAD
- TORQUE SEQUENCE PER 8 OR 10 HOLE DIAGRAM
- TIGHTEN NUTS FIRST TO 50 FT-LB, THEN TO 450-500 FT-LB TORQUE
- RETORQUE 50 TO 100 MILES AFTER INSTALLATION. CHECK TORQUE PERIODICALLY THEREAFTER.

8-Hole
Sequence

Wheel and tire servicing can be dangerous ALWAYS REMOVE ALL AIR FIRST BEFORE DEMOUNTING TIRES. Follow proper procedures as required by OSHA Regulation 1910.177 for tire and rim / wheel servicing.

KIC

Fig. # 5-15 Lug Nut Torque

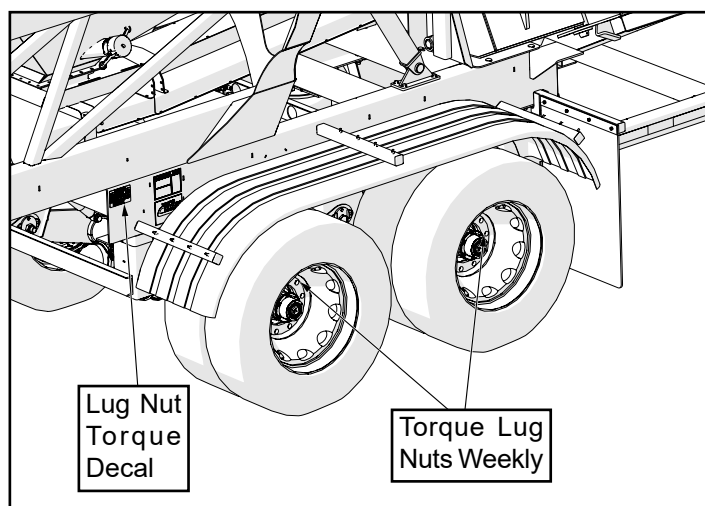


Fig. # 5-16 Lug Nut Torque

Every 150 Hours Check All Supports And Braces For Defects Or Cracked Welds

Visually inspect the entire Uni-Body Commercial Tender chassis for defects and cracked welds.

Every 5,000 Miles Grease Upper 5th Wheel Plate

It's important to perform all fifth wheel maintenance with the tractor uncoupled from the trailer. Proper lubrication procedures include removing old grease and debris from all fifth wheel-to-trailer contact surfaces and applying new water-resistant lithium-based grease.

Lubricate the kingpin lock using a hand pump grease gun through the grease zerk provided on the skirt of the fifth wheel and apply grease to the trailer contact surface as well as a light oil to all moving parts. For sliding fifth wheels, spray light oil on the slide path of the base plate.

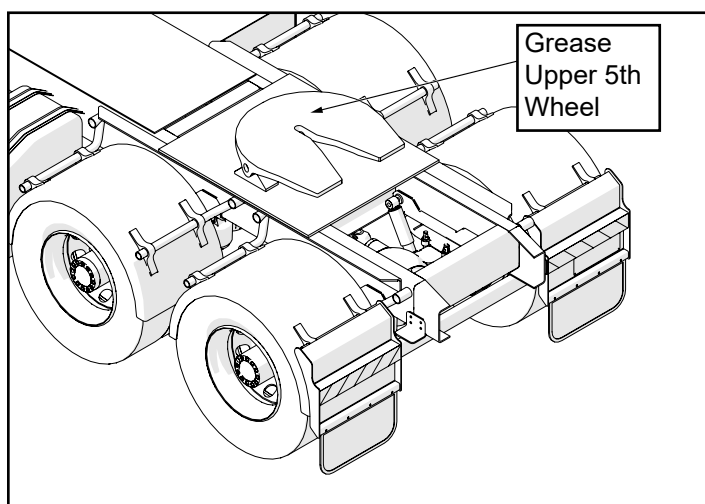


Fig. # 5-17 Grease Upper 5th Wheel Plate

Every 10K - 25K Miles Check Wheel Bearings

The wheel hub revolves around the axle spindle on two tapered roller bearings. The bearings are oil lubricated and the hub cavity is sealed against leakage by a seal which rides around and axle ring on the spindle shoulder. (See Fig. # 5-20) Illustrates the bearing and seal arrangement.

Check the oil level and check for leaks around the oil seal at least once a week. If it is low, refill the hub to the oil level line on the hub cap. Use SAE 80-90 W Gear Oil.

Check Wheel Bearing Adjustment

1. Tighten the jam nut while turning the wheel until there is a slight bind.
2. Back off the inner jam nut 1/3 turn to allow the wheel to rotate freely.
3. Snug the washer to the inner jam nut and tighten the outer jam nut.
4. After the final adjustment, end play should be between 0.001" and 0.008".

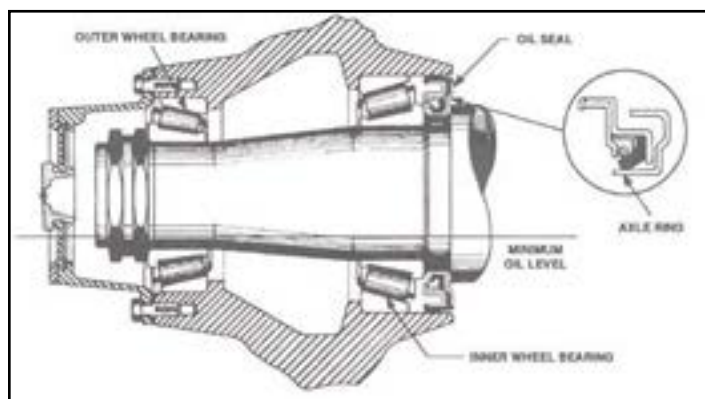


Fig. # 5-18 Cross Section of Wheel Hub

Check Oil Seal Replacement

1. Remove the wheels and hubs.
2. Remove and discard the old seal.
3. Remove all burrs from the hub bore and thoroughly clean the entire wheel cavity.
4. Lay the wheel down and after oiling the inner bearing, place it into the bearing cup.
5. Apply a thin coat of No. 2 sealant on the O.D. of the seal and position it in the starting position on the hub bore. Place the proper Installation tool on the seal with the handle in the vertical position and strike the tool sharply to start. Drive the seal into the bore until it is completely bottomed against the axle shoulder. Check that there is at least 1/32" clearance between the cone and seal.
6. Oil the I.D. of the bearing cone and align the wheel with the axle. Slip the wheel into place on the axle, being careful not to damage the seal. If the wheel does not slip back in place easily, remove it and check for burrs or possible component damage.
7. Install the outer bearing, lock nut, and axle nut. Tighten and adjust the bearings to manufacturer's recommendations.
8. Install the hub cap with gasket and fill the cavity with oil until the proper level is reached. Check for leaks.

100 Hours Or Monthly

Check The Hydraulic Oil Level

The Uni-Body Commercial Tender uses a self contained hydraulic fluid reservoir mounted on the machine. The system is virtually maintenance-free, except for checking the oil level in the reservoir.

⚠ WARNING

- Gas engine drives: Place all controls in neutral by disengaging hydraulic levers, stop the engine, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Keep body, hair, and clothing away from moving or rotating parts.
- Do not operate with any guards removed or modified. Keep guards in good working order. Failure to comply could result in death or serious injury.

1. To fully understand components of the hydraulic fluid reservoir, they are described as follows:

- “Hydraulic Fluid Reservoir” **(A)**
- “Hydraulic Supply Line” **(B)**
- “Hydraulic Return Line” **(C)**
- “Hydraulic Reservoir Cap” **(D)**
- “Hydraulic Reservoir Filter” **(E)** (Filter is under Cap)
- “Hydraulic Reservoir Strainer” **(F)**
- “Sight Glass” **(G)**
- “Sight Glass Maximum Level Mark” **(H)**
- “Sight Glass Minimum Level Mark” **(I)**
- “Sight Glass Temperature Gauge Grads. in °F” **(J)**
- “Sight Glass Temperature Gauge Grads. in °C” **(K)**
- “Sight Glass Temperature Thermometer” **(L)**

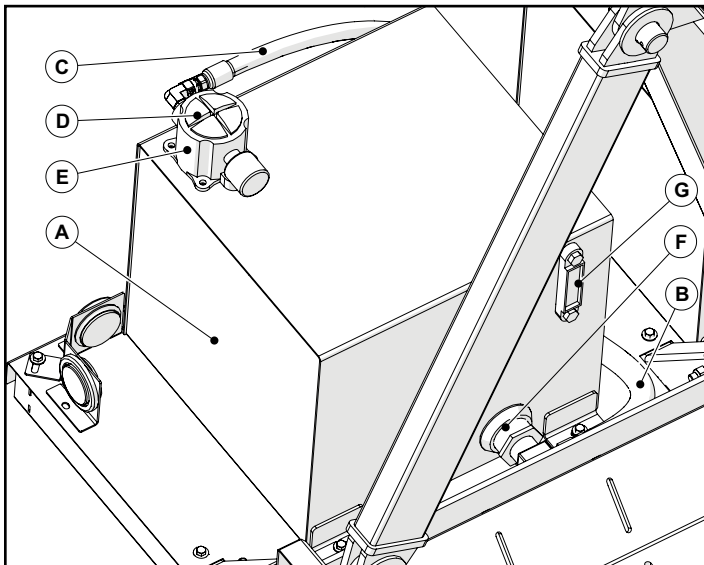


Fig. # 5-19 Hydraulic Fluid Reservoir

1. Check the level when the oil is cold by inspecting the “Sight Glass” **(G)** on the side of the reservoir. You can determine the temperature of the hydraulic fluid by looking at the “Sight Glass Temperature Thermometer” **(L)**, and using the “Sight Glass Temperature Gauge Grads. in °F” **(J)**, or “Sight Glass Temperature Gauge Grads. in °C” **(K)**. (See Fig. # 5-22)

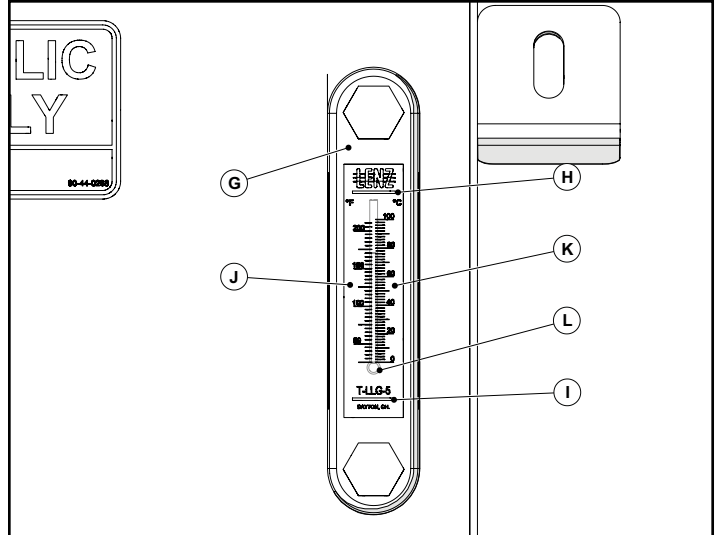


Fig. # 5-20 Sight Glass Detail

2. Fill the reservoir so that hydraulic oil comes up the “Fill Mark” **(H)**. (See Fig. # 5-22)
3. Use an ISO VG (Viscosity Grade) AW 32 hydraulic oil for all operating conditions.
4. The reservoir capacity is listed below. (See Fig. # 5-23)

Hydraulic Oil Reservoir Capacity				
Quarts	Gallons	Liters	Pints	Ounces
98	24.5	92.8	196.1	3138.3

Fig. # 5-21 Table: Reservoir Capacity

5. After filling, close and secure the cap.

Yearly

Change Hydraulic Oil and Filter

The hydraulic oil reservoir serves as a sump for the hydraulic circuit. When changing the hydraulic oil, the reservoir must be drained and the filter replaced.

For best results, drain the oil while the reservoir is still warm to the touch (not hot).

To change the oil, park the tractor on level ground, remove the key from the engine switch, and then perform the following steps:

⚠ WARNING **HOT LIQUID HAZARD**

The hydraulic system must cool before changing the oil. Hot oil can cause burns if it contacts exposed skin.



Failure to comply could result in serious injury.

IMPORTANT



The hydraulic reservoir is a large capacity tank, keep in mind that the drain pan used to collect the oil needs to have sufficient storage for collecting the fluid.

1. Place a pan under the drain plug. (See Fig. # 5-24)

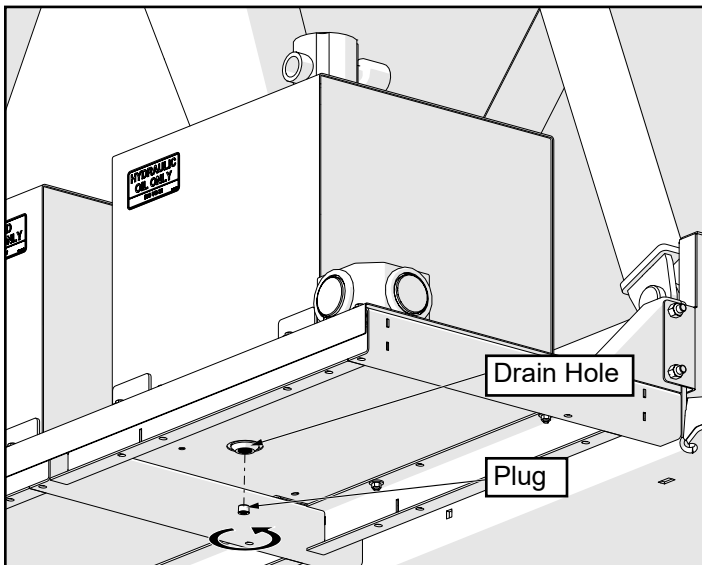


Fig. # 5-22 Drain Hydraulic Oil

2. Allow the hydraulic system to cool slightly before changing oil. For best results, drain the oil while the reservoir is still warm to the touch (not hot). Also you can check the temperature of the fluid by reading the “**Sight Glass Temperature Thermometer**” **L**. (See Fig. # 5-25)

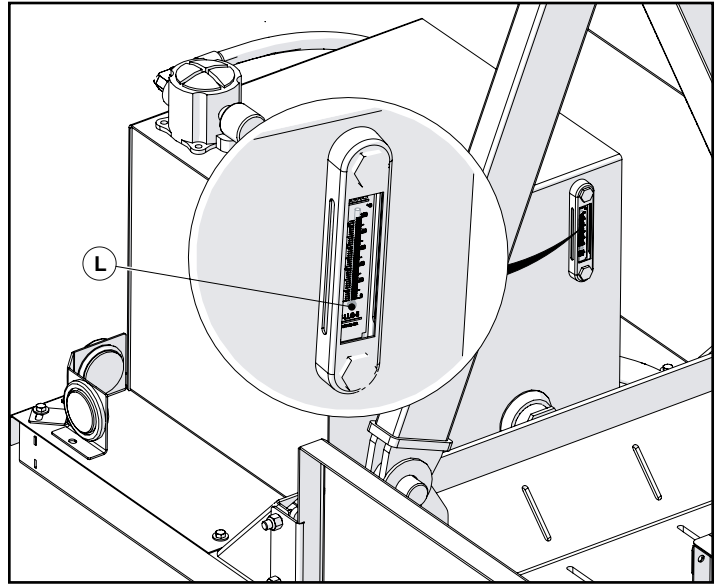


Fig. # 5-23 Check Hydraulic Fluid Temperature

3. Drain fluid into the oil drain pan.
4. Remove the “**Tank Top Mount Filter Cap**” **A** by unscrewing it from the “**Tank Top Mount Filter**” **B**, pull out the old “**Filter Element**” **C** and discard. Replacement Filter Element is Norwood P/N 90-36-2010. (See Fig. # 5-26)

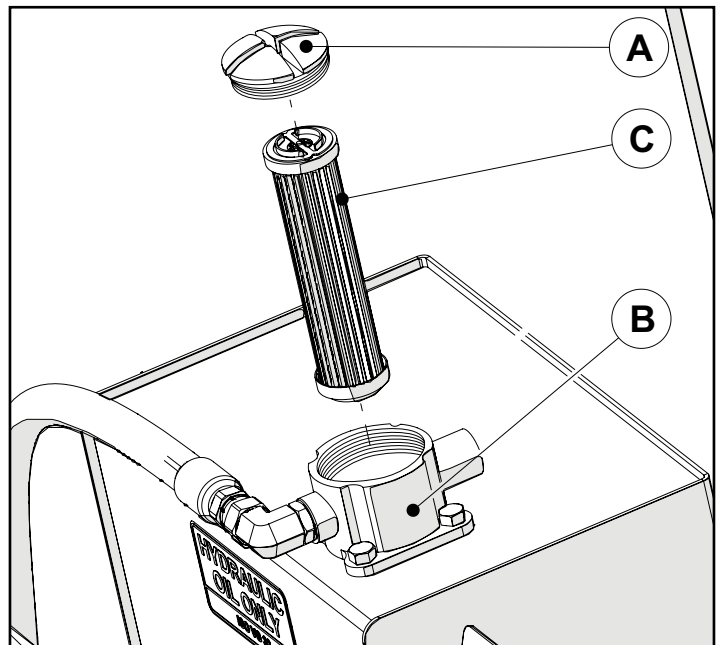


Fig. # 5-24 Remove Old Filter Element

5. To remove the strainer, disconnect the hardware securing the **“Hydraulic Tank Assembly” (A)** to the **“Fender” (B)**. Raise the Hydraulic Tank Assembly approx. 6” to 8”, support the Hydraulic Tank Assembly.

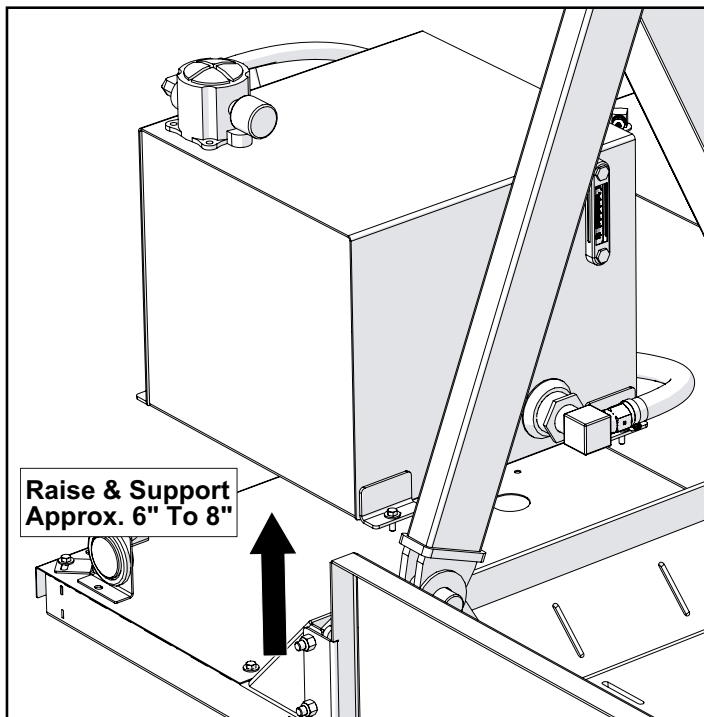


Fig. # 5-25 Raise & Support The Hydraulic Tank Assembly

6. Disconnect the **“Hose” (A)** from the **“90° Elbow, 20 MP x 20 Beaded Hose Adapter” (C)** by removing the **“Worm Clamp” (B)**. Allow any residual oil to drain into drain pan. Remove the **“90° Elbow, 20 MP x 20 Beaded Hose Adapter” (C)**, and **“Strainer” (E)** and clean. (See Fig. # 5-28)

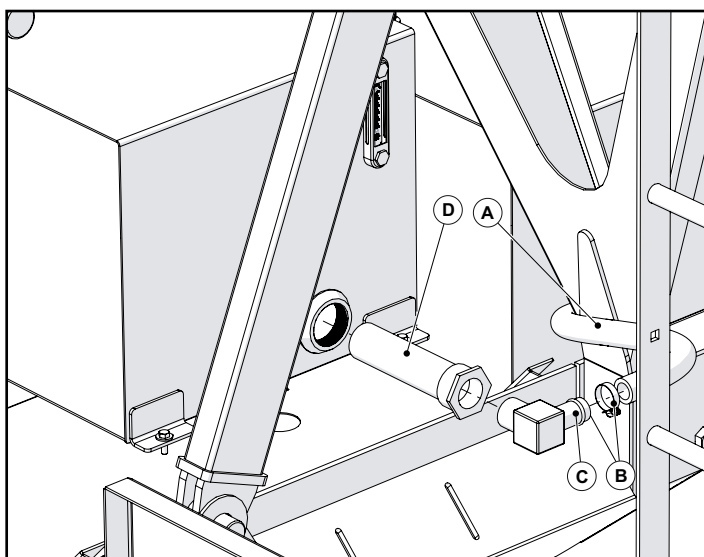


Fig. # 5-26 Clean The Strainer

7. Re-install the Strainer, adapters, Hose, and Hose Clamp to the reservoir. Use a thread sealant on the threads.
8. Dispose of the used oil in an approved container and manner.
9. Fill the reservoir so that oil is at the **“Sight Glass Maximum Level Mark” (H)**. Use an ISO VG (Viscosity Grade) AW 32 hydraulic oil for all operating conditions. (See Fig. # 5-29)

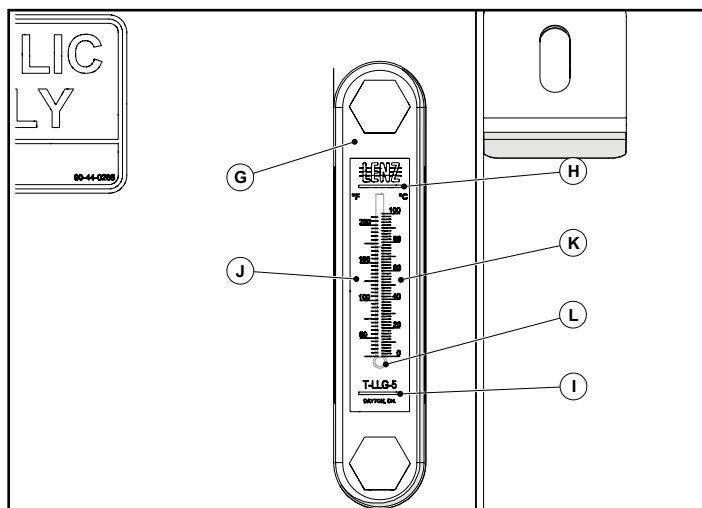
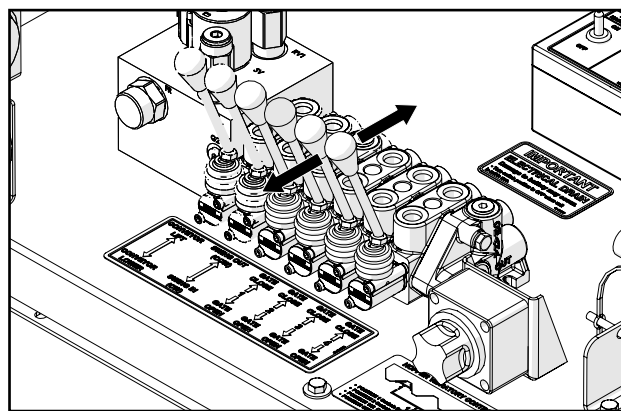


Fig. # 5-27 Sight Glass Detail

IMPORTANT

For the first time operation of the machine, or after long periods of non-use, safely cycle all of the hydraulic control levers to remove any trapped air in the hydraulics. This will ensure smoother operation.



10. Install a new **“Filter Element” (C)** into the **“Tank Top Mount Filter” (B)**. Replacement Filter Element is Norwood P/N 90-36-2010 Replace the **“Tank Top Mount Filter Cap” (A)**. (See Fig. # 5-26)
11. Run the system for 1-2 minutes and check for oil leaks.
12. If leaks are found around the adapters or strainer, tighten slightly.
13. Check oil level. Top up as required.

As Required**Replace the Conveyor Belt Lacing**

The most common method of joining belt ends is the metal fastener such as the "Clipper" type wire lace or the "Alligator" type steel hinge, as well as others. Fastener manufacturer's catalogs should be consulted for proper size and method of application. Refer to the instructions that came with your type of belt lacing, or consult your Norwood dealer.

⚠ WARNING

- **Hydraulic Drive Option:** Engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.
- Keep body, hair, and clothing away from moving conveyor belt and rollers.
- Do not operate with any guards removed or modified. Keep guards in good working order. Failure to comply could result in death or serious injury.

1. Rotate the "Swing Conveyor" (A) belt until the "Lacing" (C) is midway between the Intake and discharge end. Remove the "Bottom Cover" (B) to access. (See Fig. # 5-30)

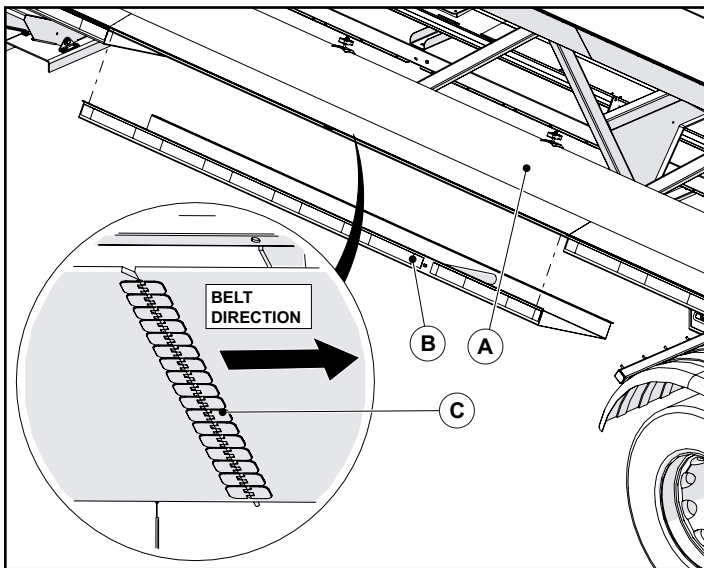


Fig. # 5-28 Rotate Swing Conveyor Belt So Lacing Is At Midway Point Between Discharge & Intake End

2. Rotate the "Underbin Conveyor" (A) belt until the "Lacing" (C) is midway between the Intake and discharge end. Remove the "Bottom Cover" (B) to access.

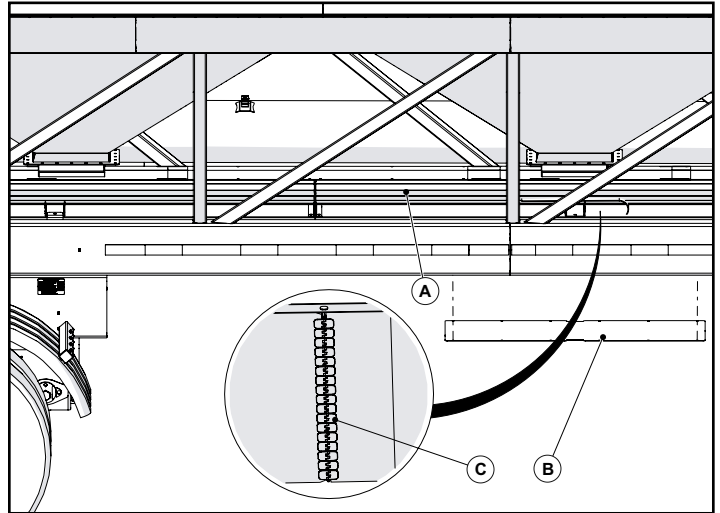


Fig. # 5-29 Rotate Underbin Conveyor Belt So Lacing Is At Midway Point Between Discharge & Intake End

3. Inspect the "Conveyor Belt Lacing" (C), look for "Opened Hooks", "Fully Cinched Hooks" that are pulled free from the rubber belting, "Belt Fractures" directly behind the fasteners, "Corroded or Rusted Hooks or Plates", a "Waved or Rippling Belt" near the lacing.
4. If the conveyor belt lacing passes inspection, replace the covers on the machine. If the conveyor belt lacing does not pass inspection, proceed to the next step.
5. If necessary, remove the "Return Roller" (D), press the spring loaded "Hex Shaft" (E) to release one side of the roller, drop down the end of the roller and remove. (See Fig. # 5-32)

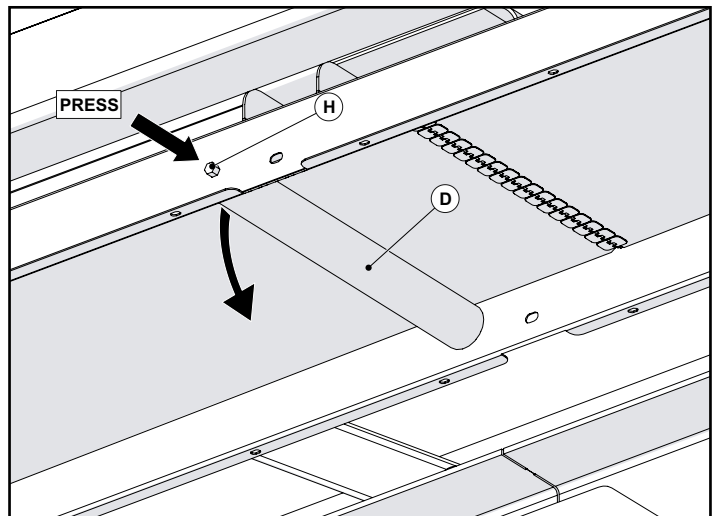


Fig. # 5-30 Remove the Return Roller

6. Loosen “**Bearing Nuts**” **(A)** and “**Jam Nuts**” **(B)** at the hopper pulley. (See Fig. # 5-33)

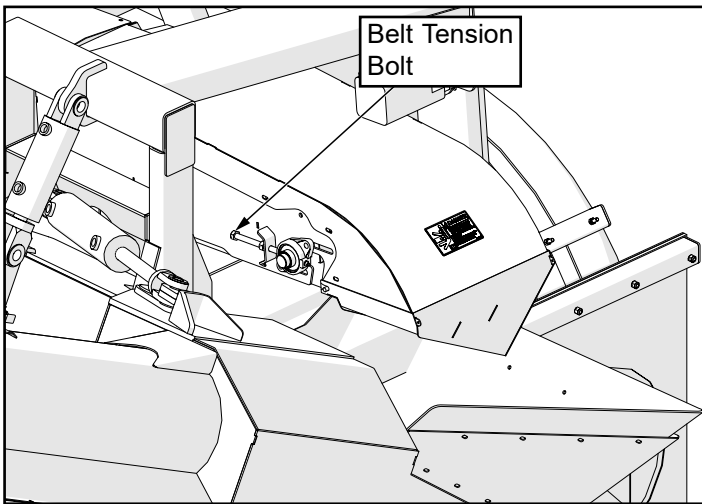
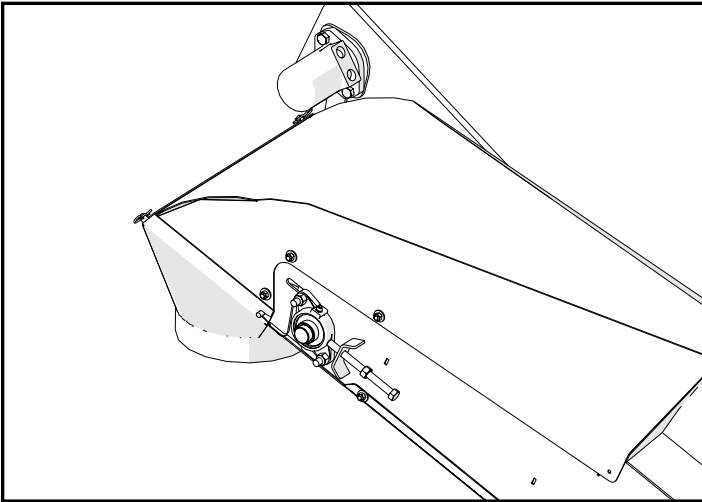


Fig. # 5-37 Underbin Discharge End Belt Tension Location

5. Loosen the “**Adjustment Bolts**” **(C)** equally to decrease conveyor belt tension. (See Fig. # 5-14)



6. Move hopper pulley backwards to its loosest position.
7. Loosen the conveyor belt by pulling all slack to the seam area and remove the old lacing pin. If required, use a ratchet strap clamped to both ends of belt to cinch belting ends together. (See Fig. # 5-35)

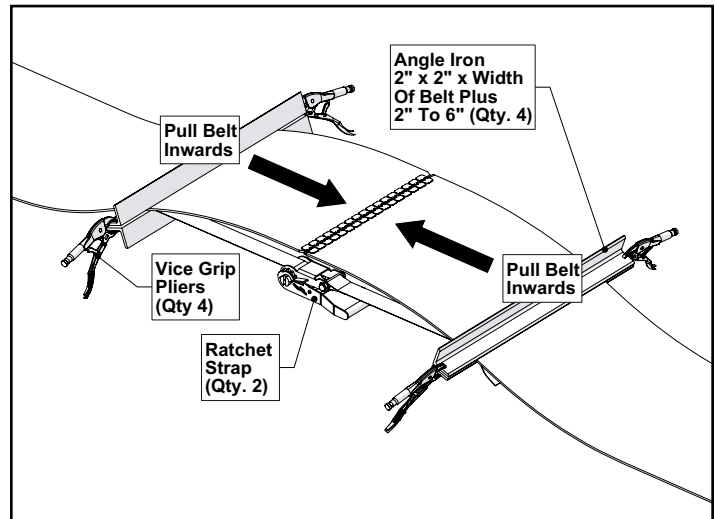


Fig. # 5-31 Pulling Slack Towards Belt Seam

8. Using a square and sharp knife, cut the lacing off right behind the lacing clips. The cut belt **MUST** have a square end.

IMPORTANT

If the belt is not cut off truly square, improper belt tracking will occur and serious belt damage can result. Always use a large T-square or equivalent method to make sure that belt ends are cut square at the lacing ends.

9. If you are installing a crescent top belt be sure to remove approximately 1.0" of the raised belt crescents on both ends of the belt. This ensures that the lacing is centered and fully seated on the belt. Belts can be skived with a Flexco® brand Rough Top Belt Skiver. (See Fig. # 5-36) (See Fig. # 5-37)

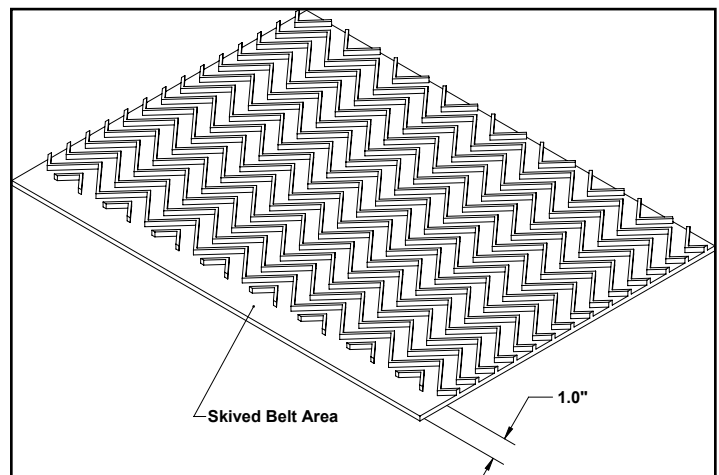


Fig. # 5-32 Belt Skiving Dimensions

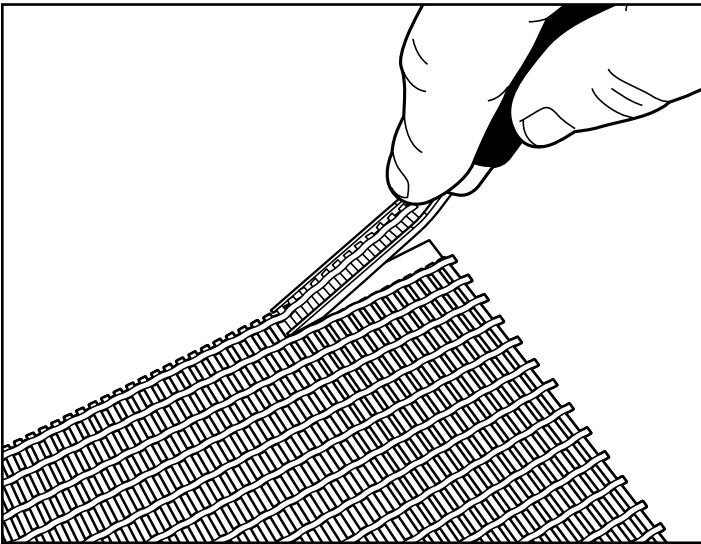


Fig. # 5-33 Skiving the Belt

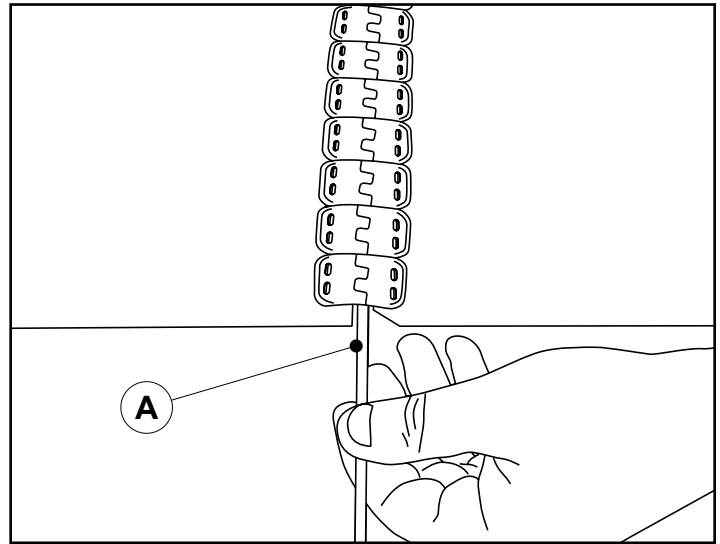


Fig. # 5-35 Install The Lacing Pin

10. Use a lacing tool to install new lacing clips. Center the lacing on the belt and install the lacing as per instructions that came with the lacing. The instructions will vary from manufacturer to manufacturer.
11. Notch the conveyor belt as necessary in order to keep belt from catching the conveyor framework. Notch only the trailing end of the conveyor belt. (See Fig. # 5-5)

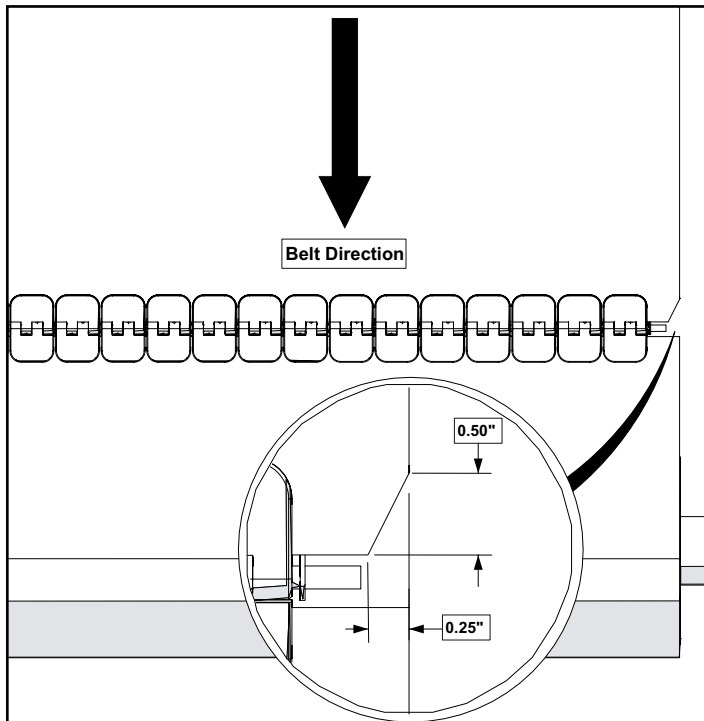


Fig. # 5-34 Notch The Belt

8. Crimp the “**Retainer clips**” (C) onto each end of the “**Lacing Pin**” (L) using an “**Adjustable Pliers**” (P).

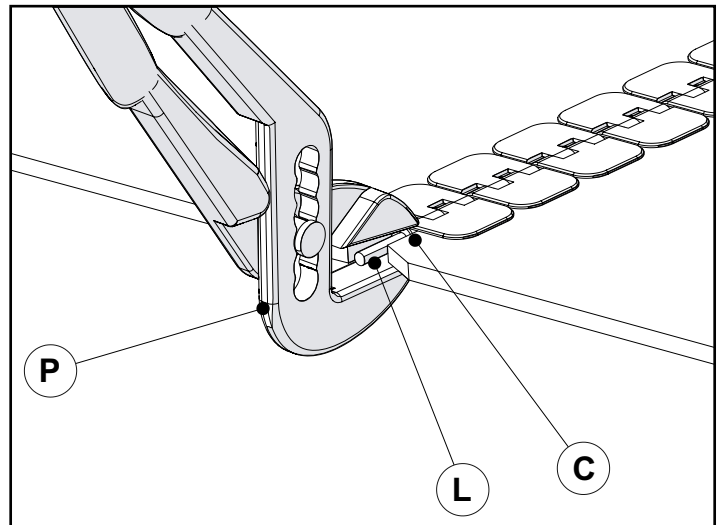


Fig. # 5-36 Crimp The Retainer Clips Onto Each End Of The Lacing Pin.

6. Re-attach the conveyor belt ends together. If required, use a ratchet strap clamped to both ends of the belt to cinch the belting ends together. (See Fig. # 5-35)
7. Install the lacing pin and bend the ends of the lacing pin away from belt travel direction.

9. There must be (Qty. 2) “**Retainer clips**” (C) on each side of the belt as shown. Crimp the (Qty. 2) “**Retainer clips**” (C) so that the edges of the clips face
9. Remove the ratchet strap and set the correct tension for the conveyor belt. “*Conveyor Belt Tension*” on page 5-8
10. Check and set the belt alignment. “*Conveyor Belt Alignment*” on page 5-10
11. Engage the conveyor belt. Allow the conveyor to run for 30 seconds, then shut down the conveyor and inspect the lacing.

STORAGE

Preparing For Storage

WARNING

Equipment Rolling Hazard!

Always try to park the machine on firm level ground. Avoid parking on slopes. Block the wheels in both directions.

Failure to comply could result in death or serious injury.

After the season's use or when the Uni-Body Commercial Tender will not be used for a period of time, completely inspect all major systems of the Uni-Body Commercial Tender.

Replace or repair any worn or damaged components to prevent any unnecessary down time at the beginning of the next season.

Follow these procedures before storing:

1. Remove all left over material from the machine.
2. Thoroughly wash the unit to remove all dirt, mud and debris.
3. Inspect all rotating parts for entanglements. Remove anything caught in the mechanisms.
4. Check the condition of the components in the hydraulic system. Repair, replace or adjust as required.
5. Check the condition of the Underbin, and Swing conveyors. Replace any damaged belts.
6. Lubricate all fittings and fill grease cavities.
7. Touch up all paint nicks and scratches to prevent rusting.
8. Store the machine inside for protection from the weather. If the Uni-Body Commercial Tender must be stored outside, cover with a waterproof tarpaulin and tie down securely, place boards under the wheels and parking stands to prevent sinking into the soil.
9. Remove the battery.
 - Be sure that it is fully charged.
 - Store it inside
 - Do not sit the battery on a cold, concrete floor.

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6 - TROUBLESHOOTING

SYMPTOM(S)

Problem	Possible Cause	Correction
Belt slipping	Conveyor belt is loose.	Tighten and align belt.
	Drive roller lagging worn or damaged.	Replace drive roller lagging.
	Belt frozen to tube from operating in high humidity and cold temperatures.	Remove conveyor from area of high humidity and warm belt to de-ice.
Excessive belt edge fraying	Belt not in alignment.	Align and tension belt.
Belt loose	Belt stretches over time... also can be caused by oily grain products.	Re-tension belt If tightener is fully engaged, you may need to shorten belt.
Conveyor doesn't move	No Hydraulic power	Verify hydraulic supply with Manual Plunger
	No Electrical Power	Verify power at Conveyor Coil & repair electrical circuit
	Worn hydraulic motor	Replace hydraulic motor
Lids don't open	No hydraulic power	Verify hydraulic supply with manual plunger or lever
	No electrical power	Verify power at Lid Coil
	Failed hydraulic cylinders and or hoses	Replace as required
Gates won't work	No hydraulic power	Verify hydraulic supply with manual plunger or lever
	No electrical power	Verify power at Gate Coil
	Failed hydraulic cylinders and hoses	Replace as required
Remote unresponsive	Lost communication	Reference Kartec manual on repairing instructions

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7 - SPECIFICATIONS

S3 900 Specifications

Standard Features

- Non-corrosive poly tanks that are 300 cu/ft. each.
- S3 900 has 3 Cubes/Compartments.
- Each individual cube can store 2,000 gallons of Water, 9 tons of dry fertilizer, 300 units of seed or 240 bushels, or 2,000 gallons of liquid fertilizer.

S3 900 Total Capacities	
Water	6,000 Gallons
Dry Fertilizer	27 Tons
Liquid Fertilizer	6,000 Gallons
Seed	900 Units or 720 bushels

- Dry weight of trailer 16,600 lbs.
- Integrated Stainless Steel D.O.T. Trailer.
- 12 GA 304 Stainless Steel Hopper Conveyor 18"x 28', all rubber belt with up to 350 ton/hr capacity.
- 12 GA 304 Stainless Steel Swing Conveyor 18"x 30', all rubber belt with up to 350 ton/hr capacity.
- Enclosed conveyor belt return.
- Without Self-Contained Hydraulic Power Pack - Requires 16 gal/min @ 2,700psi- 8" x 8" Manual Stainless Steel Slide Gates.
- Front Mounted Conveyor Controls.
- Access ladder.
- Aluminum Wheels.

Optional Features Include

- Wireless Hydraulic Remote Package.
- Electric Manual Control Box for Hydraulic Gates.
- 37hp Kohler Self-Contained Hydraulic Power Pack.
- Liquid Conversion Kit.

S3 1200 Specifications

Standard Features

- Non-corrosive poly tanks that are 300 cu/ft. each.
- S3 1200 has 4 Cubes/Compartments.
- Each individual cube can store 2,000 gallons of Water, 9 tons of dry fertilizer, 300 units of seed or 240 bushels, or 2,000 gallons of liquid fertilizer.

S3 1200 Total Capacities	
Water	8,000 Gallons
Dry Fertilizer	37 Tons
Liquid Fertilizer	8,000 Gallons
Seed	1200 Units or 960 bushels

- Dry weight of trailer 20,000 lbs.
- Integrated Stainless Steel D.O.T. Trailer.
- 12 GA 304 Stainless Steel Hopper Conveyor 18"x 36', all rubber belt with up to 350 ton/hr capacity.
- 12 GA 304 Stainless Steel Swing Conveyor 18"x 30', all rubber belt with up to 350 ton/hr capacity.
- Enclosed conveyor belt return.
- Without Self-Contained Hydraulic Power Pack - Requires 16 gal/min @ 2,700psi- 8" x 8" Manual Stainless Steel Slide Gates.
- Front Mounted Conveyor Controls.
- Access ladder.
- Aluminum Wheels.

Optional Features Include

- Wireless Hydraulic Remote Package.
- Electric Manual Control Box for Hydraulic Gates.
- 37hp Kohler Self-Contained Hydraulic Power Pack.
- Liquid Conversion Kit.

S3 1500 Specifications

Standard Features

- Non-corrosive poly tanks that are 300 cu/ft. each.
- S3 1500 has 5 Cubes/Compartments.
- Each individual cube can store 2,000 gallons of Water, 9 tons of dry fertilizer, 300 units of seed or 240 bushels, or 2,000 gallons of liquid fertilizer.

S3 1500 Total Capacities	
Water	10,000 Gallons
Dry Fertilizer	45 Tons
Liquid Fertilizer	10,000 Gallons
Seed	1500 Units or 1,200 bushels

- Dry weight of trailer 22,400 lbs.
- Integrated Stainless Steel D.O.T. Trailer.
- 12 GA 304 Stainless Steel Hopper Conveyor 18"x 44', all rubber belt with up to 350 ton/hr capacity.
- 12 GA 304 Stainless Steel Swing Conveyor 18"x 30', all rubber belt with up to 350 ton/hr capacity.
- Enclosed conveyor belt return.
- Without Self-Contained Hydraulic Power Pack - Requires 16 gal/min @ 2,700psi- 8" x 8" Manual Stainless Steel Slide Gates.
- Front Mounted Conveyor Controls.
- Access ladder.
- Aluminum Wheels.

Optional Features Include

- Wireless Hydraulic Remote Package.
- Electric Manual Control Box for Hydraulic Gates.
- 37hp Kohler Self-Contained Hydraulic Power Pack.
- Liquid Conversion Kit.

S3 900, S3 1200, & S3 1500 Dimensional Data

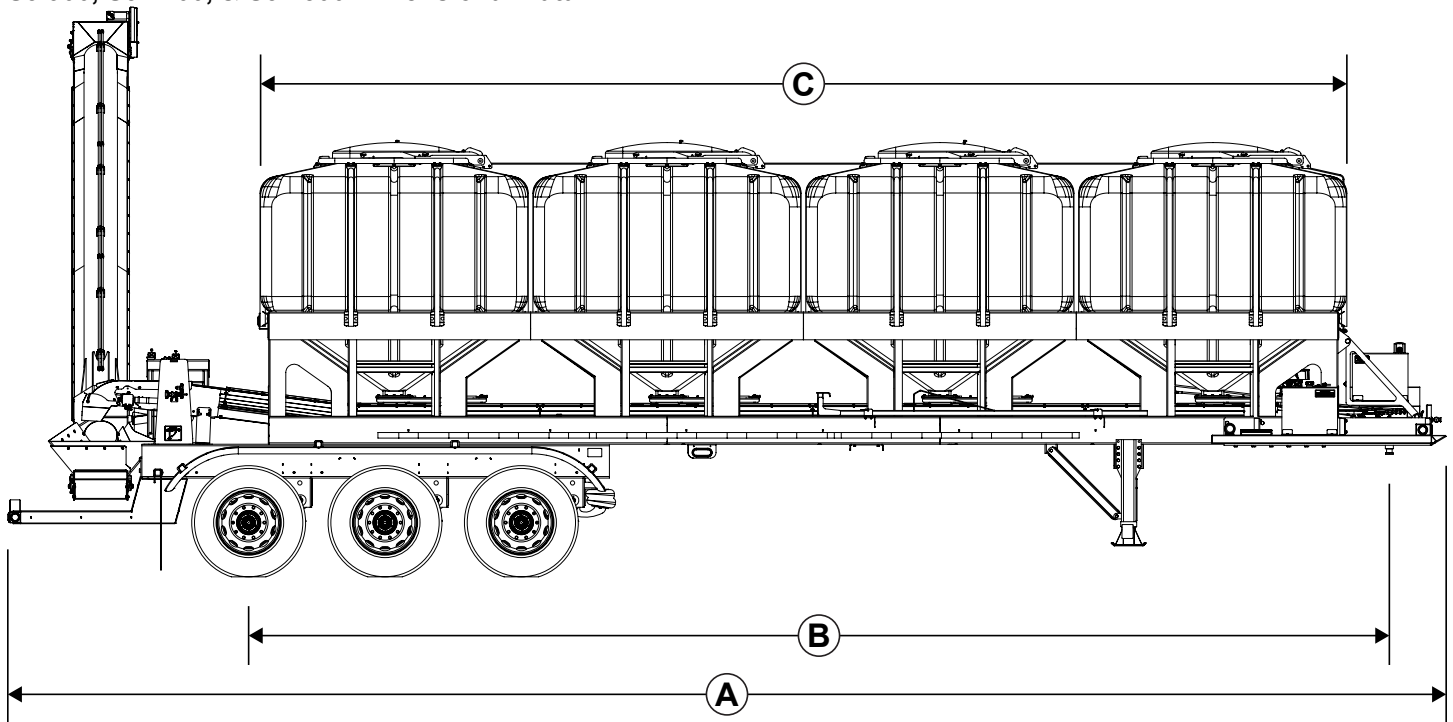


Fig. # 7-38 Uni-Body Commercial Tender (Model S3 1200 Shown) Dimensional Data

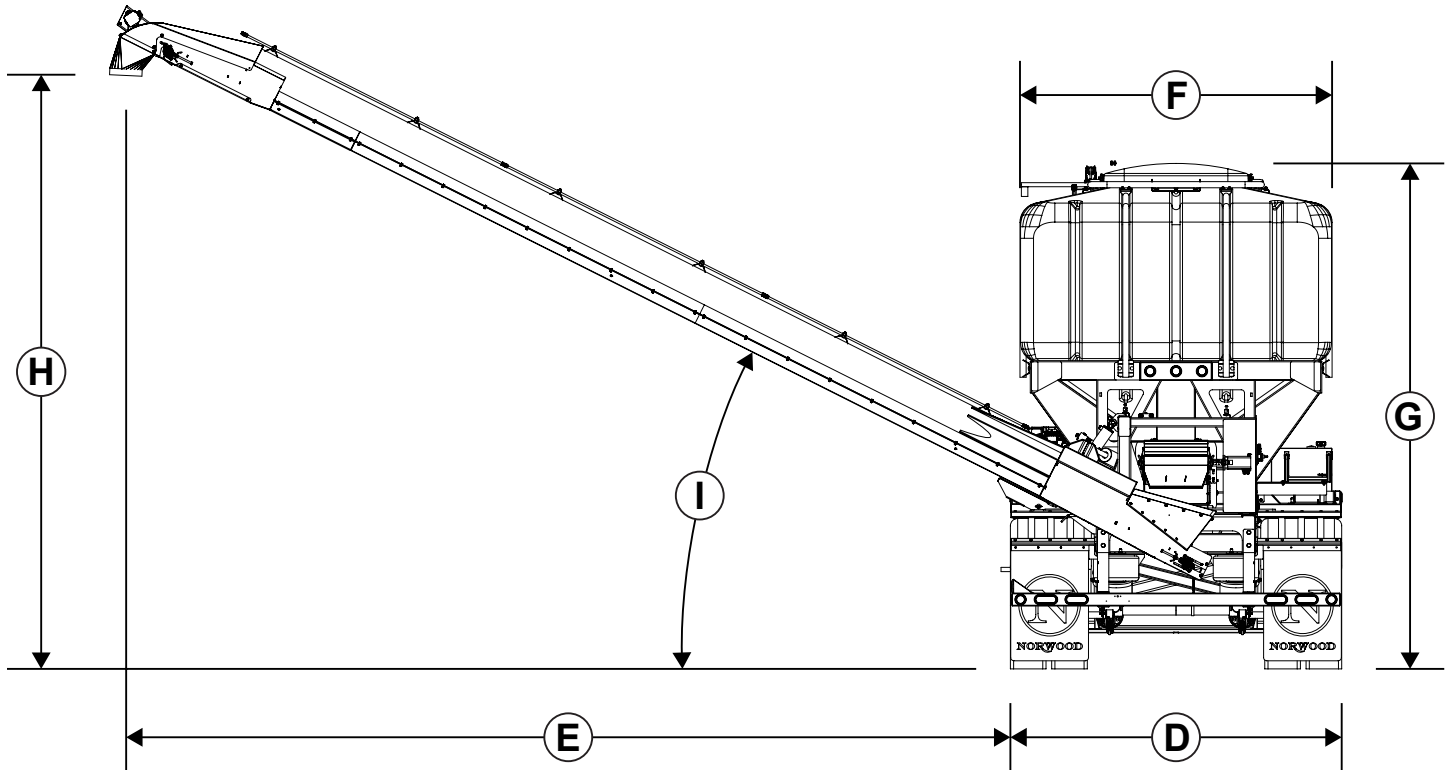


Fig. # 7-39 Uni-Body Commercial Tender (Model S3 1200 Shown) Dimensional Data

Model	Cubes	A	B	C	D	E		F	G	H		I		# of Axles	Weight (lbs)	GVWR (lbs)
						Min	Max			Min	Max	Min	Max			
900	3	38' - 10"	25' - 11"	24' - 4"	8' - 6"	22' - 3"	24' - 2"	8' - 0"	13' - 0"	11' - 7"	16' - 8"	18°	29°	2	16,600	65,600
1200	4	43' - 0"	34' - 2"	32' - 6"										3	20,000	81,800
1500	5	51' - 3"	42' - 4"	40' - 8"										3	22,400	81,800

* All specifications are subject to change without notification

Torque – Hydraulic Tubes and Fittings

Standard torque data for hydraulic tubes and fittings

Tube Nuts for 37° Flared Fittings								O-Ring Boss Plugs, Adjustable Fitting Lock Nuts, Swivel JIC - 37 ° Seats			
Size	Tubing OD		Thread Size	ft-lbs		Nm		ft-lbs		Nm	
	Inches	mm		Min	Max	Min	Max	Min	Max	Min	Max
4	1/4	6.4	7/16-20	9	12	12	16	6	10	8	14
5	5/16	7.9	1/2-20	12	15	16	20	10	15	14	20
6	3/8	9.5	9/16-18	21	24	29	33	15	20	20	27
8	1/2	12.7	3/4-18	35	40	47	54	25	30	34	41
10	5/8	15.9	7/8-14	53	58	72	79	35	40	47	54
12	3/4	19.1	1-1/6-12	77	82	104	111	60	70	81	95
14	7/8	22.2	1-3/16-12	90	100	122	136	70	80	95	109
16	1	25.4	1-5/16-12	110	120	149	163	80	90	108	122
20	1-1/4	31.8	1-5/8-12	140	150	190	204	95	115	129	156
24	1-1/2	38.1	1-7/8-12	160	175	217	237	120	140	163	190
32	2	50.8	2-1/2-12	225	240	305	325	250	300	339	407

The above torque figures are recommended for plain, cadmium or zinc plated fittings, dry or wet installations and swivel nuts either swagged or brazed. These torques are not recommended for tubes 12.7 mm (0.5 in) OD and thicker with wall thickness of 0.889 mm (0.035 in) or less. The torque is specified for 0.889 mm (0.035 in) wall tubes on each application individually.

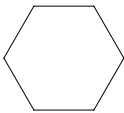
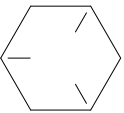
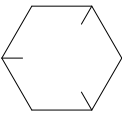
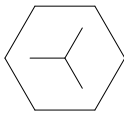
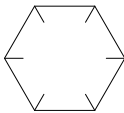
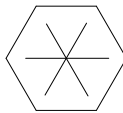
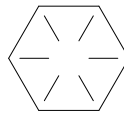
Torque – Fasteners

Society of Automotive Engineers (SAE) fastener torque

Use these torques, unless special torques are specified. Values are for Unified Coarse (UNC) and Unified Fine (UNF) thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.

NOTE: Thick nuts must be used with Grade 8 bolts.

SAE Grade No.	Grade 2				Grade 5				Grade 8 (See Note below.)			
Bolt Head Identification (See Note below.)					  				  			
Bolt Size	ft-lbs		Nm		ft-lbs		Nm		ft-lbs		Nm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	7	8	9	11	12	15	12	15	16	20
5/16	10	12	14	16	17	20.5	23	28	24	29	33	39
3/8	20	23	27	31	35	42	48	57	45	54	61	73
7/16	30	35	41	47	54	64	73	87	70	84	95	114
1/2	45	52	61	70	80	96	109	130	110	132	149	179
9/16	65	75	88	102	110	132	149	179	160	192	217	260
5/8	95	105	129	142	150	180	203	244	220	264	298	358
3/4	150	185	203	251	270	324	366	439	380	456	515	618
7/8	160	200	217	271	400	480	542	651	600	720	814	976
1	250	300	339	406	580	696	787	944	900	1080	1220	1464
1-1/8					800	880	1085	1193	1280	1440	1736	1953
1-1/4					1120	1240	1519	1681	1820	2000	2468	2712
1-3/8					1460	1680	1980	2278	2380	2720	3227	3688
1-1/2					1940	2200	2631	2983	3160	3560	4285	4827

Metric International Standards Organization (ISO) Fastener Torque

Use these torques, unless special torques are specified. Values are for coarse thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.

ISO Class No.	8.8				10.9				12.9			
Bolt Head Identification (See Note below.)												
Bolt Size	ft-lbs		Nm		ft-lbs		Nm		ft-lbs		Nm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M4	2	3	3	4	3	4	4	5	Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for Grade 10.9 fasteners can be used satisfactorily on 12.9 fasteners.			
M5	5	6	7	8	7	8.0	10	11				
M6	8	9	11	12	11	13	15	18				
M8	19	23	26	31	27	32	37	43				
M10	38	45	52	61	54	64	73	87				
M12	66	79	90	107	93	112	125	150				
M14	106	127	144	172	149	179	200	245				
M16	160	200	217	271	230	280	310	380				
M20	320	380	434	515	450	540	610	730				
M24	500	600	675	815	780	940	1050	1275				
M30	920	1100	1250	1500	1470	1770	2000	2400				
M36	1600	1950	2175	2600	2580	3090	3500	4200				

8 - FORMS AND DECLARATIONS

Norwood follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE), and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the equipment must read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate, or allow anyone else to operate, this equipment until this document has been read. Review this information annually, before the season start-up.

Make periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment.

The following Sign-Off Form is provided for your record keeping. Use it to show that all personnel who will be working with the equipment have read and understand the provided information. Also, they have been instructed in the operation of the equipment. Copy this page to continue the record.

SIGN - OFF FORM

DATE	EMPLOYEES SIGNATURE	EMPLOYERS SIGNATURE

Warranty

Warranty Registration

Customer's Name

Dealer's Name

Address

Address

City

State

Area Code

City

State

Area Code

Phone Number

Phone Number

Model

Serial Number

Delivery Date

Check One Below:

Commercial Use ☐Farm Use ☐

Dealer Inspection Report

☐ Wheel Nuts Tight☐ Signal Lights Work Properly☐ Tire Pressure☐ Safety Chain Installed☐ Fasteners Tight☐ Review Operating & Safety Instructions☐ All Decals Installed☐ Operator Manual Supplied

I have thoroughly instructed the buyer on the above described equipment including a review of the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date

Dealer's Signature

I have received the above equipment and Operator's Manual and I have been thoroughly instructed on its care, adjustments, safe operation and applicable warranty policy.

Date

Owner's Signature

Warranty

Limited Warranty Policy

Norwood Sales Inc. warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective on new machinery, which has not been altered, changed or repaired since its delivery to the buyer.

Norwood Sales Inc. shall only be liable for defects in materials or workmanship and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with **Norwood Sales Inc.** operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to **Norwood Sales Inc.** within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows: **Norwood Sales Inc., 11202 38th Street South, Horace, ND 58047.**

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, **Norwood Sales Inc.** at its option will either repair or replace any defect. The buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless **Norwood Sales Inc.** authorizes such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by **Norwood Sales Inc.** or its authorized dealers.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. **Norwood Sales Inc.** disclaims all liability for incidental or consequential damages.

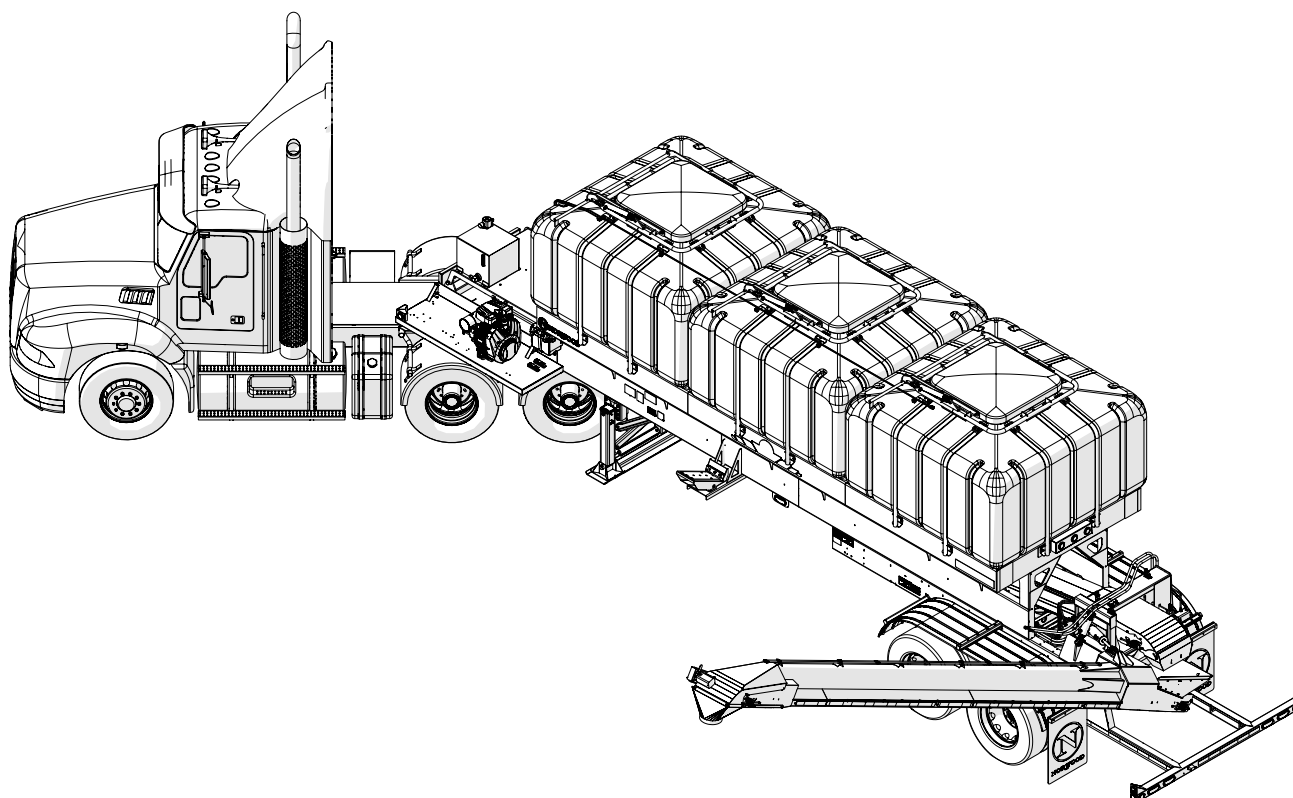
This machine is subject to design changes and **Norwood Sales Inc.** shall not be required to retro-fit or exchange items on previously sold units except at its own option.

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