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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 Stainless Tender dealer if any of your decals are missing or illegible or you have questions.

Preface:

This manual is intended for use with all Uni-Body Stainless Tenders (ST)

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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 Stainless Tender. Refer to the 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 Stainless Tender, with standard equipment and authorized attachments, is intended to be used for dry fertilizer and 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 Stainless Tender.

Fig. # 1-1 Operators Manual Location

Your Stainless Tender dealer will 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.
Stainless Tender V.I.N. Location

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

The V.I.N. 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. __________________________________________

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

When you are behind the Stainless Tender, looking forward toward the kingpin, the left (Street Side) (1) and right (Curb Side) (2) sides of the Stainless Tender are the same as your left and right hand.

Determining Orientation Using Directional Arrows

Front, Back, Left, and Right are determined by the operator sitting in the towing vehicle seat facing the forward direction of travel.

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)

<table>
<thead>
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<th>Item</th>
<th>Description</th>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Underbin Conveyor</td>
<td>14</td>
<td>Swing Conveyor Discharge End</td>
</tr>
<tr>
<td>2</td>
<td>Landing Gear</td>
<td>15</td>
<td>Hydraulic Valve Controls</td>
</tr>
<tr>
<td>3</td>
<td>Swing Conveyor</td>
<td>16</td>
<td>Swing Conveyor Drive Assy.</td>
</tr>
<tr>
<td>4</td>
<td>Engine Battery</td>
<td>17</td>
<td>Underbin Conveyor Discharge End</td>
</tr>
<tr>
<td>5</td>
<td>Engine</td>
<td>18</td>
<td>Swing Conveyor Intake End</td>
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<tr>
<td>6</td>
<td>Hopper Extension</td>
<td>19</td>
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<td>7</td>
<td>Swing Conveyor Rest</td>
<td>20</td>
<td>Swing Base</td>
</tr>
<tr>
<td>8</td>
<td>Turn Signal Light</td>
<td>21</td>
<td>Tarp System (Manual Option Shown)</td>
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<td>9</td>
<td>Clearance Light</td>
<td>22</td>
<td>Underbin Conveyor Drive Assy.</td>
</tr>
<tr>
<td>10</td>
<td>ABS Indicator Light</td>
<td>23</td>
<td>Rear Bumper</td>
</tr>
<tr>
<td>11</td>
<td>Brake Light</td>
<td>24</td>
<td>Wide Vehicle Marker Lights</td>
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<tr>
<td>12</td>
<td>Driver (Roadside) Side Fender</td>
<td>25</td>
<td>Axle Strut</td>
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<tr>
<td>13</td>
<td>Integrated Frame</td>
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**Fig. # 1-7 Machine Components, (Shown in Field Up Position)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Item</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>Kinpin Strut</td>
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<td>Hopper Discharge Gates</td>
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<td>5</td>
<td>Passenger (Curbside) Side Fender</td>
<td>11</td>
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<td>6</td>
<td>Owners Manual Tube</td>
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</table>

**Machine Components Contd.**

The ST is available in a variety of sizes depending on the required seed capacity. A self-contained hydraulic power pack is mounted onto the side, and consists of an engine, fuel tank, hydraulic pump, oil reservoir and associated plumbing. A remote control is used to set and operate the unit. Each hopper can be opened or closed individually. The main components are shown above and on the previous page in this manual.

* There are some options shown which 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** 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** 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**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate 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.

Information

**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.

⚠️ WARNING
Unexpected machine movement!
Disengage power, shut down the tractor, and be sure that all moving parts have stopped before servicing, adjusting, cleaning, or unclogging the equipment.
Failure to comply could result in death or serious injury.

⚠️ WARNING
Escaping fluid!
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.
To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.
Failure to comply could result in death or serious injury.

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.

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.

Use caution when operating the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Travel speed must be such that complete control and machine stability is maintained at all times. Reduce speed when turning, crossing slopes and when on rough, slick or muddy surfaces.

Never permit anyone to ride on any part of the machine, including the stationary ladder.

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.

Never operate the machine under the influence of alcohol, drugs or while otherwise impaired.
Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

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.

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

Wear protective equipment when appropriate.

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.

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

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

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment at any time.

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.

Air and Air Hoses

Compressor hoses may move unexpectedly when suddenly disconnected.

Use properly sized air nozzles. Never use compressed air to clean off clothes or otherwise direct it toward yourself.

General Maintenance Safety

Keep area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm level surface.
Reinstall guards and shields after servicing the machine.

Close all access doors and install all panels after servicing the machine and before operation.

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.

Always make sure working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless securely supported.

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

Stop the engine and remove key before disconnecting or connecting electrical connections.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

When welding, follow the instructions in this manual. Always disconnect battery before welding on machine. Always wash your hands after handling battery components.

⚠️ Wheels and Tires ⚠️

⚠️ DANGER

Explosion hazard!
Welding to a wheel can create an explosive air and gas mixture. Removing air from the tire or loosening the tire on the wheel (breaking the bead) will NOT eliminate the hazard. ALWAYS remove the tire completely from the wheel before welding.
Failure to comply will result in death or serious injury.

Make sure tires are correctly inflated. Do not exceed recommended load or pressure. Follow instructions in the manual for proper tire inflation.
Tires are heavy. Handling tires without the proper equipment could cause death or serious injury.

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 death or serious injury.

⚠️ Driving on public roads and general transportation safety (if applicable) ⚠️

Comply with local laws and regulations.

Use appropriate lighting to meet local regulations.

Lift implements and attachments high enough above ground to prevent accidental contact with road.
Be aware of overhead structures or power lines and make sure the machine and/or attachments can pass safely under. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Travel speed should be such that complete control and machine stability is maintained at all times.

Slow down and signal before turning.

Follow correct towing procedure for equipment with or without brakes.

⚠️ Reflectors and Warning Lamps ⚠️

Check that all the lights, reflectors and other lighting requirements are installed and in good working condition.

⚠️ Fire and Explosion Prevention ⚠️

Fuel or oil leaked or spills 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 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 components that get hot during operation such as engine, transmission, exhaust, battery, etc. Wait for these areas to cool down before performing any maintenance. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

At least once each day, remove debris accumulation around moving components such as bearings, pulleys, belts, gears cleaning fan, etc. Wait for these areas to cool down before performing any maintenance. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

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

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

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

⚠️ Personal Protective Equipment (PPE) ⚠️

Wear personal protective equipment such as hard hat, safety glasses or goggles, heavy gloves, hearing protection, protective clothing, protective shoes, etc.

⚠️ Do Not Operate Tag ⚠️

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible.
If you are exposed to or come in contact with hazardous chemicals, you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures and procedures to be taken in the event of a spill or accidental release. MSDS are available from your dealer.

Before you service your machine, check the MSDS for each lubricant, fluid, etc. used in this machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, on manufacturer's containers, as well as the information in this manual when servicing the machine.

Dispose of all fluids, filters and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances. Keep out of reach of children or other unauthorized persons.

Additional precautions are required for applied chemicals. Obtain complete information from the manufacturer or distributor of the chemicals before using them.

In case of fire involving chemicals, chemical containers or equipment containing chemicals, remain upwind and avoid exposure to smoke from the fire.

**Precautions When Using Chemicals**

Agricultural chemicals can be dangerous. These chemicals include fertilizers, fungicides, herbicides and pesticides or insecticides. These may be in liquid, dust or granular form. Rubber gloves, chemical respirator, goggles and/or other protective clothing may be required for certain chemicals. Improper selection or use can injure people and animals, plants and soils. Care must be exercised to avoid damage to other people’s property. Follow the chemical manufacturers instructions and safety precautions.

Chemicals can be used in one or more of the following ways:
- Treated seeds
- Added to seed in seed hopper
- Applied with granular feeding mechanisms
- Applied with dusting or spraying equipment

When adjusting, servicing, cleaning and storing machines that have chemical materials associated with them, use the same degree of care that is required for the initial handling of these chemicals.
When chemicals have been used in a machine, it is of utmost importance to inform all employees, service personnel and others of any potential chemical hazard and required safety precautions before they come in contact with the machine, its contents or the applied material.

⚠️ Utility safety (Self-propelled machines and applicable attachments and accessories) ⚠️

Make sure the machine has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. 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 and remove the key. Check if you can safely leave the 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 the wires, 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.

⚠️ 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.

⚠️ Mounting and Dismounting ⚠️

Mount and dismount the machine only at designated locations that have handhold’s, steps or ladders.

Do not jump off the machine.

Make sure steps, ladders and platforms remain clean and clear of debris and foreign substances. Injury may result from slippery surfaces.

Face the machine when mounting and dismounting.

Maintain a three-point contact with steps, ladders and handhold’s.

Never mount or dismount from a moving machine.

Do not use the steering wheel or other controls or accessories as handhold’s when entering or exiting the cab or operator’s platform.

⚠️ 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.
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 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.
Stationary and Detachable Ladder Safety

⚠️ WARNING

Unexpected movement!
Use caution when attaching the detachable ladder. Make sure the detachable ladder mates to the hopper side before climbing ladder. Stow the detachable ladder onto the ladder support bracket and install transport locks before transporting.
Failure to comply could result in death or serious injury.

⚠️ WARNING

Fall hazard!
Jumping on or off the machine could cause an injury. Always face the machine, 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 death or serious injury.

⚠️ WARNING

Fall hazard!
Take correct measures to make sure steps, ladders, and platforms remain clean and clear of debris or foreign substances.
Failure to comply could result in death or serious injury.

Detachable Ladder

The hoppers can be accessed with the stationary and detachable ladder. The detachable ladder can be attached to the left side (street side) hopper only. (See Fig. # 2-8)

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

⚠️ IMPORTANT

Always return the detachable ladder in the stowed position and secure with the transport locks when not in use.

Fig. # 2-8 Detachable Ladder

Fig. # 2-9 Detachable Ladder Stowed Position
Manual Gate Wrench

The hopper gates can be opened and closed hydraulically or manually with the manual gate wrench. The manual gate wrench has a designated stowed position on the left or right side fender (depending on the option ordered). The manual gate wrench MUST be returned in the stowed position before the machine is transported. (See Fig. # 2-10)

⚠️ IMPORTANT
Always return the manual gate wrench in the stowed position and secure with the transport locks when not in use.

![Fig. # 2-10 Manual Gate Wrench](image-url)
2 - SAFETY INFORMATION

Maintenance Safety

⚠️ WARNING
Improper operation or service of this machine can result in an accident.
Read and understand the SAFETY INFORMATION Section before you operate or service the machine.
Failure to comply could result in death or serious injury.

Environment

⚠️ WARNING
Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions.
Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

Before you service this machine and before you dispose of the old fluids and lubricants, always remember the environment. DO NOT put oil or fluids into the ground or into containers that can leak.

Check with your local environmental or recycling center or your Stainless Tender dealer for correct disposal information.
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 operator’s manual.

NOTE: Replacement decals are available from your Stainless Tender dealer.

Safety Decal Locations

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90-44-0167</td>
<td>DECAL, ROTATING PARTS HAZARD DECAL</td>
<td>2</td>
<td>9</td>
<td>T0051729 *</td>
<td>Decal, Reflector,Yellow-2x9</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>90-44-0282</td>
<td>Decal, Conspicuity Tape Red/White Roll -2’ X 150’</td>
<td>729*</td>
<td>10</td>
<td>90-44-0267 *</td>
<td>Decal, Unleaded Gasoline Only (87 Oct)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>90-44-0283</td>
<td>Decal, Crush Hazard Do Not Enter</td>
<td>2</td>
<td>11</td>
<td>90-44-0288</td>
<td>Decal, Warning - Cush</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>90-44-0286</td>
<td>Decal, Danger - Electrocution Hazard</td>
<td>1</td>
<td>12</td>
<td>90-44-0284</td>
<td>Decal, Warning - Ladder Safety</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>90-44-0268 *</td>
<td>Decal, Hydraulic Oil Only (AW32)</td>
<td>1</td>
<td>13</td>
<td>90-44-0285</td>
<td>Decal, Warning - Machine Safety</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>90-44-0266</td>
<td>Decal, Important Electrical Drain</td>
<td>1</td>
<td>14</td>
<td>T0051669</td>
<td>Decal, Warning-Hyd Fluid</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>90-44-0287</td>
<td>Decal, Notice ABS</td>
<td>1</td>
<td>15</td>
<td>90-44-0290</td>
<td>Decal, Wheel End Torque</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>90-44-0021 *</td>
<td>Decal, Danger Missing Guard (2 x 3.5)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

* Not shown In this view
### Safety Decal Locations Cont...

**Fig. # 2-12 Safety Decal Locations**

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90-44-0167</td>
<td>DECAL, ROTATING PARTS HAZARD DECAL</td>
<td>2</td>
<td>9</td>
<td>T0051729</td>
<td>Decal, Reflector; Yellow-2x9</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>90-44-0282</td>
<td>Decal, Conspicuity Tape Red/White Roll -2&quot; X 150'</td>
<td>729*</td>
<td>10</td>
<td>90-44-0267</td>
<td>Decal, Unleaded Gasoline Only (87 Oct)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>90-44-0283*</td>
<td>Decal, Crush Hazard Do Not Enter</td>
<td>2</td>
<td>11</td>
<td>90-44-0288*</td>
<td>Decal, Warning - Cush</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>90-44-0286*</td>
<td>Decal, Danger - Electrocuton Hazard</td>
<td>1</td>
<td>12</td>
<td>90-44-0284</td>
<td>Decal, Warning - Ladder Safety</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>90-44-0268</td>
<td>Decal, Hydraulic Oil Only (AW32)</td>
<td>1</td>
<td>13</td>
<td>90-44-0285*</td>
<td>Decal, Warning - Machine Safety</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>90-44-0266*</td>
<td>Decal, Important Electrical Drain</td>
<td>1</td>
<td>14</td>
<td>T0051669*</td>
<td>Decal, Warning-Hyd Fluid</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>90-44-0287*</td>
<td>Decal, Notice ABS</td>
<td>1</td>
<td>15</td>
<td>90-44-0290</td>
<td>Decal, Wheel End Torque</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>90-44-0021</td>
<td>Decal, Danger Missing Guard (2 x 3.5)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not shown In this view*
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.
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.

Fig. # 2-15 Warning Decal Qty 1 Per Machine P/N 90-44-0295

(See Fig. # 2-15)

Fig. # 2-16 Safety Decal Location
Fig. # 2-17 Danger Decal Qty 1 Per Machine P/N 90-44-0286

Failure to comply will result in death or serious injury.

DANGER

ELECTROCUTION HAZARD

• Keep machine away from overhead electrical wires and devices.
• Fully lower equipment before moving.
• Electrocution can result without direct contact.
• If the equipment should become electrically charged, keep clear of equipment and load.

90-44-0286

Failure to comply will result in death or serious injury.

Fig. # 2-18 Safety Decal Location

(See Fig. # 2-17)
Fig. # 2-19 Danger Decal Qty 2 Per Machine P/N 90-44-0283

DANGER
CRUSH HAZARD
DO NOT ENTER
TO PREVENT SERIOUS INJURY
OR DEATH:
Move conveyor to transport position
and lockout power source before
performing any maintenance.

Fig. # 2-20 Safety Decal Location

Fig. # 2-21 Safety Decal Location

(See Fig. # 2-19)
To prevent serious injury or death:
1. Relieve pressure on hydraulic system before repairing or adjusting.
2. Wear proper hand and eye protection
3. Keep all components in good repair.

HIGH-PRESSURE FLUID HAZARD

Fig. # 2-22 Warning Decal Qty 1 Per Machine, P/N T0051669

(See Fig. # 2-22)

Fig. # 2-23 Warning Decal Located on Left Side Main Frame
Fig. # 2-24 Warning Decal Qty 2 Per Machine, P/N 90-44-0284

**WARNING**

**FALLING HAZARD**

- Face the ladder when climbing up and down.
- One person on the ladder at a time.
- Stow the detachable ladder onto the ladder support bracket and install transport locks before transporting.

Failure to comply could result in serious injury or death.

---

Fig. # 2-25 Ladder Safety Decal Location

Fig. # 2-26 Ladder Safety Decal Location
**WARNING**

**ROTATING PART HAZARD**

Can cause serious injury or death.

1. Keep hands, feet, clothing and hair away from moving parts.
2. Do not operate with guards removed.
3. Keep others away from moving parts.

---

*(See Fig. # 2-27)*

---

*Fig. # 2-27 Warning Decal Qty 2 per machine P/N 90-44-0167*

---

*(See Fig. # 2-27)*

---

(Fig. # 2-28 Safety Decal Location)

(Fig. # 2-29 Safety Decal Location)
**DANGER**

MISSING GUARD HAZARD

To Prevent Injury or Death:
1. Shut off and lockout power source.
2. Reattach guard before operating.

---

Fig. # 2-30 Danger Decal Qty 2 per Machine P/N 90-44-0021

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

Fig. # 2-32 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*

Fig. # 2-33 Caution Decal Qty 2 Per Machine (Standard Equipment on ST1166 Model) P/N 90-44-0360

---

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

**Fig. # 2-35 Safety Decal Location on Suspension Frame Left Side**
Sealco Load Sensing Axle System (LSAS)

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

Fig. # 2-36 Caution Decal Qty 2 Per Machine (Standard Equipment on ST1166 Model) P/N 90-44-0361

(See Fig. # 2-36)

Fig. # 2-37 Safety Decal Location on Suspension Frame Right Side
**WARNING**

Always refer to service manual for specific inspection & maintenance requirements

FAILURE to dump air pressure during loading & unloading is UNSAFE. It could cause DAMAGE or PERSONAL INJURY and void the warranty of the suspension. Likewise, FAILURE to reinflate air pressure for operation is UNSAFE. Trailer walk can occur due to loading, unloading, or loss of air spring. Do not tow or pull vehicle by suspension components. Fasteners should never be reused, overtorqued, or lubricated. Torque value is given for clean, dry fasteners. Torque should be verified with a wrench of known accuracy. Failure can occur due to over-tightening of fasteners. Fastener systems are considered “LOOSE” anytime the torque is found to be below spec values. Retorque at 30 days & every 6 months. Do not operate vehicle suspension with conditions such as: broken welds, loose, broken, or missing parts, or loss of air pressure in system.

### CUSH TORQUE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Suspension Fastener Description</th>
<th>Size</th>
<th>Grade</th>
<th>Min.</th>
<th>Max.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Spring Mount</td>
<td>3/8</td>
<td>5/B</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Air Spring Mount</td>
<td>1/2</td>
<td>5/B</td>
<td>25</td>
<td>35</td>
<td>34</td>
<td>47</td>
</tr>
<tr>
<td>Air Spring Mount</td>
<td>3/4</td>
<td>5/B</td>
<td>40</td>
<td>50</td>
<td>54</td>
<td>68</td>
</tr>
<tr>
<td>Brake Chamber Mounting</td>
<td>5/8</td>
<td>5/B</td>
<td>100</td>
<td>110</td>
<td>136</td>
<td>149</td>
</tr>
<tr>
<td>Beam Tower for Air Spring Mount</td>
<td>3/8</td>
<td>5/B</td>
<td>100</td>
<td>110</td>
<td>136</td>
<td>149</td>
</tr>
<tr>
<td>U-Bolt Nut</td>
<td>7/8</td>
<td>8/C</td>
<td>475</td>
<td>525</td>
<td>644</td>
<td>712</td>
</tr>
<tr>
<td>Pivot Nut (as supplied)</td>
<td>7/8</td>
<td>8/C</td>
<td>800</td>
<td>1100</td>
<td>1085</td>
<td>1356</td>
</tr>
<tr>
<td>Pivot Nut (Wet_Oily_Anti-seize)</td>
<td>1-1/8</td>
<td>8/C</td>
<td>800</td>
<td>1100</td>
<td>1085</td>
<td>1356</td>
</tr>
</tbody>
</table>

**INSPECTION**

Vehicle should be properly supported and securely parked on a level surface prior to any inspection and maintenance activity. With new vehicle, inspections should be done at 30 & 90 days and thereafter at regular maintenance intervals and after every brake lining change:

- **Fasteners** - Not loose, broken, missing
- **Bushings** - Not torn, worn, missing
- **Shocks** - Not leaking or damaged
- **Airsprings** - Not Leaking, worn, damaged
- **Air Control** - Trailer maintains ride height. No leaking or damaged components
- **Suspension** - Components and welds should be visually inspected for excessive wear, deformation, and structural soundness (not worn, cracked, bent, or damaged)
- **Axle Alignment** - No pivot bolt movement or inappropriate tire wear. Ensure axles track properly.
- **Trailer** - Not leaning, frame sound, no cracked welds

www.cushcorp.com (877) 786-8247
Important, Notice & Informative Decal Locations

UNLEADED GASOLINE ONLY
87 Octane or higher

Fig. # 2-40 Informational Decal Qty 1 Per Machine P/N 90-44-0267

Fig. # 2-41 Informational Decal

(See Fig. # 2-40)
Fig. # 2-42 Informational Decal Qty 1 Per Machine P/N 90-44-0268

Fig. # 2-43 Informational Decal Qty 1 Per Machine

(See Fig. # 2-42)
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.

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

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

Fig. # 2-46 Important Decal Location - Wheel Lug Nut Torque

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.
**IMPORTANT**

**ELECTRICAL DRAIN**

Damage to battery may occur.

- Turn switch position to OFF when unit is not in use.

Fig. # 2-47 Important Decal Qty 1 Per Machine, P/N 90-44-0266

Fig. # 2-48 Important Decal Located Front Left Fender

(See Fig. # 2-47)
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.

Fig. # 2-49 Notice Decal Qty 1 Per Machine, P/N 90-44-0287

Fig. # 2-50 Notice Decal Located on Left Rear Bumper
Fig. # 2-51 Informational Decal Qty 1 Per Machine, (Optional Equipment) P/N 90-44-0271

- 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. # 2-52 Informational Decal Located on Left Front Fender
Fig. # 2-53 Informational Decal Qty 1 Per Machine, P/N 90-44-0292

Fig. # 2-54 Informational Decal Located on the Electrical Control Box on Left Front Fender
Fig. # 2-55 Informational Decal Qty 1 Per Machine, (Optional Equipment) P/N 90-44-0023

Fig. # 2-56 Informational Decal Located on Left Front Fender

CONVEYOR SWING
LIFT OUT (CCW)

CONVEYOR SWING
LOWER IN (CW)

(See Fig. # 2-55)
HOPPER VIBRATORY CONTROL

1 & 2
- POSITION 1 Controls the front set or sets of hoppers.
- POSITION 2 Controls the rear set or sets of hoppers.
- POSITION 1 & 2 Controls the front & rear sets of hoppers.
- POSITION OFF Turns all vibratory control off.

Fig. # 2-57 Informational Decal Qty 1 Per Machine, (Optional Equipment) P/N 90-44-0291

Fig. # 2-58 Informational Decal Located on Left Front Fender
Fig. # 2-59 Informational Decal Qty 1 Per Machine, P/N 90-44-0293

Fig. # 2-60 Informational Decal Located on Rear of Swing Base
3 - TRANSPORT OPERATIONS

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 Stainless Tender on public roads and to prevent damage to the Stainless 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 Stainless 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 Stainless Tender.

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>7-Pin Lighting Connector</td>
</tr>
<tr>
<td>2</td>
<td>Gladhand Fitting, 3/8&quot; (Service)</td>
</tr>
<tr>
<td>3</td>
<td>Gladhand Fitting, 1/2&quot; Emergency)</td>
</tr>
</tbody>
</table>

Fig. # 3-61 Trailer Color Code

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

Stainless Tender should follow the pattern indicated in the table below. The Stainless 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 Stainless Tender lighting does not follow the pattern from the table, contact your Stainless Tender dealer.

![Fig. # 3-2 Lighting](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Tractor Function</th>
<th>Lights OFF</th>
<th>Road Lights On</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Left Turn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brakes Only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Right Turn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Lights</td>
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<td>No Brakes</td>
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<td></td>
<td></td>
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<td>No Brakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Brakes</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>No Brakes</td>
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<tr>
<td>1</td>
<td>Front Clearance Amber</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>2</td>
<td>Middle Side Clearance Amber</td>
<td>OFF</td>
<td>BLINK</td>
</tr>
<tr>
<td>3</td>
<td>Rear Side Clearance Red</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>4</td>
<td>Rear Clearance Red</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>5</td>
<td>Rear Signal Red</td>
<td>OFF</td>
<td>BLINK</td>
</tr>
<tr>
<td>6</td>
<td>Rear Brake Red</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>7</td>
<td>Rear Middle Clearance Red</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>8</td>
<td>ABS Amber</td>
<td>ON When there is a malfunction</td>
<td>ON</td>
</tr>
</tbody>
</table>
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 ST will provide many years of trouble free service.

- Stay away from overhead obstructions and power lines during operation. Electrocuton 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.
Pre-Trip Inspection

**DANGER**
The Stainless 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 Stainless 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 ST should be inspected by a person trained and familiar with the operations and functions of the ST 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 ST

Prior to backing the tractor under the ST, check the following items:

- Trailer brakes are set or wheels blocked to prevent ST from rolling.
- Upper 5th wheel is at approximate height of 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 ST.

**WARNING**

Proper operation of the Stainless Tender primary brake system is essential for safe operation of the vehicle. A functional system check is necessary each time the Stainless 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.

**TURNING INSTRUCTIONS**

When turning corners, remember that the ST 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 ST. If the ST 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 ST will be pushed to the left and the ST wheels will steer to the right.

**STOPPING INSTRUCTIONS**

In normal operation, the brakes of the tractor and those of the ST 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.

**DRIVING INSTRUCTIONS**

When driving a tractor and ST, 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, Stainless 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.
UNHOOKING THE ST FROM TRACTOR

**WARNING**
If the Stainless 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 ST. The ST 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 ST.
4. Lower the landing gear legs. (See below).
5. Release the ST kingpin from the tractor’s 5th wheel latch.
6. Pull the tractor out from under the ST, 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 A-400 and a-401 Landing Gear P/N 40-5-00011 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 bending it, and causing 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. This may also be accomplished by the use of an automatic, manual or electric dump valve. (See Fig. # 4-1)

**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 Command Pro CH940-CH1000 or CV940-CV1000 Gas Engines (Optional Equipment)
For safety, starting, operation, maintenance, and troubleshooting the Kohler Command Pro gas engines. See the Kohler Command Pro Owner’s Manual in the Owner’s Kit. Norwood P/N 40-5-00015 / or Kohler P/N 62 590 15. (See Fig. # 4-2)

! IMPORTANT:
Always operate the gas engine at full throttle to allow the hydraulics to operate at maximum performance

Jost A-400 Landing Gear
For safety, operation, maintenance, and troubleshooting the Jost A-400 Landing Gear. See the Jost A-400 Landing Gear Owner’s Manual in the Owner’s Kit. Norwood P/N 40-5-00011 / or Jost P/N LT LG400-01. (See Fig. # 4-3)

Shurco Tarp System
For safety, operation, maintenance, and troubleshooting the Shurco Tarp System. See the Shurco Owners Manual in the Owner’s Kit. Norwood P/N 40-5-00017 / or Shurco P/N 1121681 for electric tarp systems. Or, if you have the manual version, See the Owners Manual, P/N 40-5-00018 or Shurco P/N 1100193. (See Fig. # 4-4)
Shurco Electric Roll-Top Tarp Controls

The electric roll-top tarp includes a control box to control the electric motor on the Roll-Top Tarp covering the top of the hoppers. The control box is located on the left side front fender. (See Fig. # 4-5)

1. Press the left switch (O) to open the roll-top cover.
2. Press the right switch (C) to close the roll-top cover.
3. Release the switches at any time, and the cover will stop.

The ST has a separate wireless remote control for the Electric roll-top tarp. (See Fig. # 4-6)

Cush Suspension System

For safety, operation, maintenance, and troubleshooting the Cush Suspension System. See the Cush Owners Manual in the Owner’s Kit. Norwood P/N 40-5-00013 / or Cush P/N P1203-01. (See Fig. # 4-7)
Vibco Vibratory System (Optional Equipment)

For safety, operation, maintenance, and troubleshooting the Vibco Vibratory System. See the Vibco Owners Manual in the Owner’s Kit. Norwood P/N 40-5-00012 / or Vibco P/N REV207-16. (See Fig. # 4-8)(See Fig. # 4-9)(See Fig. # 4-10)

Vibratory Control Switch

- POSITION 1 Controls the front set or sets of hoppers.
- POSITION 2 Controls the rear set or sets of hoppers.
- POSITION 1 & 2 Controls the front & rear sets of hoppers.
- POSITION OFF Turns all vibratory control off.

Fig. # 4-10 Vibrator
Swing Conveyor Hydraulic Bypass

The ST 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.
3. Return the swing conveyor to the transport position.
4. If necessary, remove the underbin discharge deflector. (See Fig. # 4-11)(See Fig. # 4-12)

5. Move the bypass lever to the “Swing Conveyor Off” position to stop the power to the swing conveyor.

6. Start the conveyor.
7. Open the hopper gates.
8. Discharge the desired amount of product from the underpin conveyor.
9. Close the gates.
10. Wait for the conveyor to discharge the last remaining product.
11. Return deflector back to mounted position.
Swing Conveyor Hydraulic Valve Controls

The ST 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 ST. 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 hydraulic valve controls are located on the left side fender as shown in (See Fig. # 4-15).

To operate the swing conveyor, follow the next steps.

1. Turn the hydraulic power on. (See Fig. # 4-16)

---

**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.

---

**CONVEYOR LIFT**

**SWING OUT (CCW)**

**CONVEYOR LOWER**

**SWING IN (CW)**

---

Fig. # 4-18 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. # 4-19), the figure # shown is with the swing conveyor rotated 45 degrees.)

![Fig. # 4-19 Swing Conveyor Rotation](image)

3. Pull the “CONVEYOR LOWER” or push the “CONVEYOR LIFT” lever to raise or lower the swing conveyor to the desired height. (See Fig. # 4-20)(See Fig. # 4-21)(See Fig. # 4-22)

![Fig. # 4-20 Keep Machine Away From Power Lines](image)

**DANGER**

ELECTROCUTION HAZARD

- Keep machine away from overhead electrical wires and devices.
- Fully lower equipment before moving.
- Electrocution can result without direct contact.
- If the equipment should become electrically charged, keep clear of equipment and load.

Failure to comply will result in death or serious injury.

![Fig. # 4-21 Raise or Lower Swing Conveyor](image)

1. Turn the “CONVEYOR POWER” switch “ON” to power on swing conveyor and underbin conveyor’s. (See Fig. # 4-23)

![Fig. # 4-23 Turn on Conveyor Power](image)

2. Alternatively, you can turn the “CONVEYOR POWER” “ON” with the Conveyor Power Key Fob. (See Fig. # 4-24)

![Fig. # 4-24 Conveyor Power Key Fob](image)

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 ST. Stop when the swing conveyor is approximately 45 degrees from reaching the ST (See Fig. # 4-25)(See Fig. # 4-26)

![Fig. # 4-25 Raise or Lower Swing Conveyor](image)

![Fig. # 4-26 Rotating the Swing Conveyor CW](image)

### 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. # 4-27)

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. # 4-25)(See Fig. # 4-26)(See Fig. # 4-27)(See Fig. # 4-28)(See Fig. # 4-29)

![Fig. # 4-27 Swing Conveyor Foot and Foot Rest](image)

![Fig. # 4-28 Rotating the Swing Conveyor CW](image)
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. # 4-30)

5. Folding of the Swing Conveyor is now complete.
Hydraulic Hopper Gate Controls

The ST 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. # 4-33) remotely.

The “Hydraulic Hopper Gate Controls” are located on the left side fender as shown in (See Fig. # 4-31)(See Fig. # 4-32). Only the 4 levers on the right side of the hydraulic bank are used for the gates.

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.

Conveyor Power Manual Override

The ST has a manual override switch in the event that you lose the remote or electrical power. The manual override will provide hydraulic power to the conveyor belts in the underbin and swing conveyors. (See Fig. # 4-31)

To use the manual override follow the next steps:

1. To use the manual override, the switch must be held down manually. It does not lock in place.
2. Once material is discharged, try to correct the problem before continuing operation.
Manual Hopper Gate Control

The ST can be ordered with the option of a "Manual Hopper Gate Control". The Manual Hopper Gate Control allows the operator to open and close the hopper gates.

The “Manual Hopper Gate Controls” are located on the left and right side of the machine below the hoppers as shown in (See Fig. # 4-34). The manual Hopper Gate Control wrench is located on the left side fender. (See Fig. # 4-35) There are handle spuds on each side of the machine, so the operator can control the hopper gates from either side of the machine.

<table>
<thead>
<tr>
<th>3&quot; Cap</th>
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<tbody>
<tr>
<td>Fig. # 4-36 Poke Hole Tube</td>
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! IMPORTANT:
Plugging Hazard:
Open one hopper at a time to minimize the chance of plugging the unit.

3. Use the manual hopper gate wrench to rotate the # 1 gate handle spud to open the # 1 hopper gate.
4. Use the manual hopper gate wrench to rotate the # 1 gate handle spud to close the # 1 hopper gate.
5. Close the gate to the empty hopper, before opening the next one.
6. Be sure to close all gates to the hoppers when finished.
7. Turn the conveyor off.
8. Reduce engine speed to idle.
9. Turn the engine OFF. Remove ignition key.

Poke Hole Tubes

Each hopper has a poke hole tube on the left side of the machine. If bridging or clogging occurs follow the next steps.

A. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop.
B. Unclasp the cam levers from the 3” cap, exposing the poke hole. (See Fig. # 4-36)
C. Remove the obstruction from between the hopper gate and underbin conveyor using the poke hole.
D. Clasp the cam levers on the 3” cap, securing the cap to the poke hole.
E. Start the engine and run the conveyor and check that all areas are clear.

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. The hopper gates open and close differently depending at which area of the machine you are standing near. Refer to (See Fig. # 4-37)(See Fig. # 4-38) for the following steps.

<table>
<thead>
<tr>
<th>Manual Hopper Gate Control Wrench</th>
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<td>Fig. # 4-35 Manual Hopper Gate Control Wrench</td>
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<tr>
<th>Manual Hopper Gate Handle Spud</th>
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<tr>
<td>Manual Hopper Gate</td>
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<tr>
<td>Hydraulic Hopper Gate Controls</td>
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<td>Fig. # 4-34 Hydraulic Hopper Gate Controls</td>
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<td>Hydraulic Hopper Gate Controls</td>
</tr>
<tr>
<td>Fig. # 4-34 Hydraulic Hopper Gate Controls</td>
</tr>
</tbody>
</table>
Fig. # 4-37 Manual Hopper Gate Control Wrench (Left Side)

Fig. # 4-38 Manual Hopper Gate Control Wrench (Right Side)
Gama Remote Control System (Standard Equipment)

The remote control functions of the Gama Remote Control FOB (See Fig. # 4-39) 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. # 4-40)

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 ST.

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.

Latch 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 losses its connection to the Gama Remote Control Receiver, follow these steps:

1. Remove the screws and cover from the Gama Remote Control Receiver. (See Fig. # 4-41)

2. Locate the pushbutton switch on the Gama Remote Control Receiver as shown. (See Fig. # 4-42).
3. Press and hold this pushbutton switch until the program-
ing Indicator LED light next to the programming push-
button switch illuminates “RED” (hold approximately 3
seconds). The Gama Remote Control Reciever 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.

4. Press the \textbf{UP Arrow} on the Gama Remote Control
FOB. The red programming indicator LED on the Gama
Remote Control Reciever will blink once. Press the \textbf{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 Reciever
to respond to.

6. The Gama Remote Control Reciever will return to nor-
mal mode if no Gama Remote Control FOB buttons are
pressed for 5-seconds. The programmin indicator LED
on the Gama Remote Control Reciever will flash and then
turn off. The Gama Remote Control Reciever is now in
the normal mode of operation.

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

Kar-Tech Mega Remote Control System (Op-
tional Equipment)

The remote control functions of the Kar-Tech Mega Remote
(See Fig. # 4-44) correspond the valve bank on the left side
front fender of the ST. (See Fig. # 4-45) The remote control
receiver is mounted on left side fender. (See Fig. # 4-45)

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. # 4-45) while
operating the ST, unfolding, & folding the swing conveyor,
refer to pages 4-8 through 4-12.
Detachable & Stationary Ladder

The hoppers can be accessed with the detachable ladder (See Fig. # 4-47) and stationary ladder (See Fig. # 4-48).

The detachable ladder can be attached to the left side (street side) hopper only.
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5 - MAINTENANCE

GENERAL INFORMATION

Maintenance Safety

⚠️ WARNING
Improper operation or service of this machine can result in an accident. Read and understand the SAFETY INFORMATION Section before you operate or service the machine. Failure to comply could result in death or serious injury.

⚠️ WARNING
Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals. Failure to comply could result in death or serious injury.

⚠️ SERVICE AND MAINTENANCE SAFETY
- Review the Operator’s Manual and all safety items before working with, maintaining the machine.
- Place all controls in neutral, stop the engine, remove ignition key. Wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- 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.
- Before applying pressure to the hydraulic system, make sure all components are tight and that all hoses and coupling are in good condition.
- Always use personal protective devices such as safety glasses, gloves and hearing protection, when performing any service or maintenance.
- Relieve pressure from hydraulic circuits before servicing or repairing.
- Keep hands, feet, hair and clothing away from moving and/or rotating parts.
- Make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe 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.
- Keep safety signs clean. Replace any sign that is damaged or not clearly visible.
ST Checks and Maintenance

⚠️ WARNING
Improper operation or service of this machine can result in an accident. Read and understand the SAFETY INFORMATION Section before you operate or service the machine. Failure to comply could result in death or serious injury.

⚠️ WARNING
Escaping fluid!
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately. Failure to comply could result in death or serious injury.

⚠️ 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 Seed Tender. The rim and ring may come apart with explosive force, causing serious personal injury, including death.

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)

Hydraulic Oil:
Use an ISO grade 36 hydraulic oil for all operating conditions (Hydrex MV36 or comparable). The Oil Reservoir capacity is: 25 US Gal. (95 Liters)
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.

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

Greasing
Use the Maintenance Chart provided on page 5-4 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. All bearings are sealed and greasable. They require minimal lubricant. Recommended greasing is 1 small stroke every 2 weeks. Be careful not to over-grease, as this may push the seal out.
4. Replace and repair broken fittings immediately.
5. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

SERVICING INTERVALS
Make sure your ST 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 5-4 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 and engine model contained in the present unit.

The conveyor belt alignment is preset to run true under a condition of no load. It is important to check alignment and make adjustments, if required, during the initial few minutes of operation.
## MAINTENANCE CHART

**Interval** | **Page #** | **Maintenance Action** | **# of Pts.** | **# of Pts.**
--- | --- | --- | --- | ---
**FIRST 1 HOUR** | 5-5 | Underbin & Swing Conveyor Belt Tension | 4 | X
 | 5-6 | Underbin & Swing Conveyor Belt Alignment | 4 | X
**EVERY 10 HOURS OR EACH DAY** | 5-6 | Drain Any Water From Air Reservoir | 1 | X
 | 3-3 | Check The Operation Of All Lights | | X
 | 8***** | Check The Brake Operation | | X
 | 5-7 | Check The Tires For Damage | 8 | X
 | 5-7 | Check The Ladder Bolt Tightness | | X
 | 5-7 | Visually Check All Bolts For Tightness | | X
 | 25 HOURS | 28* | Low-Profile Precleaner | | X
 | 40 HOURS | 28* | Filter Minder | | X
 | 50 HOURS | 5-9, 4**** | Oil Level On The Axles | 4 | X
 | 5-10 | Lug Nut Torque | 40 | X | X
 | 5-8 | Swing Base Grease Zerks | 2 | X
 | 5-8 | Underbin Conveyor Grease Zerks | 4 | X
 | 5-9 | Hydraulic Gate Cylinder Rod End | 4 | X
 | 5-9 | Swing & Underbin Drive Chain Lubrication | 2 | X
 | 80 HOURS | 42*** | Inspect Tarp For Tears Or Worn Areas | | X
 | 42*** | Tighten Any Loose Fasteners | | X | X
 | 100 HOURS | 5* | Change Oil | 1 | X
 | 150 HOURS | 5* | Heavy-Duty Air Cleaner Element | 1 | X
 | 5* | Fuel Filter | 1 | X
 | 5* | Oil Cooler Fins, Clean As Necessary | 1 | X
 | 5-10 | Check All Supports And Braces | | X
 | 200 HOURS | 5* | 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
 | 5-10 | 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
 | 5-10, 7***** | Wheel Bearings | | X
**EVERY YEAR** | 5-11 | Changing Hydraulic Oil and Filter | 1 | X

---

* Consult your Kohler Command Pro Owner’s Manual
** Consult your Jost Owners Manual for A-400 and a-401 Landing Gear
*** Consult your Shurco Owners Manual
**** Consult your Cush 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.

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.
First 1 Hour

Underbin & Swing Conveyor Belt Alignment

The ST 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.

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.
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 Figure 1.
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.
10. Tighten bearing bolts and jam nuts if equipped.
11. Replace any covers or guards that may have been removed.

Every 10 Hours Or Each Day

Drain Any Water From Air Reservoir

The ST 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 ST.
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. # 5-6)
7. Dispose of the drained waste water properly.

Fig. # 5-5  Belt Alignment

Fig. # 5-6 Drain Any Water From Air Reservoir
### 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 ST.

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.

### Check The Ladder Bolt Tightness

Visually inspect the stationary ladder bolts daily for loose bolts.

![Stationary Ladder](Fig. # 5-7 Stationary Ladder)

### Visually Check All Bolts For Tightness

Visually inspect the entire ST 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. (Pump until the grease becomes visible)

![Grease The Swing Base Grease Zerks](Fig. # 5-8 Grease The Swing Base Grease Zerks)
Every 50 Hours
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. (Pump until the grease becomes visible)

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. (Pump until the grease becomes visible)
Every 50 Hours
Hydraulic Gate Cylinder Rod End
Grease the 4 points on the hydraulic cylinder rod ends of the hydraulic gates every 50 hours of use. Use Case IH AkcelA Multi-Purpose Grease 251H EP or equivalent. (Pump until the grease becomes visible)

Swing & Underbin Drive Chain Lubrication
Grease the 2 points on the Swing & Underbin Drive Chains every 50 hours of use. Use Case IH AkcelA Multi-Purpose Grease 251H EP or equivalent.
**Every 50 Hours**

**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.

---

**Every 5,000 Miles**

**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.

---

**Every 10K - 25K Miles**

**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. # 5-19) 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.

**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”.

---

**Every 150 Hours**

**Check All Supports And Braces For Defects Or Cracked Welds**

Visually inspect the entire ST chassis for defects and cracked welds.
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.

Yearly

Changing 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:

1. Place a pan under the drain plug.
2. Remove the drain plug from the bottom of the hydraulic reservoir. Reinstall and tighten the plug after draining.
3. Dispose of the used oil in an approved container and manner.
4. Fill the reservoir with Mobil™ DTE Excel™ 32 or equivalent.
5. Run the engine for 1-2 minutes and check for oil leaks.
6. Check engine oil level. Top up as required.
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 ST will not be used for a period of time, completely inspect all major systems of the ST.

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 ST inside for protection from the weather. If the ST 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.
## 6 - TROUBLESHOOTING

### SYMPTOM(S)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt slipping</td>
<td>Conveyor belt is loose.</td>
<td>Tighten and align belt.</td>
</tr>
<tr>
<td></td>
<td>Drive roller lagging worn or damaged.</td>
<td>Replace drive roller lagging.</td>
</tr>
<tr>
<td></td>
<td>Drive belt loose.</td>
<td>Tighten and align.</td>
</tr>
<tr>
<td></td>
<td>Belt frozen to tube from operating in high humidity and</td>
<td>Remove conveyor from area of high humidity and warm belt to de-ice.</td>
</tr>
<tr>
<td></td>
<td>cold temperatures.</td>
<td></td>
</tr>
<tr>
<td>Excessive belt edge fraying</td>
<td>Belt not in alignment.</td>
<td>Align and tension belt.</td>
</tr>
<tr>
<td>Belt loose</td>
<td>Belt stretches over time… also can be caused by oily grain products.</td>
<td>Re-tension belt If tightener is fully engaged, you may need to shorten belt.</td>
</tr>
</tbody>
</table>
7 - SPECIFICATIONS

ST933 Specifications

Standard Features

• 4 Compartments - 933 cu/ft.
• Dry weight of trailer 15,600 lbs.
• Integrated Stainless Steel D.O.T. Trailer
• 12 GA 304 Stainless Steel Tank, Hopper Conveyor, & Discharge Conveyor - 10’x 30’ Conveyor, 15” wide all rubber belt with 150 ton/hr capacity
• Enclosed conveyor belt return
• Without Self-Contained Hydraulic Power Pack - Requires 16 gal/min @ 2,700psi- 9” x 14” Manual Stainless Steel Slide Gates
• Rear or Front Mounted Conveyor Controls
• Access ladder
• Poke Holes
• Steel Wheels

Optional Features Include

• Wireless Hydraulic Remote Package
• Electric or Manual Roll Tarp
• Tank Split (shares one gate)
• Full Tank Split (includes two 9” x 14” gates)
• Electric Manual Control Box for Hydraulic Gates
• 12 Volt Electric Tank Vibrator
• Aluminum Wheels
• 37hp Kohler Self-Contained Hydraulic Power Pack
• 12” x 30’ Conveyor, 18” wide all rubber belt with over 200 ton/hr capacity

ST1166 Specifications

Standard Features

• 5 Compartments - 1,166 cu/ft.
• Dry weight of trailer 18,800 lbs.
• Integrated Stainless Steel D.O.T. Trailer
• 12 GA 304 Stainless Steel Tank, Hopper Conveyor, & Discharge Conveyor - 10’x 30’ Conveyor, 15” wide all rubber belt with 150 ton/hr capacity
• Enclosed conveyor belt return
• Without Self-Contained Hydraulic Power Pack - Requires 16 gal/min @ 2,700psi- 9” x 14” Manual Stainless Steel Slide Gates
• Rear or Front Mounted Conveyor Controls
• Access ladder
• Poke Holes
• Steel Wheels

Optional Features Include

• Wireless Hydraulic Remote Package
• Electric or Manual Roll Tarp
• Tank Split (shares one gate)
• Full Tank Split (includes two 9” x 14” gates)
• Electric Manual Control Box for Hydraulic Gates
• 12 Volt Electric Tank Vibrator
• Aluminum Wheels
• 37hp Kohler Self-Contained Hydraulic Power Pack
• 12” x 30’ Conveyor, 18” wide all rubber belt with over 200 ton/hr capacity
ST933 Dimensional Data

Fig. # 7-22 Stainless Tender Model ST933 Dimensional Data
ST1166 Dimensional Data

Fig. # 7-23 Stainless Tender Model ST1166 Dimensional Data
Torque – Hydraulic Tubes and Fittings

Standard torque data for hydraulic tubes and fittings

<table>
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<th>Size</th>
<th>Tubing OD (Inches)</th>
<th>Thread Size</th>
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<td></td>
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<td>1/2</td>
<td>3/4-18</td>
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<td>225</td>
<td>240</td>
<td>305</td>
<td>325</td>
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</tbody>
</table>

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.) | ft-lbs | Nm | ft-lbs | Nm | ft-lbs | Nm |
| 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.

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<th>10.9</th>
<th>12.9</th>
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<td><img src="image" alt="10.9" /></td>
<td><img src="image" alt="12.9" /></td>
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<table>
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<tr>
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<th>ft-lbs</th>
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</tbody>
</table>

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.
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**

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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
_____ Tire Pressure
_____ Fasteners Tight
_____ All Decals Installed

_____ Signal Lights Work Properly
_____ Safety Chain Installed
_____ Review Operating & Safety Instructions
_____ 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 warrant 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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