CONVEY-ALL®

CST 16

CST 32

SEED TENDER

MODELS CST 16, CST 18, CST 20 & CST 32

OPERATOR'S MANUAL

LIMITED WARRANTY

Convey-All warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective as to any new machinery which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by Convey-All or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with new machinery, if they have not been manufactured by Convey-All.

Convey-All shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with Convey-All operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to Convey-All within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:
Convey-All Industries Inc., Box 2008, 130 Canada St., Winkler, Manitoba, R6W 4B7.

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

If these conditions are fulfilled, Convey-All shall at its own cost and at its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless Convey-All has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Convey-All or its authorized dealers or employees.

This warranty extents 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. Convey-All disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and Convey-All shall not be required to retrofit or exchange items on previously sold units except at its own option.

WARRANTY VOID IF NOT REGISTERED

CONVEY-ALL
SEED TENDER

WARRANTY REGISTRATION FORM & INSPECTION REPORT

WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer's Name _____

Address _____

City, State/Prov., Code _____

Phone Number (____) _____

Dealer Name _____

Address _____

City, State/Prov., Code _____

Tender Model _____

Serial Number _____

Delivery Date _____

Application

☐ Private
☐ Commercial

DEALER INSPECTION REPORT

_____ All Fasteners Tight
_____ Drive System Rotates Freely
_____ Drives Aligned and Tensioned
_____ Belting Moves Freely
_____ Check Belting Tension and Alignment
_____ Lubricate Machine
_____ Unloading Conveyor Extends/Retracts Freely
_____ All Hydraulic Fittings Tight. No Leaks.

SAFETY

_____ All Guards and Shields Installed and Secured
_____ All Safety Signs Installed and Legible
_____ Reflectors Clean
_____ Review Operating and Safety Instructions
_____ All Lights Clean and Working

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

Date _____ Dealer's Rep. Signature _____

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

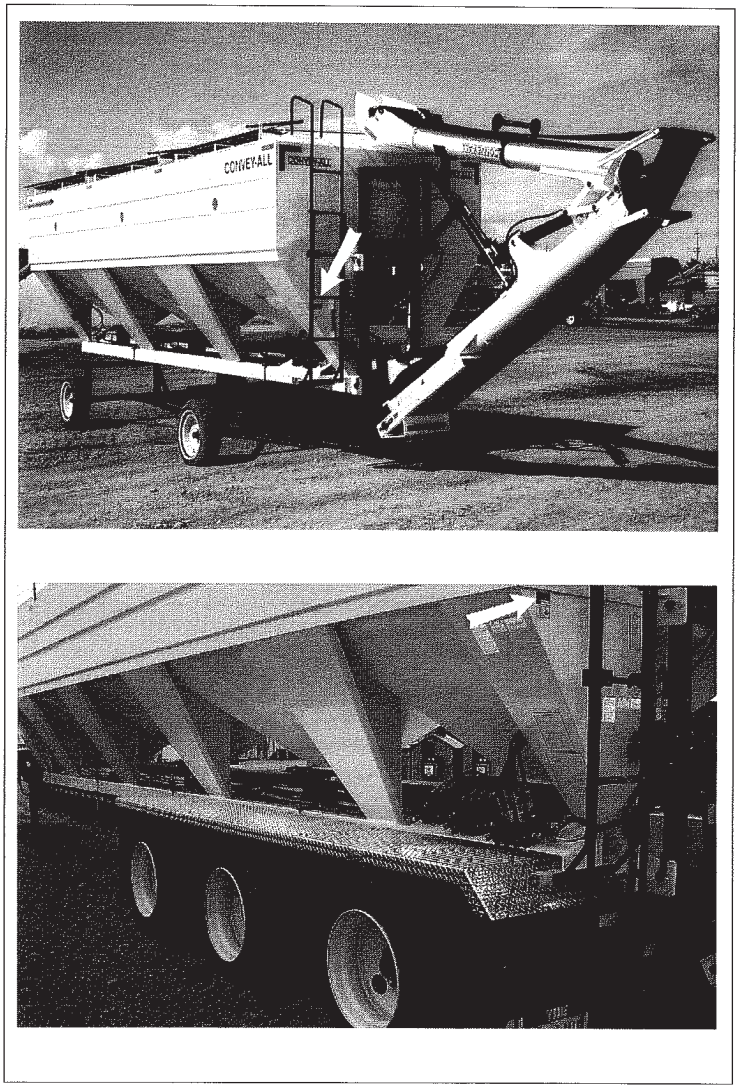
Date _____ Owner's Signature _____

WHITE	YELLOW	PINK
CONVEY-ALL	DEALER	CUSTOMER

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Convey-All Seed Tender when ordering parts or requesting service or other information.

The serial number plate is located where indicated. Please mark the number in the space provided for easy reference.



SERIAL NUMBER LOCATIONS (TYPICAL)

Model Number _____

Serial Number _____

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1	**Introduction**	**1**
2	**Safety**	**2**
2.1	General Safety	3
2.2	Equipment Safety	4
2.3	Safety Training	5
2.4	Safety Signs	5
2.5	Preparation	6
2.6	Operating Safety	7
2.7	Maintenance Safety	7
2.8	Hydraulic Safety	8
2.9	Transport Safety	8
2.10	Safety Sign-Off Form	9
3	**Safety Sign Locations**	**10**
4	**Operation**	**14**
4.1	To the New Operator or Owner	14
4.2	Machine Components	15
4.3	Machine Break-In	16
4.4	Pre-Operation Checklist	16
4.5	Controls	17
4.6	Field Operation	20
4.7	Storage	29
5	**Service and Maintenance**	**30**
5.1	Service	30
5.2	Maintenance	36
6	**Trouble Shooting**	**41**
7	**Specifications**	**42**
7.1	Mechanical	42
7.2	Hydraulic Fitting Torque	42
7.3	Bolt Torque	43
8	**Index**	**44**

1 INTRODUCTION

Congratulations on your choice of a Convey-All Seed Tender to complement your seed delivery system in your farming operation. This equipment has been designed and manufactured to meet the exacting standards for such equipment in the agricultural industry and will keep your seed delivery operation working at optimum efficiency.

Safe, efficient and trouble free operation of your Seed Tender system requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.

CST 16

CST 32

This manual covers the Seed Tender Models CST 16, CST 18, CST 20 and CST 32 manufactured by Convey-All Inc.. Differences are explained where appropriate. Use the Table of Contents and Index as a guide to locate required information.

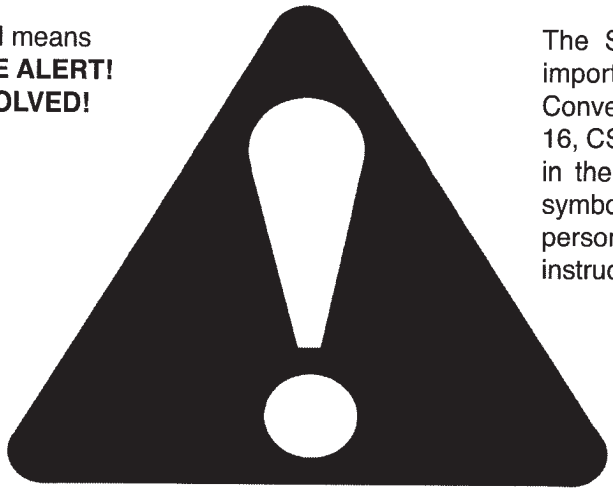
Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Convey-All Inc. dealer or distributor if you need assistance, information or additional copies of the manuals.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are as seen from the truck drivers' seat and facing in the direction of travel.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the Convey-All Seed Tender Models CST 16, CST 18, CST 20 and CST 32 and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER, WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies of the manual or the manual is damaged, please contact your dealer or Convey-All Industries Inc., Box 2008, 130 Canada St., Winkler Manitoba, R6W 4B7. 1-800-418-9461 • ph: 204-325-4195 • fax: 204-325-8116

SAFETY

YOU are responsible for the **SAFE** operation and maintenance of your Convey-All Seed Tender system. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Seed Tender be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the seed delivery system.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Seed Tender system owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter.

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

- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. Always be and stay alert to any possible unsafe operating or maintenance procedures or conditions.

- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety of the components and systems and could affect the life of the equipment, possibly invalidating the warranty coverage.

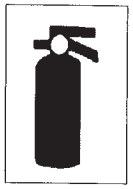
- Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting, filling, unloading or unplugging the Seed Tender system.

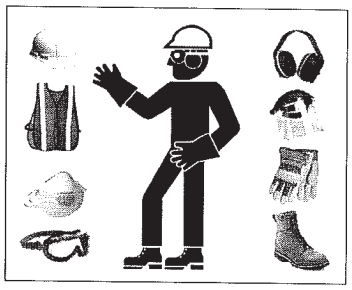
2. Have a first-aid kit available for use should the need arise and know how to use it.

3. Have a fire extinguisher available for use should the need arise and know how to use it.



4. Do not allow riders.

5. Wear appropriate protective gear. This list includes but is not limited to:



   - A hard hat
   - Protective shoes with slip resistant soles
   - Protective goggles, glasses or face shield
   - Heavy gloves
   - Protective clothing
   - Respirator

6. Install and secure all guards before starting.

7. Stop engine, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting, loading, filling or unplugging.

8. Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before working around loading/unloading equipment.

9. Clear the area of people, especially small children, before starting.

10. Review safety related items annually with all personnel who will operating, using or maintaining the Seed Tender system.

2.2 EQUIPMENT SAFETY GUIDELINES

1. Safety of the operator and bystanders is one of the main concerns in designing and developing a machine. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.

2. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.

3. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.

4. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.

5. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.** Review the safety instructions with all users annually.

6. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with farm machinery and trained in this equipment's operations. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.

7. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**

8. Do not modify the equipment in any way. Unauthorized modification result in serious injury or death and may impair the function and life of the equipment.

9. In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the auxiliary equipment and machine Manuals. Pay close attention to the Safety Signs affixed to the auxiliary equipment and the machine.

2.3 SAFETY TRAINING

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.

2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.

3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Accidents can be avoided.

4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your auxiliary equipment, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself. It is the machine owner's responsibility to make certain that the operator, prior to operating:**

   a. Reads and understands the operator's manuals.

   b. Is instructed in safe and proper use.

5. Know your controls and how to stop conveyors and any other auxiliary equipment quickly in an emergency. Read this manual and the one provided with your other equipment.

6. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machinery. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.

2.4 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.

2. Replace safety signs that are missing or have become illegible.

3. Replaced parts that displayed a safety sign should also display the current sign.

4. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

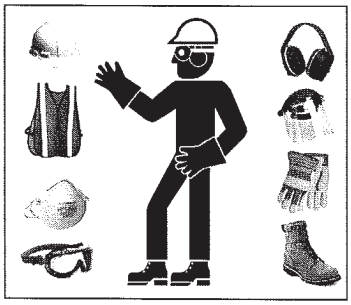
How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper. (See Section 3).
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

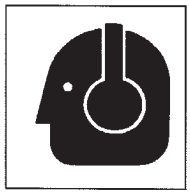
2.5 PREPARATION

1. Never operate the seed tender system and auxiliary equipment until you have read and completely understand this manual, the auxiliary equipment Operator's Manual, and each of the Safety Messages found on the safety signs on the delivery system and auxiliary equipment.

2. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving the implement. Do not allow long hair, loose fitting clothing or jewelry to be around equipment.



3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**
Motors or equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db. Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss. **NOTE:** Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.



4. Clear working area of debris, trash or hidden obstacles that might be hooked or snagged, causing injury, damage or tripping.

5. Operate only in daylight or good artificial light.

6. Be sure machine is properly anchored to the trailer, adjusted and in good operating condition.

7. Ensure that all safety shielding and safety signs are properly installed and in good condition.

8. Before starting, give the machine a "once over" for any loose bolts, worn parts, cracks, leaks, frayed belts and make necessary repairs. Always follow maintenance instructions.

2.6 OPERATING SAFETY

1. Make sure that anyone who will be operating the Seed Tender system or working on or around the unit reads and understands all the operating, maintenance and safety information in the operator's manual. Review safety related items annually.

2. Keep all bystanders, especially children, away from the machine when loading or unloading is being done, or when authorized personnel are carrying out maintenance work.

3. Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before servicing the unit or working around loading/unloading equipment.

4. Stop engine, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting, loading, filling or unplugging.

5. Keep hydraulic components in good condition.

6. Keep working area clean and free of debris to prevent slipping or tripping.

7. Do not allow riders on the trailer or frame when transporting.

8. Keep hands, feet, hair and clothing away from moving parts.

9. Do not place hands, arms or body between compartment and unloading conveyor frame to prevent pinching or crushing. Components can move unexpectedly.

10. Stay away from overhead power lines. Electrocution can occur without direct contact.

11. Install and secure all guards before starting.

12. Use care when climbing on frame or ladder to prevent slipping or falling.

13. Fasten frame securely to trailer before transporting.

2.7 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

2. 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.

3. Make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation.

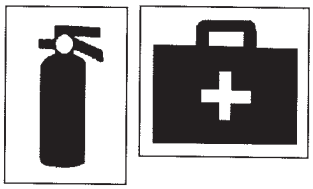
4. Before working on this machine, shut off the engine, and remove the ignition keys.

5. Never work under equipment unless it is blocked securely.

6. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.

7. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.



9. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.

10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

2.8 HYDRAULIC SAFETY

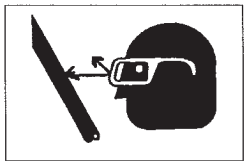
1. Always place all tractor hydraulic controls in neutral before disconnecting from tractor or working on hydraulic system.

2. Make sure that all components in the hydraulic system are kept in good condition and are clean.

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

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

5. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.



6. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

7. Relieve pressure in hydraulic system before maintaining or working on machine.

2.9 TRANSPORT SAFETY

1. Comply with state and local laws governing safety and transporting of farm machinery on public roads.

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

3. Be sure that the trailer is equipped with brakes that are in good working order. Be familiar with their operation.

4. Do not exceed a safe travel speed. Slow down for rough terrain and when cornering.

5. Fasten frame securely to trailer before transporting.

6. Stay away from overhead power lines. Electrocution can occur without direct contact.

7. Plan your route to avoid heavy traffic.

8. Always install unloading conveyor transport lock before transporting.

9. Do not drink and drive.

10. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.

11. Never allow riders on either trailer or machine.

2.10 SIGN-OFF FORM

Convey-All follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Convey-All Seed Tender system 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 such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. We feel that an untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the Operator's Manual and have been instructed in the operation of the equipment.

SIGN-OFF FORM

DATE	EMPLOYEES SIGNATURE	EMPLOYERS SIGNATURE

3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

A

CAUTION

- **Read and understand the Operator's manual before using. Review safety instructions annually.**
- **Stop engine, remove ignition key, and wait for all moving parts to stop before servicing, repairing, adjusting, loading, filling or unplugging.**
- **Keep working area clean and free of debris to prevent slipping or tripping.**
- **Do not allow riders on trailer or frame when transporting.**
- **Only enter bin when it is empty.**
- **Keep hands, feet, hair and clothing away from moving parts.**
- **Do not place hands, fingers or arms between unloading conveyor frame when moving unloading frame.**
- **Stay away from overhead power lines. Electrocution can occur without direct contact.**
- **Install and secure all guards before starting.**
- **Use care when climbing on frame or ladder to prevent slipping or falling.**
- **Do not smoke when refueling or working around machine.**
- **Fasten frame securely to trailer or truck frame before transporting or moving.**
- **Always empty rear compartment first to prevent an unbalanced load. An unbalanced load can cause hitch to upend.**
- **Keep hydraulic components in good condition.**

13-1100-0004

B

WARNING

FALLING HAZARD

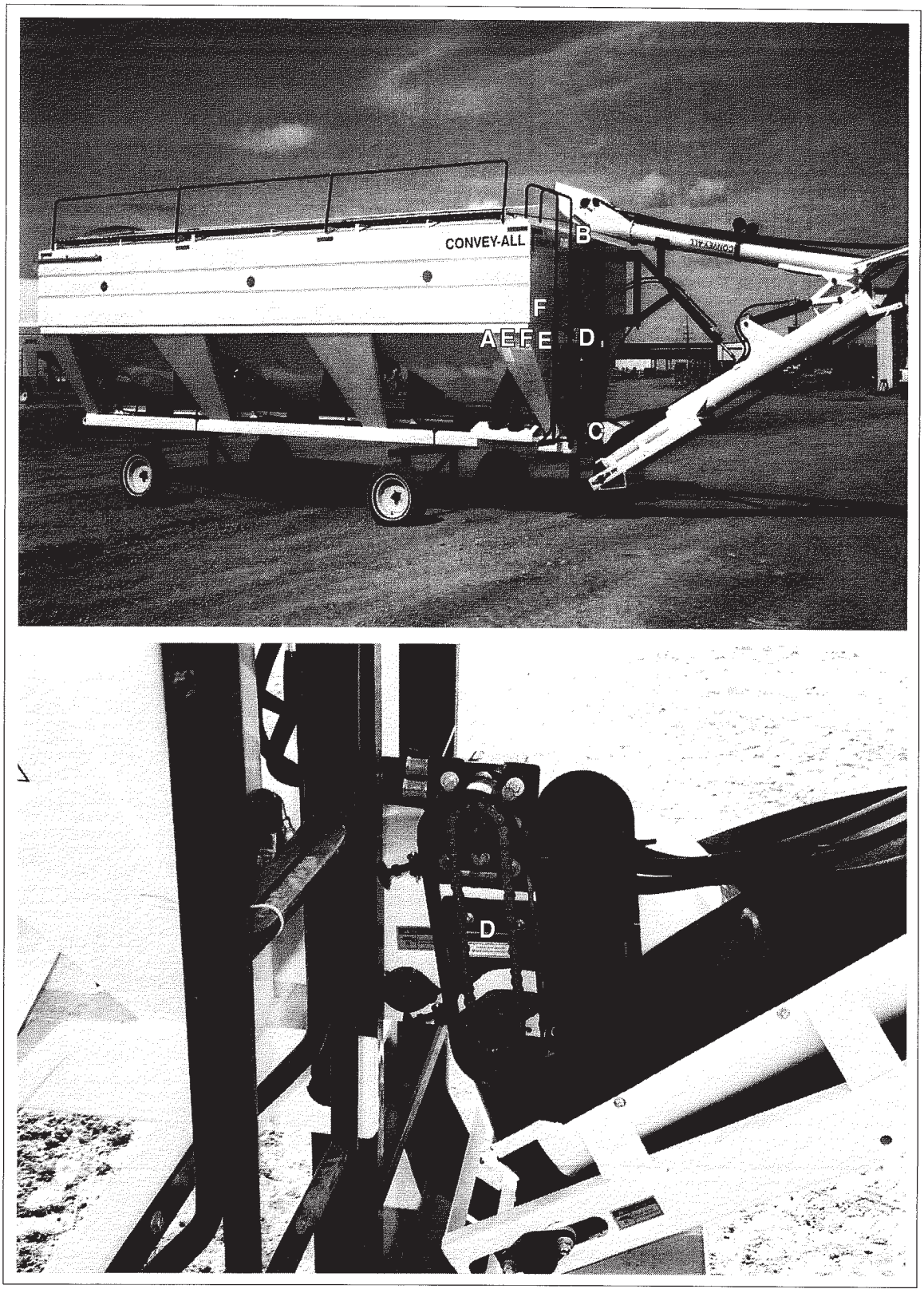
To prevent serious injury or death from falling:

- **Use special care when climbing ladder or frame to prevent slipping or falling.**
- **Keep rungs clean to prevent slipping.**
- **Have others use care when climbing.**

13-1100-0039

REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without signs, new signs must be applied. New signs are available from your authorized dealer.

The types of safety signs and locations on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.



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C

WARNING

ROTATING PART HAZARD
KEEP AWAY

To prevent serious injury or death from rotating parts:

1. **Place all controls in neutral or off, stop engine or motor, remove ignition key or disable power source and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.**
2. **Install and secure all guards before operating.**
3. **Do not operate with rotating parts exposed.**

13-1100-0005

D

DANGER

MISSING SHIELD HAZARD

Install and secure shield before operating.

13-1100-0014

E

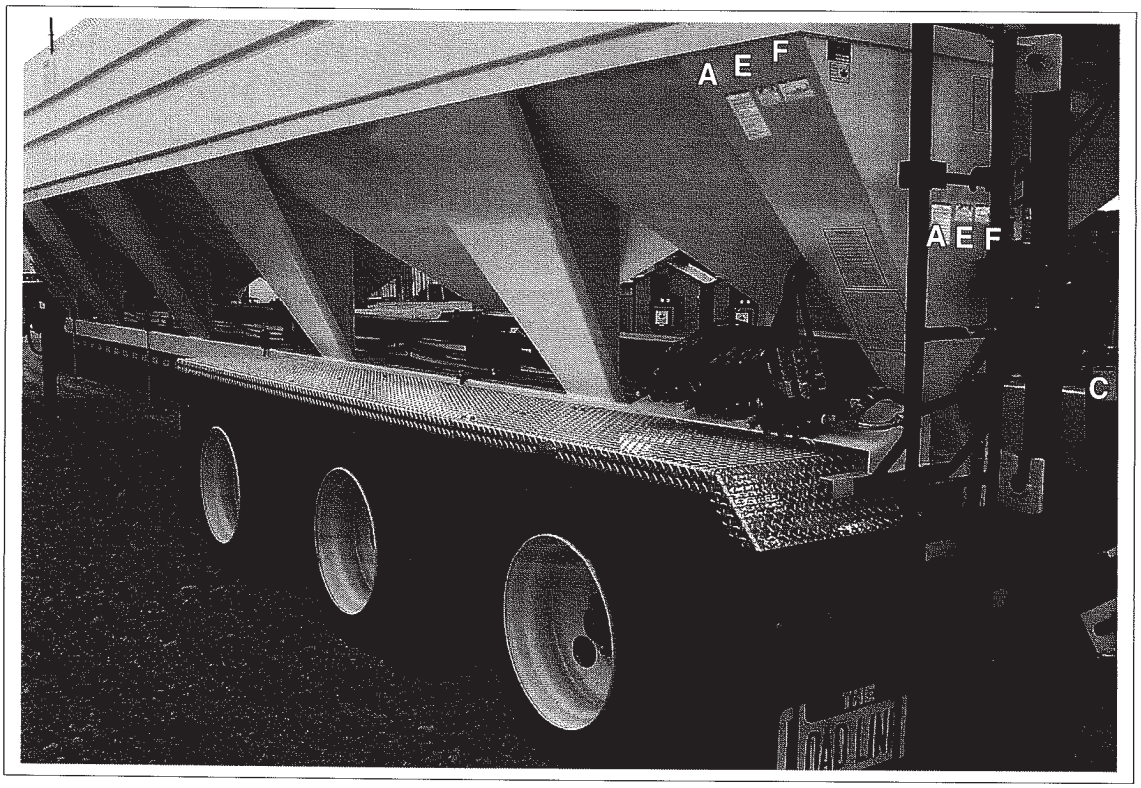
WARNING

HIGH-PRESSURE FLUID HAZARD

To prevent serious injury or death:

1. **Relieve pressure on system before repairing or adjusting.**
2. **Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.**
3. **Keep all components in good repair.**

13-1100-0010



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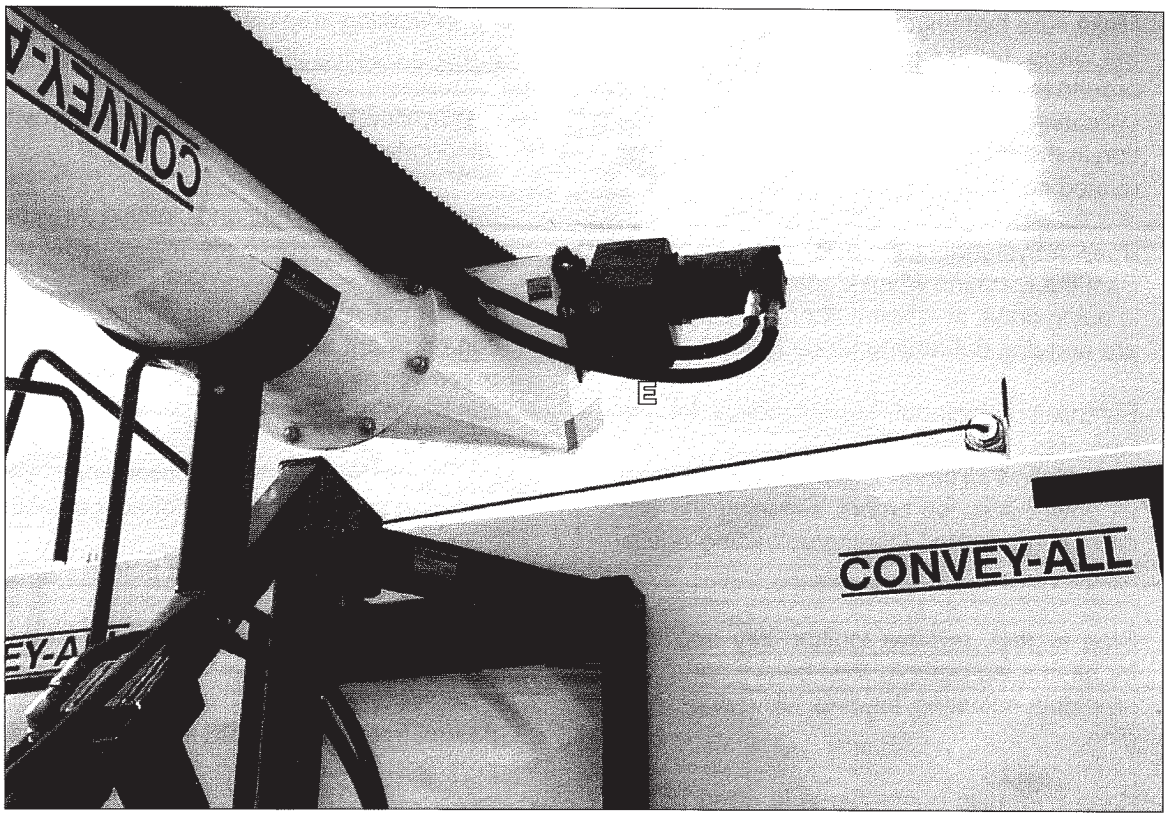

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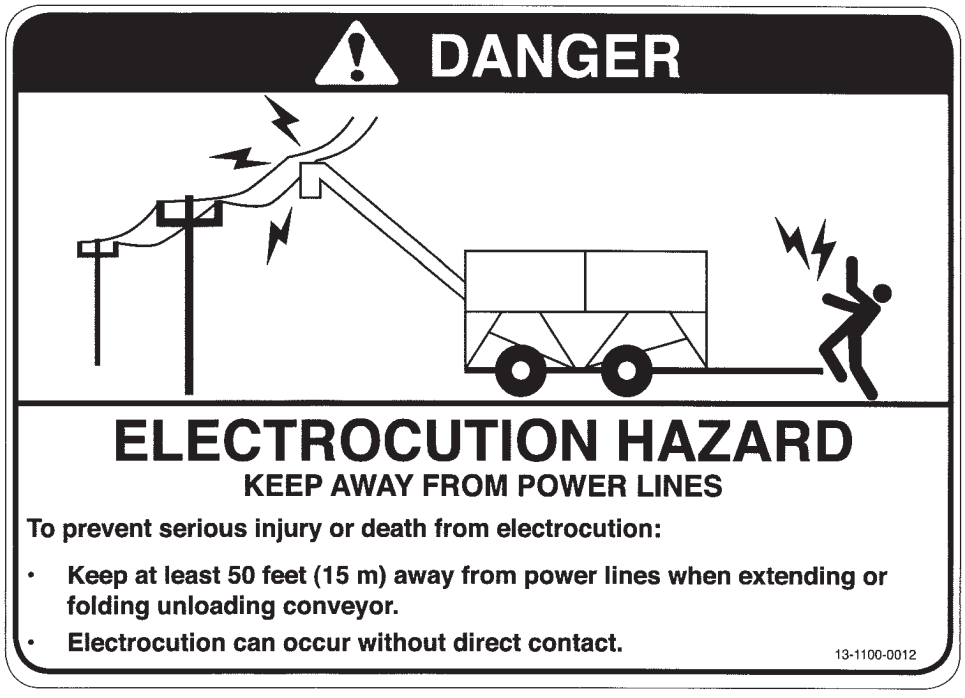


REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without signs, new signs must be applied. New signs are available from your authorized dealer.

4 OPERATION

OPERATING SAFETY

- Make sure that anyone who will be operating the Seed Tender system or working on or around the unit reads and understands all the operating, maintenance and safety information in the operator's manual. Review safety related items annually.
- Keep all bystanders, especially children, away from the machine when loading or unloading is being done, or when authorized personnel are carrying out maintenance work.
- Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before servicing the unit or working around loading/unloading equipment.
- Stop engine, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting, loading, filling or unplugging.
- Keep hydraulic components in good condition.
- Keep working area clean and free of debris to prevent slipping or tripping.
- Do not allow riders on the trailer or frame when transporting.
- Keep hands, feet, hair and clothing away from moving parts.
- Do not place hands, arms or body between compartment and unloading conveyor frame to prevent pinching or crushing. Components can move unexpectedly.
- Stay away from overhead power lines. Electrocution can occur without direct contact.
- Install and secure all guards before starting.
- Use care when climbing on frame or ladder to prevent slipping or falling.
- Fasten frame securely to trailer before transporting.

4.1 TO THE NEW OPERATOR OR OWNER

The Convey-All Seed Tenders are designed to take a bulk batch of seed and transfer it quickly into a planter or drill. Be familiar with the machine before starting.

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 machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the worksite. Untrained operators are not qualified to operate the machine.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of 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 machine. Follow all safety instructions exactly.

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 and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your Seed Tender will provide many years of trouble free service.

4.2 MACHINE COMPONENTS

The Convey-All Seed Tenders are designed as a bulk seed transfer unit to transfer large amounts of seed or fertilizer into a planter, drill or spreader.

Bulk seed is loaded into the bins. A belt conveyor folds out on the back of the frame and transfers the seed from the bins into planters, drills or spreaders as appropriate. Slide gates on the bottom of the seed boxes control the flow of seed onto the conveyor.

The truck must have a hydraulic system to provide power to the Tender to run the conveyor, open the gates and swing the conveyor. The conveyor and drive is mounted on a swinging platform that allows for unloading along the back of the frame.

A Seed Bins
B Frame
C Swing Frame
D Hydraulic Controls
E Conveyor
F Swing Controls
G Ladder
H Top Cover
J Top Platform
K Transport Lock

Fig. 1 MACHINE COMPONENTS

4.3 MACHINE BREAK-IN

A special break-in procedure has been developed to insure the integrity of the machine when first starting. When using the machine for the first time, follow this procedure:

A. Before Starting:

1. Read the truck or trailer and Machine Operator's manuals.

2. Review and follow pre-operation and pre-start procedures before starting machine.

B. At 1/2, 5 and 10 Hours:

1. Lubricate the points defined in the Maintenance section.

2. Check the tension and alignment of the conveyor drive system and conveyor belting. Tension and align as required.

3. Check hardware and fasteners: tie-downs and all fasteners. Tighten to their specified torque.

4. Check the controls. Be sure that they all function properly.

5. Check that the brakes are functioning as required.

C. At 10 Hours:

1. Go to the service schedule as defined in the Maintenance section.

4.4 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Convey-All Seed Tender system requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operational checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the delivery system that is checklist be followed.

Before operating the delivery system and each time thereafter, the following areas should be checked off:

1. Lubricate the machine per the schedule outlined in the "Maintenance" section.

2. Check tie-down hardware. Tighten or re-torque as required.

3. Check that the unloading conveyor swinging frame can move freely.

4. Check that the unloading conveyor can extend and retract freely.

5. Check that the conveyor belting is aligned and tensioned properly.

6. Remove all entangled material.

4.5 CONTROLS

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

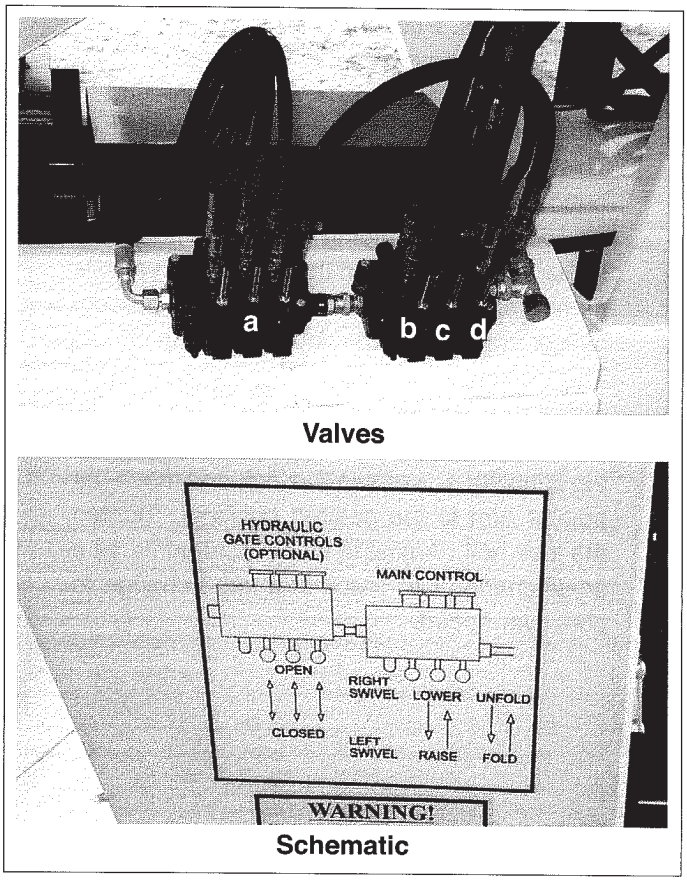
1. **Hydraulic Controls - Side:**
   This bank of hydraulic valves controls the operation of all functions except the unloading conveyor belt. The valves are all spring-loaded-to-center-neutral that requires that they be held when the machine function is being actuated or operated.

   a. **Gate Controls (Front Bank):**
   This valve bank controls the gate position under each compartment with the front lever/control valve controlling the front compartment. Push and hold the lever to open the gate under the desired compartment. Pull on the lever and hold to close the gate. Release the lever when the gate is in the desired position and the gate will stop moving.

   b. **Unloading Conveyor Swivel (Rear Bank):**
   This valve controls the angle position of the unloading conveyor. Push and hold the lever to swivel the conveyor to the right. Pull and hold the lever to swivel the conveyor to the left. Release the lever and the conveyor will remain in its position.

   c. **Unloading Conveyor Height (Rear Bank):**
   This valve controls the height of the unloading conveyor. Push and hold the lever to lower the conveyor. Pull and hold the lever to raise the conveyor. Release the lever and it will stop moving and remain in its position.

   d. **Unloading Conveyor Fold/Unfold (Rear Bank):**
   This valve controls the folding and unfolding of the unloading conveyor. Push and hold the lever to unfold or extend the conveyor. Pull and hold the lever to fold or retract the conveyor. Release the lever and it will stop moving and remain in that position.



Valves

Schematic

Fig. 2 SIDE HYDRAULIC CONTROLS

2. **Hydraulic Controls - Rear:**
This two-position hydraulic valve controls the flow of oil to the motors on the unloading conveyors. Pull the lever out to direct the oil flow to the motors. Push the lever in to stop the flow of oil to the conveyors.

3. **Flow Control Valve:**
This manually-set flow divider allows the operator to set the flow through the circuit from 0% to 100% by dumping the excess flow back to the truck. A scale on the face of the valve is numbered from 0 to 10 to define the percent of flow from 0 to 100% flowing into the circuit. The conveyor unloading circuit is equipped with a flow divider so the operator can adjust the conveyor speed appropriate for the operating conditions. Loosen the lock and move the pointer arm to the desired position. Tighten the lock bolt. Adjust in small increments as a small change can result in a large change to conveyor speed.

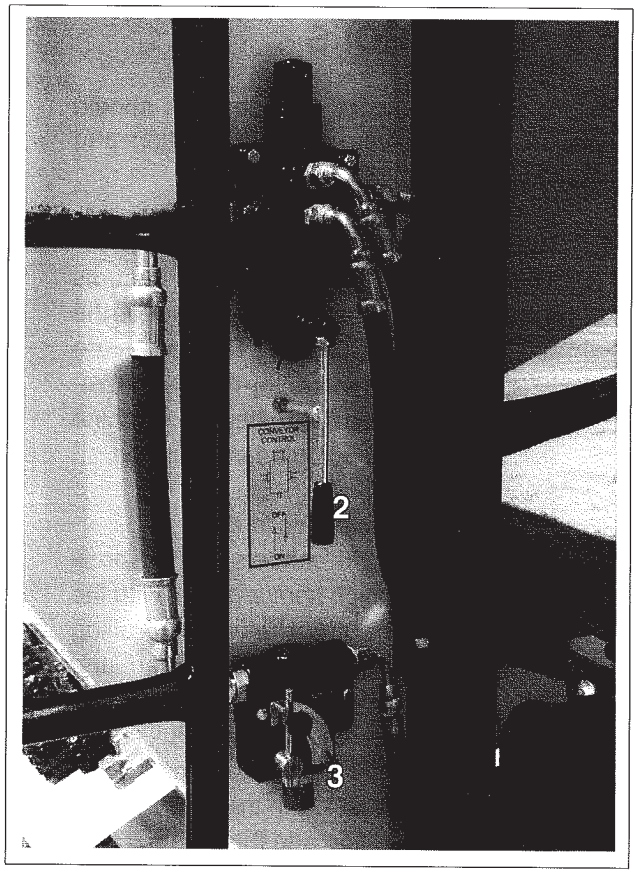


Fig. 3 REAR HYDRAULIC CONTROLS

4. **Electric Roll-Top Tarp:**
This switch controls the power to the electric motor on the Roll-Top Tarp covering the top of the Tender. Move the switch to the left and hold to close the roll-top cover. Move the switch to the right and hold to open the roll-top cover. Release the switch and it will return to its neutral centered position and the cover will stop.

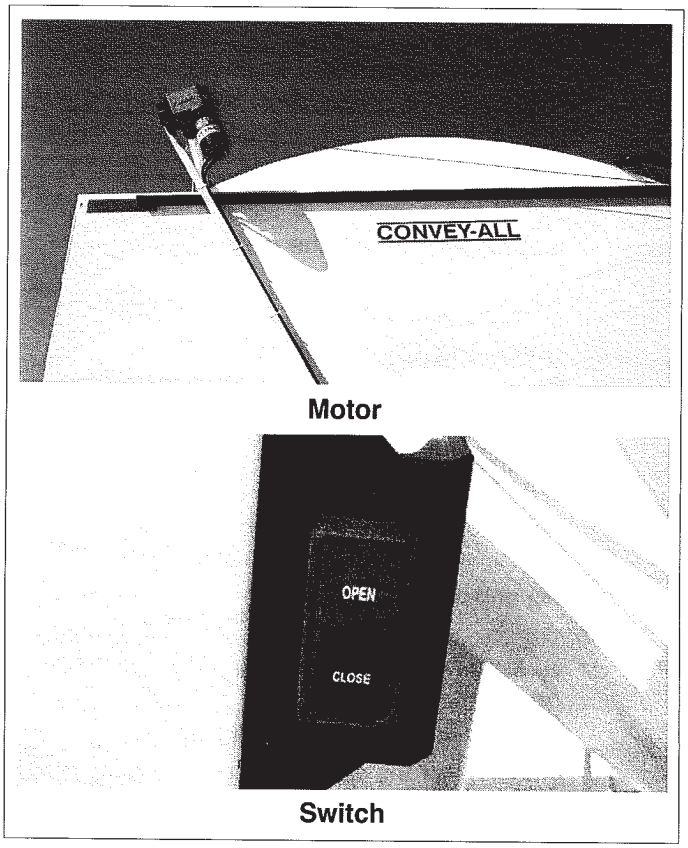


Fig. 4 ROLL-TOP TARP

5. **Conveyor Frame Lock:**
This spring-loaded mechanical pin is used to lock the conveyor swivel frame in position for storage or transporting. Use the swivel control valve to center the frame and pull down on the lock to release it. The spring locks the pin in position when the frame is centered.

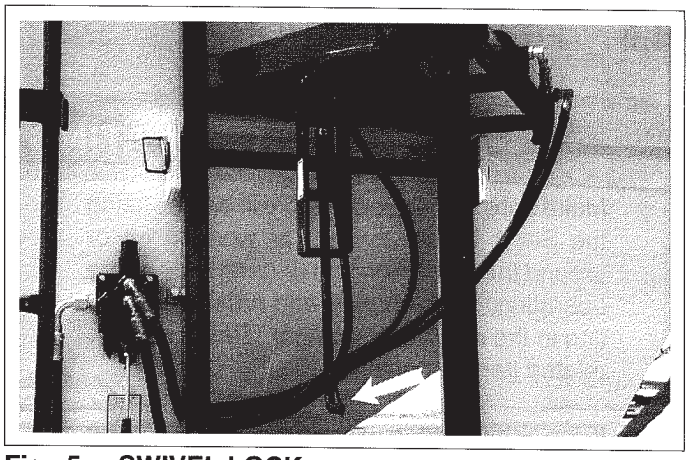


Fig. 5 SWIVEL LOCK

4.6 FIELD OPERATION

OPERATING SAFETY

- Make sure that anyone who will be operating the Seed Tender system or working on or around the unit reads and understands all the operating, maintenance and safety information in the operator's manual. Review safety related items annually.
- Keep all bystanders, especially children, away from the machine when loading or unloading is being done, or when authorized personnel are carrying out maintenance work.
- Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before servicing the unit or working around loading/unloading equipment.
- Stop engine, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting, loading, filling or unplugging.
- Keep hydraulic components in good condition.
- Keep working area clean and free of debris to prevent slipping or tripping.
- Do not allow riders on the trailer or frame when transporting.
- Keep hands, feet, hair and clothing away from moving parts.
- Do not place hands, arms or body between compartment and unloading conveyor frame to prevent pinching or crushing. Components can move unexpectedly.
- Stay away from overhead power lines. Electrocution can occur without direct contact.
- Install and secure all guards before starting.
- Use care when climbing on frame or ladder to prevent slipping or falling.
- Fasten frame securely to trailer before transporting.

The Convey-All Seed Tender is designed to handle any kind of seed, transport it and transfer it into planters and drills as required. Inspect the machine at the start of each day to be sure it is in good mechanical condition.

Follow this procedure when using the Seed Tender:

1. Attach trailer to the towing truck.
2. Review and follow the pre-operation checklist.
3. Open roll top lid.
4. Fill the bin(s).
5. Close the roll top lid.

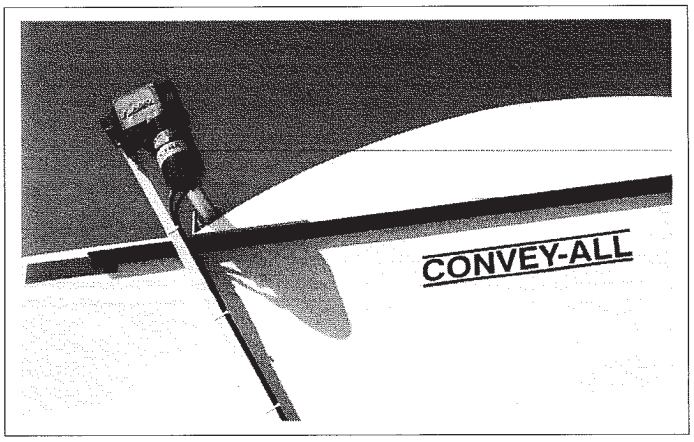


Fig. 6 ROLL-TOP COVER

4. Be sure the unloading conveyor is folded.

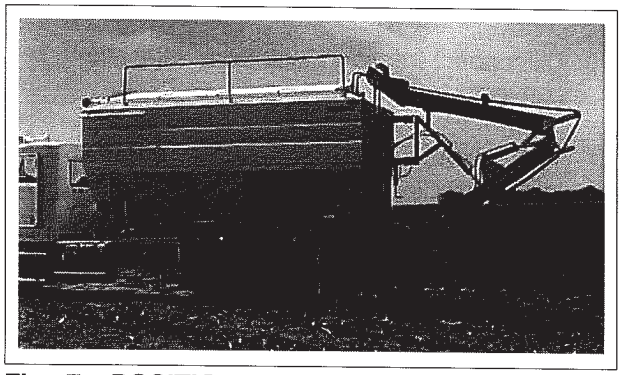


Fig. 7 POSITIONED

5. Engage transport lock into unloading conveyor swivel frame.

6. Transport to the working area. Review trailer or truck Operator's manual and follow the instructions.

7. Back up to the planter or drill.

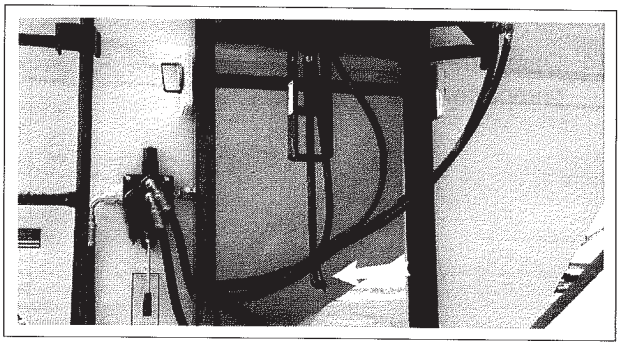
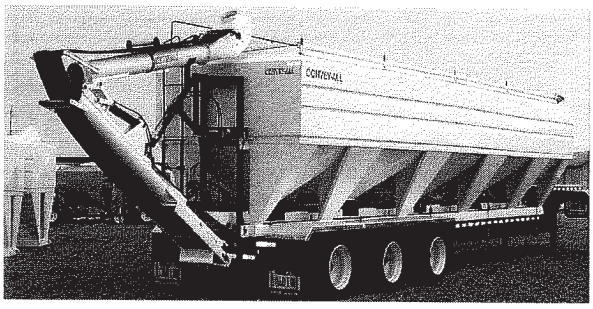


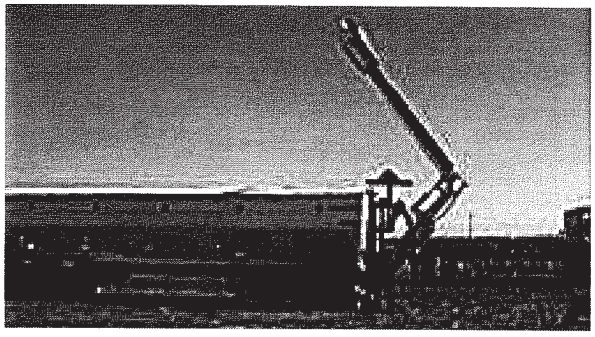
Fig. 8 TRANSPORT LOCK

8. Set park brake, set engine RPM at mid range and engage remote hydraulic system.

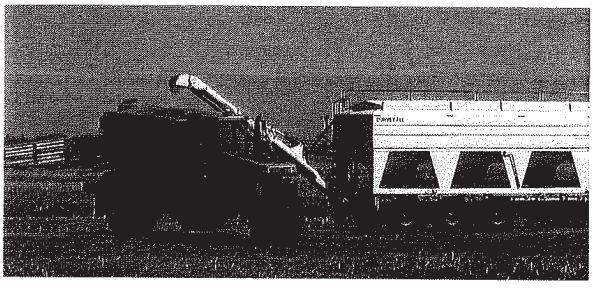
9 Hold the Unfold-Fold control valve lever to extend the unloading conveyor into its working configuration. Be sure it is fully extended.



Folded



Unfolding



Unfolded

Fig. 9 UNFOLDING

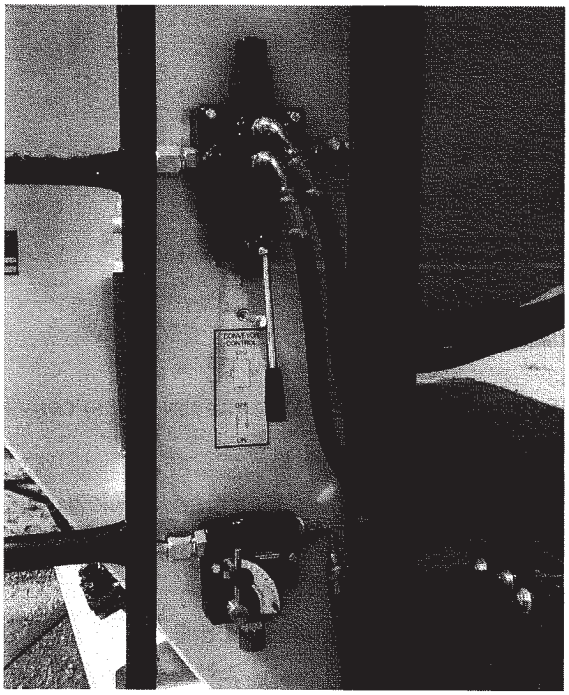
10. Disconnect transport lock from unloading conveyor frame.

11. Turn unloading assembly conveyor frame to position discharge over the drill, planter seed box or spreader.

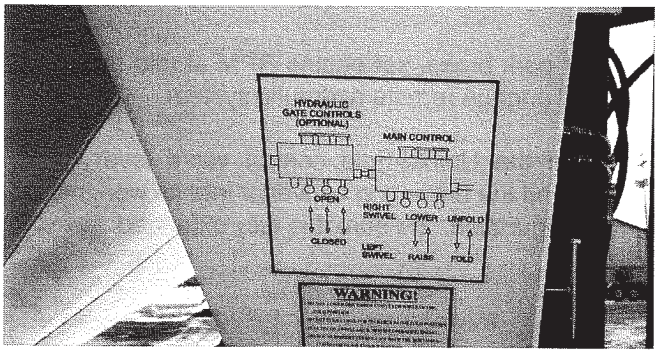
12. Open the drill, planter or spreader cover(s).

13. Start the conveyor. Be sure the valve is in detent.

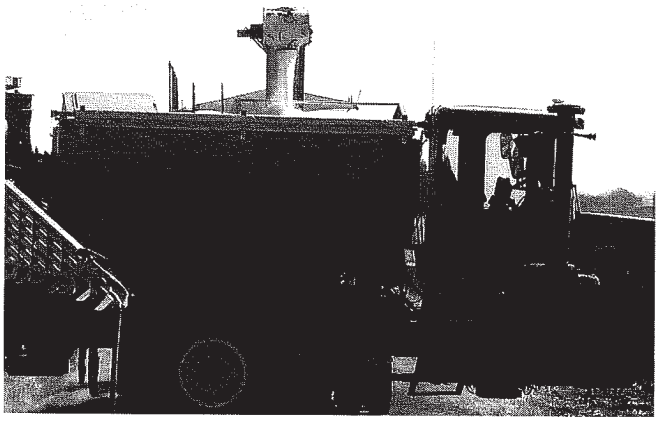
14. Open the discharge gate to one of the compartments.



Unloading Conveyor Control



Gate Control



Unloading

Fig. 10 UNLOADING

15. Fill the drill, planter or spreader until it is full or the tender compartment is empty.

Fig. 11 FILLING

16. Close the gate to the empty compartment and open the next one.

17. Continue to fill the implement until it is filled or the tender is empty.

18. Close the gates to all compartments when finished.

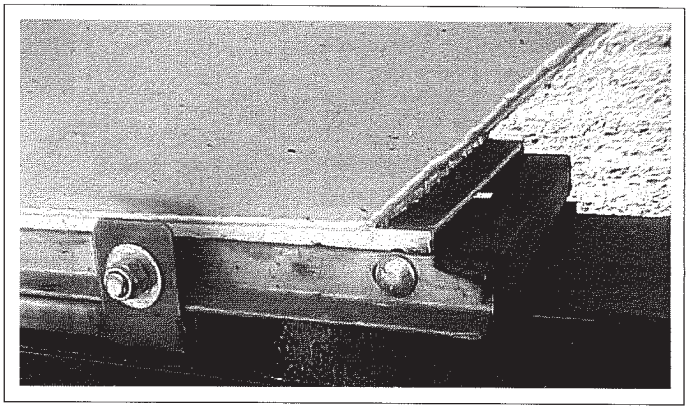


Fig. 12 COMPARTMENT DISCHARGE GATE

19. Install the conveyor frame lock pin if the tender will be transported on the road.

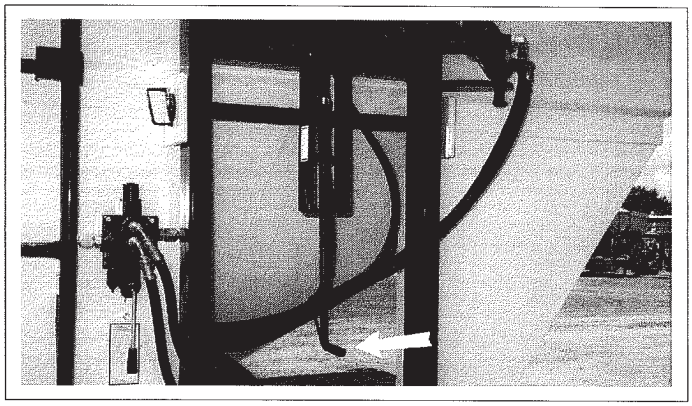


Fig. 13 FRAME LOCK

20. Fold the conveyor prior to transporting.

Fig. 14 FOLDED

21. Turn truck hydraulic system off.

22. Drive the tender to its filling or loading location.

23. Fill the tender.

24. Return to the field to fill the planter, drill or spreader as required.

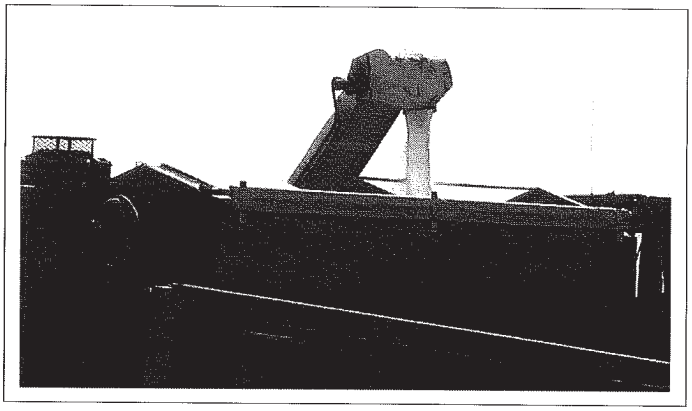
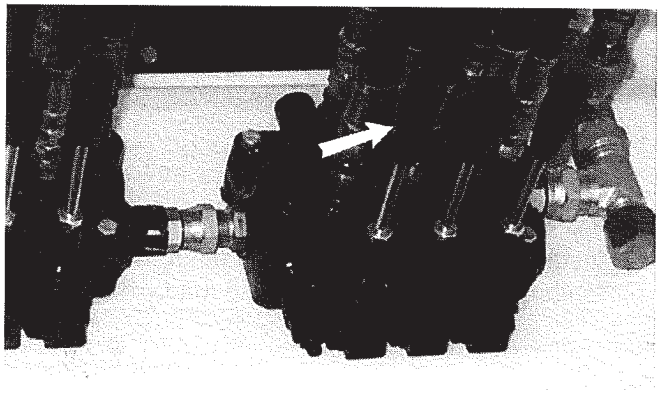
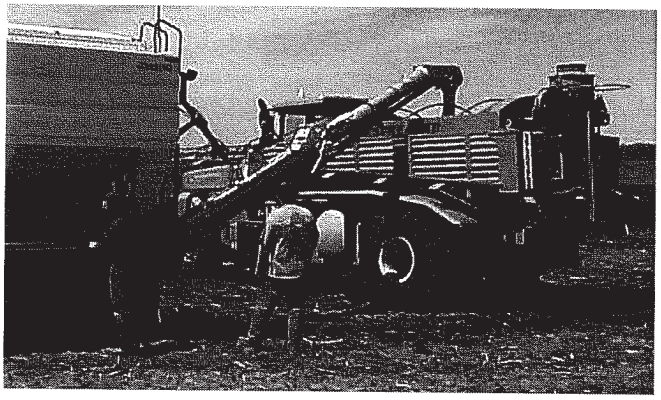


Fig. 15 FILLING TENDER

25. **Unloading Conveyor Angle:**
The conveyor unloading frame can be moved through a 60° arc to allow it to fill more than one compartment on the planter, drill or spreader. Remove the frame lock pin and use the side control lever to move the conveyor to the desired position.



Conveyor Angle Control Lever



Extended

Fig. 16 FILLING

26. **Unloading Speed:**
Use the flow control valve in the conveyor belt drive circuit to set the belt speed. Move the control in small increments to change the speed of the belt.

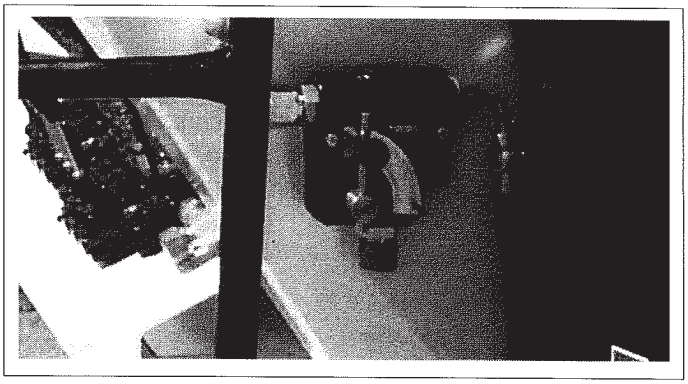
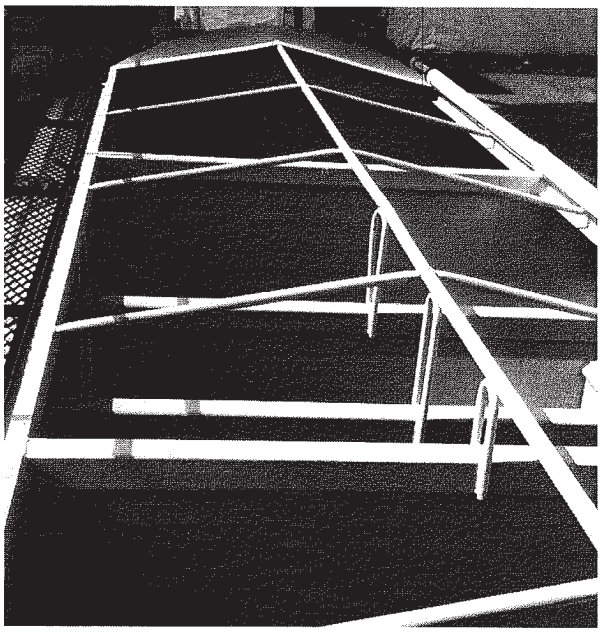
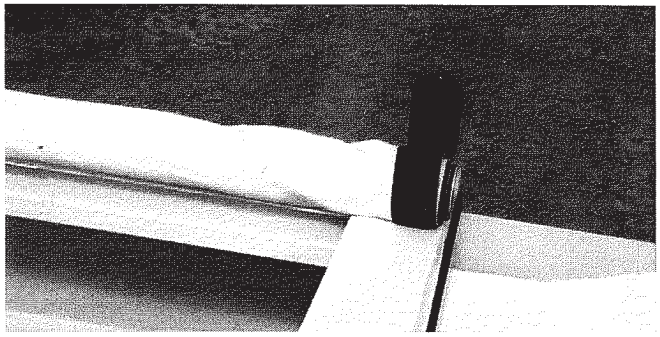


Fig. 17 FLOW CONTROL

27. **Roll Top Cover:**
An roll top tarp is used to cover the unit. Roll the tarp back when filling the bins.

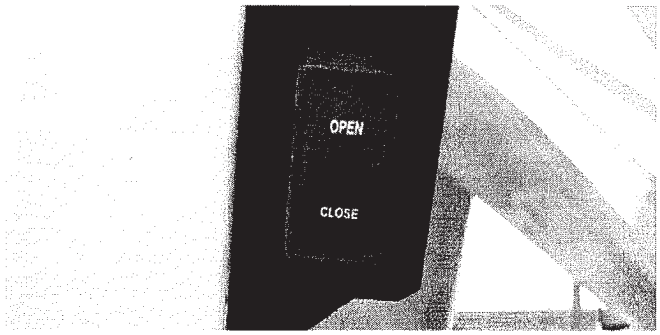


Top



Electric Motor

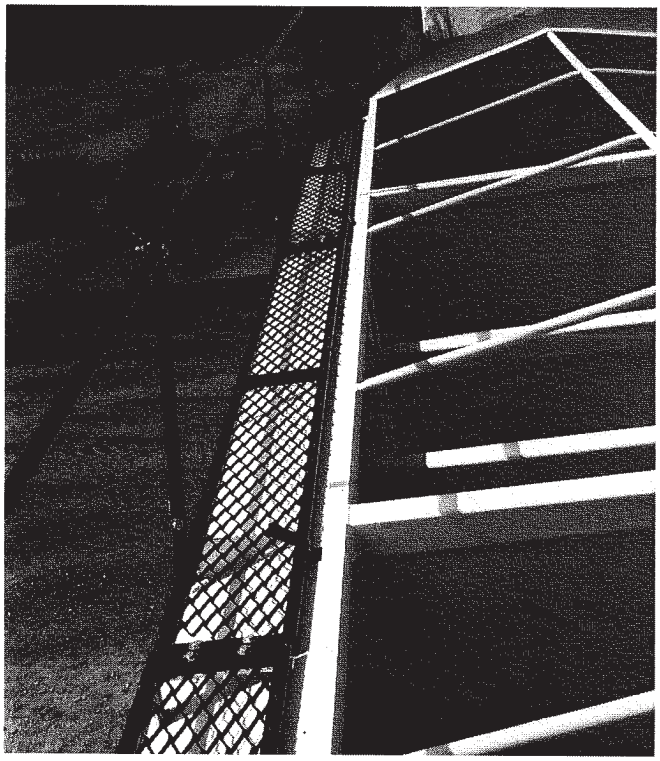
Use the switch on the front of the frame to turn the tarp rolling motor on or off and determine the direction.



Switch

Fig. 18 ROLL-TOP COVER

28. **Top Platform:**
The frame is designed with a walkway on the top to provide access to each compartment. Use care when climbing the ladder. Always raise and lock the railing when using the platform.



Platform

Front Ladder

Fig. 19 TOP PLATFORM

29. **Compartment Ladder:**
Each compartment is designed with an inner ladder to provide access to the inside of each compartment.

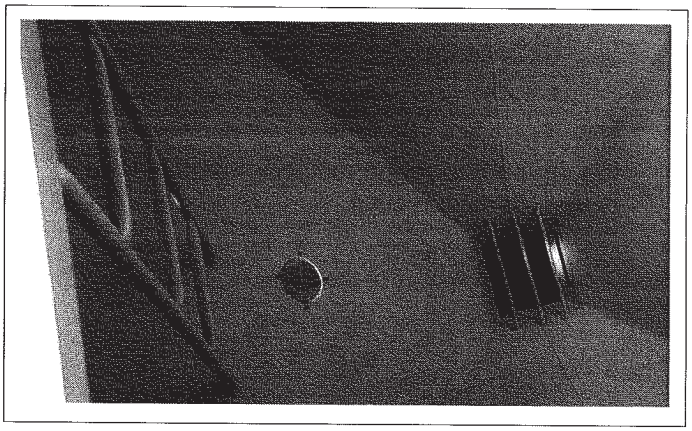


Fig. 20 COMPARTMENT LADDER

30. **Sight Glasses:**
Each bin in the tender is designed with a sight glass on the upper and lower sides to allow the operator to monitor the amount of material in the bin. Watch the sight glass to monitor the amount of material in the compartment while transferring the material.

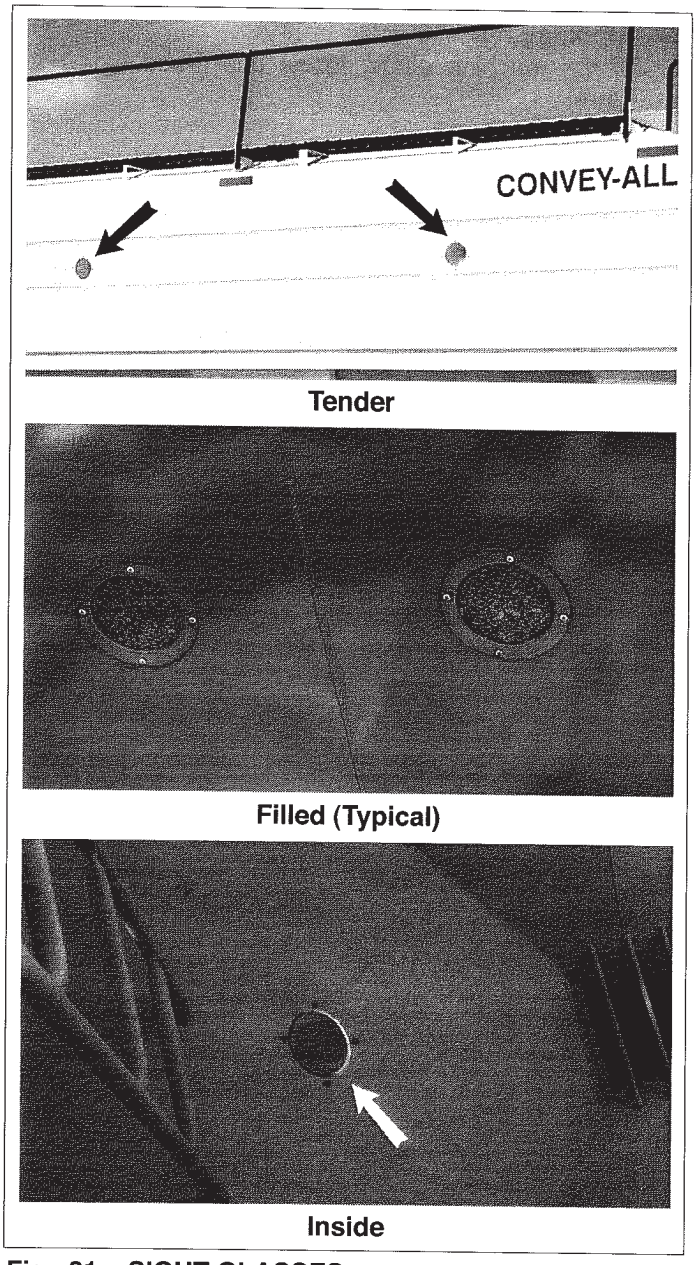


Fig. 21 SIGHT GLASSES

31. **Unplugging:**
If the machine plugs, follow this procedure:

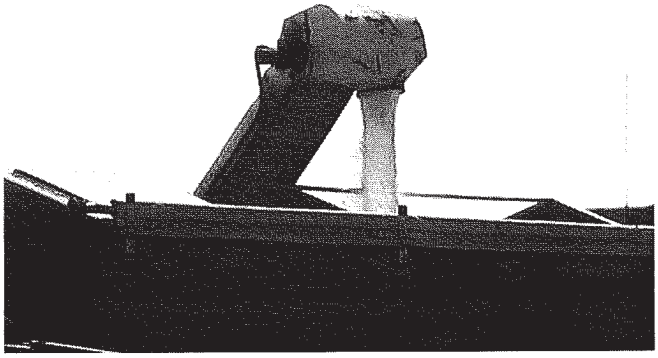
a. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop.

b. Unplug conveyor discharge.

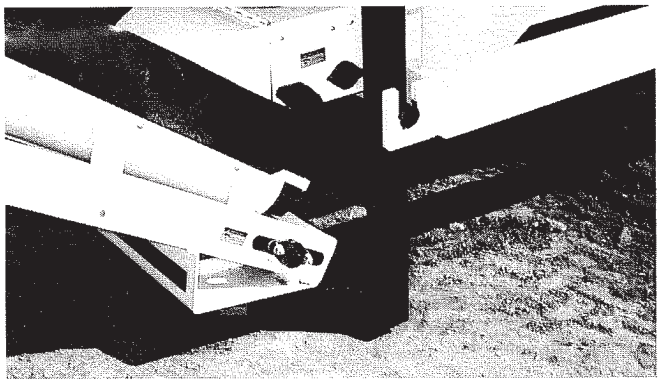
c. Remove obstruction from between the tank discharge gate and conveyor.

d. Remove the obstruction at the base of the unloading conveyor.

e. Start the truck engine, engage hydraulics, run the unloading conveyor and check that all areas are clear.



Top



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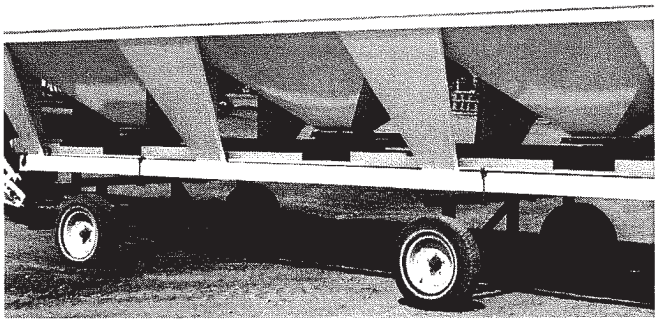


Discharge Gates

Fig. 22 UNPLUGGING

33. **Operating Hints:**

a. Swing the unloading conveyor into the desired position for convenient and easy unloading.

b. Use the flow divider on the conveyor hydraulic circuit to control the unloading speed.

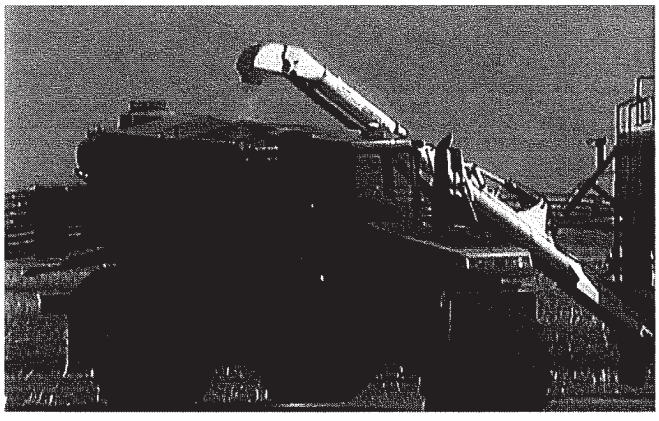


Fig. 23 FILLING

4.7 STORAGE

OPERATING SAFETY

- Store the unit in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Store the unit in a dry, level area. Support the frame with planks if required.

4.7.1 PLACING IN STORAGE

After the season's use or when the machine will not be used for a period of time, completely inspect all major systems of the Seed Tender. Replace or repair any worn or damaged components to prevent any unnecessary down time at the beginning of the next season.

Follow this procedure before storing:

1. Remove all material from the machine.
2. Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud or debris.
3. Inspect all rotating parts for entangled material. Remove all entangled materials.
4. Check the condition of the chains and sprockets. Replace or adjust as required.
5. Check the condition of the unloading conveyor belting. Replace any damaged belt.
6. Touch up all paint nicks and scratches to prevent rusting.
7. It is best to store the machine inside. If that is not possible, cover with a waterproof tarpaulin and tie down securely.
8. Store in an area away from human activity.
9. Do not allow children to play around the stored unit.

4.7.2 REMOVING FROM STORAGE

When removing the machine from storage, follow this procedure:

1. Remove the tarpaulin if covered.
2. Review and follow the Pre-Operation Checklist.

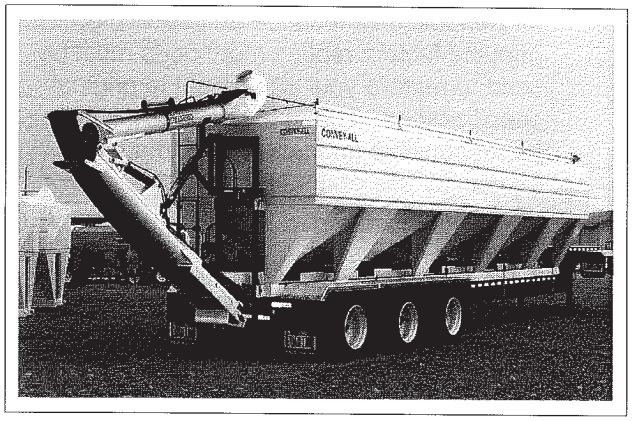


Fig. 24 STORED (Typical)

5 SERVICE AND MAINTENANCE

MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- 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.
- Make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on this machine, shut off the engine, and remove the ignition keys.
- Never work under equipment unless it is blocked securely.
- Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- 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.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

5.1 SERVICE

5.1.1 FUELS, FLUIDS AND LUBRICANTS

1. **Grease:**
   Use an SAE multi-purpose high temperature grease or a multi-purpose lithium base grease.

2. **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.

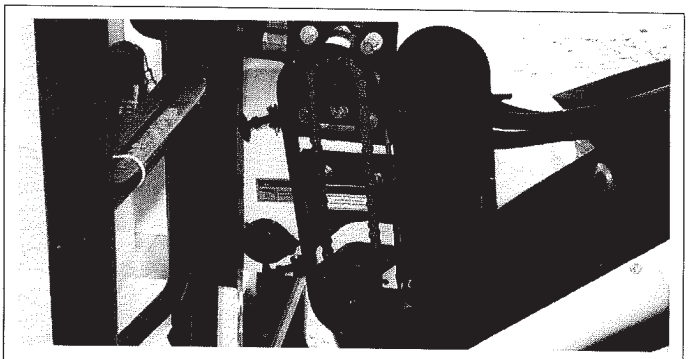
5.1.2 GREASING

Refer to section 5.1.1 for recommended grease. Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

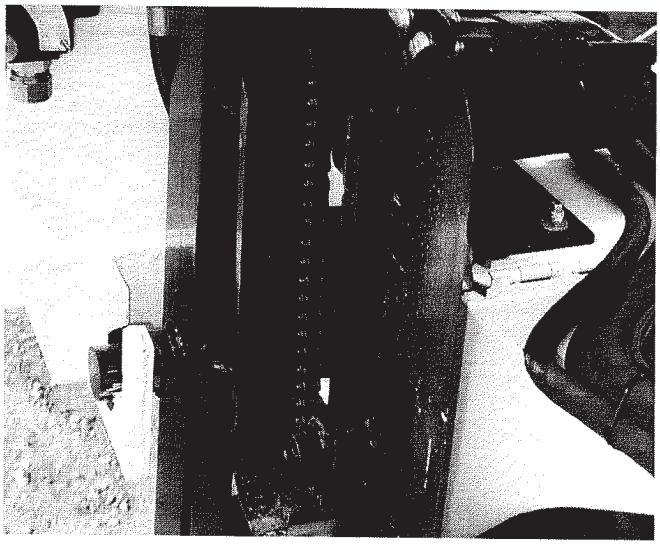
1. Use only a hand-held grease gun for all greasing. An air-powered greasing system can damage the seals on bearings and lead to early failures.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

5.1.3 SERVICING INTERVALS

1. Check drive chain tension and alignment.



Tension



Alignment

Fig. 25 DRIVE CHAIN

WARNING

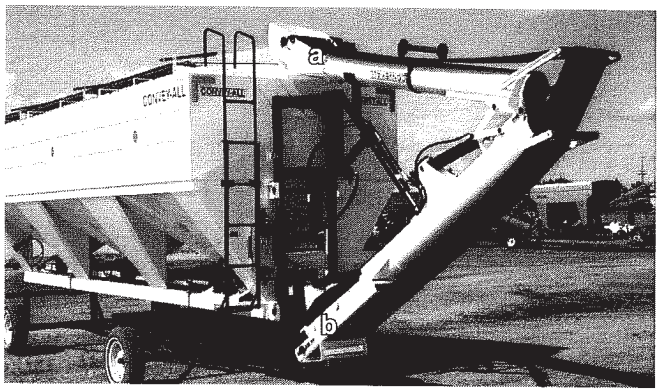
Machine is shown with guards opened or removed for illustrative purposes only. Never operate machine with access guards opened or removed.

50 Hours or Weekly

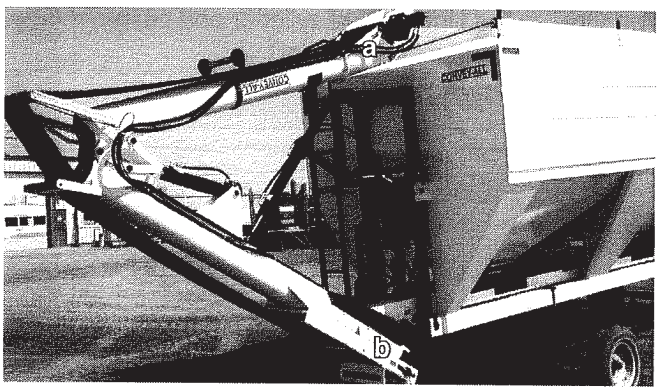
1. Grease the unloading conveyor roller bearings.

   a. Drive end (2 locations).

   b. Idler end (2 locations).



Drive End



Idler End

Fig. 26 UNLOADING CONVEYOR ROLLER BEARINGS

2. Grease the conveying conveyor roller bearings.

   a. Drive end (2 shafts).

   b. Idler end (2 shafts).

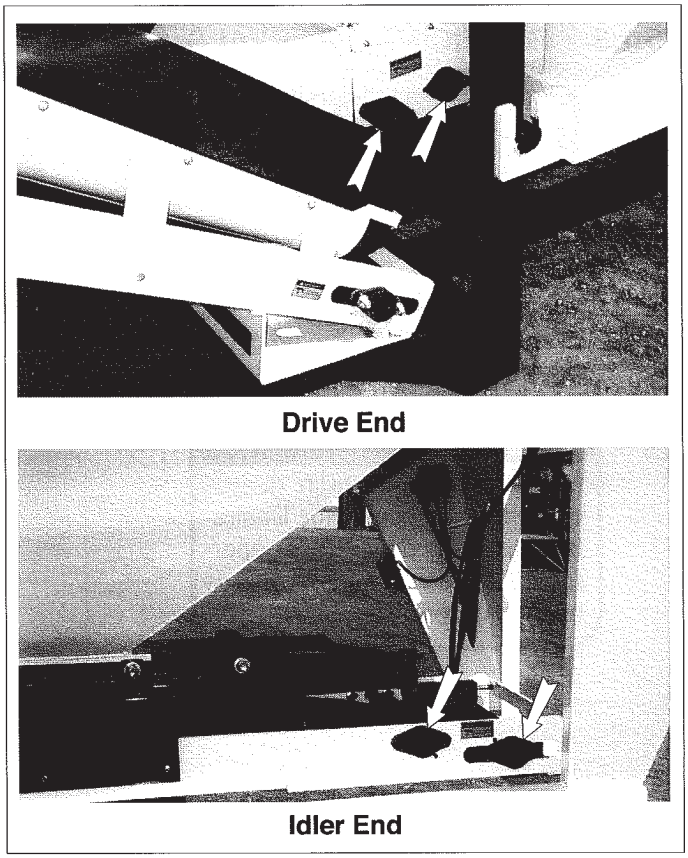


Fig. 27 CONVEYING CONVEYOR ROLLER BEARINGS

3. Grease the discharge gate cylinder end bushings (2 locations each gate).

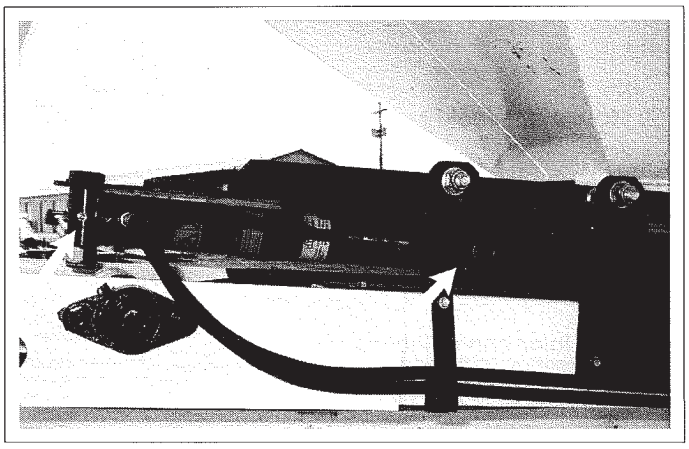


Fig. 28 CYLINDER ENDS (Typical)

4. Grease the Unfold/Fold cylinder end bushings (2 locations on cylinder).

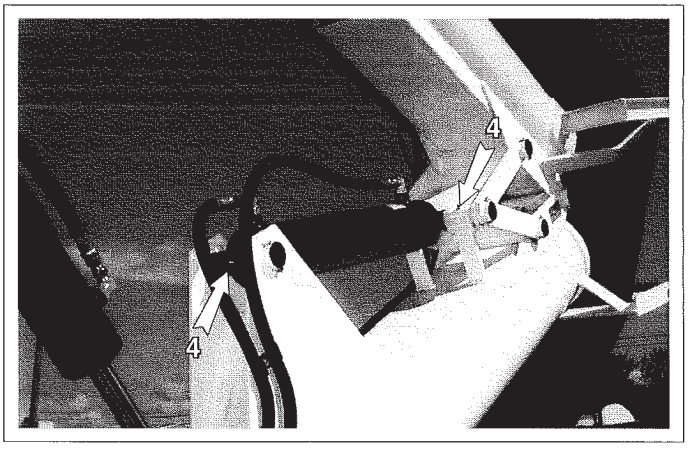


Fig. 29 UNFOLD/FOLD CYLINDER

5. Grease swing cylinder end bushings.

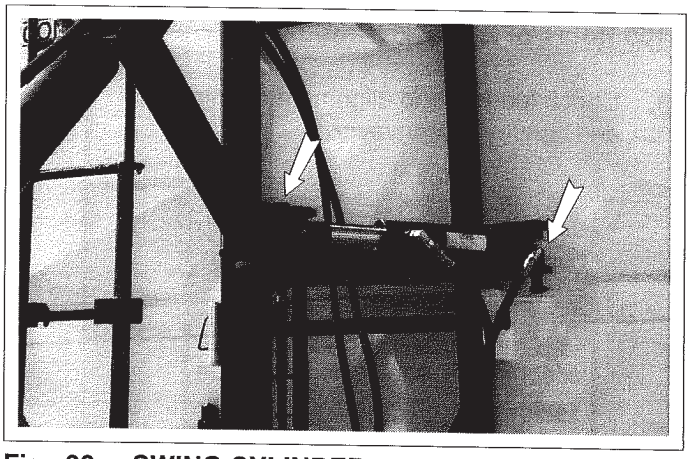
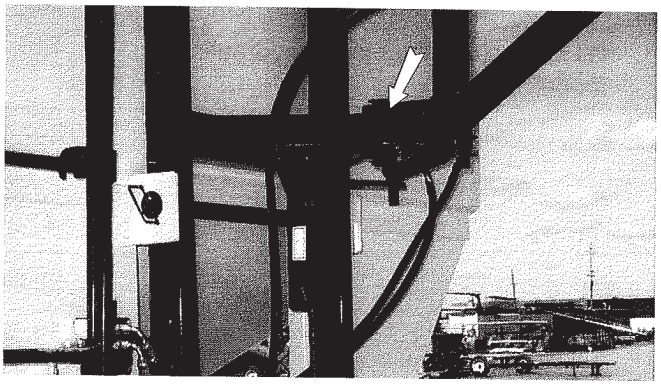


Fig. 30 SWING CYLINDER

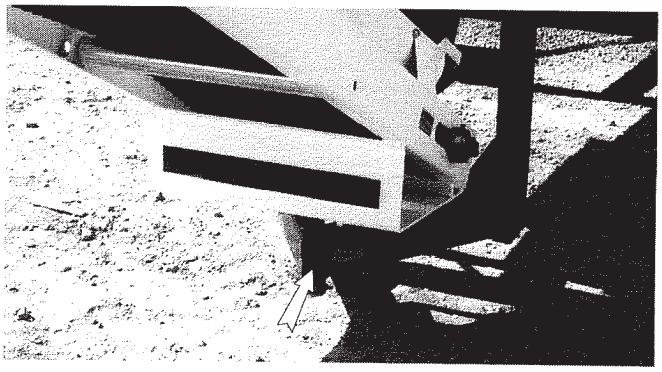
6. Grease raise/lower cylinder end bushings.

Fig. 31 RAISE/LOWER CYLINDER

7. Grease unloading conveyor frame pivot bushings.



Top



Bottom

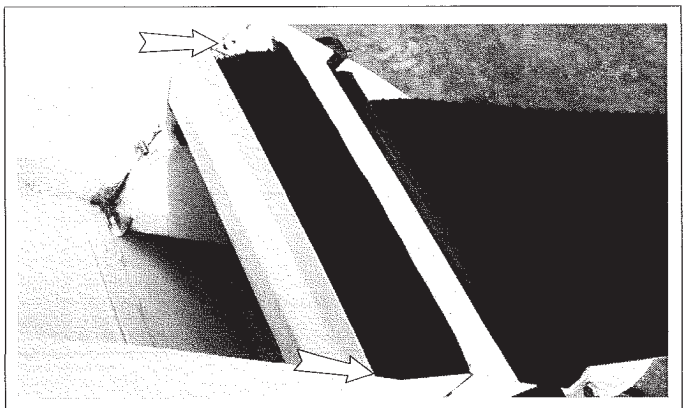
Fig. 32 UNLOADING FRAME PIVOT BUSHINGS

100 Hours or Bi-weekly

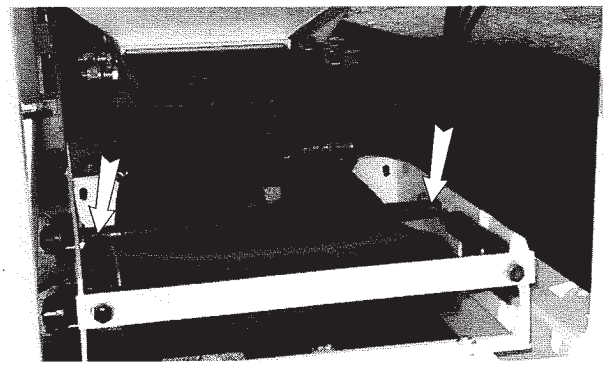
1. Check tension and alignment of unloading and conveying conveyor.

⚠ WARNING

Machine is shown with guards opened or removed for illustrative purposes only. Never operate machine with access guards opened or removed.



Unloading



Conveying

Fig. 33 CONVEYORS

400 Hours or Annually

1. Oil roller chain coupler on hydraulic model.

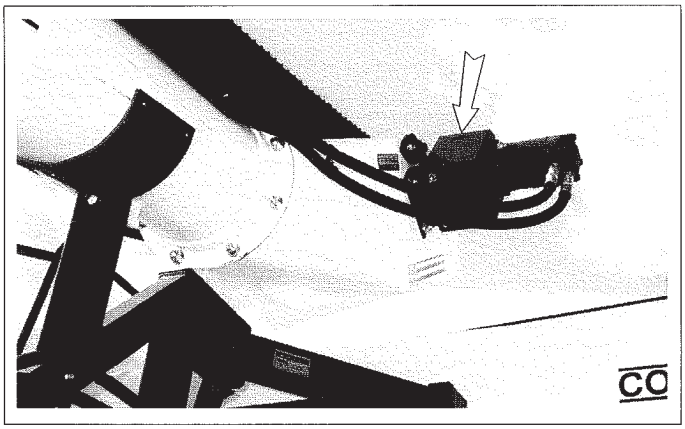


Fig. 34 ROLLER CHAIN COUPLER

2. Wash machine.

Fig. 35 WASH MACHINE

5.1.4 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

ACTION CODE:

CL CLEAN	R REMOVE	CH Change
G GREASE	CK CHECK	RE Repack

HOURS / SERVICED BY / MAINTENANCE														
8 Hours or Daily														
CK	Drive Chain Tension and Alignment													
50 Hours or Weekly														
G	Unloading Conveyor Roller Bearings													
	Drive End (2 locations)													
	Idler End (2 locations)													
G	Conveying Conveyor Roller Bearings													
	Drive End (2 Shafts)													
	Idler End (w Shafts)													
G	Discharge Gate Cylinder End													
	(2 Locations each Gate)													
G	Unfold/Fold Cylinder End Bushings													
	(2 Locations on Cylinder)													
G	Swing Cylinder End Bushings													
G	Raise/Lower Cylinder End Bushings													
G	Unloading Conveyor Frame Pivot													
	Bushings													
100 Hours or Bi-weekly														
CK	Tension and Alighnment on													
	Unloading and Conveying Conveyor													
400 Hours or Annually														
G	Roller Chain Coupler (Hydraulic Model)													
CL	Machine													

5.2 MAINTENANCE

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble-free service.

5.2.1 UNLOADING CONVEYOR DRIVE CHAIN

The unloading conveyor is driven by a roller chain from the motor. The chain is tightened by moving the motor mounting bolts.

Loosen the mounting bolts when replacing the chain. Always close and secure the guard before resuming work.

a. Loosen hydraulic motor anchor bolts.

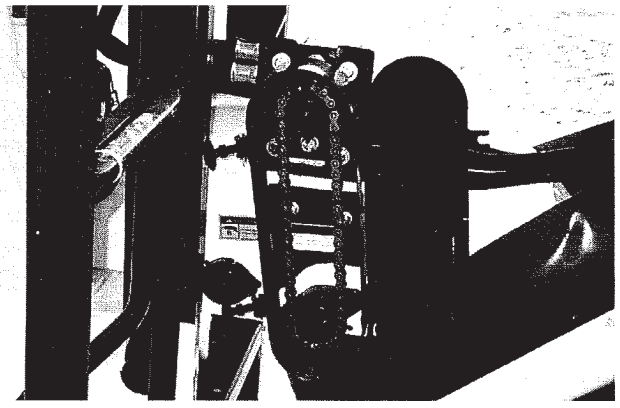
b. Move the motor and sprockets to set the chain tension.

c. Tighten anchor bolts.

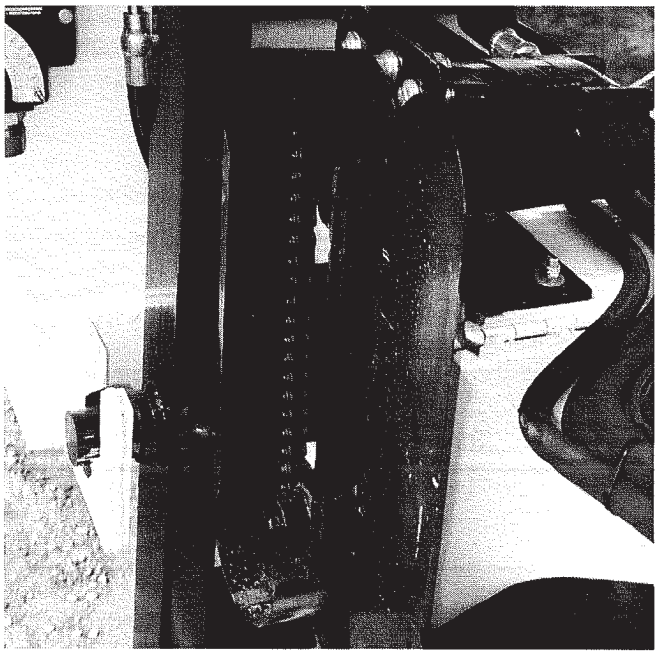
⚠ WARNING

Machine is shown with guards opened or removed for illustrative purposes only. Never operate machine with access guards opened or removed.

Always check the sprocket alignment when replacing the chain.



Chain



Alignment (Typical)

Fig. 36 ROLLER CHAIN DRIVE

5.2.2 UNLOADING CONVEYOR BELT TENSION/ALIGNMENT OR REPLACEMENT

A flat belt is used to move material from the conveying conveyor into a drill, planter or spreader. The tension and alignment of the belt should be checked daily to insure proper function. Replace the belt when damaged or badly worn. To maintain belt, follow this procedure:

1. Place all controls in their OFF or neutral position.

2. Stop engine, remove ignition key and lockout.

3. **Tension:**
   It is tensioned correctly when the belt does not slip on the drive roller when loaded.

   a. Loosen the idler shaft bearing housing anchor bolts.

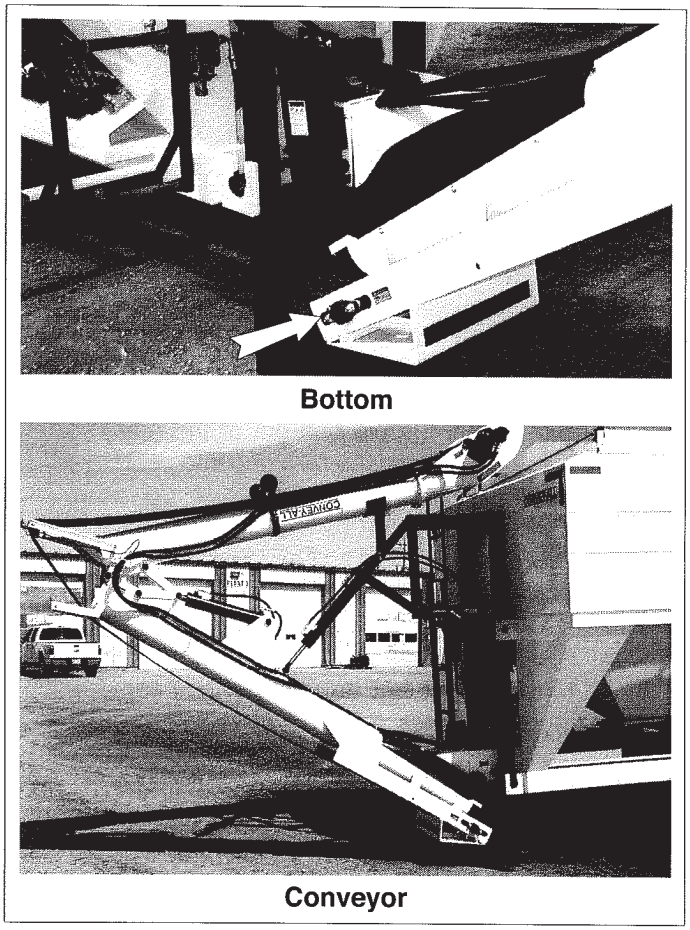
   b. Loosen adjusting bolt jam nut.

   c. Turn adjusting bolt to move shaft to desired position.

   d. Tighten jam nut and anchor bolts to their specified torque.

   e. Repeat with other side to maintain belt alignment.

   f. Measure the position to be sure.



Bottom

Conveyor

Fig. 37 TENSION ADJUSTING (TYPICAL)

4. **Alignment:**
It is properly aligned when the belt runs in the center of the frame and the shafts. Be sure to run the conveyor a full revolution to check the entire belt. The belt can move from side-to-side while it is turning as long as it doesn't contact the sides. If it contacts the sides, it must be aligned. Align by loosening the shaft bearing assembly on the tight side or tightening the bearing assembly on the loose side. Move the bearing assemblies on either the drive or driven shafts to align the conveyor but always maintain the proper tension.

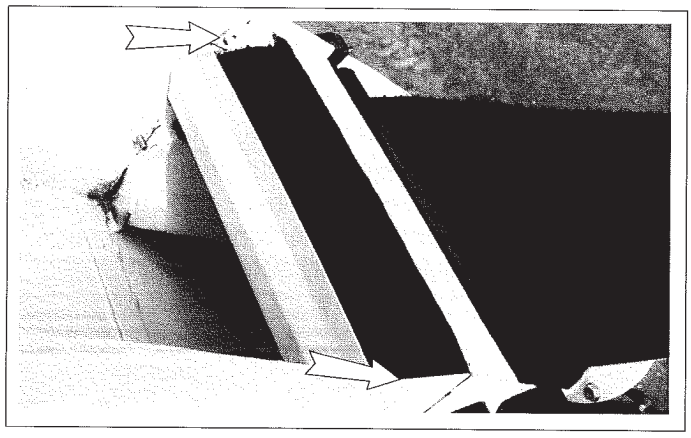


Fig. 38 CONVEYOR ALIGNMENT (TYPICAL)

5. **Replacement:**
   a. Move the bottom shaft into its loosest position.

   b. Open the conveyor by removing the connecting rod on the belt

   c. Attach the replacement belt to the end of the old conveyor.

   d. Slowly pull the old belt out of the machine and thread the new one into position.

   e. Disconnect the old belt and connect the ends of the new one together.

   f. Move the shafts into position to set the tension of the belt and secure the bearing assemblies.

   9. Check the tension and alignment of the conveyor frequently during the first 10 hours of operation and set as required. Then, go to the regular maintenance schedule. Normally a conveyor will seat itself during the first 10 hours of operation and then require less or no adjustment.

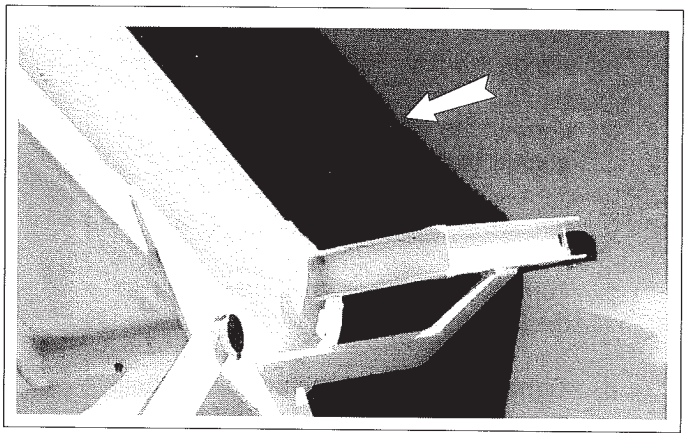


Fig. 39 BELT CONNECTOR (TYPICAL)

5.2.3 CONVEYING CONVEYOR BELT TENSION/ALIGNMENT OR REPLACEMENT

A flat belt is used to move material from the compartment/bin into the unloading conveyor. The tension and alignment of the belt should be checked daily to insure proper function. Replace the belt when damaged or badly worn. To maintain belt, follow this procedure:

1. Place all controls in their OFF or neutral position.

2. Stop engine, remove ignition key and lock-out.

3. **Tension:**
   It is tensioned correctly when the belt does not slip on the drive roller when loaded.

   a. Loosen the idler shaft bearing housing anchor bolts.

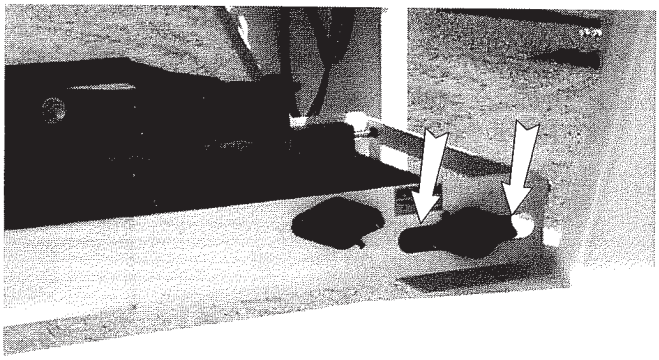
   b. Loosen adjusting bolt jam nut.

   c. Turn adjusting bolt to move shaft to desired position.

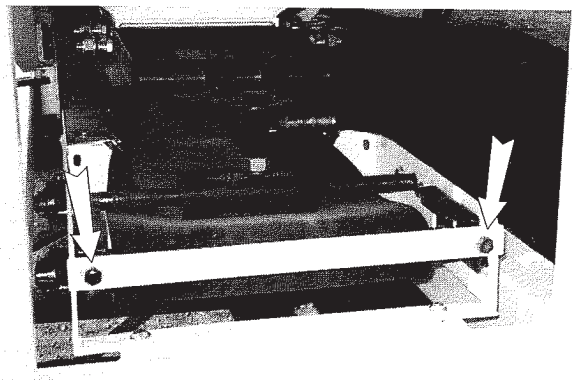
   d. Tighten jam nut and anchor bolts to their specified torque.

   e. Repeat with other side to maintain belt alignment.

   f. Measure the position to be sure.



Bearing Anchor Bolts



Adjusting Bolts

Fig. 40 TENSION ADJUSTING (TYPICAL)

4. **Alignment:**
It is properly aligned when the belt runs in the center of the frame and the shafts. Be sure to run the conveyor a full revolution to check the entire belt. The belt can move from side-to-side while it is turning as long as it doesn't contact the sides. If it contacts the sides, it must be aligned. Align by loosening the shaft bearing assembly on the tight side or tightening the bearing assembly on the loose side. Move the bearing assemblies on either the drive or driven shafts to align the conveyor but always maintain the proper tension.

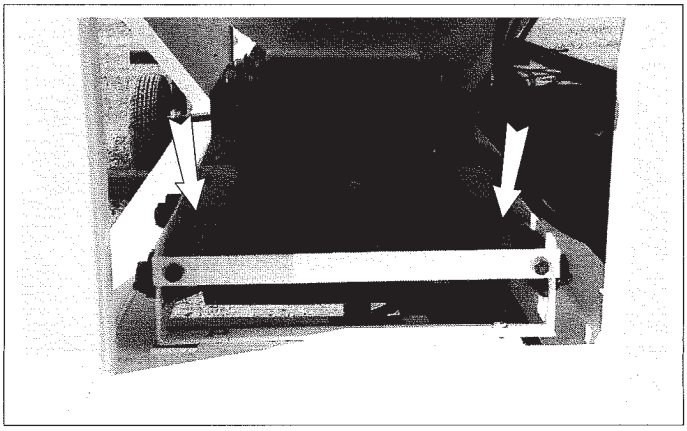


Fig. 41 CONVEYOR ALIGNMENT (TYPICAL)

5. **Replacement:**
   a. Move the bottom shaft into its loosest position.

   b. Open the conveyor by removing the connecting rod on the belt

   c. Attach the replacement belt to the end of the old conveyor.

   d. Slowly pull the old belt out of the machine and thread the new one into position.

   e. Disconnect the old belt and connect the ends of the new one together.

   f. Move the shafts into position to set the tension of the belt and secure the bearing assemblies.

   9. Check the tension and alignment of the conveyor frequently during the first 10 hours of operation and set as required. Then, go to the regular maintenance schedule. Normally a conveyor will seat itself during the first 10 hours of operation and then require less or no adjustment.

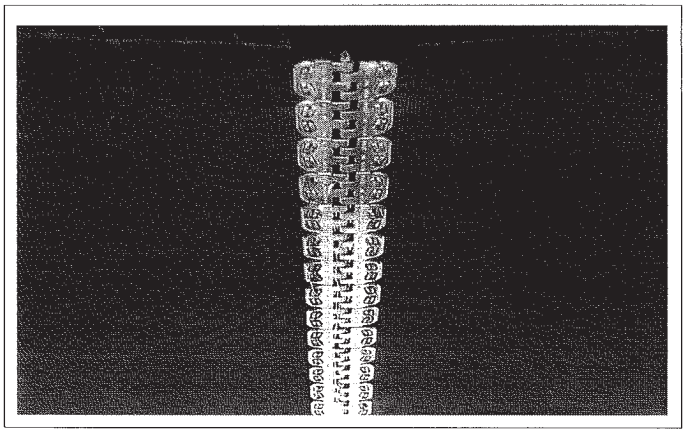


Fig. 42 BELT CONNECTOR (TYPICAL)

6 TROUBLE SHOOTING

The Convey-All Seed Tender uses a belt conveyor to move seed from boxes/bins into a drill, planter or spreader. It is a simple machine that requires minimum maintenance.

In the following trouble shooting section, we have listed many of the problems, causes and solutions to the problems which you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please contact your authorized dealer, distributor or the factory. Before you call, please have this Operator's Manual and the serial number from your machine ready.

PROBLEM	CAUSE	SOLUTION
Truck won't start.	No fuel.	Fill the fuel tank.
	Battery dead.	Recharge or replace battery.
	Engine problem.	Refer to engine manual.
Conveyors won't turn	No power.	Start engine, increase speed above 1400 RPM and engage hydraulic system.
	Drive belt slipping.	Tighten drive belt.
	No hydraulic power.	Open flow divider valve.
	Power not engaged.	Place control valve in detent.
	Unloading conveyor frame not fully extended.	Extend frame completely.

7 SPECIFICATIONS

7.1 MECHANICAL

CST Specifications										
Model	Length In Feet	Total Cubic Feet (Bu.)	Total Tons* (Tonnes)	Number, Size of Compart-ments	Cubic Feet Per Compart-ment	Tons Per Compart-ment*	Conveyor Length	Discharge Height**	Body Width	Overall Height
CST-16	16	608 (490)	18.24 (16.55)	2 - 8'	8' = 304	9.12	20'	10' TO 14'	8'	9' 10"
CST-18	18	684 (550)	20.52 (18.62)	3 - 6'	6' = 228	6.84	20'	10' TO 14'	8'	9' 10"
CST-20	20	760 (610)	22.80 (20.68)	2 - 6' & 1 - 8'	6' = 228 8' = 304	6.84 9.12	20'	10' TO 14'	8'	9' 10"
CST-32	32	1216 (975)	36.48 (33.09)	4 - 8'	8' = 304	9.12	20'	10' TO 14'	8'	9' 10"

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

7.2 HYDRAULIC FITTING TORQUE

TIGHTENING FLARE TYPE TUBE FITTINGS *

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the toque shown.

* The torque values shown are based on lubricated connections as in reassembly.

Tube Size OD (in.)	Nut Size Across Flats (in.)	Torque Value* (N.m)	Torque Value* (lb-ft)	Recommended Turns To Tighten (After Finger Tightening) (Flats)	Recommended Turns To Tighten (After Finger Tightening) (Turn)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	**11/16**	**24**	**18**	**1**	**1/6**
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

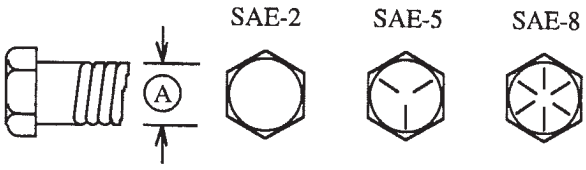
7.3 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

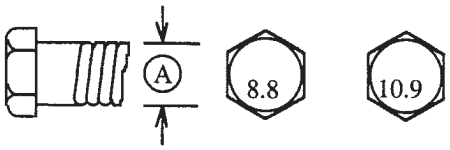
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2		SAE 5		SAE 8	
	(N.m)	(lb-ft)	(N.m)	(lb-ft)	(N.m)	(lb-ft)
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8		10.9	
	(N.m)	(lb-ft)	(N.m)	(lb-ft)
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

8 INDEX

I PAGE

Introduction....1

M

Maintenance....36

O

Operation....14
- Controls....17
- Field Operation....20
- Machine Break-In....18
- Machine Components....15
- Pre-Operation Checklist....16
- Storage....29
- To the New Operator or Owner....14

S PAGE

Safety....2
- Equipment Safety Guidelines....4
- General Safety....3
- Hydraulic Safety....8
- Maintenance Safety....7
- Operating Safety....7
- Preparation....6
- Safety Training....5
- Safety Signs....5
- Sign-Off Form....9
- Transport Safety....8

Safety Sign Locations....10
Service and Maintenance....30
- Maintenance....36
- Service....30

Specifications....42
- Bolt Torque....43
- Hydraulic....42
- Mechanical....42

T

Trouble Shooting....41

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