UNLOADING CONVEYOR WITH STINGER(S) MODEL 2000 SERIES
OPERATOR'S MANUAL
MAYO MANUFACTURING, INC. LIMITED WARRANTY

THE FOLLOWING WARRANTIES FOR MACHINERY, EQUIPMENT OR PARTS SOLD BY MAYO MANUFACTURING, INC. ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, OR THOSE WARRANTIES IMPOSED BY STATUTE, INCLUDING, BUT NOT LIMITED TO ANY AND ALL IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND OF ANY AND ALL OTHER WARRANTY OBLIGATIONS ON THE PART OF MAYO MANUFACTURING, INC. (The Company).

The Company warrants the machinery, equipment or parts delivered against faulty workmanship or the use of parts delivered against faulty workmanship or the use of defective materials for a period of one (1) year from the date of shipment.

The Company's warranties set forth above are the only warranties made by the Company and shall not be enlarged, diminished or affected by, and no obligation or liability shall arise out of the Company's rendering technical or other advice or service in connection with the machinery, equipment or parts.

Parts or components furnished to the Company by third persons are guaranteed only to the extent of the original manufacturer's guarantee to the Company, a copy of which will be supplied to the Purchaser upon written request to the Company.

LIABILITY

THE COMPANY'S SOLE AND EXCLUSIVE MAXIMUM LIABILITY, AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY under the above warranty shall be, at the Company's option, the repair, or replacement of the machine, equipment or part which is found to be defective due to faulty workmanship or defective materials, and is returned by the Purchaser to the Company within the warranty period. Shipment both ways and in transit damage shall be at the purchaser's risk and expense. If the Company elects to repair or replace the machine, equipment, or part, the Company will have a reasonable time within which to do so.

The remedies set forth above are available upon the following conditions:

1. Purchaser has promptly notified Company upon discovery that the machinery, equipment, or parts are defective due to faulty workmanship or defective materials; and
2. Purchaser provides Company with a detailed description of the deficiencies; and
3. Company's examination discloses that the alleged deficiencies exist and were not caused by accident, fire, misuse, neglect, alteration, or any other hazard or by Purchaser's improper installation, use or maintenance.

Such repair or replacement shall constitute fulfilment of all Company's liability to Purchaser, whether based on contract or tort.

This warranty does not apply to any machine that has been altered outside the factory in any way so as, in the judgement of Mayo, to affect its operation, reliability or safety, or which has been subject to misuse, neglect or accident.

In the event the Company breach any other provisions of the Purchase Agreement, the Company's EXCLUSIVE MAXIMUM LIABILITY AND PURCHASER'S EXCLUSIVE REMEDY, whether in contract or tort, otherwise shall not in any event exceed the contract price for the particular machine, piece of equipment or parts involved.

IN NO EVENT SHALL COMPANY BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY PROVISIONS OF THIS CONTRACT OR WARRANTY. SUCH EXCLUDE DAMAGES INCLUDE, BUT ARE NOT LIMITED TO, costs of REMOVAL AND REINSTALLATION OF ITEMS, Loss of GOODWILL, LOSS OF PROFITS, LOSS OF USE OR INTERRUPTION OF BUSINESS.

WARRANTY VOID IF NOT REGISTERED
MAYO
STINGER 2000 SERIES

WARRANTY REGISTRATION FORM & INSPECTION REPORT

WARRANTY REGISTRATION   (please print)
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 ____________________________  Dealer Name ____________________________
Address ____________________________
City, State/Province, Code ____________________________
Phone Number ( ___ ) ____________________________  Phone Number ( ___ ) ____________________________
Contact Name ____________________________
Model ____________________________
Serial Number ____________________________
Delivery Date ____________________________

DEALER INSPECTION REPORT
   ___ Inspect Electrical System
   ___ Hydraulic Hoses Free
   ___ Hydraulic Fittings Tight
   ___ Lubricate Machine
   ___ Conveyor Tensioned and Aligned
   ___ Roller Chains Tensioned and Aligned
   ___ Speed Reducer Gearbox Oil Level Checked

SAFETY
   ___ All Decals Installed
   ___ Lights, Reflectors and SMV Clean
   ___ Review Operating and Safety Instructions

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
MAYO MFG., INC     DEALER     CUSTOMER
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SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Mayo Stinger 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.

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![Image showing serial number location]
1 INTRODUCTION

Congratulations on your choice of a Mayo Model 2000 Series Stinger with unloading conveyor and welcome to Mayo's quality line of potato handling equipment. This equipment is designed and manufactured to meet the needs of a discriminating buyer in the agricultural industry for the loading, unloading, processing and storing of harvest yields.

Safe, efficient and trouble free operation of your new Mayo Stinger with unloading conveyor requires that you, and anyone else who will be operating or maintaining the machine, read, understand and practice ALL of the Safety, Operation, Maintenance and Trouble Shooting recommendations contained within this Operator's Manual.

This manual applies to all Model 2000 Series Stingers with unloading conveyor manufactured by Mayo. Certain options may be available to specifically tailor the Stinger to your operation and may not be included in this manual. Please contact the manufacturer regarding additional information about these options. Use the Table of Contents and Index as a guide to find specific information. Since the Stinger is always attached to another machine (in this case an unloading conveyor), use this manual in conjunction with the manual for the other machine to learn how to operate it properly and safely.

Keep this manual handy for frequent reference and so that it will be passed on to new operators or owners. Call your Mayo dealer if you need assistance, information or additional copies of this manual.

MACHINE ORIENTATION - The hopper end of the conveyor is the front. All electrical and hydraulic controls are on the left side.
SAFETY ALERT SYMBOL

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

The Safety Alert symbol identifies important safety messages on your Mayo Stinger with unloading conveyor 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 You Money
Accidents Can Be Avoided

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 that, 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.

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 guidelines:

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or Mayo, P.O. Box 497, Bus Highway 2, East Grand Forks, Minnesota, 56721. (Telephone) 218-773-1234, (FAX) 218-773-6693 or toll free at 1-800-223-5873.
SAFETY

YOU are responsible for the SAFE operation and maintenance of your Mayo Stinger with unloading conveyor. YOU must ensure that you and anyone else who is going to operate, maintain or work around the Stinger with unloading conveyor 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 while operating the Stinger with unloading conveyor.

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 machine is familiar with the procedures recommended and follows safety precautions. Remember, most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

• Stinger with unloading conveyor 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 device on this equipment is a SAFE operator. It is the operator’s responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.

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

• Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.

• Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

1. Read and understand the Operator’s Manual and all safety signs before supplying power, operating, maintaining or adjusting Stinger with unloading conveyor.

2. Only trained, competent persons shall operate the Stinger with unloading conveyor. An untrained operator is not qualified to operate this machine.

3. Provide a first-aid kit for use in case of an accident. Store in a highly visible place.

4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.

5. Install and properly secure all guards and shields before operating.

6. Wear appropriate protective gear. This list includes but is not limited to:
   - Protective shoes with slip resistant soles
   - Protective glasses or goggles
   - Heavy gloves
   - Hearing protection

7. Turn machine OFF, shut down and lockout power supply, relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining, repairing or cleaning. (Safety lockout devices are available through your Mayo dealer parts department).

8. Know the emergency medical center number for your area.

9. Review safety related items with all operators annually.
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 STORAGE SAFETY

1. Store the Stinger with unloading conveyor on a firm level surface.

2. If required, make sure the unit is firmly blocked up.

3. Make certain that all mechanical locks are safely and positively connected before storing.

4. Store away from areas of human activity.

5. Do not allow children to play on or around the stored Stinger with unloading conveyor.

6. Lock out power by turning off master control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start up of the Stinger with unloading conveyor.
2.4 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 pilers, 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.

2.5 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 displayed in Section 3 each have a part number in the lower right hand corner. Use this part number when ordering replacement parts.

5. 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.
2.6 PREPARATION

1. Never operate the Stinger with unloading conveyor 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 Stinger with unloading conveyor 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, 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.
2.7 INSTALLATION SAFETY

1. Disconnect and remove all mechanical locks, anchor chains and any other transport devices that would hinder or prohibit the normal functioning of the Stinger with unloading conveyor upon start up. Serious damage to the machine and/or personal injury to the operator and bystanders may result from attempting to operate the machine while mechanical locking devices are still attached.

2. Position the machine on firm, level ground before operating.

3. Extend leg ratchets to level the frame before loading. Use a level to be sure.

4. Have at least one extra person available to assist when elevating, moving or connecting to other equipment.

5. Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. If you are uncertain, have a licensed electrician provide power to the machine.

6. If using Stinger with unloading conveyor as part of material handling system, anchor securely to other equipment before starting.

2.8 LOCK-OUT TAG-OUT SAFETY

1. Establish a formal Lock-Out Tag-Out program for your operation.

2. Train all operators and service personnel before allowing them to work around the Stinger with unloading conveyor.

3. Provide tags at the work site and a sign-up sheet to record tag out details.

4. Do not perform any service or maintenance work unless motors are OFF and the power locked out at the master panel. Keep others away.

2.9 OPERATING SAFETY

1. Read and understand the Operator’s Manual and all safety signs before operating, maintaining, adjusting or repairing the Stinger with unloading conveyor.

2. Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.

3. Install and properly secure all guards and shields before operating.

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

5. Clear the area of bystanders, especially small children, before starting.

6. Make sure all control switches are in the off position before connecting power supply.

7. Extend leg ratchets to level the frame before using.

8. Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it. If you do not know or are unsure, consult a licensed electrician.

9. Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.

10. Do not stand between the frame and other structures when raising or swinging the Stinger. Keep others away.

11. Keep the working area clean and dry.

12. Review safety instructions annually.
2.10 MAINTENANCE SAFETY

1. Read and understand all the information contained in the Operator's Manual regarding operating, servicing, adjusting, maintaining and repairing.

2. Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.

3. Exercise extreme caution when working around, or with, high-pressure hydraulic systems. Depressurize the system before working on it.

4. 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.

5. Wear heavy gloves and eye protection when searching for suspected hydraulic leaks. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak. A high pressure concentrated stream of hydraulic fluid can pierce the skin. If such happens, seek immediate medical attention as infection and toxic reaction could develop.

6. Make sure all guards and doors are in place and properly secured when operating the Stinger with unloading conveyor.

7. Do not work on Stinger with unloading conveyor electrical system unless the power cord is unplugged or the power supply is locked out. Lock-out tag-out power source before performing any maintenance work.

2.11 HYDRAULIC SAFETY

1. Make sure that all the components in the pump system are kept in good condition and are clean.

2. Before applying pressure to the system, make sure all components are tight, and that lines, hoses and couplings are not damaged.

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

4. 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.

5. 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.
2.12 ELECTRICAL SAFETY

1. Have only a qualified licensed electrician supply power.

2. Make certain that the Stinger with unloading conveyor is properly grounded at the power source.

3. Make certain that all electrical switches are in the OFF position before plugging the Stinger with unloading conveyor in.

4. Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.

5. Disconnect power before resetting any motor or breaker overload.

6. Replace any damaged electrical plugs, cords, switches and components immediately.

7. Do not work on Stinger with unloading conveyor electrical system unless the power cord is unplugged or the power supply is locked-out tagged-out.

2.13 TIRE SAFETY

1. Inflate tires to proper pressure as specified on the side wall of each tire. Do not overinflate or underinflate.

2. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

3. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

4. Have a qualified tire dealer or repair service perform required tire maintenance.

5. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

6. Secure Stinger with unloading conveyor anchor chains to prevent swinging before moving or transporting.

7. Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.

8. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).

9. Do not exceed 15 MPH (25 Km/H). Reduce speed on rough roads and surfaces.

10. Do not allow anyone to ride on the Stinger with unloading conveyor or towing vehicle during transport.

11. Always use hazard flashers on the towing vehicle when transporting.

2.14 TRANSPORT SAFETY

1. Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.

2. Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not underinflate or overinflate.

3. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).

4. Secure Stinger with unloading conveyor anchor chains to prevent swinging before moving or transporting.

5. Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.

6. Raise and secure all jack stands if applicable.

7. Wrap up and bind to the frame all loose hydraulic and electrical ends.

8. Be sure that any necessary SMV (slow moving vehicle) signs, reflectors and lights required by law are in proper place and are clearly visible to oncoming and overtaking traffic.

9. Be sure that the machine is positively hitched to the towing vehicle. Use a safety chain to assure a safe hitch hook-up when transporting.

10. Adhere to local regulations regarding maximum weight, width and length.

11. Do not exceed 15 MPH (25 Km/H). Reduce speed on rough roads and surfaces.

12. Do not allow anyone to ride on the Stinger with unloading conveyor or towing vehicle during transport.

13. Always use hazard flashers on the towing vehicle when transporting.
2.15 EMPLOYEE SIGN-OFF FORM

Mayo Manufacturing, Inc. 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 a Mayo built machine 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**

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<tr>
<th>DATE</th>
<th>EMPLOYEE'S SIGNATURE</th>
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3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustrations that follow. 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.

- Think SAFETY! Work SAFELY!

REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.
The types of safety signs and locations on the equipment are shown in the illustrations that follow. 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.

- Think SAFETY! Work SAFELY!

REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.
The types of safety signs and locations on the equipment are shown in the illustrations that follow. 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.

- Think SAFETY! Work SAFELY!

### WARNING

**HIGH-PRESSURE FLUID HAZARD**

To prevent serious injury or death from high-pressure fluid:

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

REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.
The types of safety signs and locations on the equipment are shown in the illustrations that follow. 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.

- Think SAFETY! Work SAFELY!

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

OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Stinger with unloading conveyor.

2. Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.

3. Install and properly secure all guards and shields before operating.

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

5. Clear the area of bystanders, especially small children, before starting.

6. Make sure all control switches are in the off position before connecting power supply.

7. Extend leg ratchets to level the frame before using.

8. Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it. If you do not know or are unsure, consult a licensed electrician.

9. Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.

10. Do not stand between the frame and other structures when raising or swinging the Stinger. Keep others away.

11. Keep the working area clean and dry.

12. Review safety instructions annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Stinger with unloading conveyor is designed to move harvest yields from a truck into a conveying system. 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.

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 Stinger with unloading conveyor will provide many years of trouble-free service.
4.2 MACHINE COMPONENTS

The Mayo Manufacturing Stinger with unloading conveyor is always attached to and part of another main machine and is used to load potatoes into the machine. It consists of a hopper and short elevating conveyor that normally is used to unload trucks.

Power is provided by an electric motor through a gearbox. A belted or rod conveyor can be used in the machine.

An independent hydraulic system typically is used to raise or lower the hopper to minimize the drop height from the truck. The controls are mounted on the left side of the frame. Optional power outlets can be provided on the side of the frame to run the truck unloading system.

Additional optional features can be incorporated into the Stinger per customer requirements.

Fig. 1 MACHINE COMPONENTS

A Mounting Frame
B Hopper
C Elevator
D Conveyor Drive
E Electric Control Panel
F Hydraulic Control Panel
G Input Drive
H Hydraulic Power Pack
J Belt Conveyor
K Rod Conveyor
4.3 GENERAL OPERATION THEORY

The Stinger with unloading conveyor is typically mounted to another main machine. It is used for unloading trucks and conveying the harvest yields into the main machine.

Potatoes (or other products) are discharged into the hopper from the truck and conveyed into the main machine on a belted conveyor or potato chain. The frame height is adjustable to minimize drop height when unloading.

The Stinger with unloading conveyor is welded to the frame of the main machine to keep it secure. It can be mounted to pivot and swing from side-to-side to accommodate most any application. Main machines can range from conveyors, grading tables or any piece of equipment in a conveying system.
4.4 MACHINE BREAK-IN

Although there are no operational restrictions on the Stinger with unloading conveyor when used for the first time, it is recommended that the following mechanical items be checked:

A. Read Stinger with unloading conveyor and main equipment manuals before starting.

B. After operating for 1/2 hour:
   1. Retorque all fasteners and hardware.
   2. Check that all electrical connections are tight and cords are routed out of the way or protected.
   3. Check for leaks in hydraulic system. Retorque fittings that leak.
   4. Check that no hydraulic lines are being pinched or crimped. Reroute as required.
   5. Check the alignment and conveyor tension of the belt or rod. Realign or tighten as required.
   6. Check oil level in hydraulic power pac reservoir. Top up as required.
   7. Check oil level in the speed reduction gear box(s). Top up as required.
   8. Lubricate all grease fittings.

C. After 2, 5 and 10 hours of operation:
   1. Retorque all fasteners and hardware.
   2. Check that all electrical connections are tight and cords are routed out of the way or protected.
   3. Check for leaks in hydraulic system. Retorque fittings that leak.
   4. Check that no hydraulic lines are being pinched or crimped. Reroute as required.
   5. Check the alignment and conveyor tension of the belt or rod. Realign or tighten as required.
   6. Check oil level in the speed reduction gear box(s). Top up as required.
   7. Then go to the regular servicing and maintenance schedule as defined in the Maintenance Section.

4.5 PRE-OPERATION CHECKLIST

Safe and efficient operation of your new Stinger with unloading conveyor requires that each operator reads and follows all safety precautions and operating procedures contained in this section. Performing the following pre-operation checklist is important for personal safety as well as for continued mechanical soundness and longevity of your new Mayo conveyor. The checklist should be performed before operating the conveyor and prior to each operation thereafter.

1. Lubricate the machine according to the schedule prescribed in the "Maintenance Section".
2. Insure that proper protective gear is in good repair and available for use by each operator. Make certain that each operator uses the protective gear. Protective gear includes but is not limited to:
   - Leather gloves
   - Safety glasses or face shield
   - Full length protective clothing
   - Steel toed boots with slip resistant soles.

3. Check for hydraulic leaks. Tighten fittings or reroute hoses as required to maintain a leak-free system.
4. Insure that all safety guards and shields are in good repair and securely in place.
5. Check that the conveyor belt or chain is centered on the head and tail rollers. Adjust if necessary as outlined in the "Maintenance Section".
6. Make sure that all electrical switches are in the OFF position before supplying power.
7. Check that all electrical connections are tight and cords are routed out of the way or protected.
8. Be sure the working area is clean and dry to prevent tripping or slipping.
4.6 CONTROLS

It is recommended that all operators review this section of the manual to familiarize themselves with the location and function of all machine controls before starting. Some machines may vary slightly due to custom features but they are similar and all controls are labelled.

1. Operational Controls:
   Operational controls for the stinger are located on the top of the frame.
   a. **Stinger STOP/START:**
      These 2 position rotary switches control the power to the stinger conveyor. Turn counterclockwise to STOP the stinger conveyor and clockwise to START and run.
   b. **Stinger Height:**
      This hydraulic valve is used to set the height of the stinger hopper. Move the lever up to raise the hopper and down to lower. Always raise the hopper to its highest position without interfering with the truck to minimize the drop height.

**NOTE**

The pump control switch must be turned on at the master panel to provide oil to the valve.
2. **Ratchet Jacks:**
Ratchet jacks are located in the frame to allow the operator to change the frame position appropriately for their own specific application. Generally 2 jacks are used to control the frame evenly. Extend or retract the jack as required.

a. Stinger vertical frame.

b. Stinger lateral position.

![Fig. 5 RATCHET JACKS](image)

3. **Master Control Panel:**

a. This 2 position rotary switch controls the power to the hydraulic pump power pac. Turn counterclockwise to STOP the pump and clockwise to START and run.

b. This 2 position rotary switch controls the power to the conveyor drive motor. Turn counterclockwise to STOP the motor and clockwise to START and run.

4. **Emergency Stop:**

This red push-pull switch is the master ON/OFF switch on the panel itself and should be used as an emergency shut down switch. Push the switch in to turn all the power off. The switch will remain in unless pulled out. It must be pulled out for any of the other controls to work.

![Fig. 6 CONTROL PANEL](image)
5. **Tractive Drive (Optional):**
   This 3 lever hydraulic bank controls the oil flow to the optional tractive drive system. The pump must be on the tractive drive to run.
   
a. This lever controls the steer left function. Move the lever up and hold to turn the wheels to the left. Release the lever when the wheels are at the desired angle.
   
b. This lever controls the flow of oil to the drive motor. Move the lever up and hold to move in the forward direction. Move down and hold to move in reverse. Release the lever and the unit will stop moving.
   
c. This lever controls the steer right function. Move the lever up and hold to turn the wheels to the right. Release the lever when the wheels are at the desired angle.
4.7 MACHINE INSTALLATION AND PREPARATION

The machine must be properly prepared prior to using. Before starting machine, be sure that the following items are appropriate for your machine and operating requirements:

1. **Power:**
   - Have a licensed electrician provide power at the required voltage, phase and amperage for your machine. An improper source of power will cause damage to electrical components and could create an electrical hazard to the operator, worker or bystanders.

   Be sure to use an extension cord of the correct specifications for the power being carried. Route the cord so that it does not interfere with the working area. Provide appropriate protection when people or equipment must go over the cord. Inspect the cord occasionally to be sure it is not damaged. Replace immediately if it is damaged.

2. **Machine Position:**
   - If your Stinger can swing, use the anchor chains to position the frame where required for your application. Do not allow the frame to swing into other equipment.

3. **Hitch:**
   - Always place the hitch into its retracted position to reduce the chance of tripping or interfering with another machine.

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Fig. 8 ANCHOR CHAINS

Fig. 9 RETRACTED HITCH
4.8 OPERATING

OPERATING SAFETY

1. Read and understand the Operator’s Manual and all safety signs before operating, maintaining, adjusting or repairing the Stinger with unloading conveyor.

2. Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.

3. Install and properly secure all guards and shields before operating.

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

5. Clear the area of bystanders, especially small children, before starting.

6. Make sure all control switches are in the off position before connecting power supply.

7. Extend leg ratchets to level the frame before using.

8. Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it. If you do not know or are unsure, consult a licensed electrician.

9. Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.

10. Do not stand between the frame and other structures when raising or swinging the Stinger. Keep others away.

11. Keep the working area clean and dry.

12. Review safety instructions annually.

Follow this procedure when using the Stinger with unloading conveyor:

1. Review Section 4.7 Machine Preparation and follow all the instructions.

2. Review and follow the pre-operation checklist (See Section 4.5).

3. Review the location and function of all controls (See Section 4.6).
4. **Starting Stinger:**
   a. Clear the area of bystanders. Know where everyone is before starting.
   b. Place all controls in the OFF or neutral position.
   c. Turn the power to the machine ON at the master panel.
   d. Turn the main equipment ON that moves potatoes away from the Stinger.
   e. Turn the Stinger ON.
   f. Turn the truck unloading system ON to move potatoes into the hopper.

5. **Stopping Machine:**
   a. Turn OFF the truck unloading system.
   b. Wait until the potatoes have moved off the end of the Stinger.
   c. Turn the Stinger OFF.
   d. Turn the main equipment OFF that moves potatoes away from the Stinger.

6. **Emergency STOP:**
   Turn the Stinger OFF. Depress the red emergency STOP switch on the main panel.
7. **Unloading:**
When unloading potatoes, follow this procedure:

a. Be sure everyone is clear of the machine.

b. Place the unit in its fully down position.

c. Back the truck up to the machine.

d. Be sure the hopper is under the discharge gate of the truck.

e. Start the main machine.

f. Start the Stinger.

g. Raise the hopper as high as possible without interfering with the truck.

h. Open the truck discharge gate and unload the truck.

i. Discharge at a rate appropriate for the main machine.

j. Stop the unloading system when the truck is empty.

k. Close the discharge gate.

l. Stop the Stinger.

m. Lower the Stinger and move out of the way.

n. Stop the main machine and auxiliary equipment.

![Fig. 11 UNLOADING](image-url)
8. **Drop Height:**
   Potatoes are sensitive to bruising during the harvesting, transporting and conveying phases of your operation. Bruising is kept to a minimum by maintaining a full flow of potatoes through each machine and minimizing all drop heights. Raise the hopper as high as possible without interfering with the truck when unloading to keep the drop height to a minimum.

9. **Operating Hints:**
   a. Be sure that all workers and operators are supplied with and use the required safety gear.
   b. Keep the working area clean and dry to prevent slipping and tripping.
   c. Train all operators before starting. An untrained operator is not qualified to operate this machine and can expose himself and others to needless hazards.
   d. Keep the Stinger as full as possible to minimize bruising during the unloading process.
   e. Set the drop height as small as possible to minimize bruising.
TRANSPORT SAFETY

1. Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.

2. Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not underinflate or overinflate.

3. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).

4. Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.

5. Secure Stinger anchor chains to prevent swinging before moving or transporting.

6. Raise and secure all jack stands, if applicable.

7. Wrap up and bind to the frame all loose hydraulic and electrical ends.

8. Be sure that any necessary SMV (slow moving vehicle) signs, reflectors and lights required by law are in proper place and are clearly visible to oncoming and overtaking traffic.

9. Be sure that the machine is positively hitched to the towing vehicle. Use a proper safety chain to assure a safe hitch hook-up when transporting.

10. Adhere to local regulations regarding maximum weight, width and length.

11. Do not exceed 20 MPH (32 Km/H). Reduce speed on rough roads and surfaces.

12. Do not allow anyone to ride on the machine or towing vehicle during transport.

13. Always use hazard flashers on the towing vehicle when transporting.

Stingers are an integral part of another machine. Refer to and follow the Transporting instructions in the manual of the other machine when moving on a public road. When preparing to move or transport, follow these instructions.

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

2. Turn the power OFF at the master panel and lock out.

3. Unplug and remove the power cord.

4. Be sure all bystanders are clear of the machine.

5. Place the hitch into its fully extended position and secure with the pin.
6. Remove the driving roller chain if equipped with optional tractive drive system.

7. Be sure that the Conveyor is hitched positively to the towing vehicle. Always use a safety chain between the machine and the tractor and a retainer on the hitch.

8. Raise the Stinger to its fully up position and attach the anchor chains on each side of the frame to secure in the desired position.
9. Install an SMV on the rear frame.

10. Use pilot vehicles or install extra lights on the machine when transporting.

11. Clean all the reflectors.

12. Be sure all bystanders are clear of the machine.

13. Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.

14. Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.

15. It is not recommended that the machine be transported faster than 15 mph (25 km/hr). Table 1 gives the acceptable transport speed as the ratio of tractor weight to conveyor weight.

16. Do not allow riders on the machine or tractor.

17. Always use hazard flashers on the tractor when transporting unless prohibited by law.

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**Table 1  Travel Speed vs Weight Ratio**

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<td>Up to 25 km/h (15 mph)</td>
<td>1 to 1, or less</td>
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<tr>
<td>Up to 16 km/h (10 mph)</td>
<td>2 to 1, or less</td>
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<td>Do not tow</td>
<td>More than 2 to 1</td>
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4.10 STORAGE

**STORAGE SAFETY**

1. Store the main machine on a firm level surface.
2. If required, make sure the unit is firmly blocked up.
3. Make certain that all mechanical locks and anchor chains are safely and positively connected before storing.
4. Store away from areas of human activity.
5. Do not allow children to play on or around the stored Stinger with unloading conveyor.
6. Lock out power by turning off master control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start up of the Stinger with unloading conveyor.

4.10.1 PLACING IN STORAGE

At the end of the season, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the beginning of the next season. Follow this procedure:

1. Turn the power OFF at the master electrical panel and lock out.
2. Unplug and remove power cord from machine.
3. Lock out power by shutting control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start up of the Stinger with unloading conveyor.
4. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
5. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
6. Inspect all the hydraulic hoses, lines, fittings and cylinders. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or separating from a fitting. Replace any damaged components.
7. Inspect all the electrical cords, lines, junction boxes and motors. Tighten any loose connections. Replace any cord that is badly cut, nicked or abraded. Replace any damaged components.
8. Inspect the conveyor belt/chain. Realign if the belt/chain is not tracking in the center of the frame. Replace if the edges are damaged from rubbing on the frame. Properly tension the belt/chain.
9. Check all rotating parts for entangled material. Remove.
10. Touch up all paint nicks and scratches to prevent rusting.
11. Select a storage area that is dry, level and free of debris.
12. Cover with a weather-proof tarpaulin and tie down if stored outside.

4.10.2 REMOVING FROM STORAGE

When preparing to use the machine at the start of the season, follow this procedure:

1. Remove the tarpaulin if covered.
2. Transport or move to the working area.
3. Check
   a. Hydraulic and electrical systems and components.
   b. Conveyor belts and drive systems.
   c. All hardware. Tighten as required.
4. Replace any defective components.
5. Go through the pre-operation checklist (Section 4.5) before starting.
5 SERVICE AND MAINTENANCE

5.1 SERVICE

5.1.1 FLUIDS AND LUBRICANTS

1. Grease:
Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance meeting or exceeding the NLGI #2 rating for all requirements.

2. Speed Reducer Gear Box Lubricant:
Use a Browning Worm Gear high-temperature GL32HT lubricant (AGMA Comp. #8) or equivalent.

   Capacities: Capacity differs with size of reducer.

3. Hydraulic Oil:
Use - Amco All-Purpose Hydraulic Oil or equivalent.

   Reservoir Capacity: (40 US. gals, 150 liters).

4. 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 provide to keep a record of all scheduled maintenance.

1. Use only a hand-held grease gun for all greasing. Air powered greasing systems can damage the seals on bearings and lead to early bearing failure.

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 a fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

5. Conveyor Bearings:
Only sealed bearings are used on the conveyor bearings. Sealed bearings should never be greased more often than weekly or every 50 hours. Do not over-grease. Do not give bearing more than 1 shot of grease each time it is greased. Once the bearing seal is broken, the bearing must be greased each day or the bearing will fail.
5.1.3 SERVICING INTERVALS

8 Hours or Daily

1. Check the conveyor tension and alignment. Tension or align as re- quired.
2. Inspect hydraulic system and all components.
3. Inspect electrical system and all components.

Fig. 17 CONVEYOR TENSION AND ALIGNMENT
Weekly or 50 Hours

1. Grease elevator drive, driven and guide shafts with 1 shot of grease. (2 locations each shaft).

**IMPORTANT**

Only sealed bearings are used on the conveyor bearings. Sealed bearings should never be greased more often than weekly or every 50 hours. Do not over-grease. Do not give bearing more than 1 shot of grease each time it is greased. Once the bearing seal is broken, the bearing must be greased each day or the bearing will fail.

![Drive](Image)

![Guide](Image)

![Driven](Image)

Fig. 18 CONVEYOR SHAFTS
2. Grease the conveyor drive and driven shafts (2 locations each shaft).

3. Check the oil level in the hydraulic reservoir.
100 Hours or Annually

1. Grease the electric motor bearings with 1 shot of grease (1 location each motor).

**IMPORTANT**

Do not over-grease electric motors. Over-greasing can render the electric motor inoperative.

Fig. 21 ELECTRIC MOTOR
2. Check the oil level in the speed reducing gear box in the drive systems (1 location on gear box).

Fig. 22 GEAR BOX

Fig. 23 GEAR BOX SCHEMATIC (TYPICAL)
500 Hours or Annually

1. Change oil in speed reducing gearbox.

2. Clean each gearbox breather plug (each drive and hydraulic pump).

3. Change the oil in the hydraulic system.

Fig. 24 GEAR BOX DRAIN PLUG

Fig. 25 HYDRAULIC RESERVOIR
4. Grease each rachet fitting with 2 shots of grease (2 fittings each jack).
### 5.1.4 SERVICE RECORD

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

**ACTION CODE:** CHECK  CHANGE  CLEAN

LUBRIFICATE REMOVE  INSPECT

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<td>IN Hydraulic System &amp; Components</td>
<td></td>
</tr>
<tr>
<td>IN Electrical System &amp; Components</td>
<td></td>
</tr>
</tbody>
</table>

| 50 HOURS OR WEEKLY | |
| L Elevator Drive, Driven & Guide Shafts |
| L Conveyor Drive, Driven Shafts |
| § Oil Level in Hydraulic Reservoir |

| 100 HOURS OR ANNUALLY | |
| L Electric Motor Bearings (1 shot) (1 ea) |
| § Oil Level In Speed Reducing Gearbox |

| 500 HOURS OR ANNUALLY | |
| C Oil In Speed Reducing Gearbox |
| CL Each Gearbox Breather Plug (Each Drive & Hydraulic Pump) |
| C Oil In Hydraulic System |
| L Ea. Ratchet Fitting (2 shots) |
5.2 MAINTENANCE

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

5.2.1 ELECTRICAL SYSTEM MAINTENANCE

Electricity provides power to the conveyor system. To maintain the integrity of the system and provide a safe working environment for the operator, it is important that a daily inspection be done to make sure that the system and components are in good working condition. To provide a safe working environment, have a licensed electrician provide power to the machine.

When inspecting the electrical system and components, follow this procedure:

1. Place all controls in the OFF or neutral position.
2. Turn power OFF at the master panel and lock-out before starting the inspection.

**IMPORTANT**

Do not operate the machine unless the master panel is equipped with a lock-out device. Always engage lock-out device before performing any maintenance work. Lock-out devices are available from your dealer or the factory.

3. Inspect all electrical components looking for:
   a. Damaged plugs.
   b. Frayed wires.
   c. Cut or cracked insulation.
4. Replace any damaged components immediately.
5. Be sure all components are grounded.
6. Be sure there is no water or moisture in any junction box or enclosure. Dry the components before turning power on. Be sure that all compartments seal properly when closed.

5.2.2 ELECTRIC MOTOR RESTART

It is recommended that only a licensed electrician perform maintenance work on the electrical system.

The electric motor is supplied with power through a manual push button starter switch box or rotary switch.

5.2.2.1 MANUAL PUSH BUTTON STARTER

Depress the top green button to start and red bottom button to stop. Each starter switch box contains a current sensing device, known as a heater, to measure or monitor the amount of current going to the motor. When the motor draws too much current, the heater will cut-off or break the circuit to motor (like a circuit breaker) and the motor/conveyor will stop. To reset the heater and start the motor again, fully depress the red stop button. Then depress the green start button to start the motor. If the motor doesn't start, go through the reset and restart sequence again. If the motor still won't start, one of the following five conditions exist:

1. The motor is hot and must cool a period of time before attempting to restart.

   **NOTE**
   
   If your Stinger utilizes single phase motors, chances are good that the motor has a thermal overload located on the electrical junction box of the motor itself. If this is the case then, fully depress the reset button to make certain that the overload circuit is closed.

2. The heater is of the wrong size and must be replaced with one that is the correct size.

   **NOTE**
   
   The proper heater size can be determined by consulting the table and instructions affixed to the inside of the front cover of the manual starter box.

3. The heater has fulfilled its service life and is in need of replacement.

4. The motor is bad and needs replacing.

5. An electrical short exists somewhere in the circuit.
5.2.2.2 ROTARY SWITCH

The electric motor is supplied with power through an individual circuit that includes a circuit breaker, switch, contactor and overload relay that are all incorporated into a single electrical component inside the main machine electrical control panel. The contactor is the main connecting device for power to the motor. If the current is greater than the adjustable dial of the relay, the relay will trip and cut off power to the coil of the contactor. When this happens, the contactor dial will move to a new position and indicate the cause of the overload. It must be reset before the motor can be restarted.

When a motor will not start:

1. Turn machine OFF and lock out power at the master control panel before opening the control panel.

2. Fully rotate the contactor dial counter-clockwise to reset and then, turn dial clockwise to the ON contactor open position.

3. Close and secure the panel door and turn the power to the machine ON.

4. If the motor still will not start you have one of the following conditions:

   a. The motor is hot and must cool a period of time before attempting to restart.

   b. The overload is adjusted incorrectly for the amperage of the motor and must be properly adjusted.

   c. The overload and/or contactor has fulfilled its service life and is in need of replacement.

   d. The motor is bad and needs replacing.

   e. An electrical short exists somewhere in the circuit.

Fig. 27 MOTOR RESTART
5.2.3 SPEED REDUCER GEARBOX OIL

The conveyor is driven by an electric motor that is attached to a high ratio speed reducing gearbox to give the required operating speed. The gearbox is equipped with a drain, level and fill plug. Every 100 hours, the oil level should be checked. Every 500 operating hours or annually, whichever comes first, the oil should be replaced. Check more frequently if there are leaks around any of the plugs or shaft seals. When checking oil level or changing oil, follow this procedure.

1. Stop the Stinger.
2. Place all controls in their OFF or neutral position.
3. Turn the power OFF at the master panel and lock-out.

4. **Checking oil level:**
   a. When the gearbox is cold, remove the level plug from the side of the gearbox.
   b. When the oil just fills the threads of the level plug, it is at the correct level.
   c. Add oil through the fill plug as required.
   d. Install and tighten level and fill plugs.

5. **Changing oil:**
   a. Run the Stinger until the gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.
   
   b. Perform steps number 1 through 3.
   c. Place a container under the drain plug.
   d. Remove the drain, level and fill plugs.
   e. Allow 10 minutes to drain.
   f. Install and tighten the drain plug.

**NOTE**

It may be necessary to add teflon tape or pipe sealant to the drain plug prior to installation to prevent leaking.

   g. Add approximately 1 qt (1 liter) of Browning Worm Gear GL 32HT lubricant or equivalent. Use the level plug to determine the proper amount of oil.
   h. Check that the air passage through the breather is open.
   i. Install and tighten the fill and level plugs.
   j. Dispose of the used oil in an environmentally safe manner.
5.2.4 BREATHER CLEANING

The gearbox is equipped with a breather in the fill plug that vents the internal pressure to atmosphere. As the gearbox temperature increases and decreases during the operating and stopped modes, the pressure in the gearbox will increase or decrease if it is not vented to atmosphere. An increase in internal pressure will cause the shaft seals to leak until the gearbox runs low on or out of oil. To check on or clean the breather, follow this procedure:

1. Place all controls in their OFF or neutral position.
2. Turn the power OFF at the master panel and lock-out.
3. Remove the fill plug/breather from the gearbox.
4. Check that the vent passage through the plug is open.
5. If plugged, soak in a solvent over night.
6. Use a high-pressure air hose to blow the passage open. Use a probe to clear the passage if the hole is caked with dirt.
7. Install and tighten the breather plug.

IMPORTANT
Always clean the breather if any leaks are noticed around shafts.

Fig. 29 BREATHER

Fig. 30 GEAR BOX SCHEMATIC (TYPICAL)
5.2.5 CONVEYOR TENSION/ALIGNMENT OR REPLACEMENT

Rubber belts or potato chains can be used to move potatoes with the Stinger. The tension and alignment of the conveyors should be checked daily to insure proper function. Replace the conveyor when damaged or badly worn. To maintain conveyor, follow this procedure:

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

2. Turn the power OFF at the master panel and lock-out.

3. **Tension:**
   a. **Conveyor belts:** They are tensioned correctly when there is a 1 to 2 inch (25 to 50 mm) sag between the guide rollers on the bottom or slack side of the conveyor during operation.
   b. **Conveyor chain:** They are tensioned correctly when there is a 3 to 4 inch (75 to 100 mm) sag between the guide rollers on the bottom or slack side of the conveyor when the stinger is raised all the way up.

Fig. 31 TENSION ADJUSTING (TYPICAL)
4. **Alignment:**
   a. **Conveyor belts:** They are properly aligned when the belt runs in the center of the frame panels 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.
   b. **Conveyor chain:** They are properly aligned when the chain links center on the drive sprockets. If the links run on the side of the sprockets, align the chain. 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 but always maintain the proper tension.

---

Fig. 32 **ALIGNMENT (TYPICAL)**

---

Belt

Chain
5. **Replacement:**
   a. Move one or both of the shafts into their loosest position.
   b. Open the conveyor belt/chain by splitting the links on the chain type or removing the connecting rod on the belt type.
   c. Attach the replacement conveyor belt/chain to the end of the old conveyor belt/chain.
   d. Slowly pull the old conveyor belt/chain out of the machine and thread the new one into position.
   e. Disconnect the old conveyor belt/chain and connect the ends of the new one together.
   f. Move the shaft into position to set the tension of the conveyor belt/chain and secure the bearing assemblies.
   g. Check the tension and alignment of the conveyor belt/chain frequently during the first 10 hours of operation and set as required. Then, go to the regular maintenance schedule. Normally a conveyor belt/chain will seat itself during the first 10 hours of operation and then require less adjustment.

---

**Fig. 33 CONNECTOR (TYPICAL)**
6 TROUBLE SHOOTING

The Mayo Stinger with unloading conveyor is a short elevating conveyor and used to unload trucks and move the produce into another machine. It is a simple and reliable system that requires minimum maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that 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 local Mayo dealer or the factory. Before you call, please have this Operator's Manual from your machine ready.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conveyor won't start.</td>
<td>No power.</td>
<td>Turn power ON at master panel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plug stinger into main machine electrical system.</td>
</tr>
<tr>
<td></td>
<td>Tripped heater element/ overload.</td>
<td>Reset heater element/overload. (Refer to Section 5.2.2).</td>
</tr>
<tr>
<td>Conveyor won't run.</td>
<td>No power.</td>
<td>Turn conveyor ON.</td>
</tr>
<tr>
<td></td>
<td>Binding.</td>
<td>Align conveyor.</td>
</tr>
</tbody>
</table>
7  SPECIFICATIONS

7.1  MECHANICAL

<table>
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<th>DIMENSIONS</th>
<th>8 FT. STINGER</th>
<th>10 FT. STINGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length:</td>
<td>9 ft.</td>
<td>11 ft.</td>
</tr>
<tr>
<td>Overall Width:</td>
<td>3 ft.</td>
<td>3 ft.</td>
</tr>
<tr>
<td>Overall Height:</td>
<td>3 ft.</td>
<td>3 ft.</td>
</tr>
<tr>
<td>Weight:</td>
<td>400 lbs.</td>
<td>500 lbs.</td>
</tr>
</tbody>
</table>

**POWER**

| Type:               | 1 ph, 230 V, 14 amps | 1 ph, 230 V, 14 amps |
| Motor:              | 1 1/2 hp            | 2 hp              |

| HYDRAULIC SYSTEM    | 1 GPM (1 ph)         | 1 GPM (1 ph)      |
| Flow:               | 2 GPM (3 ph)         | 2 GPM (3 ph)      |
| Pressure:           | 1500 psi             | 1500 psi          |
| Power:              | 1 hp (1 ph)          | 1 hp (1 ph)       |
| Capacity:           | 1.5 gal              | 1.5 gal           |

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE
7.2 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

<table>
<thead>
<tr>
<th>Bolt Diameter &quot;A&quot;</th>
<th>SAE 2 (N.m)</th>
<th>SAE 5 (N.m)</th>
<th>SAE 8 (N.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>8</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>5/16&quot;</td>
<td>13</td>
<td>25</td>
<td>36</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>27</td>
<td>45</td>
<td>63</td>
</tr>
<tr>
<td>7/16&quot;</td>
<td>41</td>
<td>72</td>
<td>100</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>61</td>
<td>110</td>
<td>155</td>
</tr>
<tr>
<td>9/16&quot;</td>
<td>95</td>
<td>155</td>
<td>220</td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>128</td>
<td>215</td>
<td>305</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>225</td>
<td>390</td>
<td>540</td>
</tr>
<tr>
<td>7/8&quot;</td>
<td>230</td>
<td>570</td>
<td>880</td>
</tr>
<tr>
<td>1&quot;</td>
<td>345</td>
<td>850</td>
<td>1320</td>
</tr>
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</table>

SAE 2 (N.m)  (lb-ft)  

SAE 5 (N.m)  (lb-ft)  

SAE 8 (N.m)  (lb-ft)  

METRIC TORQUE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Bolt Diameter &quot;A&quot;</th>
<th>8.8 (N.m)</th>
<th>10.9 (N.m)</th>
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<tbody>
<tr>
<td>M3</td>
<td>.5</td>
<td>1.8</td>
</tr>
<tr>
<td>M4</td>
<td>3</td>
<td>4.5</td>
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<tr>
<td>M5</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>M6</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>M8</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>M10</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>M12</td>
<td>90</td>
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</tr>
<tr>
<td>M14</td>
<td>140</td>
<td>200</td>
</tr>
<tr>
<td>M16</td>
<td>225</td>
<td>310</td>
</tr>
<tr>
<td>M20</td>
<td>435</td>
<td>610</td>
</tr>
<tr>
<td>M24</td>
<td>750</td>
<td>1050</td>
</tr>
<tr>
<td>M30</td>
<td>1495</td>
<td>2100</td>
</tr>
<tr>
<td>M36</td>
<td>2600</td>
<td>3675</td>
</tr>
</tbody>
</table>

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.
7.3 HYDRAULIC FITTING TORQUE

TIGHTENING O-RING FITTINGS *

1. Inspect O-ring and seat for dirt or obvious defects.

2. On angle fittings, back the lock nut off until washer bottoms out at top of groove.

3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.

4. Position angle fittings by unscrewing no more than one turn.

5. Tighten straight fittings to torque shown.

6. Tighten while holding body of fitting with a wrench.

<table>
<thead>
<tr>
<th>Tube Size OD (in.)</th>
<th>Nut Size Across Flats (in.)</th>
<th>Torque Value* (N.m) (lb-ft)</th>
<th>Recommended Turns To Tighten (After Finger Tightening) (Flats) (Turn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>1/2</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>7/16</td>
<td>9/16</td>
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<td>9</td>
</tr>
<tr>
<td>1/2</td>
<td>5/8</td>
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<td>12</td>
</tr>
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<td>11/16</td>
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<td>18</td>
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<tr>
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<td>7/8</td>
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<td>1-1/16</td>
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<td>217</td>
<td>160</td>
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</tbody>
</table>

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

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

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500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT

500 WATT LIGHT
7.5 HYDRAULIC SCHEMATIC

[Diagram of hydraulic system with labels for various components and connections, including
- HYDRAULIC HOSE
- QTY
- DESCRIPTION
- ITEM NUMBER]

[Table with columns for HYDRAULIC HOSE LENGTHS and corresponding details like
- 3/8" HOSE A2 149"
- 3/8" HOSE- 127"
- 3/8" HOSE1 74"
- 3/8" HOSE1 143"
- 3/8" HOSE1 197"
- 3/8" HOSE1 126"
- 3/8" HOSE1 120"
- 3/8" HOSE1 137"
- 3/8" HOSE1 141"
- 3/8 MALE QUICK CONNECT 1451350]

[Diagram annotations like
- RIGHT STINGER
- LEFT STINGER
- AXLE EXTEND
- STEER
- HP GS3 GAUGE
- #6JIC-3/8" STRAIGHT
- 3/8" STEEL TEE
- 3/8" STEEL TEE 1851800
- #6JIC-3/8" PIPE 90d ELB]

[Table for HYDRAULIC PARTS LIST with columns for
- DESCRIPTION
- ITEM NUMBER
- #6FEMALE QUICK CONNECT 1
- 2025326 6801-6-6-LL 3
- 2025347 #6JIC TO #8 ORB ADAPTER 12025355 #6 JIC TO 1/2" 90d 62025390 6801-6-8 12025395 6801-6-6 3]
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