MAYO

TELESCOPING STINGER

Operators 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 STATUE, 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 MANUFACTURING, INC.

TELESCOPING STINGER

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's Name _____

Address _____

City, State/Prov., Code _____

Telescoping Stinger Model _____

Serial Number _____

Delivery Date _____

DEALER INSPECTION REPORT

_____ Inspect Electrical System
_____ Oil Reservoir Full
_____ Hydraulic Hoses Free
_____ Hydraulic Fittings Tight
_____ Lubricate Machine
_____ Conveyors 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 _____

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

SERIAL NUMBER LOCATION

Stingers are always supported on host machine for them to function. Typical machines include but are not limited to conveyors, washers, sorters, etc. As a result, Telescoping Stingers are referenced to the machine that it is attached to.

Always give your dealer the serial number of host machine the Telescoping Stinger is attached to when ordering parts or requesting service or other information.

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

SERIAL NUMBER LOCATION

Model _____

Serial Number _____

TABLE OF CONTENTS

1 INTRODUCTION

Congratulations on your choice of a Mayo Telescoping Stinger 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 Telescoping Stinger requires that you, and anyone else who will be operating or maintaining the Stinger, read, understand and practice ALL of the Safety, Operation, Maintenance and Trouble Shooting recommendations contained within this Operator's Manual.

This manual applies to the Telescoping Stinger manufactured by Mayo. Certain options may be available to specifically tailor the Telescoping 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.

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 Telescoping Stinger is the front. The hydraulic controls are on the left side.

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 your Mayo Telescoping Stinger 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

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:

A AIGUIEN QUE SI LO LEA PARA QUE LE TRADUZCA LAS MIDIDAS DE SEGURIDAD.

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.

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 Telescoping Stinger. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Telescoping Stinger 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 Telescoping Stinger.

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.

- Read and understand the Operator's Manual and all safety signs before supplying power to, operating, maintaining or adjusting the Telescoping Stinger.

- Telescoping Stinger owners must give operating instructions to operators or employees before allowing them to operate the Telescoping Stinger, 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.

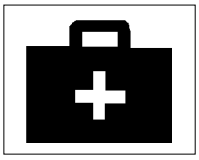
- Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

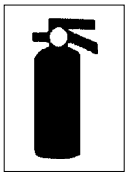
1. Read and understand the Operator's Manual and all safety signs before supplying power to, operating, maintaining or adjusting the Telescoping Stinger.

2. Only trained, competent persons shall operate the Telescoping Stinger. 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 Telescoping Stinger or machine it is attached to 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 Telescoping Stinger.

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 Telescoping Stinger.

7. If equipped with an optional power pack, stop engine or motor, remove ignition key, and unplug power cord to prevent unauthorized start-up of Telescoping Stinger.

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.

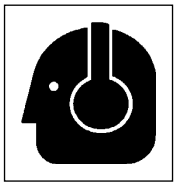
How to Install Safety Signs:

- 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 Telescoping Stinger 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 Telescoping Stinger 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 jewelery 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 Telescoping Stinger 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 Telescoping Stinger or the machine it is attached to on firm, level ground before operating.

3. Block up machine to level the frame before using. Use a level to be sure.

4. Have at least one extra person available to assist when elevating, moving or positioning 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 by following ANSI/NFPA 70 wiring standard.

6. If using Telescoping Stinger 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 Telescoping Stinger.

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

4. Do not climb on unit unless motors are OFF and the power locked out at the master panel. Never perform any maintenance or service work while power is connected. Keep others away.

5. If equipped with an optional power pack, stop engine or motor, remove ignition key, and unplug power cord to prevent unauthorized start-up of Telescoping Stinger.

2.9 OPERATING SAFETY

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

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. Use blocks to level the frame of the Telescoping Stinger before using.

8. Keep the working area clean and dry.

9. Establish a formal lock-out tag-out program for your operation.

10. Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it by following ANSI/NFPA 70 wiring standard. If you do not know or are unsure, consult a licensed electrician.

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

12. Raise frame to its fully UP position and fully retract the frame before attaching frame support anchor before transporting or storing

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

14. Contact Mayo at (218) 773-1234 or 1 (800) 223-5873 if you have any questions.

15. 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.

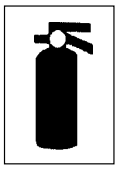
4. Follow good shop practices:

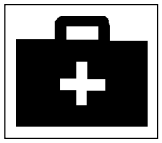
   - Keep service area clean and dry.
   - Be sure electrical outlets and tools are properly grounded.
   - Use adequate light for the job at hand.

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 hand 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 Telescoping Stinger.

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





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

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

10. Do not work on Telescoping Stinger 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

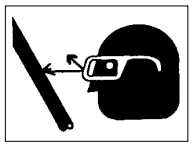
1. Make sure that all the components in the hydraulic system are kept in good condition and are clean.

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 to the machine by following ANSI/NFPA 70 wiring standard.

2. Make certain that the Telescoping Stinger is properly grounded at the power source.

3. Make certain that all electrical switches are in the OFF position before plugging the Telescoping Stinger 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 Telescoping Stinger 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 under-inflate.

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.

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. Install auxiliary light bar on rear of frame and turn lights on before moving.

2. Use pilot vehicles ahead of and behind the unit when transporting on a public highway.

3. Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not under-inflate or overinflate.

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

5. 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.

6. Be sure that the Telescoping Stinger is positively mounted to the machine it is attached to. Use a chain to secure Telescoping Stinger in its/their centered position when transporting.

7. Retract and center frame, raise frame into its fully UP position and attach the frame support chains before transporting or storing.

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

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

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

11. 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 and Biological Engineers (ASABE) 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

DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

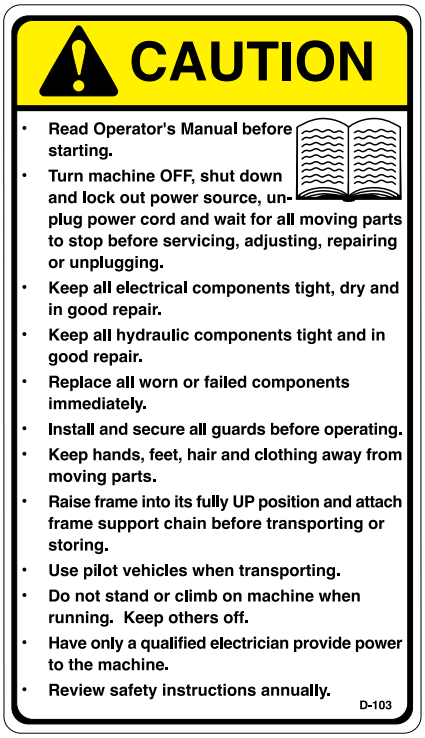
3 SAFETY SIGN LOCATIONS

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!

A

B



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.

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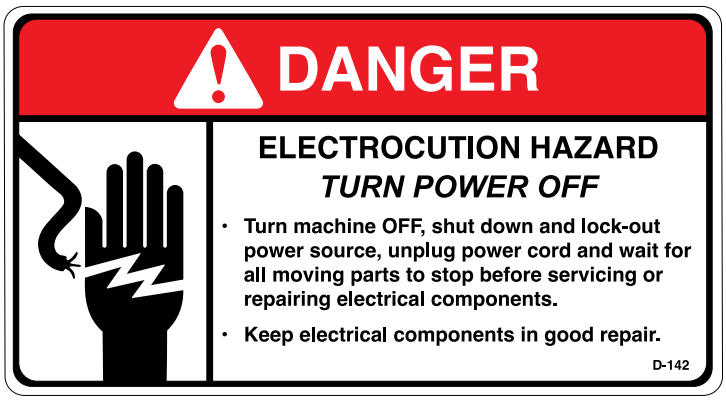

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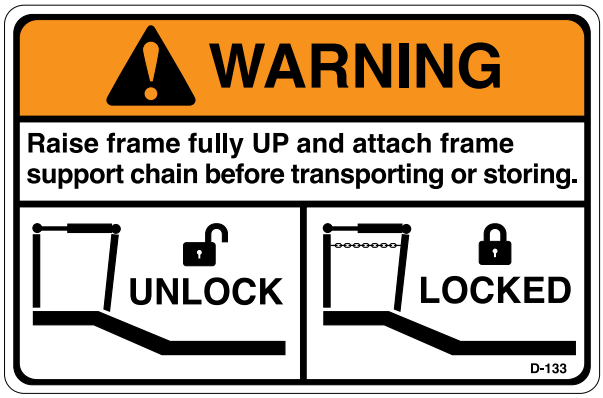

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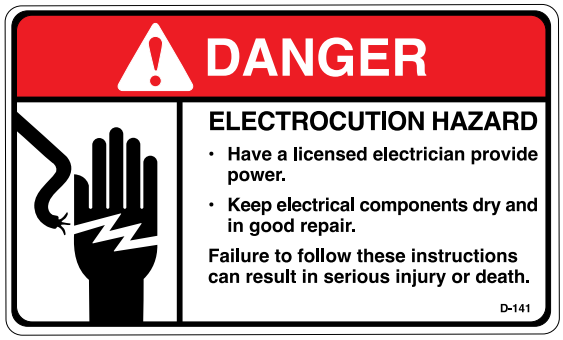

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REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

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

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Telescoping Stinger.
- 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.
- Install and properly secure all guards and shields before operating.
- Keep hands, feet, hair and clothing away from all moving parts.
- Clear the area of bystanders, especially small children, before starting.
- Make sure all control switches are in the OFF position before connecting power supply.
- Use blocks to level the frame of machine Telescoping Stinger is attached to before using.
- Keep the working area clean and dry.
- Establish a formal lock-out tag-out program for your operation.
- Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it by following ANSI/NFPA 70 wiring standard. If you do not know or are unsure, consult a licensed electrician.
- Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.
- Raise frame to its fully UP position and attach frame support chain before transporting or storing
- Do not stand between the frame and other structures or machines when raising or swinging the Telescoping Stinger. Keep others away.
- Contact Mayo at (218) 773-1234 or 1 (800) 223-5873 if you have any questions.
- Review safety instructions annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Telescoping Telescoping Stinger is designed as a conveyor to load or transfer product from trucks into graders, pilers, conveyors or other auxiliary equipment. Be familiar with the machine before starting.

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. 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 Telescoping Telescoping Stinger will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Telescoping Stinger consists of a hopper and telescoping elevator for conveying material from transport vehicles into the hopper of another vehicle or transferring material at a remote location. The top conveyor noves fore and aft via a hydraulic cylinder to provide the telescoping feature. Electric motor power each conveyor. Hydraulic power is provided by the machine the Telescoping Stinger is attached to.

The electrical control box is mounted to the main frame and the hydraulic control valve is mounted on the side of the elevator frame.

A Hopper
B Top Conveyor
C Bottom Conveyor
D Hydraulic Controls
E Control Panel
F Discharge
G Hydraulic Pump
H Top Conveyor Drive
J Bottom Conveyor Drive
K Attached Machine
L Anchor Chain - Swing Position
M Anchor Chain - Height
N Anchor Change - Extend
O Telescoping Cylinder

FIG. 1 MACHINE COMPONENTS


O
H
G
H
C
B
A


L
B
Q
E
C
J
C
F
D
Mayo
K

4.3 GENERAL OPERATION THEORY

Mayo Telescoping Stingers are designed to mount to another piece of equipment and be used to move potatoes into the host equipment. The Telescoping Stinger consists of 2 conveyors that are moved relative to each other with a hydraulic cylinder that allows the top conveyor and hopper to be move to where the potatoes are. Trucks or other transport vehicles unload into the hopper on the front of the Telescoping Stinger. The Telescoping Stinger in turn raises the potatoes and places them on the intake of the next piece of equipment.

Both 36" and 42" wide Telescoping Stingers are available.

Generally 2 Telescoping Stingers are mounted on a machine to increase efficiency. One is being used to unload a transport vehicle while the second one is being positioned. When the first Telescoping Stinger has finished unloading, the second one is ready to unload.

Operating

Positioning

System

FIG. 2 TELESCOPING STINGERS

4.4 MACHINE BREAK-IN

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

A. When machine is received:

1. Tighten all fasteners.

2. Open breather on gearboxes by turning 1/4 turn.

3. Connect power to the unit and "bump" the ON switch to momentarily run the machine. Observe the direction the conveyors move. If running in reverse, consult licensed electrician to reverse direction of the motor. (If a reversing switch is not installed).

B. Read Conveyor and auxiliary equipment manuals before starting.

C. **After operating for 1/2 hour:**

1. Retorque all fasteners.

2. Check that all electrical connections are tight and cords are routed out of the way or protected. Replace any damaged components.

3. Check for leaks in hydraulic system. Retorque fittings that leak. Check that no hydraulic lines are being pinched or crimped. Reroute as required.

4. Check oil level in hydraulic reservoir. Top up as required.

5. Check the alignment and tension of the conveyor belts. Realign or tighten as required.

6. Check oil level in each speed reduction gearbox for each drive. Top up as required.

7. Lubricate all grease fittings.

D. **After 2, 5 and 10 hours of operation:**

1. Retorque all fasteners.

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. Check that no hydraulic lines are being pinched or crimped. Reroute as required.

4. Reroute as required. Check oil level in hydraulic reservoir. Top up as required.

FIG. 3 TIGHTEN

FIG. 4 BREATHER (TYPICAL)

5. Check the alignment and tension of each conveyor belt. Realign or tighten as required.

6. Check oil level in the speed reduction gearbox. Top up as required.

7. Lubricate all grease fittings.

8. Go to regular servicing and maintenance schedule as defined in the Maintenance Section.

4.5 PRE-OPERATION CHECKLIST

Safe and efficient operation of your new Telescoping Stinger 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 the oil level in the hydraulic reservoir as prescribed in the "Maintenance Section".

4. Check for hydraulic leaks. Tighten fittings or re-route hoses as required to maintain a leak-free system.

5. Insure that all safety guards and shields are in good repair and securely in place.

6. Check that the conveyor belt is centered on the head and tail rollers. Adjust if necessary as outlined in the "Maintenance Section".

7. Make sure that all electrical switches are in the OFF position before supplying power.

8. Check that all electrical connections are tight and cords are routed out of the way or protected.

9. Be sure the working area is clean and dry to prevent tripping or slipping.

10. Check oil level in Power Pak (if so equipped). Top up as required.

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. **Host Conveyor:**

   a. **Hydraulic Pump On/Off:**
   This two position rotary switch controls the power to the hydraulic pump. Turn clockwise to turn pump ON and counterclockwise to turn OFF.

NOTE

Pump must be turned on to provide pressurized oil to the Telescoping Stinger.

FIG. 5 PUMP ON/OFF

2. **Electrical Panel Controls:**

   a. **Conveyors ON/OFF:**
   This 2 position rotary switch controls the power to the electric motor for the conveyor. Turn the switch clockwise to turn the conveyor motor ON and counter-clockwise to turn OFF.

   b. **Emergency Stop:**
   This red push/pull button is the emergency STOP control for the machine and stops all electrical and hydraulic functions. Push the control in for emergency STOP. Place all the individual controls in their OFF position. Before the machine can be restarted, the Emergency STOP button must be turned clockwise before it will come out.

FIG. 6 ELECTRICAL CONTROLS

3. **Stinger Function Valves:**

a. This 3 position spring-loaded-to-neutral-center hydraulic valve controls the height of the hopper. Push the lever down and hold to raise the hopper and pull up and hold to lower. Release the lever to stop. The lever will return to its neutral center position and the hopper will stop moving.

IMPORTANT

Hydraulic power is provided by the machine the Telescoping Stinger is attached to. Review the manual for the other machine to determine how to turn the hydraulic feature on. It must be on in order to use the hopper/frame raise or lower function.

b. This 3 position spring-loaded-to-neutral-center hydraulic valve controls the Stinger telescoping function. Push the lever down and hold to extend the frame and pull up and hold to retract the frame. Release the lever to stop. The lever will return to its neutral center position and the frame will stop extending/retracting.

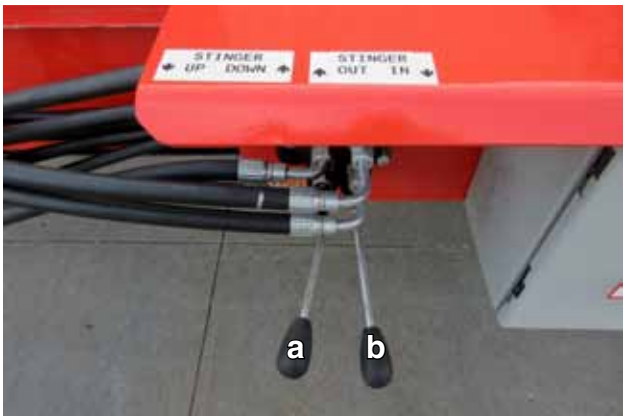


FIG. 7 STINGER FUNCTION

4.7 ATTACHING TELESCOPING STINGER

Telescoping Telescoping Stingers are designed to be mounted/attached to several different types of equipment used to handle potatoes. When attaching Telescoping Telescoping Stingers to other equipment, follow this procedure:

1. Clear the area of bystanders, especially small children.

2. Have two (2) persons available at the attaching machine to move and align the Telescoping Telescoping Stinger as it is being mounted.

3. Use a forklift to lift the Telescoping Telescoping Stinger into position.

NOTE

Be sure to set the forks to their widest position and balance the Telescoping Telescoping Stinger frame on the forks.

4. Align Telescoping Telescoping Stinger frame with mounting bracket.

5. Install anchor pin through the top and bottom brackets.

6. Secure frame angle with anchor chains.

7. Attach telescoping anchor chain.

7. Connect hydraulic system couplers and tie up.

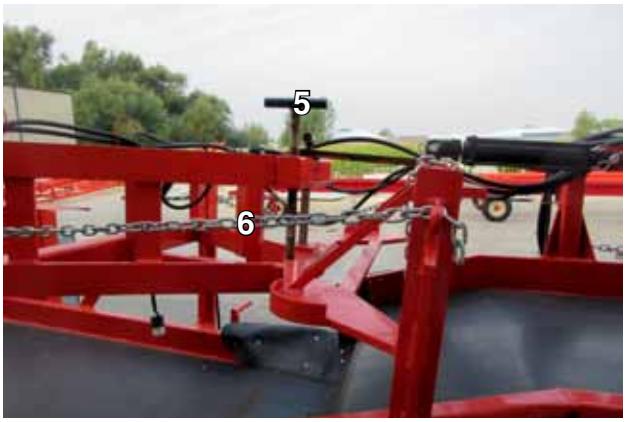
9. Connect power cord and tie up.

10. Secure frame height by attaching center anchor chain.

IMPORTANT

Always attach center anchor chain between the frames before lowering and removing forklift. The frame is not supported until the hydraulic system is turned on and pressurized oil is supplied to the Telescoping Stinger lift cylinder.

11. Reverse the above procedure when unhooking Telescoping Stinger from a machine.



Pin Installed

Telescoping Anchor Chain

Hydraulic Coupler

Mounted

FIG. 8 ATTACHING TELESCOPING STINGER

4.8 MACHINE PREPARATION

The machine must be properly prepared prior to use. Before starting the machine, be sure that the following items are appropriately set for your machine.

1. **Electrical Power:**
   If the machine will be used in a location with power, have a licensed electrician install the wiring system to provide power at the required voltage, phase and amperage for your machine by following ANSI/NFPA 70 wiring standard for the machine the Telescoping Stinger is being mounted on.

   Be sure to use an extension cord of the correct specifications for the power being carried. Route the cord over the frame 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.

   If a generator set is used to provide power, be sure the set can supply the required power at the appropriate voltage, phase and amperage. An improper source of power will cause damage to the electrical components and could create an electrical hazard to the operator, worker or bystanders.

2. **Hydraulic Power:**
   All hydraulic power is provided by the machine that the Telescoping Stinger is mounted to. Turn machine hydraulic system ON to provide power to the Telescoping Stinger. The Telescoping Stinger hydraulic lines are equipped with "Quick Couplers" that provide a convenient way to connect hydraulic power.

3. **Training:**
   Establish a lock-out tag-out policy for your worksite and train all everyone in how it is implemented. Do not allow anyone to operate the machine on the worksite unless they follow the lock-out tag-out policy.

FIG. 9 ELECTRIC & HYDRAULIC LINES (TYPICAL)

FIG. 10 OPTIONAL HYDRAULIC PACKAGE (TYPICAL)

4.9 OPERATING

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Telescoping Stinger.
- 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.
- Install and properly secure all guards and shields before operating.
- Keep hands, feet, hair and clothing away from all moving parts.
- Clear the area of bystanders, especially small children, before starting.
- Make sure all control switches are in the OFF position before connecting power supply.
- Use blocks to level the frame of machine Telescoping Stinger is attached to before using.
- Keep the working area clean and dry.
- Establish a formal lock-out tag-out program for your operation.
- Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it by following ANSI/NFPA 70 wiring standard. If you do not know or are unsure, consult a licensed electrician.
- Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.
- Raise frame to its fully UP position and attach frame support chain before transporting or storing
- Do not stand between the frame and other structures or machines when raising or swinging the Telescoping Stinger. Keep others away.
- Contact Mayo at (218) 773-1234 or 1 (800) 223-5873 if you have any questions.
- Review safety instructions annually.

Follow this procedure when using the Stinger:

1. Review Section 4.6 Machine Preparation and follow all the instructions.
2. Review and follow the pre-operation checklist (See Section 4.4).
3. Review the location and function of all controls (See Section 4.5).
4. Move the machine into its operating position with the hopper positioned so transport vehicles can access it appropriate for the application.

FIG. 11 POSITIONED

5. **Starting Telescoping Stinger:**

   a. Clear the area of bystanders. Know where everyone is before starting.

   b. Place all controls in the OFF or neutral position on all machines.

   c. Turn the power to the machine ON at the master panel.

   d. Turn ON power on machine Telescoping Stinger is attached to.

   e. Turn the hydraulic pump ON on unit Telescoping Stinger is attached to (Refer to Operator's Manual for other machine).

   f. Turn the Telescoping Stinger conveyors ON.

   IMPORTANT

   Be sure all the red emergency stop switches have been pulled out.

   g. Place product/potatoes into hopper. Turn ON transport vehicle.

6. **Stopping Telescoping Stinger:**

   a. Turn OFF the transport that brings material to the Telescoping Stinger.

   b. Wait until the material/potatoes has moved off the top conveyor.

   c. Wait until the material/potatoes has moved off the bottom conveyor.

   d. Turn the Telescoping Stinger OFF.

   e. Wait until potatoes have moved out of the other machine and then turn it OFF.

   f. Turn the hydraulic pump OFF.

   g. Turn power off at master control panel and lock-out tag-out if performing service and maintenance work on machine.

   An alternative is to depress the red Master STOP button on the control panel but then all controls must be turned OFF before restarting.

7. **Emergency STOP:**
   Depress the large red STOP button on the control panel. This will stop all the conveyors and the hydraulic pump.

FIG. 12 HYDRAULIC PUMP (TYPICAL)

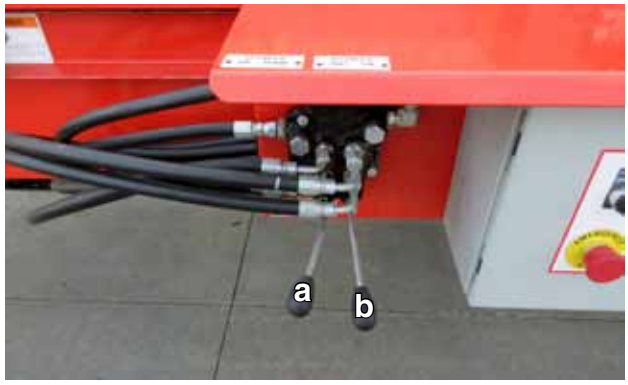
FIG. 13 CONTROLS

FIG. 14 OPERATING

8. **Drop Height:**
Potatoes are very sensitive and must be handled carefully to prevent "bruising". Minimize the chance of bruising during the harvesting, transporting and storing actions by keeping drop heights to a minimum. Use the hydraulic height and extend/retract control to move the hopper close to the discharge on the transport to minimize the drop height.

   a. Drop Height.

   b. Extend/Retract.



Hydraulic Control

Working

FIG. 15 DROP HEIGHT

Hopper Down

Hopper Up

FIG. 16 HOPPER HEIGHT

9. **Frame Angle:**
The Telescoping Stinger is designed to mount on a pivot that allows it to swing to the right or left appropriate for any application requirements. Use the link chain anchors on each side of the frame to secure the Telescoping Stinger frame angle.

FIG. 17 FRAME ANGLE

10 **Telescoping Lock:**
The machine is designed with a chain anchor lock to prevent the frames from extending during transport or storage. Remove anchor lock when preparing to use Telescoping Stinger and use it for transport or storage.

Installed

Removed

FIG. 18 TELESCOPING LOCK

11. **Telescoping:**
The machine is designed so the top conveyor frame can be moved with a hydraulic cylinder relative to the bottom fixed framr. Use the hydraulic lever on the left side of the frame to position the hopper appropriate for the application.

Control

Retracted

Mid-Range

Extended

Working

FIG. 19 TELESCOPING

11. **Operating hints:**

a. Be sure that all workers and operators are supplied with and use the required safety gear.

b. Attach two Telescoping Stingers to equipment to obtain the best unloading efficiency. Alternate between unloading with one Telescoping Stinger while the other is being set up. Then switch. One Telescoping Stinger is always in use.

c. Keep the working area clean and dry to prevent slipping and tripping.

d. Train all operators before starting. An untrained operator is not qualified to operate this machine and exposes himself and others to needless hazards.

e. Establish a Lock-out Tag-out program for your operation and require all employees to follow it.

f. Use the Telescoping Stinger height and extend/retract controls to position hopper as close to transport discharge as practical to minimize drop height and reduce bruising.

FIG. 20 DOUBLE STINGERS (TYPICAL)

FIG. 21 DROP HEIGHT (TYPICAL)

4.10 TRANSPORT

TRANSPORT SAFETY

- Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways. Install auxiliary light bar on rear of frame and turn lights on before moving.
- Use pilot vehicles ahead of and behind the unit when transporting on a public highway.
- Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not under-inflate or overinflate.
- Wrap up and bind to the frame all loose hydraulic and electrical ends.
- 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.
- Be sure that the Telescoping Stinger is positively mounted to the machine it is attached to. Use a chain to secure Stinger in its/their centered position when transporting.
- Raise frame into its fully UP position and attach the frame support chain before transporting or storing.
- Adhere to local regulations regarding maximum weight, width and length.
- Do not exceed 20 MPH (32 Km/H). Reduce speed on rough roads and surfaces.
- Do not allow anyone to ride on the Stinger or towing vehicle during transport.
- Always use hazard flashers on the towing vehicle when transporting.

Mayo Telescoping Stinger is designed to be easily and conveniently moved from location to location along with the machine they is attached to. Review and follow Transporting instructions in other machine's Operator's Manual before transporting. When transporting, follow this procedure:

1. Attach mounting machine to tow vehicle and secure with a retainer. Attach safety chain.

2. Retract the frame and secure with anchor bracket chin between the Telescoping Stingers.

Installed

Removed

FIG. 22 TELESCOPING LOCK

3. Position the Telescoping Stinger frame parallel to frame of the host machine and attach side swing anchor chain.

FIG. 22 SIDE SWING ANCHOR CHAIN

4. Raise the frame into its highest position and attach center support chain. Rest weight on chain.

5. Connect wiring harness.

6. Install an SMV on the rear frame.

7. Use pilot vehicles and install auxiliary lights on the machine when transporting.

8. Clean all the reflectors.

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

10. 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.

11. 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.

12. 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 Telescoping Stinger and host machine weight.

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

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

FIG. 23 CENTER SUPPORT CHAIN

Table 1 Travel Speed vs Weight Ratio

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of tow vehicle.
Up to 15 mph (25 kph)	1 to 1 or less
Up to 10 mph (16 kph)	2 to 1 or less
Do not tow	More than 2 to 1

4.11 STORAGE

STORAGE SAFETY

- Store the Telescoping Stinger on a firm level surface.
- If required, make sure the unit is firmly blocked up.
- Make certain that all mechanical locks are safely and positively connected before storing.
- Store away from areas of human activity.
- Do not allow children to play on or around the stored Telescoping Stinger.
- 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 Telescoping Stinger.

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. Start the hydraulic pump and run for 10 minutes to bring the oil to operating temperature. Change the hydraulic oil if appropriate as specified in the Maintenance Section.
2. Inspect the conveyor belt or chain. Realign if the conveyor is not tracking in the center of the frame. Replace if the edges are damaged from rubbing on the frame. Properly tension each conveyor.
3. If plugged into hard wiring:
    a. Turn the power OFF at the master electrical panel and lock out.
    b. Unplug and remove power cord from machine.
4. Attach center, side and extend/retract anchor chains (both sides) to support and stabilize frame for storage.
5. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
6. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
7. 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.
8. 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.
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.

4.10.2 REMOVING FROM STORAGE

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

1. Transport or move to the working area.
2. Check
    a. Hydraulic tank oil level.
    b. Hydraulic and electrical systems and components.
    c. Conveyor belt and chain drive system.
    d. All hardware. Tighten as required.
3. Replace any defective components.
4. Go through the pre-operation checklist (Section 4.4) before starting.

5 SERVICE AND MAINTENANCE

MAINTENANCE SAFETY

- Read and understand all the information contained in the Operator's Manual regarding operating, servicing, adjusting, maintaining and repairing.
- 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.
- Exercise extreme caution when working around, or with, high-pressure hydraulic systems. De-pressurize the system before working on it.
- 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.
- Wear heavy gloves and eye protection when searching for suspected hydraulic leaks. Use a piece of wood or cardboard as a backstop instead of hand 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.
- Make sure all guards and doors are in place and properly secured when operating the Telescoping Telescoping Stinger.
- Do not work on Telescoping Stinger 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.

5.1 SERVICE

5.1.1 FLUIDS AND LUBRICANTS

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

2. **Hydraulic Oil:**
   Use- Amco All-Purpose Hydraulic Oil or Equivalent (Rfer to Oil Specification page.).

   Reservoir Capacity: (3 US. gals, 11 liters).

3. **Roller Chain Lubricating Oil:**

Chain Type *	Ambient Temperature Range		
	14°F-32°F	32°F-104°F	104°F-122°F
RS-50 - less	SAE 10	SAE 20	SAE 30
RS-60/RS-80	SAE 20	SAE 30	SAE 40
RS100	SAE 20	SAE 30	SAE 40
RS120/more	SAE 30	SAE 40	SAE 40

* Stamped on chain link side plate.

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.

5.1.1.1 LUBRICANT LIST

MAYO MFG. RECOMMENDS THE FOLLOWING MOBIL PRODUCTS OR THEIR EQUIVALENTS				
Lubricant Type	**Component**	**Specification**	**Recommended Lubricant**	**Recommended Temperature / Service Interval**
Hydraulic Oil	Hydraulic Reservoir	ISO 32, Synthetic Food Grade, NSF-H1	Mobil SHC Cibus 32	All Temperatures/Oil sample guidance or 12 months
	Hydraulic Reservoir	ISO 32, Food Grade, NSF-H1	Mobil DTE FM 32	10F to 140F/Oil sample guidance or 12 months
Grease	Greased Bearings/ Points	Food Grade	Mobilgrease FM 222	All/Weekly or as needed
	Greased Bearings/ Points	Non-Food	Mobilgrease XHP 222	
Gear Oil	Winsmith Worm Gear Reducer	Poly Alkylene Glycol (PAG) ISO 460 NSF H1	Mobil Glygoyle 460	All/See Manual Note: Do not Substitute
	Browning Helical Gear Reducer	Synthetic, PAO Type ISO 220 NSF H1	Mobil SHC 630 or Mobil SHC Cibus 220 (NSF H1)	All/Change Every Two Years
	Auburn Planetary Wheel Drives	SAE GL-5 75w90	Mobil Delvac Synthetic 75w90	All/Change Every Two Years

5.1.1.2 HYDRAULIC OIL

Hydraulic Oil: Mobil DTE FM 32; Reducer lubricant: Mobil Glygoyle 460

5.1.1.3 HYDRAULIC OIL

Hydraulic Oil: Mobil DTE FM 32

5.1.2 GREASING

Refer to Section 5.1.1.1 for recommended lubricants. Use the Maintenance Checklist provided 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 belt and chain conveyor tension and alignment. Tension or align as required.

   a. **Tension.**

      • Belt.

FIG. 24 CONVEYOR TENSION

   b. **Alignment.**

      • Front and rear.

Front

Rear

FIG. 25 CONVEYOR ALIGNMENT

      • Chain.

2. Inspect electrical system and all components.

FIG. 26 ELECTRIC SYSTEMS (TYPICAL)

Weekly or 50 Hours

1. Grease conveyor shaft bearings with 1 shot of grease (2 locations each shaft.).

IMPORTANT

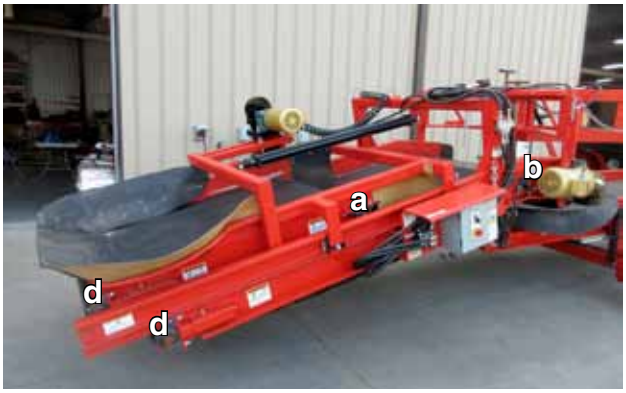
Only sealed bearings are used on the conveyor bearings. Sealed bearings should never be greased more often than weekly or every 50 hours. Do not over-grease. Do not give bearing more than 1 shot of grease each time it is greased. Once the bearing seal is broken, the bearing must be greased each day or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

a. Drive.

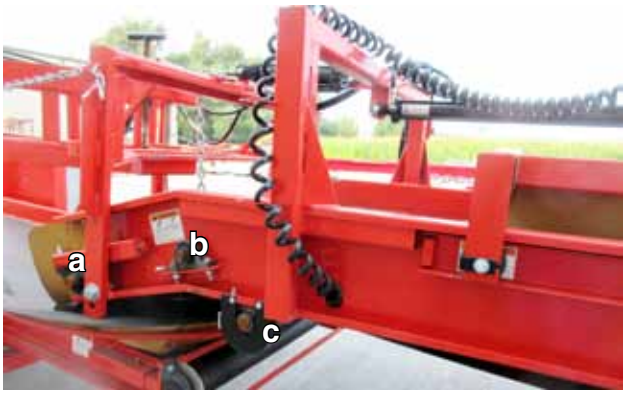
b. Top Dogleg.

c. Bottom Dogleg.

d. Driven.



Drive, Dogleg and Guide (Typical)



Drive, Dogleg and Guide (Typical)

Driven (Typical)

FIG. 27 CONVEYOR SHAFTS

2. Lubricate roller chain in top conveyor drive system.

FIG. 28 ROLLER CHAIN

100 Hours or Annually

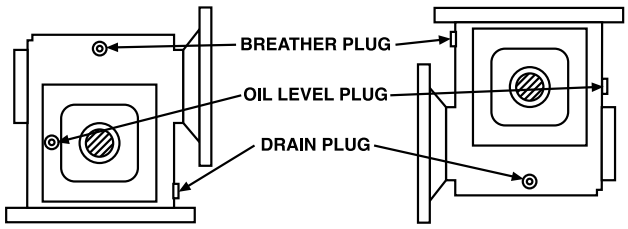
1. Check the oil level in the host machine hydraulic reservoir.

FIG. 29 HYDRAULIC OIL LEVEL (TYPICAL)

2. Check the oil level in each speed reducing gear box in the drive systems (1 location each gear box).

Top Conveyor

Bottom Conveyor



Schematic

FIG. 30 GEARBOXES (TYPICAL)

500 Hours or Annually:

1. Clean the host machine hydraulic system filter (1 location).

2. Change the oil in the hydraulic system.

FIG. 31 HYDRAULIC SYSTEM (HOST MACHINE)

5.1.4 SERVICE RECORD

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

ACTION CODE:	CK	CHECK	CH	CHANGE	CL	CLEAN
	LU	LUBRICATE	RE	REPACK	IN	INSPECT

Maintenance

Hours																						
Serviced by																						
8 Hours or Daily																						
CK Conveyor Tension and Alignment (Belt & Chain)																						
IN Hydraulic System and Components																						
IN Electrical System and Components																						
50 Hours or Weekly																						
LU Conveyor Shaft Bearings																						
100 hours or Annually																						
CK Hydraulic Oil Level																						
CK Gearbox Oil Level (2)																						
500 Hours or Annually																						
CL Hydraulic System Filter																						
CH Hydraulic System Oil																						

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 HYDRAULIC MAINTENANCE

A hydraulic system provides power to move the machine hydraulics. The hydraulic power pack can be mounted on the host machine. The system consists of an electrically powered pump, reservoir, lines, hoses, solenoid valves, directional valves, motors and cylinders. 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 entire system and all components are in good working condition.

When inspecting the hydraulic 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.
3. Inspect all hydraulic components looking for:
    a. Leaks.
    b. Damaged hoses or lines.
    c. Damaged or leaking cylinders.
    d. Leaking motors or fittings.
    e. Damaged or leaking solenoid and directional valves.
    f. Leaking pump or fittings.
4. Tighten any leaking fittings and replace any damaged components.
5. Change the hydraulic oil and filter every 500 hours or annually per the Service schedule. Change more frequently if operating in harsh conditions such as extreme heat or cold, extreme dust or dirt, and/or extreme humidity.

5.2.2 ELECTRICAL SYSTEM INSPECTION

Electricity provides power to all systems on the Stinger. To maintain the integrity of each system and provide a safe working environment for the operator, it is important that a daily inspection be done to make sure that all systems 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.

5.2.3 ELECTRIC MOTOR RESTART

A magnetic starting system is used on the Telescoping Stinger and the restart procedure is covered in this section. It is recommended that only a licensed electrician perform maintenance work on the electrical system.

1. **Magnetic Starter:**
   All electric motors are 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 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:

   a. Depress the OFF button.

   b. Depress the ON button.

   c. If the motor will not start, turn machine OFF and lock out power at the master control panel before opening the control panel.

   d. Fully rotate the contactor dial counterclockwise to reset and then, turn dial clockwise to the ON contactor open position.

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

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

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

      NOTE

      If your conveyor 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.

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

FIG. 32 CONTROL BOX (TYPICAL)

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

      iv. The motor is bad and needs replacing.

      v. An electrical short exists somewhere in the circuit.

5.2.4 CHANGING HYDRAULIC OIL

Every 500 operating hours or annually, whichever comes first, the oil in the hydraulic system on the host machine and filter should be changed. To change the oil and filter, follow this procedure:

1. Run the hydraulic pump until the oil is warm. Warm freshly agitated oil removes more contaminants when drained than cold stagnate oil.

2. Stop the pump and place all controls in their OFF or neutral position.

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

4. Place a container under the drain plug.

5. Remove the drain plug and allow the system to drain for 10 minutes.

IMPORTANT

The reservoir contains 2 gallons of oil. Be sure to have several containers to hold the oil from each tank when draining.

6. Install and tighten the drain plug. Use teflon tape or pipe sealant compound on the plug to prevent leaking.

7. Dispose of the used oil in an environmentally safe manner.

8. Fill with Amoco All-Purpose Hydraulic Oil or equivalent.

9. Add to the oil level until it measures 1 1/2 inches (37 mm) from the fill neck to fill the tank.

10. Install the fill cap.

11. Start and run the system and check for leaks.

12. Tighten any fitting that leaks.

FIG. 33 HYDRAULIC SYSTEM (TYPICAL)

5.2.5 SPEED REDUCER GEARBOX OIL

Each conveyor is driven by an electric motor that is attached to a high ratio speed reducing gearbox or roller chain to give the required operating speed. Each 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. Run the hydraulic system and conveyors until each gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.

2. Stop the conveyors and pump.

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

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

5. **Checking oil level:**

   a. When the gearbox is cold, remove the level plug from the side of the gearbox.

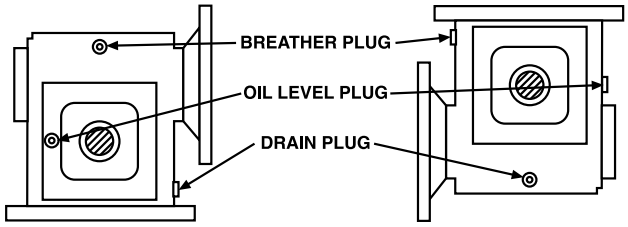
   b. When the oil just fills the threads of the level plug, it is at the correct level.

   c. Add oil through the fill plug as required.

   d. Install and tighten level and fill plugs.

Top Conveyor

Bottom Conveyor



Schematic

FIG. 34 GEARBOXES (TYPICAL)

5.2.6 CONVEYOR BELT TENSION / ALIGNMENT OR REPLACEMENT

Rubber belts or chains are used to convey material with the Telescoping Stinger. The tension and alignment of the conveyors should be checked daily to insure proper function. Replace the conveyor belt 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 lockout.

3. **Tension:**

   a. **Belt:**
   The belt is tensioned correctly when there is a 1/2 to 1 inch (12 to 25 mm) sag between the guide rollers on the bottom or slack side of the conveyor during operation. Use the roller bearing adjusting bolts to move bearing and adjust position.

IMPORTANT

The belt should not slip when machine starts or during normal operation. Do not over-tighten.

Bottom Conveyor

Top Conveyor

FIG. 35 BELT TENSION (TYPICAL)

b. **Adjusting:**
The drive end driven shaft bearings of each conveyor are mounted on an adjustable square tube to position the shaft end. Each drive and driven shaft is designed with this feature.

To adjust:

1. Shut down and lock out power.

2. Loosen square tube set screw and jam nut.

3. Move shaft to required position using position bolt.

4. Tighten set screw and jam nut to specified torque.

Drive

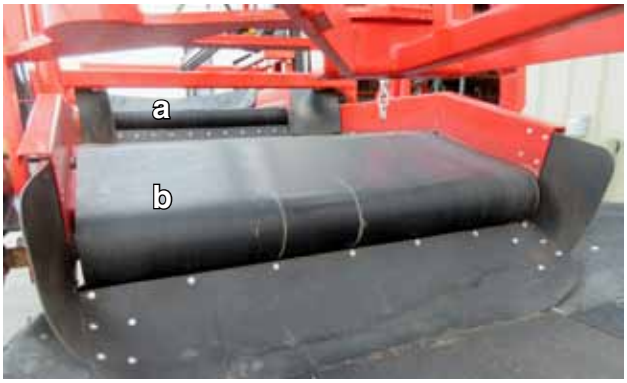
Driven

FIG. 36 SHAFT ADJUSTING

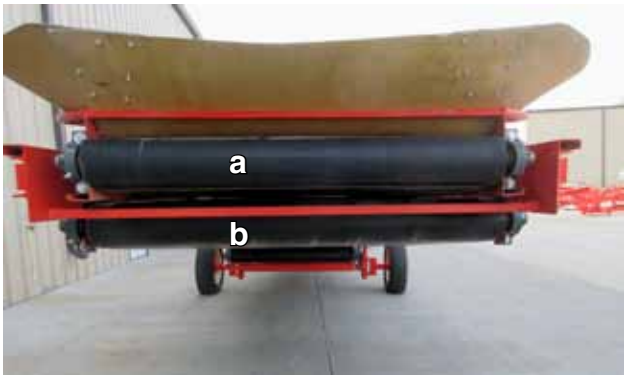
4. **Alignment:**
It is properly aligned when the belt runs in the center of the frame panels and the shafts. Be sure to run the Telescoping Stinger a full revolution to check the entire conveyor. The conveyor can move from side-to-side while it is turning as long as it doesn't contact the sides. If 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.

   a. Top

   b. Bottom



Driven



Drive

FIG. 37 CONVEYOR ALIGNMENT (TYPICAL)

5. **Replacement:**

   a. Move one or both of the shafts into their loosest position.

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

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

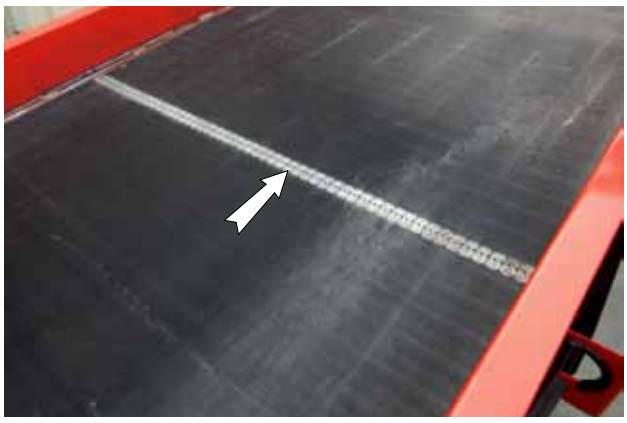
   d. Slowly pull the old conveyor out of the machine and thread the new one into position.

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

   f. Move the shaft into position to set the tension of the conveyor and secure the bearing assemblies.

   g. 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 adjustment.

Top



Bottom

FIG. 38 CONVEYOR CONNECTOR (TYPICAL)

5.2.7 TOP CONVEYOR DRIVE ROLLER SYSTEM:

The top conveyor is powered by an electric motor through a right angle gearbox and roller chain. The chains should be oiled every week or 50 hours and tension and alignment checked.

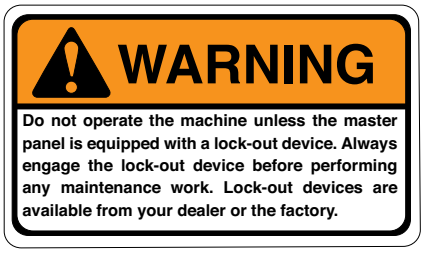
When maintaining the roller chain system, follow this procedure:

1. **Weekly Oiling:**

   a. Fully retract frame and connect lock chain.

   b. Turn machine and controls OFF, lock-out tag-out master power source.

   c. Remove the guard over the drive system.



   d. Use an oil can or brush to apply oil to the chain.

   e. Refer to the following table for oil type.

Chain Type*	Ambient Temperature Range		
	14°F - 32°F	32°F - 104°F	104°F - 122°F
RS-50 /Less	SAE 10	SAE 20	SAE 30
RS-60/RS-80	SAE 20	SAE 30	SAE 40
RS-100	SAE 20	SAE 30	SAE 40
RS-120 /More	SAE 30	SAE 40	SAE 40

* Stamped on chain link side plare

   f. Install and secure guard.

FIG. 39 ROLLER CHAIN DRIVE SYSTEM

2. **Weekly Roller Chain Tension:**
The roller chain drive system tension is set by the position of the drive motor mounting plate. Check the tension when the machine is OFF and not moving. The chain should be snug to the sprockets when the machine is not running. To set the tension:

   a. Loosen jam nut on the mounting bolts.

   b. Use the adjusting nut to set the chain tension by moving the motor mounting plate.

   c. Tighten jam nuts to their specified torque.

FIG. 40 MOUNTING BOLT

3. **Check alignment by:**

   a. Lat a straight edge across the sprocket faces. When the straight edge is flush with the faces, they are aligned, or...

   b. Visually sight across the sprocket faces. If the sprockets are in the same plane, they are aligned.

   c. Loosen set screw in sprocket hub or adjust the number of washers on the mounting bolt if alignment is required.

   d. Move sprockets to their required position.

   e. Tighten set screw or mounting bolt to specified torque.

   f. Install and secure the guard.

FIG. 41 ALIGNMENT (TYPICAL)

6 TROUBLE SHOOTING

The Mayo Telescoping Stinger is mounted to a host machine and uses a belt to convey material from a transport vehicle into the 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 and the serial number from your machine ready.

PROBLEM	CAUSE	SOLUTION
Telescoping Stinger won't run.	No power.	Turn power ON at master panel. Turn power ON at Telescoping Stinger control box.
	Tripped overload on starter.	Reset starter.
Conveyor won't run.	Loose conveyor.	Tighten conveyor.
	Binding.	Align conveyor.
Top frame doesn't extend.	No pressurized oil.	Turn pump ON.
	Frame binding.	Align frame.

7 SPECIFICATIONS

7.1 MECHANICAL

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

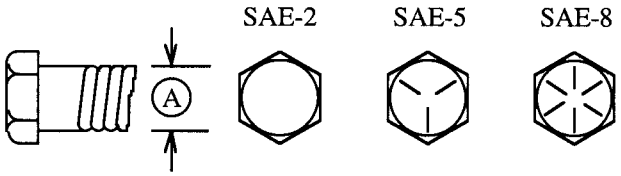
7.2 BOLT TORQUE

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.

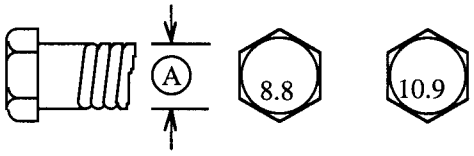
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque* SAE 2 (N.m.)	SAE 2 (lb-ft)	SAE 5 (N.m.)	SAE 5 (lb-ft)	SAE 8 (N.m.)	SAE 8 (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 (N.m.)	8.8 (lb-ft)	10.9 (N.m.)	10.9 (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.

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.

* 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)	(lb-ft)	Recommended Turns To Tighten (After Finger Tightening) (Flats)	(Turn)
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/16	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12

7.4 ELECTRICAL SCHEMATIC

7.4.1 LINE PHASING

Line phasing, line voltage, control voltage, and accessory options can vary substantially for each machine. Please contact factory at 1-800-223-5873 for your machine's specific electrical layout.

7.5 HYDRAULIC SCHEMATIC

Please contact factory at 1-800-223-5873 for your machine's specific electrical layout.

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