Mayo

SAMPLER CONVEYOR

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

TELESCOPING SAMPLING CONVEYOR 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 _____

Address _____

City, State/Province, Code _____

Phone Number (____) _____

Contact Name _____

Model _____

Serial Number _____

Delivery Date _____

Dealer Name _____

Address _____

City, State/Province, Code _____

Phone Number (___) _____

DEALER INSPECTION REPORT

____ Tire Pressure Checked
____ Wheel Bolts Torqued
____ Inspect Electrical System
____ Hydraulic Hoses Free
____ Hydraulic Fittings Tight
____ Lubricate Machine
____ Conveyor 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

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Mayo Sampling Telescoping Conveyor when ordering parts or requesting service or other information.

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

SERIAL NUMBER LOCATION

Model _____

Serial Number _____

TABLE OF CONTENTS

1 INTRODUCTION

Congratulations on your choice of a Mayo Model 2000 Series Sampling Telescoping 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 Conveyor requires that you, and anyone else who will be operating or maintaining the Conveyor, 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 Sampling Telescoping Conveyors manufactured by Mayo. Certain options may be available to specifically tailor the Conveyor 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 Conveyor is the front. The master electrical 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 Sampling Telescoping 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

SIGNAL WORDS:

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

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components 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 Sampling Telescoping Conveyor. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the 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 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.

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

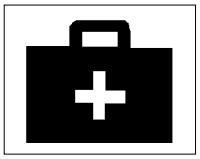
- Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

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

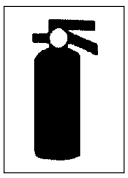
2. Only trained, competent persons shall operate the equipment . An untrained operator is not qualified to operate this machine.

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 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 Sampling Telescoping 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 Sampling Telescoping 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 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 are available from your authorized Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

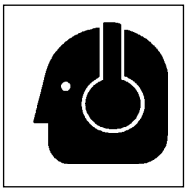
- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper. (See Section 3).
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the 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 Sampling Telescoping 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 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 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 cylinders to set frame height to match adjacent equipment.

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 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 Conveyor.

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

4. Do not service or maintain the Conveyor 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 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 cylinders to set frame height to match adjacent equipment to minimize drop height.

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. Keep the working area clean and dry.

11. 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.

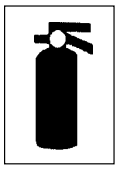
4. Follow good shop practices:

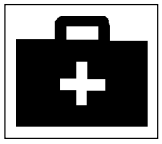
   - Keep service area clean and dry.
   - Be sure electrical outlets and tools are properly grounded.
   - Use adequate light for the job at hand.

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 Conveyor.

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 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

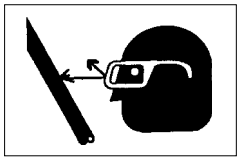
1. Make sure that all the components in the pump system are kept in good condition and are clean.

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 Conveyor is properly grounded at the power source.

3. Make certain that all electrical switches are in the OFF position before plugging the 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 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.

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. Fully retract all telescoping Conveyor section and secure before 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 wheel cylinders 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 Conveyor 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 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 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	EMPLOYEES SIGNATURE	EMPLOYERS 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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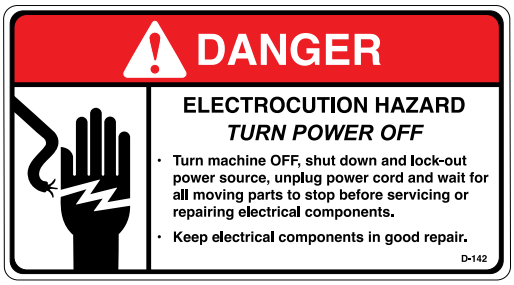

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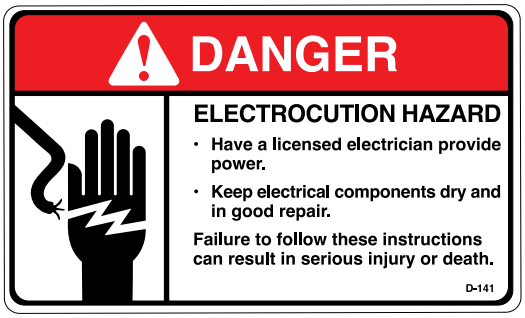

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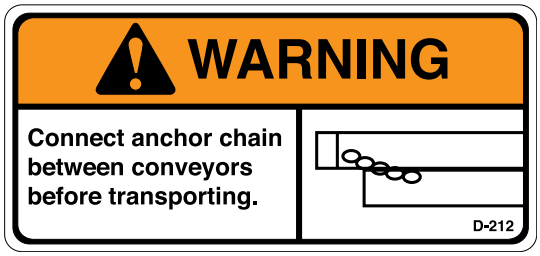

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4 OPERATION

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Conveyor.
- 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.
- Extend cylinders to set frame height to match adjacent equipment to minimize drop height.
- 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.
- Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.
- Keep the working area clean and dry.
- Review safety instructions annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Sampling Telescoping Conveyor is designed to be used as part of a system to convey potatoes from one location to another and take samples of the flow of potatoes across the width of the conveying belt. 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 Sampling Telescoping Conveyor will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Sampling Telescoping Conveyor is designed to take a sample across the full width of the conveyor while moving potatoes. Each conveyor is powered by an electric motor through a speed reducing gearbox. The master control box is mounted on the left side of the frame along with the frame height and telescoping position controls. The cross conveyor sample taker controls are positioned on both sides of the frame to allow samples to go to either side depending on the application.

The sampling components are part of the discharge conveyor. A slide inside the conveyor is positioned to keep the sampling belting flap open or closed depending on the position in the cycle. Controls on each side of the frame activate the sampling cycle to drop the sample on the cross conveyor.

Hydraulic cylinders on each corner of the frame are used to set the height of the machine for minimizing drop height. A hitch frame on the discharge end is used to attach the machine to other Mayo equipment.

A Intake Hopper
B Cross Conveyor
C Intake Conveyor
D Discharge Conveyor
E Discharge
F Height Cylinders
G Master Control Panel
H Cross Conveyor Controls
J Equipment Attachment Hitch
K Sampling Belting
L Sampling Support Plate
M Sensor
N Height/Telescoping Controls

FIG. 1 MACHINE COMPONENTS


J
G
C
D
H
E
B
F
M


D


L

4.3 GENERAL OPERATION THEORY

Sampler Telescoping Conveyors are placed in a conveying line where the user wants to take a sample from across the width of the conveyor belt to test or evaluate the potatoes. As potatoes are moved through the machine, the operator can initiate the sampling cycle or make it part of the machinery system.

The support plate slides back to allow the belting flap in the discharge conveyor to drop down and allow the potatoes on the flap to drop down on the cross conveyor. These samples can be moved to either side and directed into a container for evaluation.

When the operator initiates the sampling cycle, it starts when the conveyor connector link goes past the sensor. Then the support plate inside the conveyor retracts out of the way allowing the potatoes on the flap to drop down on the cross conveyor for the sample. As the conveyor continues moving and the connecting link passes the sensor again, it closes the support plate and this cycle is completed.

The operator must physically depress the control switch to take the next sample. Each operator selects the time and frequency of the sampling.

Controls

Sample

Operation

FIG. 2 SAMPLE (TYPICAL)

4.4 MACHINE BREAK-IN

Although there are no operational restrictions on the Conveyor 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).

4. Read operator's manual.

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

1. Retorque all wheel bolts.

2. Retorque all other fasteners and hardware.

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

4. Check the alignment and tension of all conveyor belts/chains. Realign or tighten as required.

5. Check oil level in each speed reduction gear box for each drive. Top up as required.

6. Lubricate all grease fittings.

Cross

Top

Bottom

FIG. 3 BREATHER (TYPICAL)

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

1. Check the alignment of all conveyor belts and chains. Realign as required.

2. Retorque all other fasteners and hardware.

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

4. Check the alignment and tension of all conveyor belts/chains. Realign or tighten as required.

5. Check oil level in each speed reduction gear box for each drive. Top up as required.

6. Then go to the regular servicing and maintenance schedule as defined in the Maintenance Section.

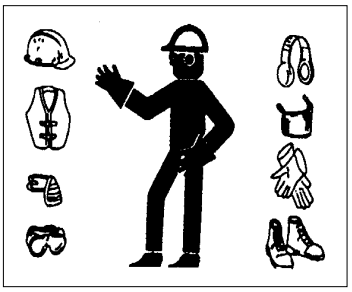
4.5 PRE-OPERATION CHECKLIST

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

4. Check for hydraulic leaks. Tighten fittings or reroute 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 or chain 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 Pack.

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 labeled.

1. **Master Power Switch:**
   The 2 position rotary switch controls the power to the machine. Turn counterclockwise to turn off and clockwise to turn on.

2. **Belts HAND/OFF/AUTO:**
   This 3 position rotary switch selects the operating mode for the belts. Turn fully counterclockwise to run in the manual (HAND) mode where the operators control the machine. Turn clockwise until the dial points up to turn the belts off. Turn fully clockwise to run in the AUTO mode where the unit is part of a system.

FIG. 4 CONVEYOR CONTROLS (TYPICAL)

3. **Pump HAND/OFF/AUTO:**
   This 3-position maintained selector switch enables the pump and configures the sample gate operator. Turn the switch fully counterclockwise to the “Hand” position, the pump will turn on and sample is ready to be taken manually from the Cross Belt control panel. Also use this switch in hand mode when extending or retracting the telescope or adjusting the leg height. Turn the switch clockwise to the “Off” position to disable the pump. Turn the switch fully clockwise to have the pump turn on only when a sample is requested.

   Sample gate operator (Green Button) is on the Cross Belt Control Panel:

   AUTO: Press and Release the Sample Button, Machine will automatically open gate, drop 1 sample, and close gate.

   HAND: Press and hold Sample button to open gate. Release button and gate will close automatically.

4. **Belt Speed Control:**
   This potentiometer controls the belt speed of the main conveyors. Turn the dial fully counterclockwise (CCW) to its (0) position for minimum conveyor belt speed set point of the variable frequency drive. Turn clockwise to increase variable speed up to 100%, or maximum conveyor speed set point of the variable frequency drive.

5. **Cross Belt REV/OFF/FWD:**
   This 3 position rotary switch selects the operating mode for the cross belt. Turn fully counterclockwise to run cross belt in the reverse direction. Turn clockwise until the dial points up to turn the cross belt off. Turn fully clockwise to run cross belt in the forward direction.

6. **Emergency Stop:**
   Each machine is designed with 3 red emergency stop switches. All are located close to operating locations and can stop the machine when required. Release all switches before turning on power. Depress the switch to stop the machine. Turn switch 1/4 turn clockwise (CW) and the switch will pop out.

7. **Sample In Progress:**
   This switch lights up (blue) when the machine is in the sampling mode.

8. **Cross Belt Controls:**
A cross belt control box is positioned on each side of the frame where typically sampling personnel would be standing.

   a. **Cross Belt Start:**
   This 2-position momentary selector switch controls operation of the cross belt. Turn fully clockwise to start the belt. Release the switch and the belt will stop as the switch automatically returns to the counterclockwise position. Note: Direction of the belt is controlled by the Cross Belt Rev/Off/Fwd Switch on the main panel, See Section 4.6.5.

   b. **Sample Start:**
   This push button green switch is used to initiate the sampling cycle for the machine. Sampling operation is determined from the Pump Hand / Off / Auto Switch on the main panel. See Section 4.6.3.

   AUTO: Press and Release the Sample Button, Machine will automatically open gate, drop 1 sample, and close gate.

   HAND: Press and hold Sample button to open gate. Release button and gate will close automatically.

   c. **Emergency Stop:**
   Each machine is designed with 3 red emergency stop switches. All are located close to operating locations and can stop the machine when required. Release all switches before turning power. Depress the switch to stop the machine. Turn switch 1/4 turn clockwise (CW) and the switch will pop out.

9. **Hydraulic Controls:**
These hydraulic valves control the machine height and frame extension. When operating the hydraulic controls, enable the pump by placing the Pump Hand / Off / Auto Switch into “Hand” mode. See section 4.6.3.

   a. Pull the left lever up and hold to raise the front of the conveyor. Release the lever and the frame will stop moving. Push down and hold and the front of the frame will move down.

   b. Pull the centre lever and hold to extend/telescope the frame out. Release the lever and the frame extension will stop moving. Push down and hold to retract/compress the frame.

   c. Pull the right lever up and hold to raise the rear (discharge) end of the frame. Release the lever and the frame will stop moving. Push down and hold to lower the rear of the frame.

Left Side

Right Side

FIG. 5 CROSS CONVEYOR CONTROLS

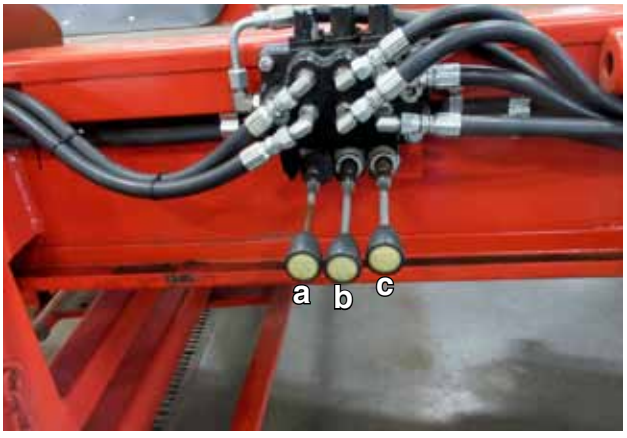


FIG. 6 HYDRAULIC CONTROLS

NOTE

Use the levers to match the machine frame to adjacent pieces of equipment to minimize drop height.

4.7 MACHINE 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, workers 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. **Hitch:**
   Sampling Telescoping Conveyors are equipped with a hitch for towing depending on its specifications. Hitches must be removed, retracted or hinged out of the way prior to the conveyor being used to prevent interfering with workers or adjacent equipment.

Mounting Pin

Extended

FIG. 7 HITCH

3. **Telescoping:**
The frame is designed to extend to connect with adjacent pieces of equipment. Extend or retract as required for your application.

Extended

Retracted

FIG. 8 TELESCOPING

4. **Steering:**
Sampler Conveyors are equipped with a manual steering system on the front wheels. Each machines equipped with a steering handle to assist in turning the wheels. Install handle over steering bracket when turning. Stow the handle in its storage position when not being used.

Handle

Stowed

FIG. 9 STEERING

5. **Frame Height:**
Hydraulic cylinders at each corner of the frame are used to set the height of the loading hopper and discharge frame to match the adjacent equipment to minimized drop height. Use the hydraulic controls to set the height.

Hydraulics

Discharge

FIG. 10 FRAME HEIGHT

6. **Equipment Attachment:**
Each customer must provide a means of supplying a steady flow of potatoes to and from the Sampling Telescoping Conveyor. Normally this is done by using another pieces of equipment such as a grader or another conveyor. When the machine is used as a component in a conveying system, it is recommended that it be securely attached to the adjacent piece of equipment. A large pintle ring dismounted on the discharge end to attach to another Mayo machine. If connecting to equipment made by other manufactures, connect securely using a chain, straps or other means.

Disconnect the hitch and move other equipment before repositioning or moving the Sampler Conveyor.

By securely attaching to the Bin Piler or other adjacent equipment, the adjacent equipment can move and the Conveyor will move along with it without having to stop and reposition. Unlock the front steering wheels and place chocks around the the front wheels when the conveyor is positioned. set the height of the equipment for minimal drop height to minimize bruising.

FIG. 11 EQUIPMENT ATTACHMENT

7. **Cross Conveyor End:**
The cross conveyor is positioned in the centre of the discharge conveyor and is designed to go in either direction as required by the application. It is designed with a removable end wall to stop the sample from falling off the end of the conveyor. always install the end wall on the side opposite of where the samples are collected.

End

Sample End

FIG. 12 CROSS CONVEYOR END

8. **Sensor:**
Verify that the sensor is mounted in its frame and the lacing buckle passes next to it. The connector in the lacing buckle must pass the sensor so the system knows when to start the sampling cycle and when to stop it.

FIG. 13 SENSOR

4.8 OPERATING

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Conveyor.
- 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.
- Extend cylinders to set frame height to match adjacent equipment to minimize drop height.
- 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.
- Before applying pressure to the hydraulic system, make sure all components are tight and that all steel lines, hoses and couplings are not damaged.
- Keep the working area clean and dry.
- Review safety instructions annually.

Follow this procedure when using the Sampling Telescoping 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).

FIG. 14 CONVEYING SYSTEMS

4. **Starting Sampling Telescoping Conveyor:**

   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 Conveyor.

   e. Turn the rotary switch to the "HAND" (manual) position to turn the hydraulic pump ON manually or "AUTO" to allow it to be controlled by the operating system.

   f. Turn the rotary switch to the "HAND" (Manual) position to turn belts ON manually or "AUTO" to allow it to be controlled by the operating system of the straight or telescoping models.

   g. Turn the equipment ON that moves potatoes on the Conveyor.

5. **Stopping Machine:**

   a. Turn OFF the equipment that brings potatoes to the Conveyor.

   b. Wait until the potatoes have moved off the end of the conveyor or lower conveyor.

   c. Turn the Conveyor OFF.

   d. Turn the hydraulic pump OFF.

   IMPORTANT

   If the machine is wired up as part of a conveying system, wait until all the potatoes have moved through the system. Then turn the system OFF.

6. **Emergency STOP:**
   Depress the red STOP button(s) on any of the control panel(s) as required.

Left Side

Right Side

FIG. 15 STOP CONTROL

7. **Equipment Attachment:**
Each customer must provide a means of supplying a steady flow of potatoes to and from the Sampling Telescoping Conveyor. Normally this is done by using another piece of equipment such as a grader or another conveyor. When the conveyor is used as a component in a conveying system, it is recommended that it be securely attached to the adjacent piece of equipment. A pintle hitch is mounted on the discharge end frame to attach to another Mayo machine. Adjust the frame height to obtain the required position. If connecting to equipment made by other manufacturers, connect securely using a chain, straps or other means.

Disconnect the hitch and move the other equipment before repositioning or moving the Conveyor.

By securely attaching to the Bin Piler or other adjacent equipment, the adjacent equipment can move and the conveyor will move along with it without having to stop and reposition. Unlock the steering wheels and place chocks around the rear wheels when the conveyor is positioned. Set the height of the equipment for minimal drop height to minimize bruising.

FIG. 16 EQUIPMENT ATTACHMENT

8. **Moving:**

A. Manual Steering:
The conveyor is manually steered and moved in normal conditions. To assist in the moving process, the front wheels are designed to be used for steering. To use this system, follow this procedure:

a. Install the manual steering extension bar on its stub holder.

b. Remove the hitch and stow.

c. Use the extension arm to turn the wheels to the desired position.

d. After the conveyor has been moved to its new position, straighten the wheels and install the hitch if towing.

e. Remove steering extension bar and place in its holder and secure with anchor pins.

f. Place chocks in front of and behind the discharge end tires to prevent machine movement.

g. Secure to the adjacent pieces of equipment.

Manual

Stowed

FIG. 17 STEERING

9. **Sampling:**
The machine is designed to take a sample across the complete width of the conveying belt when the cycle is initiated. The sensor on the bottom left side of the frame is positioned so the lacing buckle passes close to it. This feature controls the sampling sequence.

Sampling operation is determined from the Pump Hand / Off / Auto Switch on the main panel. See Section 4.6.3.

AUTO: Press and Release the Sample Button, Machine will automatically open gate, drop 1 sample, and close gate.

HAND: Press and hold Sample button to open gate. Release button and gate will close automatically.

Follow this procedure to sample:

a. Set up and start the machine per the previous instructions.

b. Fill with potatoes.

c. Place the collection container on the cross conveyor stand.

d. Depress the green Sample Start switch.

e. When the discharge conveyor connecting link passes the sensor, the sample support plate is opened (normally closed to prevent any potatoes from falling through).

FIG. 18 CROSS CONVEYOR CONTROLS

Open

Closed

FIG. 19 SUPPORT PLATE

f. As the discharge conveyor moves around its circuit, the sampling flap drops down where the support plate has been retracted and the potatoes drop down on the cross conveyor.

g. As the discharge belt continues around its circuit, the connector link again passes the sensor and the support plate is moved back into its supporting position and the sampling cycle is completed.

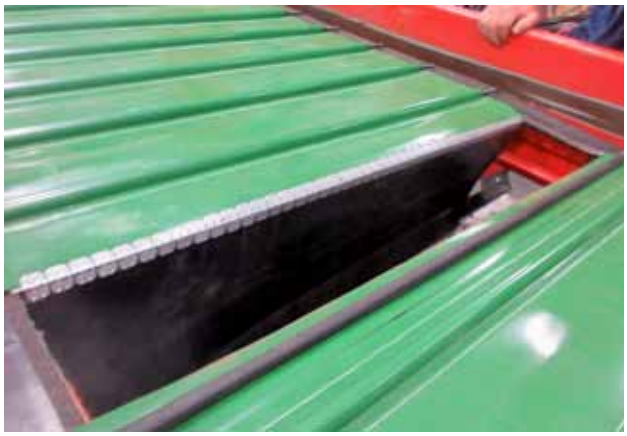


FIG. 20 FLAP OPEN

h. The operator turns the cross conveyor on to move the sample into the collection bin.

i. Unit now functions as a telescoping conveyor.

Sampling

Collector

Collected

FIG. 21 SAMPLING

11. **Drop Height:**
Potatoes are sensitive to bruising during the gathering, transporting and handling phases of harvesting. Bruising is kept to a minimum by maintaining a full flow of potatoes through each machine and minimizing all drop heights. Bruising during the conveying phase can be minimized by keeping the drop height between each piece of conveying equipment as small as possible. Use the cylinders on each corner of the conveyor to set the height.

FIG. 22 DROP HEIGHT

12. **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. Secure all pieces of equipment together to prevent unexpected movement and separation.

e. Keep the Conveyor as full as possible to minimize bruising during the unloading process.

f. Set the height of each end of the Conveyor so the drop height to the adjacent piece of equipment is at a minimum to prevent bruising.

FIG. 23 OPERATING SYSTEM

4.9 TRANSPORT

TRANSPORT SAFETY

- Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.
- Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not underinflate or overinflate.
- Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
- Fully retract all telescoping Conveyor section and secure before transporting.
- Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.
- Raise and secure all wheel cylinders if applicable.
- 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 Conveyor is positively hitched to the towing vehicle. Use a safety chain to assure a safe hitch hook-up when transporting.
- Adhere to local regulations regarding maximum weight, width and length.
- Do not exceed 15 MPH (25 Km/H). Reduce speed on rough roads and surfaces.
- Do not allow anyone to ride on the Conveyor or towing vehicle during transport.
- Always use hazard flashers on the towing vehicle when transporting.

Mayo Sampling Telescoping Conveyors are designed to be easily and conveniently moved from location to location. The term moving is used to describe the action of moving the machine manually and is covered in Section 4.9 Operating. Transporting is used to describe when the machine is being towed by a tractor or other power unit. When transporting, follow this procedure:

1. Disconnect and remove all auxiliary equipment from the Conveyor and position so the tractor can back up to the front of the machine.
2. Compress the Conveyor to its shortest length.
3. Attach the frame transport lock to prevent frame extension.

Cylinders

Lock

FIG. 24 TRANSPORT LOCK

4. Attach and secure the tow hitch.

5. If equipped with the optional traction drive, disengage drive by moving control bracket away from wheel and securing with anchor pin.

6. Place all controls in the OFF or neutral position.

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

8. Unplug and remove the power cord.

9. Attach the tow hitch to the tractor. Be sure to use a mechanical retainer through the drawbar pin.

10. Attach a safety cable between the hitch and the drawbar cage to prevent unexpected separation.

11. Install an SMV on the rear frame.

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

13. Clean all the reflectors.

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

15. 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.

16. 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.

17. 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.

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

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

FIG. 25 TOW HITCH

4.10 STORAGE

STORAGE SAFETY

- Store the Sampling Telescoping Conveyor 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 Conveyor.
- 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 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. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
4. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
5. 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.
6. Inspect each conveyor belt. Realign if the belt is not tracking in the center of the frame. Replace if the edges are damaged from rubbing on the frame. Properly tension each belt.
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. Check all rotating parts for entangled material. Remove.
9. Touch up all paint nicks and scratches to prevent rusting.
10. 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. Check hydraulic oil level.
   b. Conveyor belts and drive systems, hydraulic and oil levels.
   c. All hardware. Tighten as required.
   d. Air pressure in tires. Add as required.
3. Replace any defective components.
4. Go through the pre-operation checklist (Section 4.6) 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.
- Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.
- Make sure all guards and doors are in place and properly secured when operating the Conveyor.
- Do not work on 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.

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 per ISO 32, Food Grade, NSF-H1.

2. **Speed Reducer Gear Box Lubricant:**
   Use a Mobil Glygoyle synthetic lubricant 150 VG 460 or equivalent.

   Capacities: 1 qt (1 liter) each gear box.

3. **Hydraulic Oil:**
   Use Mobil DTE FM32 Hydraulic Oil or Equivalent.

   Reservoir Capacity: 1 US Gals, 3.78 liters.

4. **Speed Reducer Gearbox Lubricant:**
   Use Mobil Deluxe Synthetic Per SAE GL-5 75W90 lubricant or equivalent.

   Capacities (each gear box): 17 oz. or 0.5 qt.

5. **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 **Recommended Lubricant:**
Mobil DTE FM32 Hydraulic Oil or Equivalent.

5.1.1.2 NEW OIL SPECIFICATIONS

Reducer lubricant: Mobil Glygoyle 460

5.1.1.3 NEW OIL SPECIFICATIONS

Hydraulic Oil: Mobil DTE FM 32

5.1.2 GREASING

Refer to Section 5.1.1.1 for recommended lubricants. 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. Sealed bearings should never be greased more often than weekly or every 50 hours. Do not overgrease. 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 required.

   a. Cross

Alignment

Adjustment

FIG. 26 CROSS CONVEYOR

   b. Discharge

Alignment

Adjustment

FIG. 27 DISCHARGE

c. Intake

Alignment

Adjustment

FIG. 28 INTAKE

2. Inspect electrical system and all components.

FIG. 29 ELECTRICAL

Weekly or 50 Hours

1. Grease Conveyor shaft bearings with 1 shot of grease.

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. Cross

Drive

Driven

FIG. 30 CROSS CONVEYOR SHAFTS (TYPICAL)

b. Input

Input

c. Center

Center

d. Discharge

Discharge

FIG. 31 CONVEYOR SHAFTS

100 Hours or Annually

1. Check the oil level in the hydraulic system (1 location).

FIG. 32 HYDRAULIC SYSTEM

2. Grease the steering system pivots (4 locations).

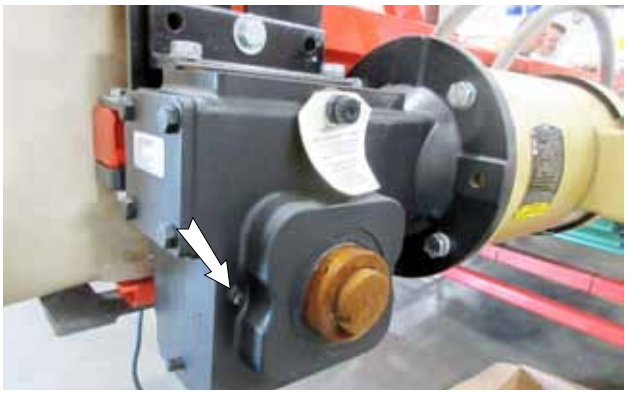
Left

Right

FIG. 33 STEERING SYSTEM

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

Input



Discharge

Cross

FIG. 34 LEVEL PLUG (TYPICAL)

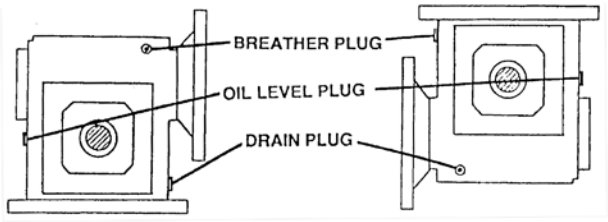
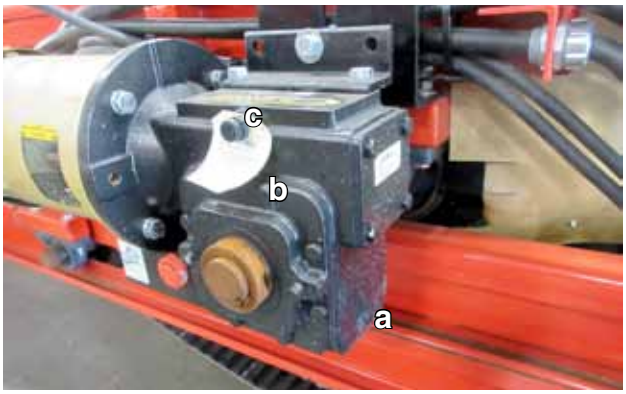


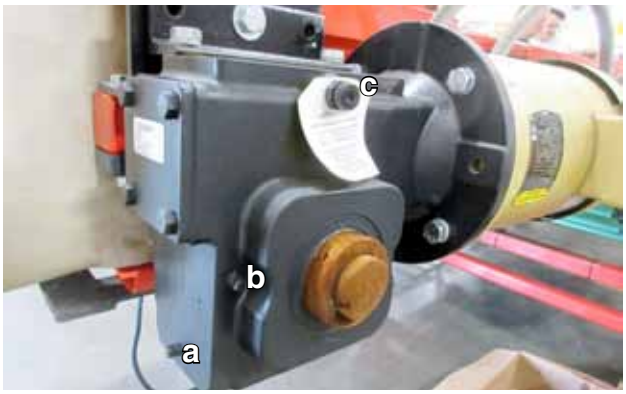
FIG. 35 GEARBOX SCHEMATIC (TYPICAL)

500 Hours or Annually

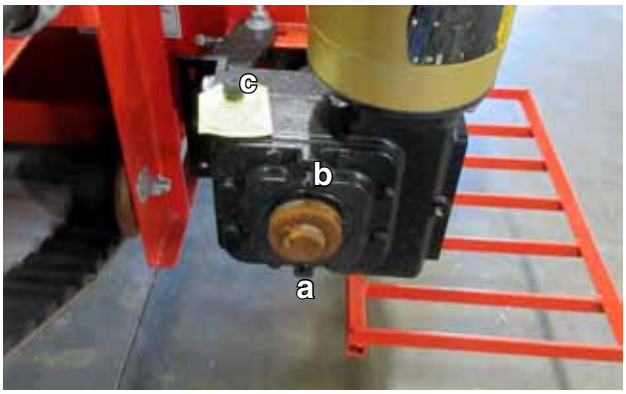
1. Change the oil in each gearbox.
    a. Drain
    b. Level
    c. Breather/Fill
2. Clean each gearbox breather plug.



Input



Discharge



Cross

FIG. 36 GEARBOX (TYPICAL)

3. Repack each wheel bearing.

FIG. 37 WHEELS (TYPICAL)

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																						
IN Electrical System and Components																						
50 Hours or Weekly																						
LU Conveyor Shaft Bearings																						
100 hours or Annually																						
CK Hydraulic Oil Level																						
LU Steering System Pivots																						
LU Ratchet Tube Jacks																						
CK Gearbox Oil Levels																						
500 Hours or Annually																						
CH Gearbox Oil																						
CL Gearbox Breather Plug																						
RE Wheel Bearings																						

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 SYSTEM INSPECTION

A hydraulic system provides power to raise or lower frame and extend boom. The system consists of an electrically powered pump, reservoir, lines, hoses, 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 ELECTRIC SYSTEM INSPECTION

Electricity provides power to all systems on the Conveyor. 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.

3. Inspect all electrical components looking for:

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.

    a. Physical damage. (Includes all components: starters, switches, enclosures, as well as plugs).

    b. Frayed or loose 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

Two types of electrical starting systems have been used on the equipment and restart procedure for each system is covered in this section. It is recommended that only a licensed electrician perform maintenance work on the electrical system.

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 indicates the cause of the overload. It must be reset before the motor can be restarted.

When a motor will not start:

1. Depress the red OFF button.

2. Depress the green ON button.

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

4. Reset the contactor dial to the ON contactor open position.

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

6. 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.

    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.

    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 it's service life and is in need of replacement.

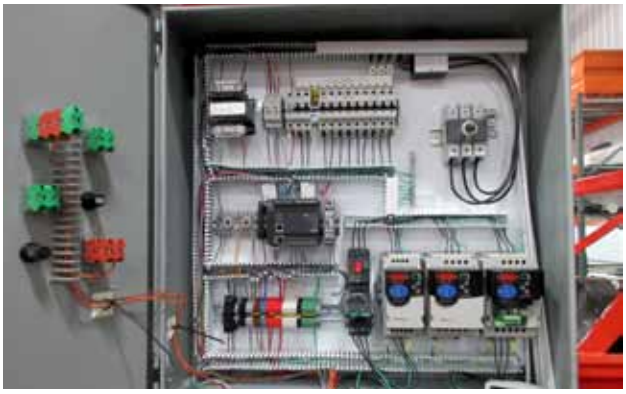


FIG. 38 MOTOR RESTART

    d. The motor is bad and needs replacing.

    e. An electrical short exists somewhere in the circuit.

5.2.4 SPEED REDUCER GEARBOX OIL

Each conveyor is driven by an electric motor that is attached to a high ratio speed reducing gearbox 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. Reducer lubricant: Mobil Glygoyle 460.

1. Run the conveyor(s) until the gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.

2. Stop the Conveyor(s).

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.

6. **Changing oil:**

   a. Place a container under the drain plug.

   b. Remove the drain.

   c. Allow 10 minutes to drain.

   d. 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.

   e. Remove the level and fill plugs.

   f. Add approximately 1 qt (1 liter) of Mobil Glygoyle 460 or equivalent. Use the level plug to determine the proper amount of oil.

   g. Check that the air passage through the breather is open.

   h. Install and tighten the fill and level plugs.

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

Input

Discharge

Cross

FIG. 39 GEARBOXES (TYPICAL)

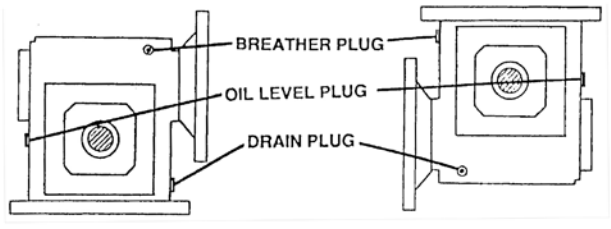


FIG. 40 GEARBOX SCHEMATIC (TYPICAL)

Reducer lubricant: Mobil Glygoyle 460

5.2.5 BREATHER CLEANING

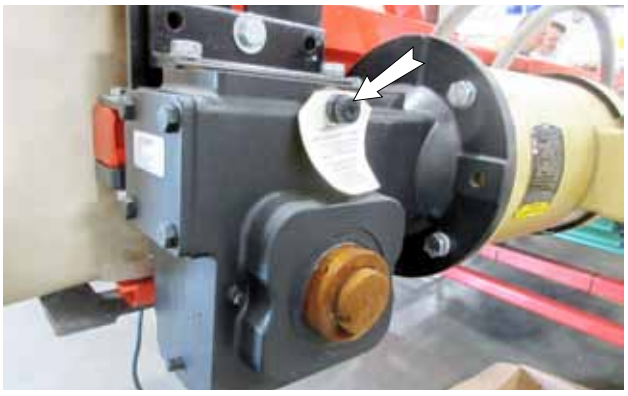
Each gearbox is equipped with a breather in the fill plug that vents the internal pressure to atmosphere. As the gearbox temperature increases and decreases during the operating and stopped modes, the pressure in the gearbox will increase or decrease if it is not vented to atmosphere. An increase in 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.

Input



Discharge

Cross

FIG. 41 BREATHER (TYPICAL)

5.2.6 CONVEYOR TENSION/ALIGNMENT OR REPLACEMENT

Rubber belts or potato chains can be used to move potatoes with the Conveyor. 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. **Conveyor Belt Tension:**
   They are tensioned correctly when the belt does not slip when belt is started or during normal operation. Do not over-tighten.

4. **Conveyor Belt Alignment:**
   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.

Input

Discharge

Cross

FIG. 42 BELT TENSION ADJUSTING (TYPICAL)

5. **Replacement:**

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

   b. Open the conveyor by splitting the links on the chain type or removing the connecting rod on the belt type.

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

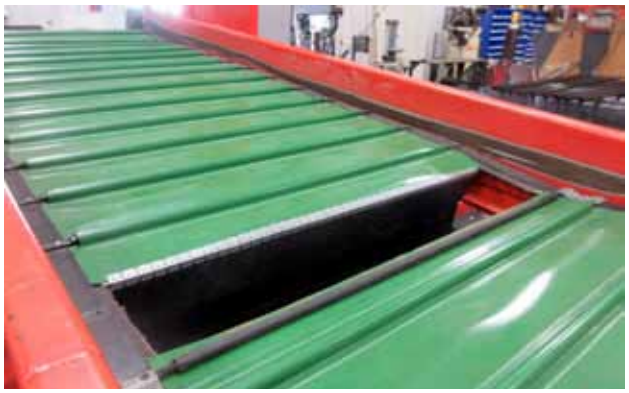
   d. Slowly pull the old conveyor out of the machine and thread the new one into position.

   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.

Input



Discharge

Cross

FIG. 43 BELT CONNECTOR (TYPICAL)

6 TROUBLE SHOOTING

The Mayo Sampling Telescoping Conveyor uses a straight or telescoping designed to take sample and convey potatoes. 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.

PROBLEM	CAUSE	SOLUTION
System won't run.	No power.	Turn power ON at master panel.
	Tripped motor starter.	Reset motor starter (See Section 5.2.3).
Conveyor won't run.	No power.	Turn conveyor ON.
	Sheared motor key.	Replace key.
	Sheared reducer key.	Replace key.
	Binding.	Align conveyor.
Conveyor won't take sample.	No power.	Turn conveyors on.
	Sensor out of position.	Set sensor position.

7 SPECIFICATIONS

7.1 MECHANICAL

7.1.1 SAMPLING TELESCOPING CONVEYOR

Sampling Telescoping Conveyor physical dimensions, power specifications & wheel/tire configurations vary substantially for each machine.

Please contact factory at 1-218-773-1234 or 1-800-223-5873 for your machines particular specifications.

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 DTE FM 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

7.1.2 SAMPLING TELESCOPING CONVEYOR

DIMENSIONS	
Length: Sampling Conveyor only (retracted):	25’ 0”
Length: Sampling Conveyor only (extended):	27’11”
Length: with hitch installed (retracted):	30’ 8”
Width: Sampling conveyor with 48” main belts:	8’ 9” total width
Height: Cylinder legs in down position (clearance):	7’ 7”
Weight:	5500 lbs (weight may vary depending on options installed)
Power:	480 V 3 Ph 20 Amps FLMA 240 V 3 Ph 40 Amps FLMA
Main Conveyor (2):	3 HP Drives
Cross Conveyor (1):	2 HP Drive
Hydraulic Pump:	3 HP 2.4 GPM 3 PH Power Unit

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

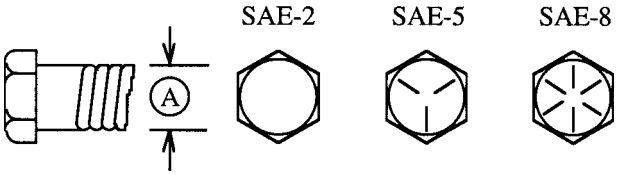
7.2 BOLT TORQUE

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.

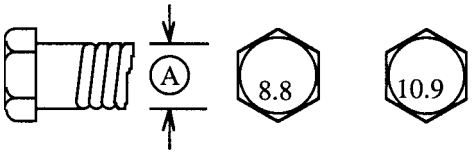
ENGLISH TORQUE SPECIFICATIONS

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



METRIC TORQUE SPECIFICATIONS

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



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

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

7.3 ELECTRICAL SCHEMATIC

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.

7.4 LUBRICANT SPECIFICATIONS

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 DTE FM 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

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