MAYO

UNLOADING 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 MANUFACTURING, INC.

COLLECTING CONVEYOR

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 _____

Conveyor Model _____

Serial Number _____

Delivery Date _____

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 _____

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 Collecting 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 (TYPICAL)

Model Number _____

Serial Number _____

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1 INTRODUCTION

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

This manual applies to all Collecting Conveyors manufactured by Mayo. Certain options may be available to specifically tailor the Collecting 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 input end of the Collecting Conveyor is the front and the controls are on the left side of the frame.

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 Collecting 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 Collecting 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.

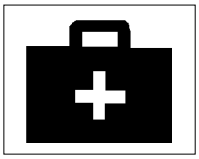
Remember, **YOU** are the key to safety. Good safety practices not only protect you but, also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this machine is familiar with the procedures recommended and follows safety precautions.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

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

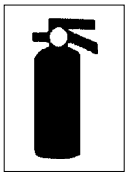
2.1 GENERAL SAFETY

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

2. Only trained, competent persons shall operate the Collecting Conveyor. An untrained operator is not qualified to operate this machine.
3. Provide a first-aid kit for use in case of an accident. Store in a highly visible place.



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



5. Install and properly secure all guards and shields before operating.
6. Wear appropriate protective gear. This list includes but is not limited to:

- Protective shoes with slip resistant soles
- Protective glasses or goggles
- Heavy gloves
- Hearing protection

7. Turn machine OFF, shut down and lockout power supply, relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining, repairing or cleaning. (Safety lockout devices are available through your Mayo dealer parts department).
8. Know the emergency medical center number for your area.
9. Review safety related items with all operators annually.

2.2 EQUIPMENT SAFETY GUIDELINES

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

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

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

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

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

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

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

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

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

2.3 STORAGE SAFETY

1. Store the Collecting 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 conveyor.

6. Lock out power by turning off master control panel, junction box or unplugging the power cord 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, clod hoppers, surge hoppers, 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.

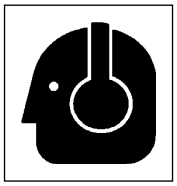
How to Install Safety Signs:

- 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 Collecting 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 Collecting Conveyor upon start up. Serious damage to the machine and/or personal injury to the operator and bystanders may result from attempting to operate the machine while mechanical locking devices are still attached.

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

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

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

5. Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. All wiring should comply with ANSI/NFPA 70 electrical requirements. If you are uncertain, have a licensed electrician provide power to the machine.

6. If using Collecting 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. Make sure that anyone who will be operating the Collecting Conveyor or working on or around the unit reads and understands all the operating, maintenance and safety information in the operator's manual. Also read and follow the instructions in the manuals of other equipment in the system.

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

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

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

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

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

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

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

9. 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.

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

11. Keep the working area clean and dry.

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

13. 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 Collecting Conveyor.

7. **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

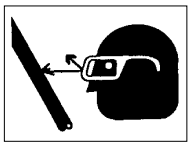
1. Make sure that all the components in the pump system are kept in good condition and are clean.

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. All wiring should comply with ANSI/NFPA 70 electrical requirements.

2. Make certain that the Collecting 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 under-inflate 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. Center the Stingers (if so equipped) 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 jack stands if applicable.

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

8. To prepare the self-contained tractive drive:

    a. Remove and stow drive chain or

    b. Disengage power wheel gears.

9. 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.

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

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

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

13. Do not allow anyone to ride on the conveyor or towing vehicle during transport.

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

2.15 EMPLOYEE SIGN-OFF FORM

Mayo Manufacturing, Inc. follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining a Mayo built machine must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.

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

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

SIGN-OFF FORM

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

WARNING

MOVING PART HAZARD

To prevent serious injury or death:

- **Do not stand or climb on machine when operating. Keep others off.**
- **Keep hand away from moving parts.**
- **Wear tight-fitting clothing and safety gear.**

B

CAUTION

- **Read Operator's Manual before starting.**
- **Turn machine OFF, shut down and lock out power source, unplug power cord and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.**
- **Keep all electrical components tight, dry and in good repair.**
- **Keep all hydraulic components tight and in good repair.**
- **Replace all worn or failed components immediately.**
- **Install and secure all guards before operating.**
- **Keep hands, feet, hair and clothing away from moving parts.**
- **Raise frame into its fully UP position and attach frame support chain before transporting or storing.**
- **Use pilot vehicles when transporting.**
- **Do not stand or climb on machine when running. Keep others off.**
- **Have only a qualified electrician provide power to the machine.**
- **Review safety instructions annually.**

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.

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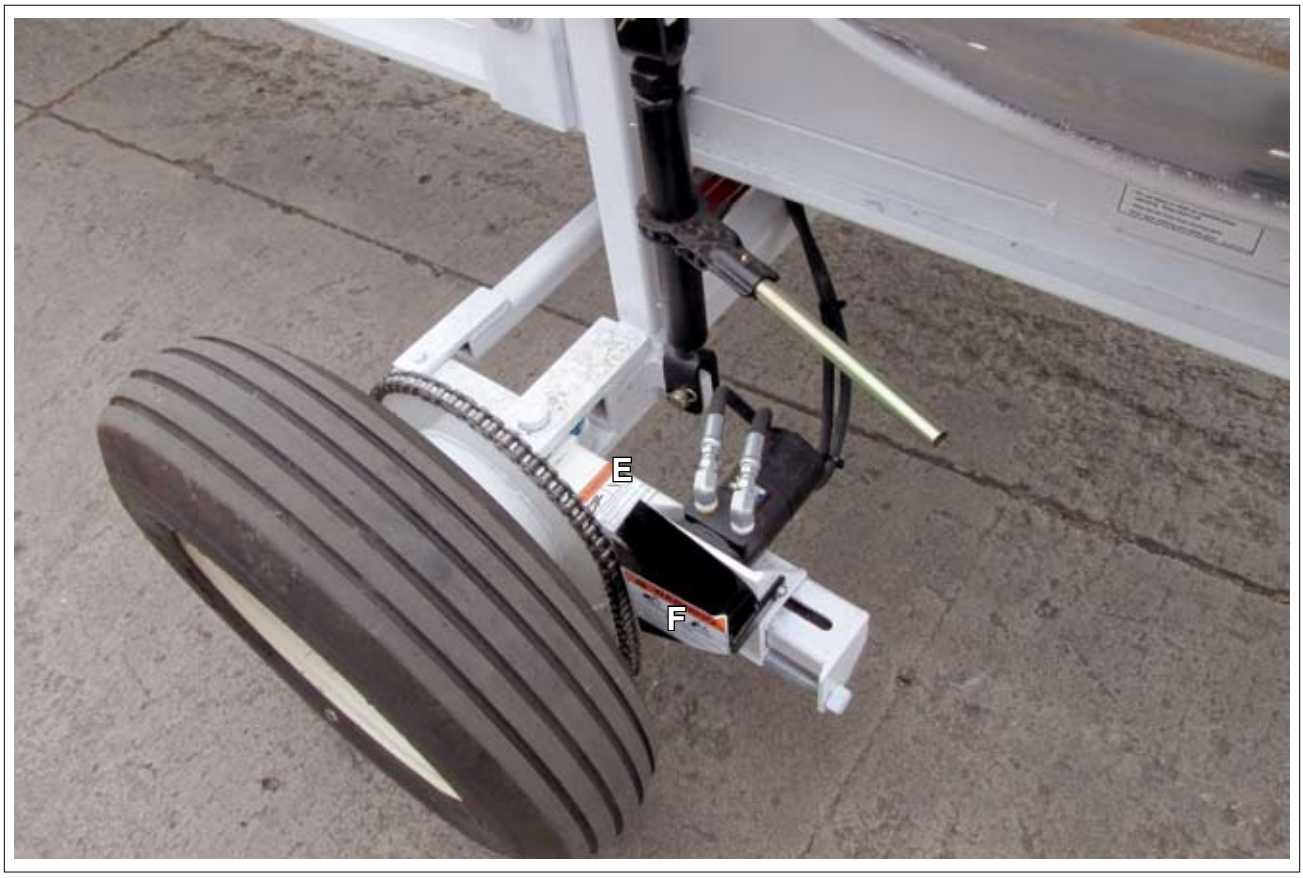

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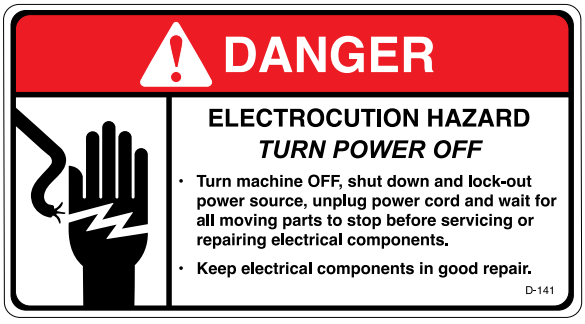

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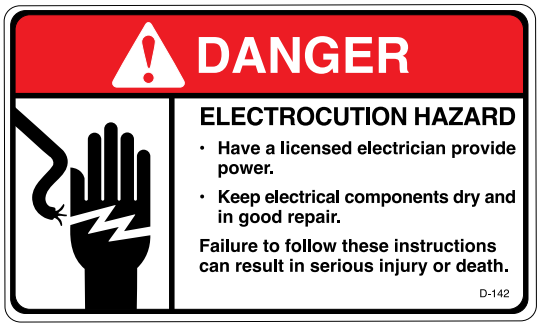

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- Think SAFETY! Work SAFELY!

E

F

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 Collecting 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 leg ratchets to level the frame before using.
- 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 Collecting Conveyor is designed to be used as a stand-alone unit or part of a system to convey potatoes from one location to another. 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.

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 personnel are not qualified to operate this 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 Collecting Conveyor will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Collecting Conveyor is designed with a belted or chain Conveyor to move potatoes. The conveyor is powered by a electric motor through a speed-reducing gear box. All controls are mounted on the left side of the frame. An optional wheel drive system is available to mount on the right front wheel for moving the machine within the working area.

Manual ratchet jacks are used to set the height of the machine for minimizing drop height. A frame on the intake end can be used to mount stingers for unloading trucks. An optional hitch frame on the discharge end can be used to attach the machine to other Mayo equipment. An optional hydraulic pump is available to mount on the frame to power the wheel drive, stinger or other hydraulic functions.

A Intake Hopper
B Conveyor
C Lightning Frame
D Wheel Drive
E Discharge End
F Stingers
G Control Panel
H Conveyor Drive
J Hydraulic Power Pack
K Ratchet Jacks

FIG. 1 MACHINE COMPONENTS

4.3 GENERAL OPERATION THEORY

Potatoes are unloaded from transport trucks into the hoppers of the stingers. Here they are carried by chain conveyors up into the hopper of the collecting conveyor. The chain conveyors are engineered to gently vibrate and rotate the potatoes to remove excess dirt.

The collecting conveyor feeds into an adjacent conveyor, which ultimately feeds into the hopper of a bin piler, an additional conveyor or directly into a processing plant for long term storage or processing.

All hopper-to-conveyor and conveyor-to-conveyor transition points are designed for minimum drop to prevent bruising of the potatoes.

The collecting conveyor can be equipped with an optional wheel drive that allows it to be moved within a working, processing or storage facility as required to fit the application.

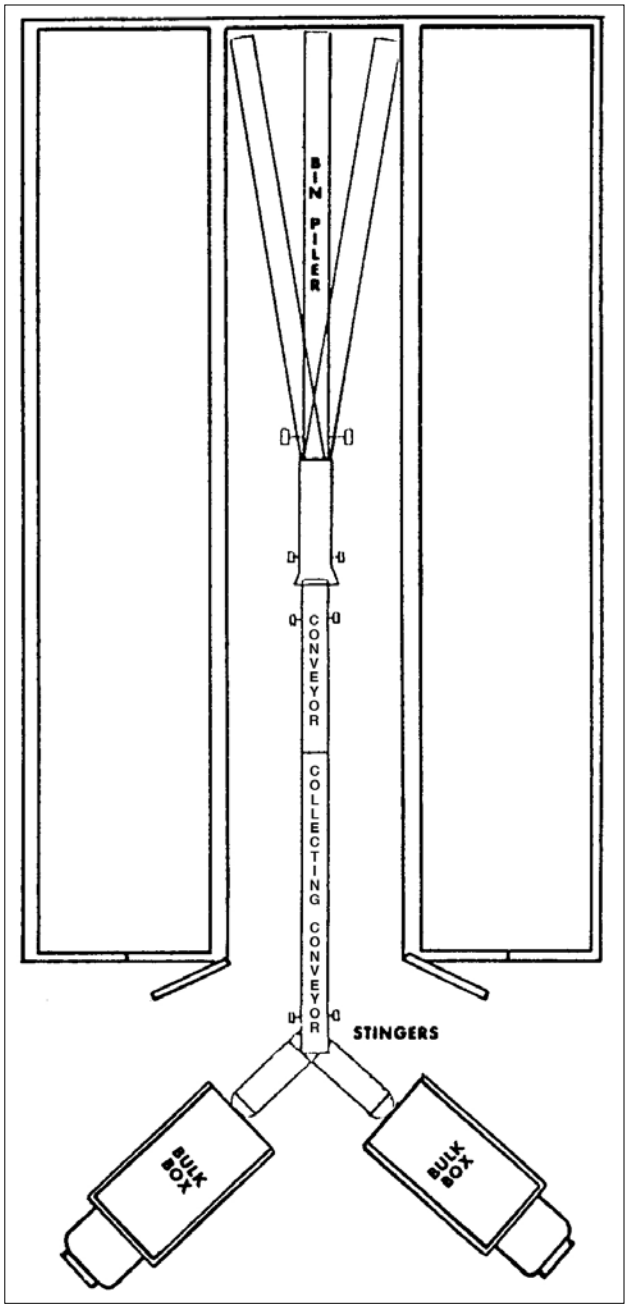


FIG. 2 POSITIONED (TYPICAL)

4.4 MACHINE BREAK-IN

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

A. Read conveyor and auxiliary equipment manuals before starting.

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

1. Retorque all wheel bolts, fasteners and hardware.

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

3. Check for leaks in the hydraulic system. Retorque fittings if leak detected.

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

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

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

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

8. Lubricate all grease fittings.

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 for leaks in the hydraulic system. Retorque fittings if leak detected.

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

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

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

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

4. Check oil level in hydraulic reservoir as prescribed in the "Maintenance Section".

5. Check for hydraulic leaks. Tighten fittings or reroute hoses as required to maintain a leak-free system.

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.

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. **Belt ON/OFF:**
   This 2 position rotary switch controls the power to the conveyor. Turn the switch clockwise to turn the conveyor ON and counter-clockwise to turn OFF.

2. **Speed Control:**
   This rheostat control adjusts the speed of the conveyor. Turn the control clockwise to increase conveyor speed and counter-clockwise to slow the conveyor. If turned fully counter-clockwise the conveyor will stop. However, it is not recommended that the speed control be used to stop the conveyor. Use the Belt ON/OFF control instead.

3. **Pump ON/OFF:**
   This 2 position rotary switch controls the power to the optional hydraulic power pack. Turn the switch clockwise to turn the pump ON and counter-clockwise to turn it OFF. The pump must be turned ON before any hydraulic functions can be used.

4. **Lights ON/OFF:**
   This 2 position rotary switch controls power to the optional lights above the conveyor. Turn the switch clockwise to turn the lights ON and counter-clockwise to turn OFF.

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

FIG. 3 CONTROLS (TYPICAL)

6. **Hydraulic Valves:**

   a. **Conveyor Move Valve:**
   This 3 position spring-loaded-to-neutral-center hydraulic valve controls machine movement via the wheel drive. Move the lever UP and hold to move the machine forward. Move DOWN and hold to move it in reverse. Release the lever and it will return to its neutral-center position and the machine will stop moving.

   NOTE

   The optional wheel drive must be installed before the machine can move itself.

   b. **Steering Valve:**
   This 3 position spring-loaded-to-neutral-center hydraulic valve controls the steering function of the wheels. Move the lever DOWN and hold to steer to the LEFT and move UP and hold to steer RIGHT. Release the lever and it will return to its neutral-center position and the steering wheels will stop and stay in their current position.

   c. **Side Shift Valve:**
   This 3 position spring-loaded-to-neutral-center hydraulic valve controls the side shift function of the rear axle. Move the lever DOWN and hold to shift the axle left. Move it UP and hold to shift the axle right. Release the lever and it will return to its neutral-center position and the axle will stop moving.

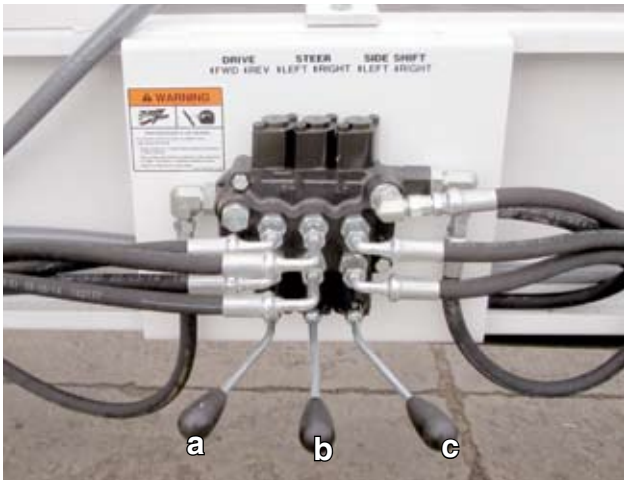


FIG. 4 HYDRAULIC VALVES

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 by following ANSI/NFPA 70 Wiring Standard. 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:**
   Collecting Conveyors can be equipped with a solid frame or steerable wheels for towing depending on its specifications. Both must be removed or retracted prior to the conveyor being used to prevent interfering with workers or adjacent equipment. Remove hitch anchor pin and retainer, remove hitch or move to the desired position and re-install pin and retainer.

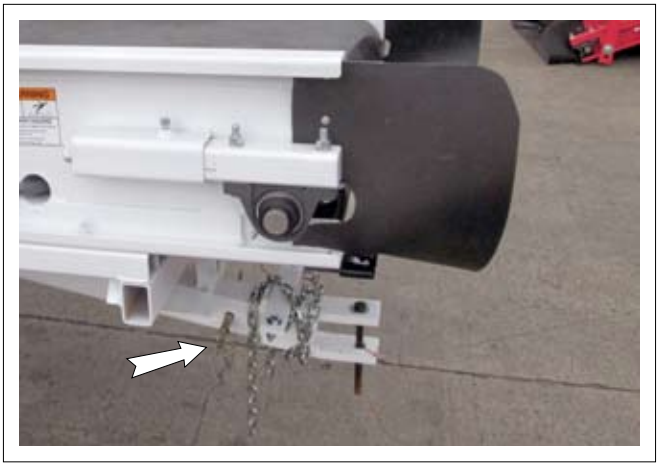


FIG. 5 ANCHOR PIN

3. **Wheel Drive System (optional):**
   Configure the optional wheel drive into its operating mode. Install the drive chain and move the motor mounting frame into its driving position. Install the cover.

FIG. 6 OPTIONAL WHEEL DRIVE

4. **Steering:**
Collecting Conveyors can be equipped with a manual steering system on the front axle unless it has an optional steer drive system. Straighten the wheels and pin the steering linkage in the straight-ahead configuration. Stow the handle in its storage position.

   a. **Manual:**
   All conveyors are equipped with a handle on the front axle to steer the machine if required.

   b. **Hydraulic:**
   An optional steering system is available for mounting on the front axle. The machine must be equipped with an optional hydraulic power pack to use this option.

Manual

Hydraulic

FIG. 7 STEERING

5. **Frame Position Cylinder (optional):**
The discharge end axle can be equipped with an optional cylinder to move the frame from side to side and allow the discharge to align with the adjacent position.

FIG. 8 FRAME POSITION CYLINDER (OPTIONAL)

6. **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.

4.8 OPERATING

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Collecting 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 leg ratchets to level the frame before using.
- 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 Collecting 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. 9 CONVEYING SYSTEM (TYPICAL)

4. **Starting Collecting 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 conveyor ON.

   f. Turn the equipment ON that moves potatoes on the conveyor.

5. **Stopping Machine:**

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

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

   c. Turn the conveyor OFF.

   d. Turn OFF the machine that moves potatoes away from the conveyor.

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 switch on the control panel as required.

   IMPORTANT

   Turn all controls OFF before restarting.

   Turn the switch clockwise to release the STOP switch so the system can run again. If a problem occurred requiring emergency stopping, correct the condition before resuming work.

FIG. 10 STOP CONTROL

7. **Equipment Position:**
Each customer must provide a means of supplying a steady flow of potatoes to the Collecting Conveyor. Normally this is done by using another piece of equipment such as a grader, another conveyor or stingers. 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, the wheels chocked or the optional wheel drive chain left installed.

Wheel Chocks (Typical)

Wheel Drive Chain

Working System (Typical)

FIG. 11 EQUIPMENT POSITION (TYPICAL)

8. **Moving:**

A. Manual Steering:
The Collecting 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. Remove the steering axle lock pin and place in its holder.

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

c. After the Collecting Conveyor has been moved to its new position, straighten the wheels and install the lock pin through the steering linkage.

d. Place chocks in front of and behind the hopper end tires to prevent machine movement.

B. Hydraulic Steering (Optional):
An optional hydraulic steering system is available and is normally used in conjunction with a traction drive. Use the hydraulic valve to turn the wheels as required for the move. Disconnect the steering cylinder before installing the towing tongue.

Manual

Hydraulic (Optional)

FIG. 12 STEERING

C. Wheel Drive (Optional):
An optional hydraulic traction drive is available for moving the machine. It can only be utilized when the Collecting Conveyor is equipped with an optional hydraulic system. Use the hydraulic valves to direct the flow of hydraulic oil to move the conveyor in the direction desired. Remove the drive chain before towing.

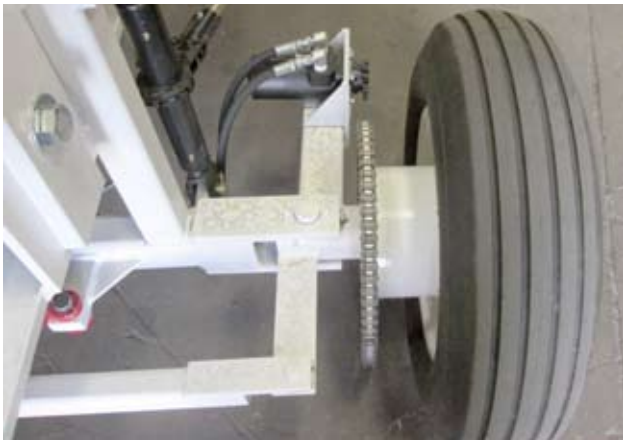


FIG. 13 WHEEL DRIVE

9. **Unloading Conveyor (Typical):**
A Stinger(s) can be mounted to a conveyor for unloading trucks. Potatoes are unloaded into the Stinger and the Stinger conveys them into the conveyor.

FIG. 14 UNLOADING CONVEYOR (TYPICAL)

10. **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 ratchet jacks on each end of the Collecting Conveyor to set the height. Use 2 personnel (one on each jack) when setting the height of an end to prevent frame twisting.

11. **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.

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

Rachet Jacks

Operating

FIG. 15 DROP HEIGHT

FIG. 16 OPERATING SYSTEM (TYPICAL)

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 under-inflate or overinflate.
- Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
- Center the Stingers (if so equipped) 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 jack stands if applicable.
- Wrap up and bind to the frame all loose hydraulic and electrical ends.
- Do not allow anyone to ride on the conveyor or towing vehicle during transport.
- To prepare the self-contained tractive drive:
  a. Remove and stow drive chain or
  b. Disengage power wheel gears.
- 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 Collecting 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.
- Always use hazard flashers on the towing vehicle when transporting.

Mayo Collecting 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 or with the optional wheel drive system and is covered in Section 4.8 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 Collecting Conveyor and position so the tractor can back up to the front of the machine.
2. Center axle on discharge end of frame if equipped with optional adjustable axle.

FIG. 17 CENTERED AXLE (TYPICAL)

3. Attach, extend and secure the solid frame tow hitch into working position.

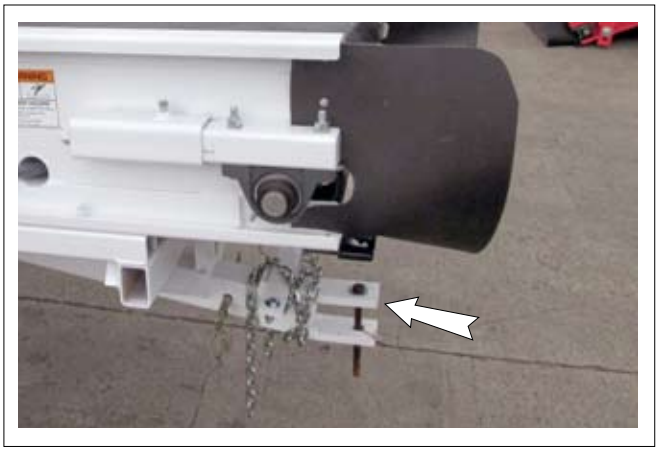


FIG. 18 TOW HITCH

4. Install the steering axle anchor pin so the wheels won't inadvertently turn during transport.

FIG. 19 AXLE ANCHOR PIN

5. If equipped with the optional hydraulic steering, disconnect and tie up the steering cylinder.

FIG. 20 HYDRAULIC STEERING (TYPICAL)

6. If equipped with the optional wheel drive, remove the drive chain and tie up.

7. If equipped with an optional Stinger, center the Stinger behind the Collecting Conveyor and secure using the anchor chains.

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

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

10. Unplug and remove the power cord.

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

12. Attach a safety chain between the hitch and the drawbar cage to prevent unexpected separation.

13. Install an SMV on the rear frame.

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

15. Clean all the reflectors.

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

17. 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.

18. 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.

19. 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.

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

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

FIG. 21 WHEEL DRIVE

FIG. 22 STINGERS CENTERED (TYPICAL)

TABLE 1 TRAVEL SPEED VS WEIGHT RATIO

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of tow unit
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

4.10 STORAGE

STORAGE SAFETY

- Store the Collecting 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. Start the hydraulic pump and run for 10 minutes to bring oil to operating temperature. Change the hydraulic oil if appropriate as specified in Maintenance Section.
2. Inspect the conveyor belt. Realign if belt is not tracking in the center of the frame. Replace if the edges are damaged from rubbing against the frame. Properly tension the belt.
3. Turn the power OFF at the master electrical panel and lock out.
4. Unplug and remove power cord from machine.
5. Lock out power by closing control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start up of the machine.
6. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
7. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
8. Inspect all hydraulic hoses, lines, fittings and cylinders. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or separated from a fitting. Replace any damaged components.
9. 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.
10. Inspect the conveyor drive system.
11. Check all rotating parts for entangled material. Remove.
12. Touch up all paint nicks and scratches to prevent rusting.
13. Select a storage area that is dry, level and free of debris.
10. Cover with a weather-proof tarpaulin and tie down if stored outside.

4.10.2 REMOVING FROM STORAGE

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

1. Remove the tarpaulin if covered.
2. Transport or move to the working area.
3. Check
   a. Hydraulic tank oil level.
   b. Electrical systems and components.
   c. Conveyor belts and drive systems.
   d. All hardware. Tighten as required.
   e. Air pressure in tires. Add as required.
4. Replace any defective components.
5. 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 Collecting 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.

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

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

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

   Reservoir Capacity: 1 US Gals, 3.78 liters.

4. **Storing Lubricants:**
   Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

5.1.2 GREASING

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

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

2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

3. Replace and repair broken fittings immediately.

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

5. **Conveyor Bearings:**
   Only sealed bearings are used on the conveyor. 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.

2. Inspect electrical system and all components.

3. Inspect hydraulic system and all components.

Alignment

Tension (Typical)

Adjustment (Typical)

FIG. 23 TENSION/ALIGNMENT

Weekly or 50 Hours

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

IMPORTANT

Only sealed bearings are used on the Collecting 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.

NOTE

Drive and driven shafts (2 locations each shaft).

FIG. 24 CONVEYOR SHAFTS (TYPICAL)

100 Hours or Annually

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

FIG. 25 OPTIONAL HYDRAULIC SYSTEM

2. Grease the steering system pivots (5 locations).

FIG. 26 STEERING SYSTEM

3. Grease the ratchet jack tubes (2 locations each jack).

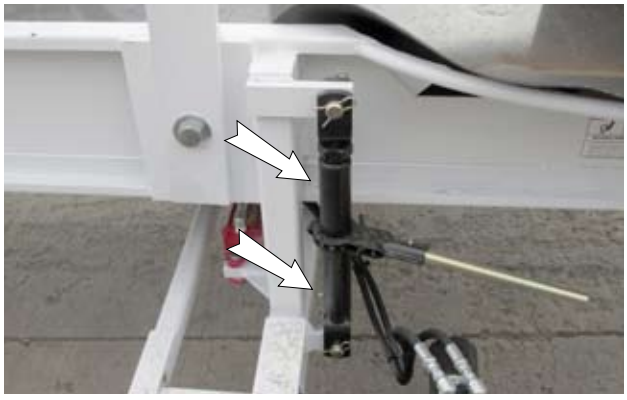
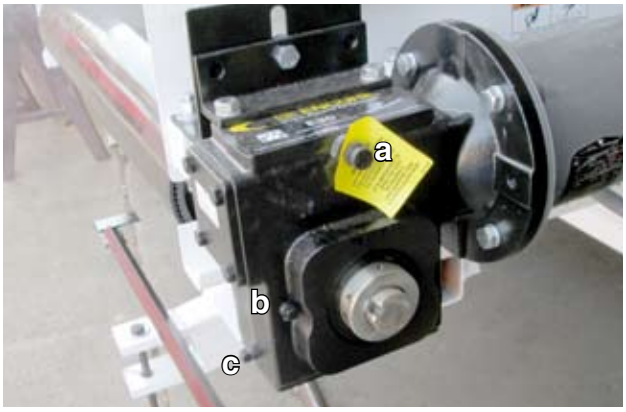


FIG. 27 RATCHET JACK (TYPICAL)

4. Check the oil level in each speed reducing gearbox in the drive systems (1 location each gearbox).

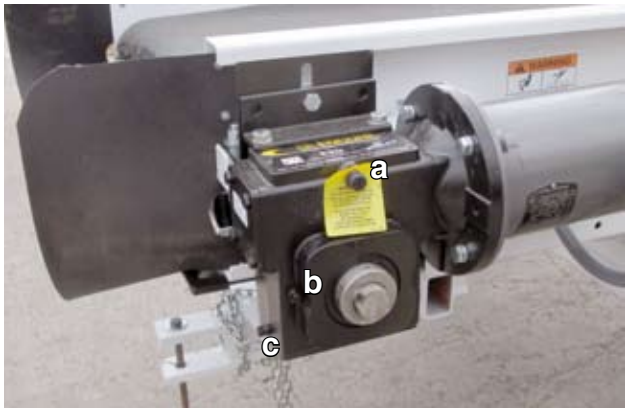


a. Fill Plug b. Level Plug c. Drain Plug

FIG. 28 GEARBOX (TYPICAL)

500 Hours or Annually

1. Change the oil in each gearbox.
2. Clean each gearbox breather plug.



a. Fill Plug b. Level Plug c. Drain Plug

FIG. 29 GEARBOX (TYPICAL)

3. Repack each wheel bearing.
4. Clean machine.

FIG. 30 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																							
IN Hydraulic System and Components																							
50 Hours or Weekly																							
LU Conveyor Shaft Bearings																							
100 hours or Annually																							
CK Oil level in Optional Hydraulic System																							
LU Steering System Pivots																							
LU Ratchet Jack Tubes																							
CK Oil Level in Gearbox																							
500 Hours or Annually																							
CH Gearbox Oil																							
CL Gearbox Breather Plug(s)																							
RE Wheel Bearings																							
CL Machine																							

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 move the machine. 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 Collecting 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 not 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 SPEED REDUCER GEARBOX OIL

The Collecting 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.

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 lockout.

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.

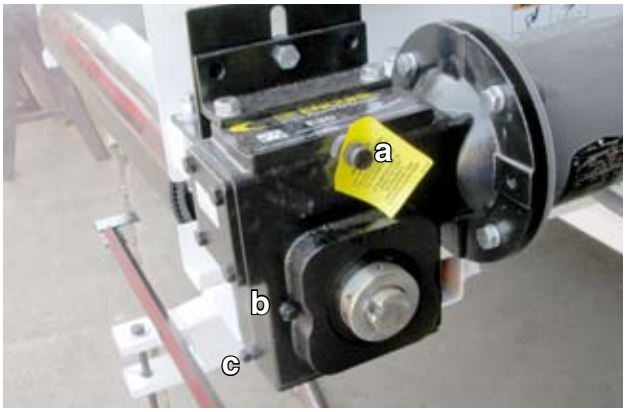
   d. Install and tighten the drain plug.

   e. Remove the level and fill plugs.

   f. Add approximately 1 qt (1 liter) of Browning Worm Gear GL 32HT lubricant or equivalent. Use the level plug to determine the proper amount of oil.

NOTE

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



a. Fill Plug b. Level Plug c. Drain Plug

FIG. 31 GEARBOX (TYPICAL)

   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.

5.2.4 BREATHER CLEANING

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

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

2. Turn the power OFF at the master panel and lockout.

3. Remove the fill plug/breather from the gearbox.

4. Check that the vent passage through the plug is open.

5. If plugged, soak in a solvent over night.

6. Use a high-pressure air hose to blow the passage open. Use a probe to clear the passage if the hole is caked with dirt.

7. Install and tighten the breather plug.

IMPORTANT

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

FIG. 32 BREATHER (TYPICAL)

5.2.5 CONVEYOR TENSION/ALIGNMENT OR REPLACEMENT

Flat belts are used to move potatoes with the Collecting Conveyor. The tension and alignment of the conveyor 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 lockout.

3. **Tension:**
   Belts are tensioned correctly when there is a 1 to 2 inch (25 to 50 mm) sag between the guide rollers on the bottom or slack side of the conveyor during operation.

Sag

Adjustment

FIG. 33 BELT TENSION ADJUSTING (TYPICAL)

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

FIG. 33 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.

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

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

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

   f. Move the 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.

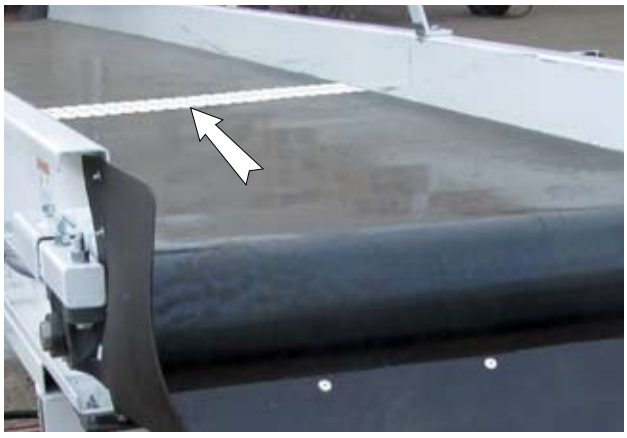


FIG. 34 BELT CONNECTOR (TYPICAL)

6 TROUBLE SHOOTING

The Mayo Collecting Conveyor uses a flat belt design to 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.

7 SPECIFICATIONS

7.1 MECHANICAL

7.1.1 COLLECTING CONVEYORS

Collecting 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.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

7.1.2 UNLOADING COLLECTING CONVEYORS

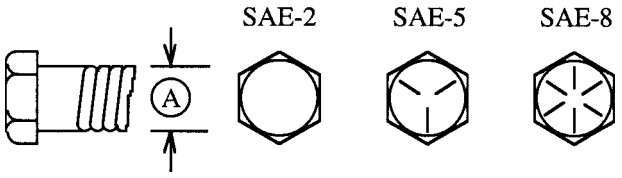
7.2 BOLT TORQUE

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.

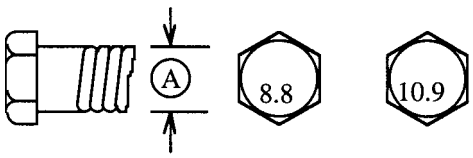
ENGLISH TORQUE SPECIFICATIONS

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



METRIC TORQUE SPECIFICATIONS

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



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

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

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

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

7.4 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.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

7.5 HYDRAULIC SCHEMATIC

8 INDEX

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