

MAYO



Metering Bin 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
METERING HOPPER 12000 SERIES

WARRANTY REGISTRATION FORM & INSPECTION REPORT

WARRANTY REGISTRATION (please print)

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

Customer's Name _____	Dealer Name _____
Address _____	Address _____
City, State/Province, Code _____	City, State/Province, Code _____
Phone Number (____) _____	Phone Number (____) _____
Contact Name _____	
Model _____	
Serial Number _____	
Delivery Date _____	

DEALER INSPECTION REPORT

☐ Inspect Electrical System
☐ Machine Lubricated
☐ Drive Belts Tensioned and Aligned
☐ Speed Reducer Gearbox Oil Level Checked
☐ Check Oil Level in Hydraulic Reservoir
☐ Hydraulic Hoses Free
☐ Hydraulic Fittings Tight
☐ Lubricate Machine
☐ Conveyors Tensioned and Aligned
☐ Speed Reducer Gearbox Oil Levels Checked

SAFETY

☐ Guards and Shields Installed and Secured
☐ Review Operating and Safety Instructions
☐ All Decals Installed

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.

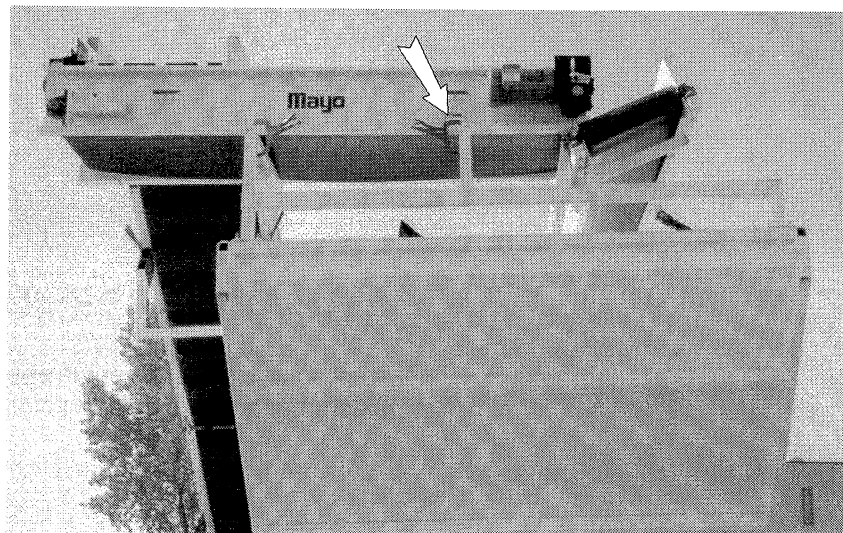
Date _____ Owner's Signature _____

WHITE	YELLOW	PINK
MAYO MFG., INC	DEALER	CUSTOMER

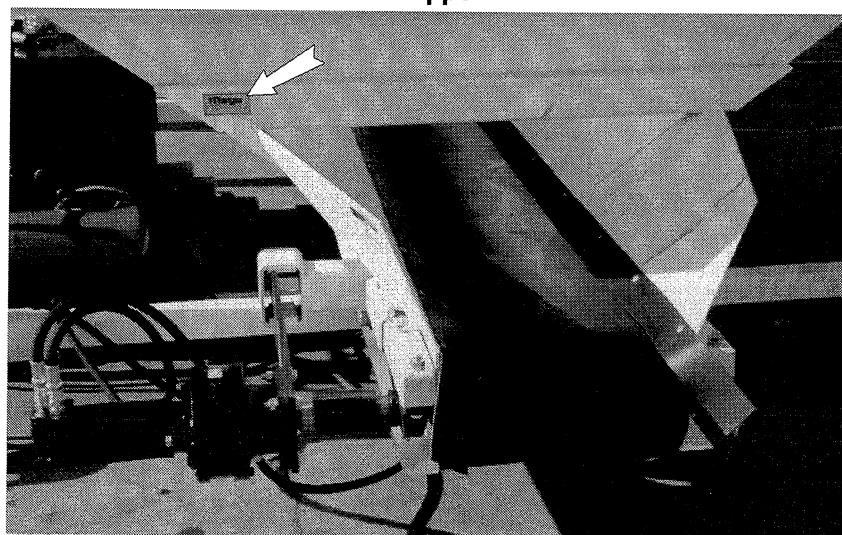
SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Mayo Metering Hopper and Cross Conveyor when ordering parts or requesting service or other information.

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



Hopper



Cross Conveyor

SERIAL NUMBER LOCATION

Metering Hopper

Model

Serial Number

Cross Conveyor

Serial Number

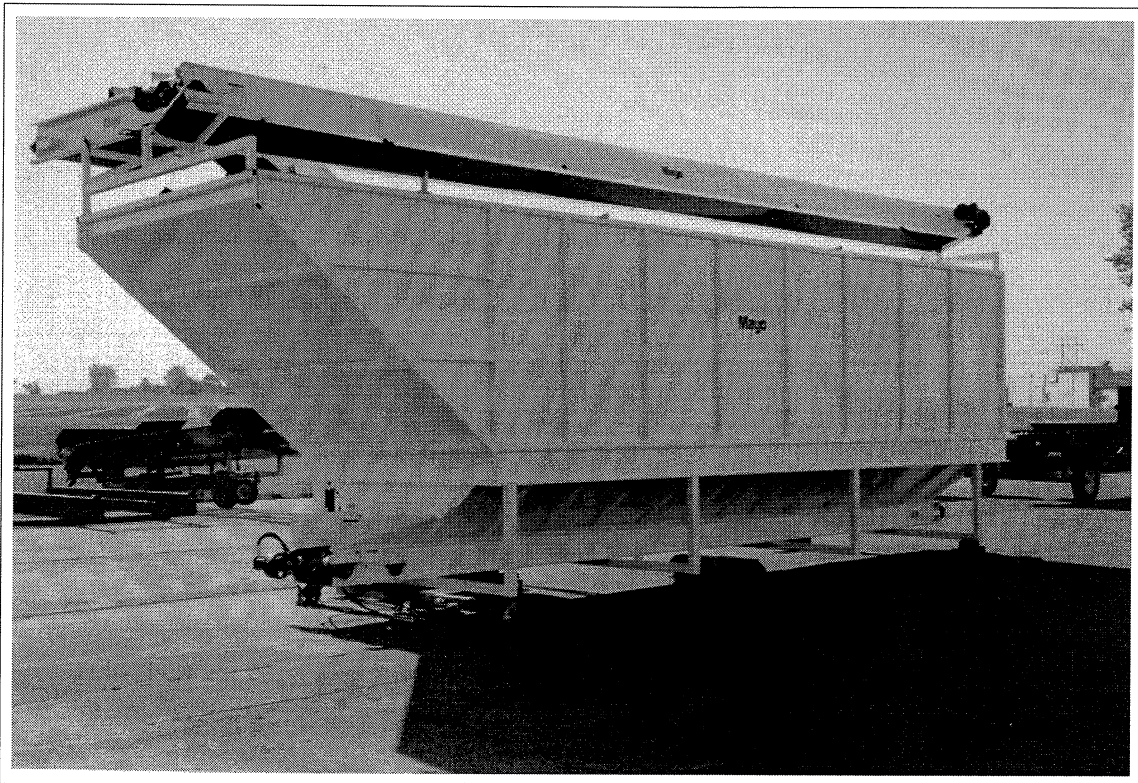
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1 INTRODUCTION

Congratulations on your choice of a Mayo Model 40 D Metering Hopper and Cross 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 and processing of harvest yields.

Safe, efficient and trouble free operation of your new 40 D Metering Hopper and Cross Conveyor requires that you, and anyone else who will be operating or maintaining the Hopper and 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 most Model 40 D Metering Hopper and Cross Conveyors manufactured by Mayo. Certain options may be available to specifically tailor the Hopper and 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.

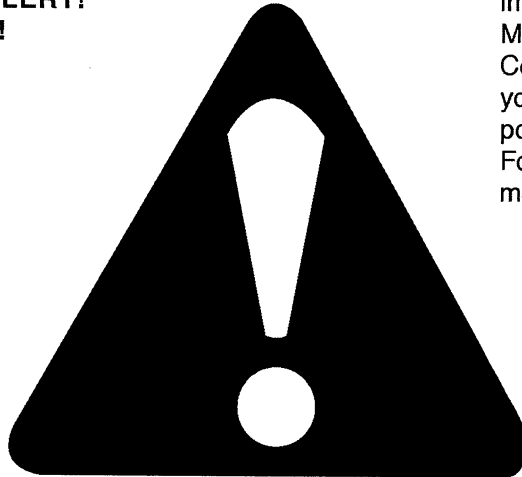
Keep this manual handy for frequent reference and so that it will be passed on to new operators or owners. Call your Mayo dealer if you need assistance, information or additional copies of this manual.

MACHINE ORIENTATION - The discharge end of the Hopper and Conveyor is the front.

2 SAFETY

SAFETY ALERT SYMBOL

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



The Safety Alert symbol identifies important safety messages on your Mayo Metering Hopper and Cross 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 Metering Hopper and Cross Conveyor. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Metering Hopper and Cross 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 Hopper and 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, operating, maintaining or adjusting the Hopper and Conveyor.
- 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!**

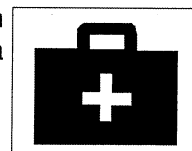
2.1 GENERAL SAFETY

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

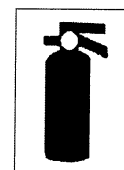


2. Only trained, competent persons shall operate the Hopper and Conveyor. An untrained operator is not qualified to operate this machine.

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



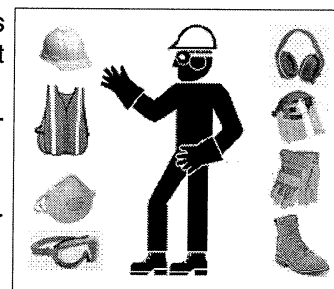
4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.



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 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. Most 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 auxiliary conveyors, hydraulic system and any other auxiliary equipment quickly in an emergency. Read this manual and the one provided with your other equipment.
6. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machinery. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.

2.4 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs 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.

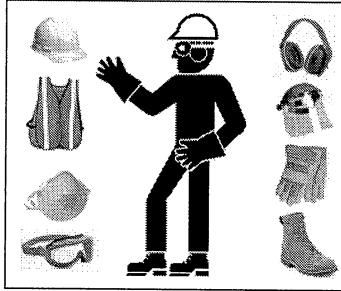
How to Install Safety Signs:

- 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.

2.5 PREPARATION

1. Never operate the Hopper and 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 Hopper and Conveyor and auxiliary equipment.

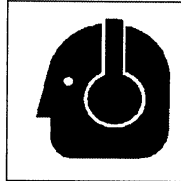
2. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving the implement. Do not allow long hair, loose fitting clothing or jewelry to be around equipment.



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 80 db. Noise over 85 db on a long-term basis can cause severe hearing loss. Noise over 90 db 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, loose chains and make necessary repairs. Always follow maintenance instructions.

2.6 INSTALLATION SAFETY

1. Remove all transport devices that would hinder or prohibit the normal functioning of the Machines upon start up. Serious damage to the machines and/or personal injury to the operator and bystanders may result from attempting to operate the machines while transport locking devices are still in place.
2. Position the machines on firm, level ground before operating.
3. Have at least one extra person available to assist when elevating, moving or connecting to other equipment.
4. 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.
5. If using Hopper and Conveyor as part of material handling system, anchor securely to other conveying equipment before starting.

2.7 OPERATING SAFETY

1. Make sure that anyone who will be operating the Metering Hopper and Conveyor or working on or around the units 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), engage drum anchor lock pin and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**
3. Establish a lock-out tag-out policy for the worksite. 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. **Make sure all control switches are in the OFF position before connecting power supply.**

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.

5. Keep working area clean and free of debris to prevent slipping or tripping.
6. Keep hands, feet, hair and clothing away from rotating and moving parts. Keep others away.
7. Install and secure all guards before starting.
8. Keep all hydraulic components in good condition before operating.
9. Review safety related items annually with all personnel who will operating, using or maintaining the Hopper and Conveyor.

2.8 MAINTENANCE SAFETY

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

2. Follow good shop practices:

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



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

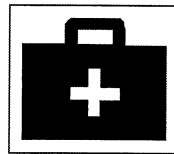
4. Do not work on Metering Hopper and Conveyor electrical system unless the power cord is unplugged or the power supply is locked out. Lock-out tag-out power source before performing any maintenance work.



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

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

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



9. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

2.9 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 unloading system.
3. Provide tags on the machine and a sign-up sheet to record tag out details.

2.10 STORAGE SAFETY

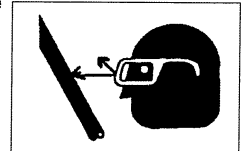
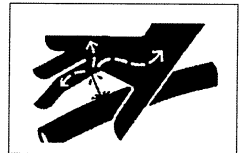
1. Store the Metering Hopper and Conveyor on a firm, level surface.
2. If required, make sure the unit is solidly blocked up.
3. Make certain all mechanical locks are safely and positively connected before storing.
4. Store away from areas of human activity.
5. Do not permit children to play on or around the stored machine.
6. Lock out power by turning OFF at master control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start-up of the Metering Hopper and Conveyor.

2.11 ELECTRICAL SAFETY

1. Have only a qualified electrician supply power. All wiring should comply with ANSI/NFPA 70 electrical requirements.
2. Make certain that the Hopper and Conveyor is properly grounded at the power source.
3. Make certain that all electrical switches are in the OFF position before plugging the Hopper and Conveyor in.
4. **Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department), engage drum anchor lock pin and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**
5. Disconnect power before resetting any motor
6. Replace any damaged electrical plugs, cords, switches and components immediately.
7. Do not work on Hopper and Conveyor electrical system unless the power cord is unplugged or the power supply is locked out.

2.12 HYDRAULIC SAFETY

1. Always place hydraulic controls in neutral before disconnecting from hydraulic system.
2. Make sure that all components in the hydraulic system are kept in good condition and are clean.
3. Replace any worn, cut, abraded, flattened or crimped hoses and steel lines.
4. Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
5. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.



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

2.13 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.

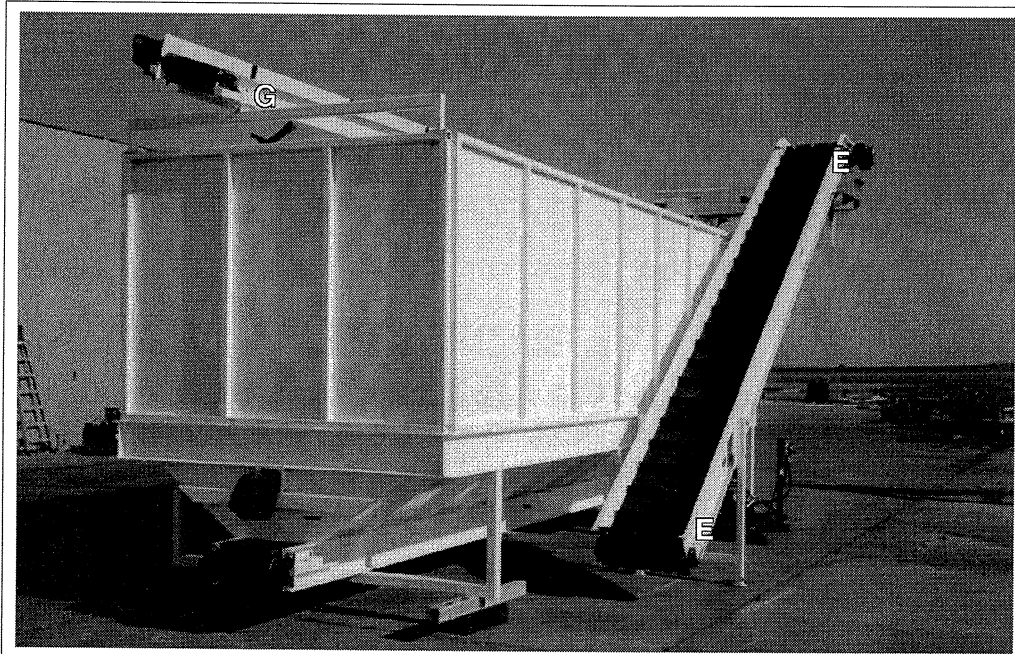
SIGN-OFF FORM

[illegible]


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.

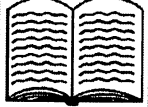
- Think SAFETY! Work SAFELY!

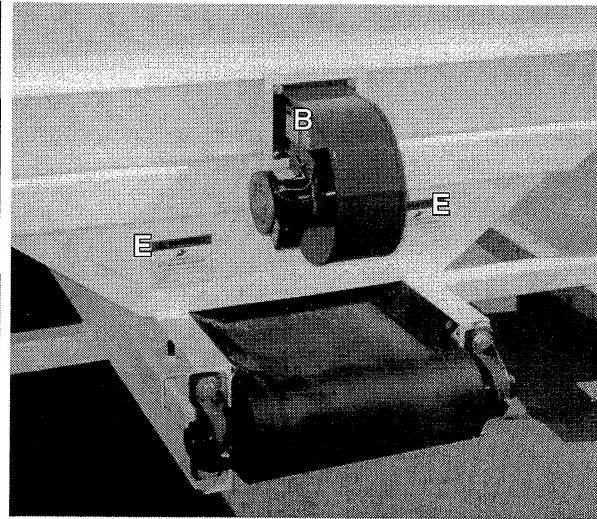


A




CAUTION


- Read Operator's Manual before starting. Review safety instructions annually. 
- 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.
- Lock Out Tag Out machine before performing any service or maintenance work.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.



B



DANGER



ELECTROCUTION HAZARD

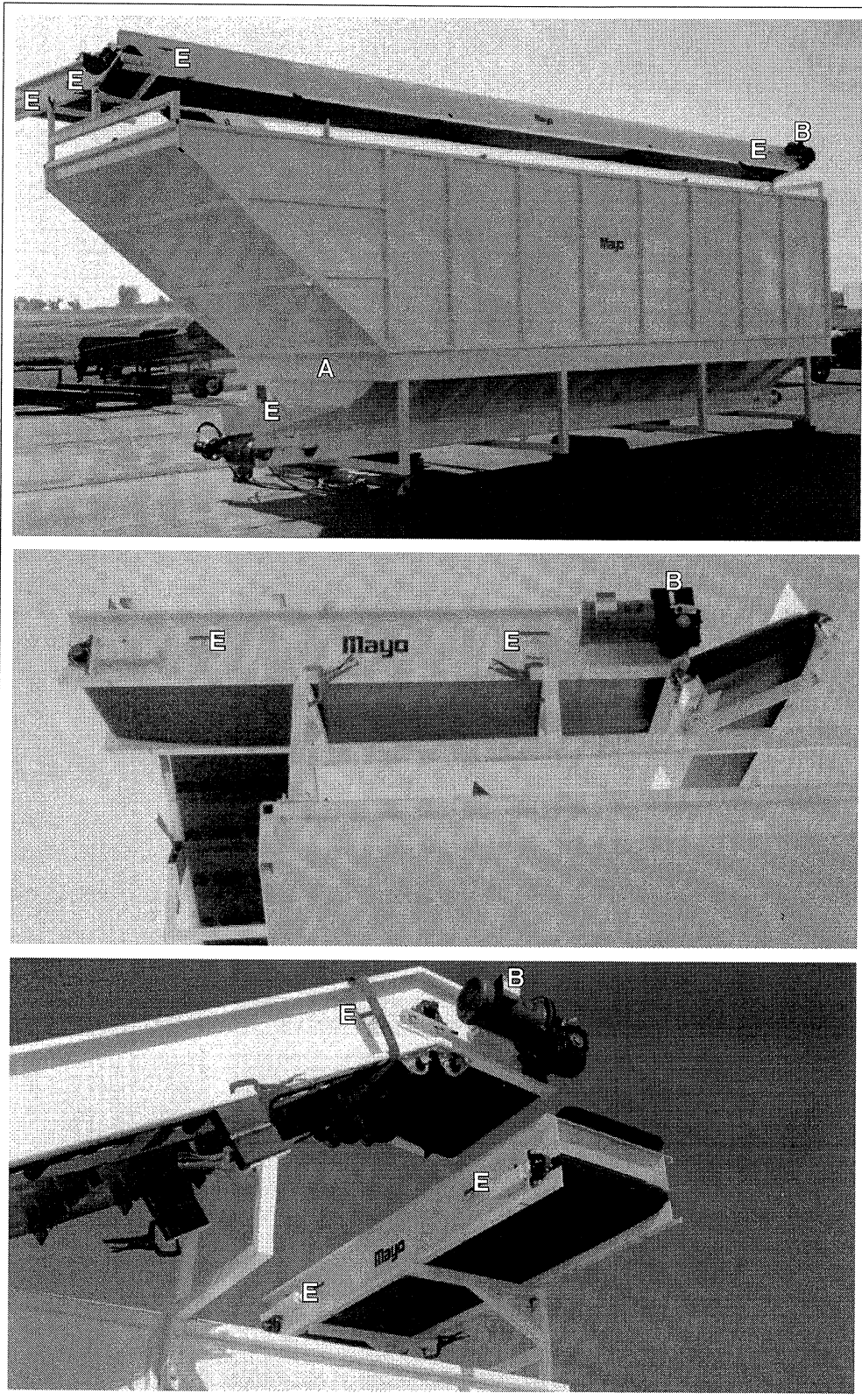
- Have a licensed electrician provide power.
- Keep electrical components dry and in good repair.

Failure to follow these instructions can result in serious injury or death.

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

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

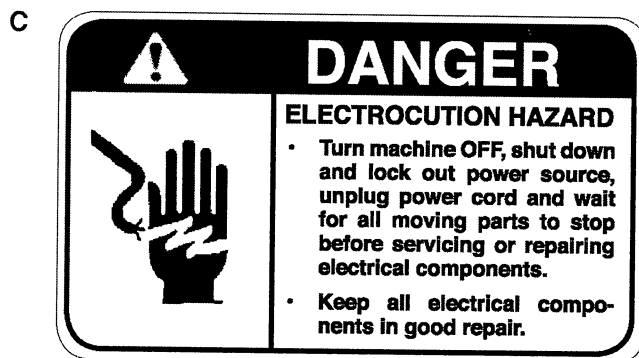
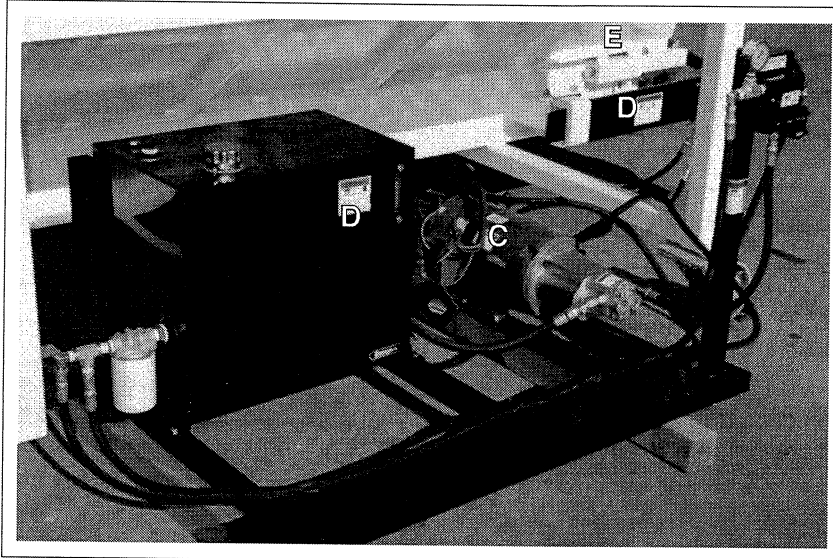
- Think SAFETY! Work SAFELY!



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- Think SAFETY! Work SAFELY!



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

4 OPERATION



OPERATING SAFETY

- Read Operator's Manual before starting.
- Review safety instructions annually.
- 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.
- Lock Out Tag Out machine before performing any service or maintenance work.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Metering Hopper and Cross Conveyor is designed to hold a volume of potatoes that can be loaded or filled quickly and supply potatoes in a slow, even rate into the adjacent handling equipment. 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. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, and prudence of personnel involved in the operation, transport, maintenance and storage of equipment or in the use of facilities.

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 Metering Hopper and Cross Conveyor will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Metering Hopper and Cross Conveyor are used to receive and hold a large volume of potatoes and meter the potatoes out slowly. An elevating conveyor receives the potatoes and lifts them to the cross conveyor. From there, they go to the distributing conveyor where the sweeper arm moves the potatoes into the hopper.

A cascade on the discharge end keeps the drop height small to minimize bruising. The discharge conveyor on the bottom of the hopper moves the potatoes to the next operation.

An optional, self-contained hydraulic pack is available for use with the machine.

An optional blower is available to move cool air through the potatoes if they remain in the hopper for extended periods of time.

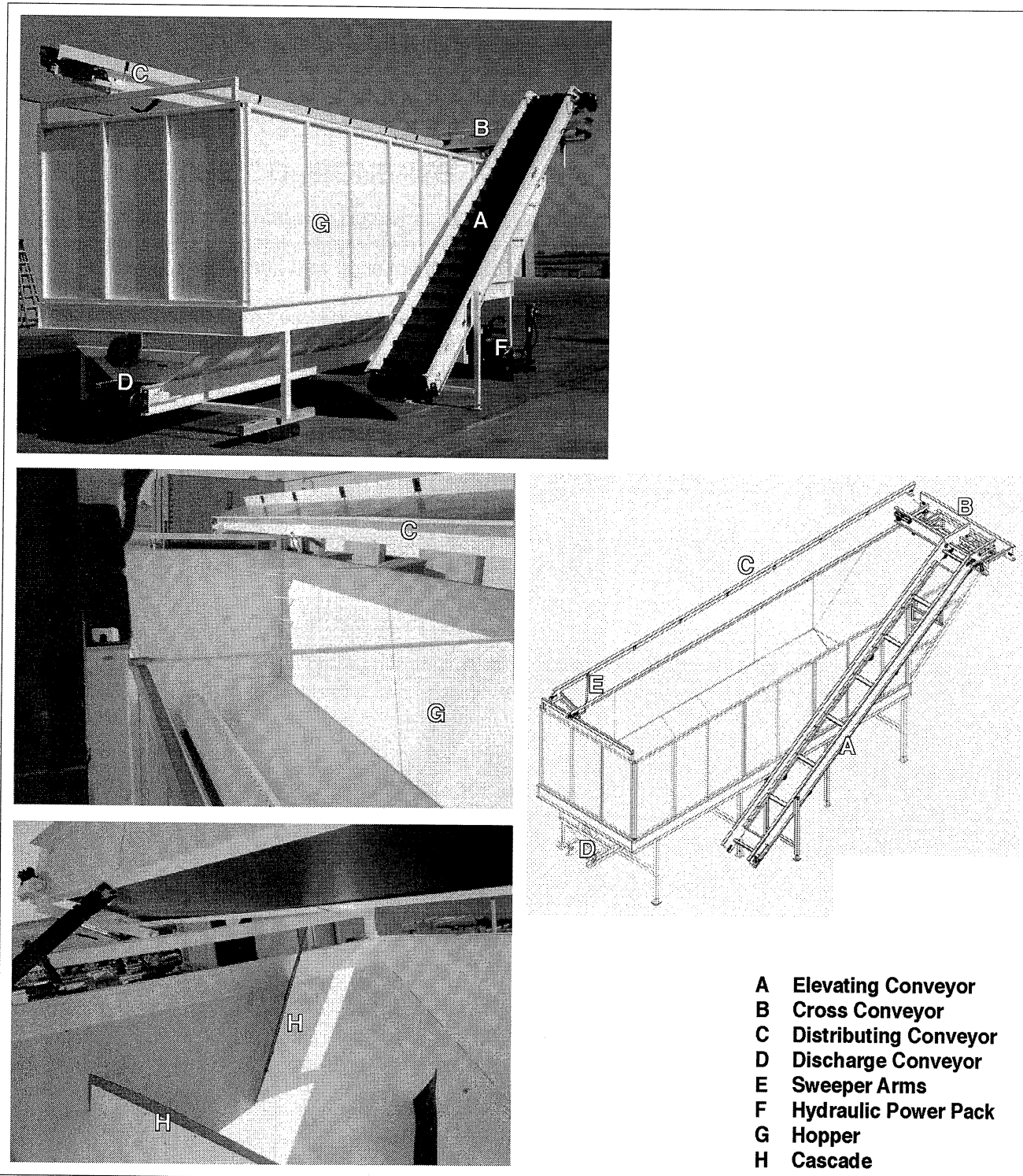


Fig. 1 MACHINE COMPONENTS

4.3 GENERAL OPERATION THEORY

A Metering Hopper and Cross Conveyor is positioned in the line of conveying equipment that unloads trucks and transfers to a storage facility or storage equipment. The machine is normally located at a storage or transfer facility and used prior to the potatoes being loaded into the transport truck.

Potatoes are loaded into the Metering Hopper by one of several types of conveying machines which could include, but is not limited to a telescoping conveyor, a straight conveyor, a sizing conveyor, a chain conveyor, a transport truck, etc.

The purpose of this unit is to accumulate a large number of potatoes very quickly and hold them until they are used or required. Potatoes are conveyed up to the cross conveyor and moved to the distributing conveyor. They then drop into the hopper. A discharge conveyor unloads the hopper as required for the rest of the system.

The customer must provide a means to remove the potatoes from the hopper as they are discharged.

Minimize all drop heights to prevent bruising of the potatoes.

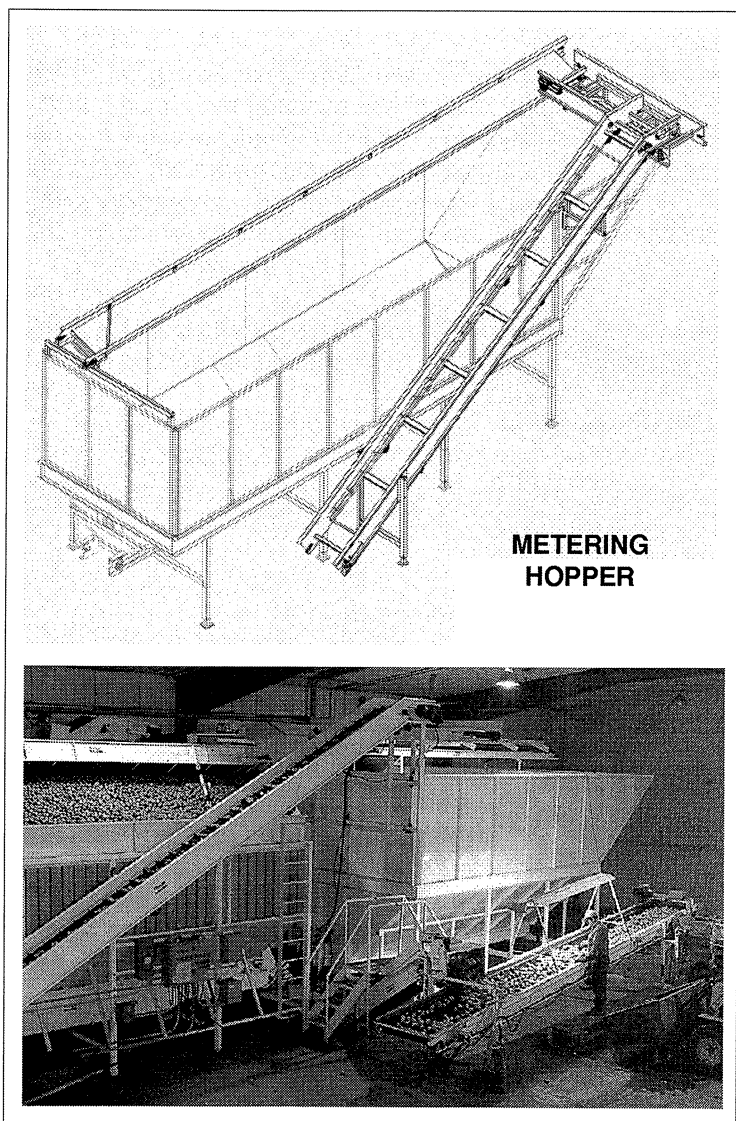


Fig. 2 POSITIONED (TYPICAL)

4.4 MACHINE BREAK-IN

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

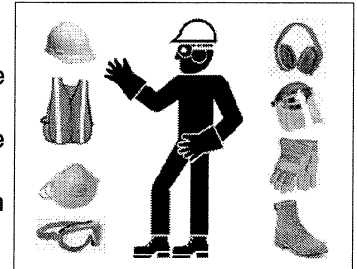
- A. Read Hopper and Conveyor and auxiliary equipment manuals before starting.
- B. **After operating for 1/2 hour:**
 1. Re-torque all other fasteners and hardware.
 2. Check that all electrical connections are tight and cords are routed out of the way or protected.
 3. Check for hydraulic leaks. Tighten any leaking fittings.
 4. Check the alignment and tension of all conveying belts. Realign or tighten as required.
 5. Check oil level in hydraulic oil reservoirs. Top up as required.
 6. Check oil level in each speed reduction gear box for each drive. Top up as required.
 7. Lubricate all grease fittings.
- C. **After 2, 5 and 10 hours of operation:**
 1. Re-torque all fasteners and hardware.
 2. Check that all electrical connections are tight and cords are routed out of the way or protected.
 3. Check for hydraulic leaks. Tighten any leaking fittings.
 4. Check the alignment and tension of all conveying belts. 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 Hopper and 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 Hopper and Conveyor. The checklist should be performed before operating the machine 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 that all conveying belts are properly tensioned and aligned. Adjust if required.
5. Check for hydraulic leaks. Tighten any leaking fittings.
6. Check for and remove all entangled material.
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. Flow Control Valve:

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

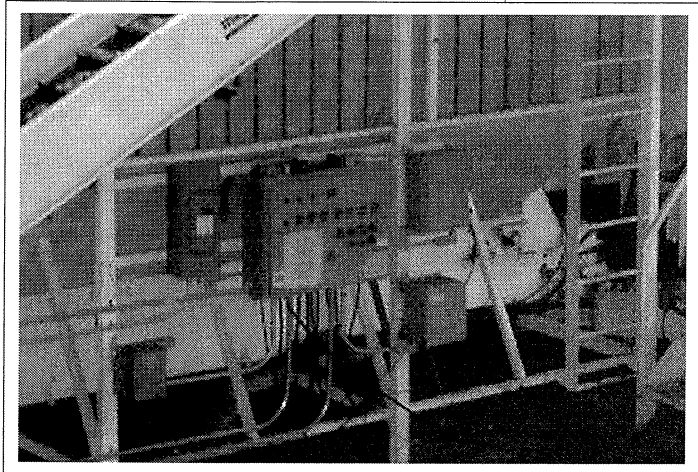


Fig. 3 HYDRAULIC CONTROLS (Typical)

2. Pressure Gauge:

This gauge displays the pressure in the driving circuit. Use in conjunction with the flow control valve to set the system pressure.

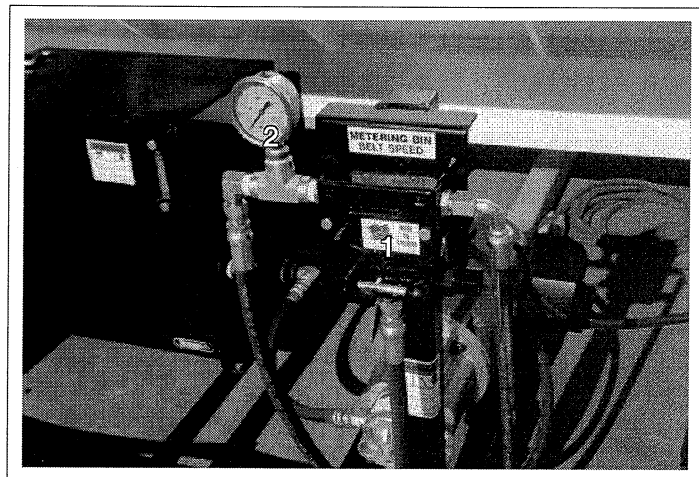
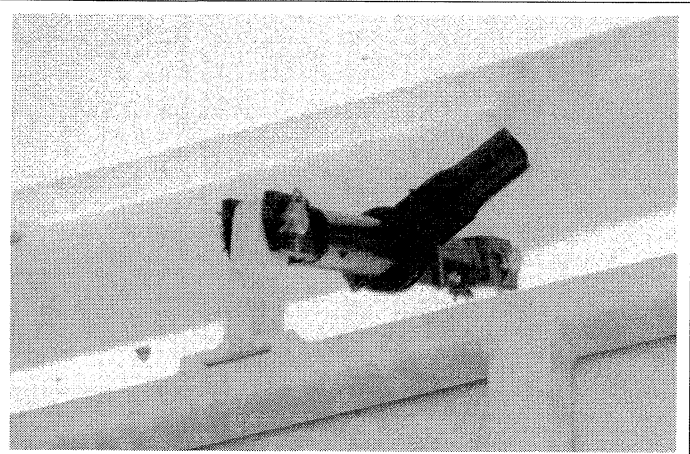


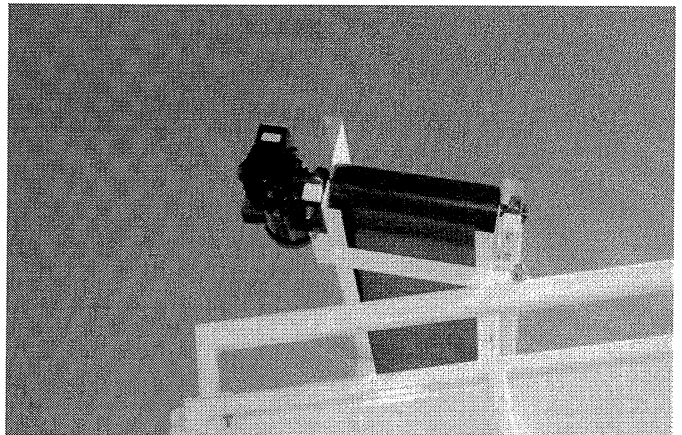
Fig. 4 FLOW CONTROL

3. **Distributing Conveyor:**

These turnbuckles set the frame angle of the distributing conveyor. Extend the turnbuckle to increase the angle and retract to reduce the angle. Always set both at the same dimension.



Turnbuckle



Angle

Fig. 5 FRAME ANGLE

4. **Unload Arm:**

This arm extends out to move the potatoes off the distribution conveyor and into the hopper. Extend the arm at the appropriate location along the conveyor to fill the hopper.

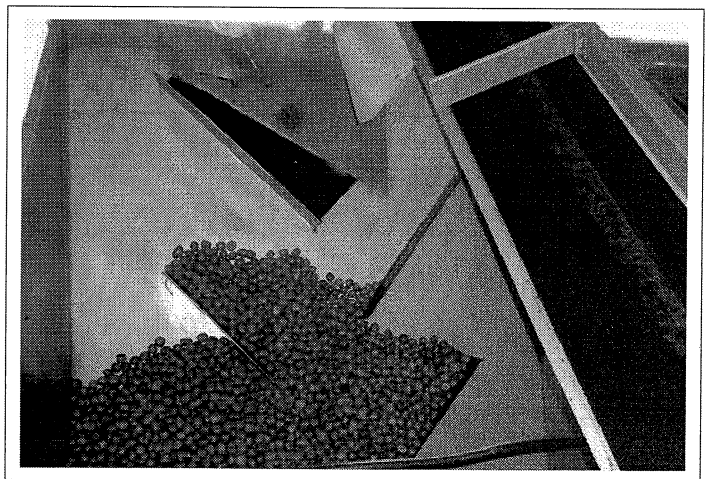


Fig. 6 UNLOAD ARM

5. **Electrical Controls:**

The customer provides the controls for the electrical circuits. Always use a licensed electrician to provide power at the appropri-

4. **Loading Conveyor:**

This elevating conveyor is used to move the potatoes up to the cross conveyor.

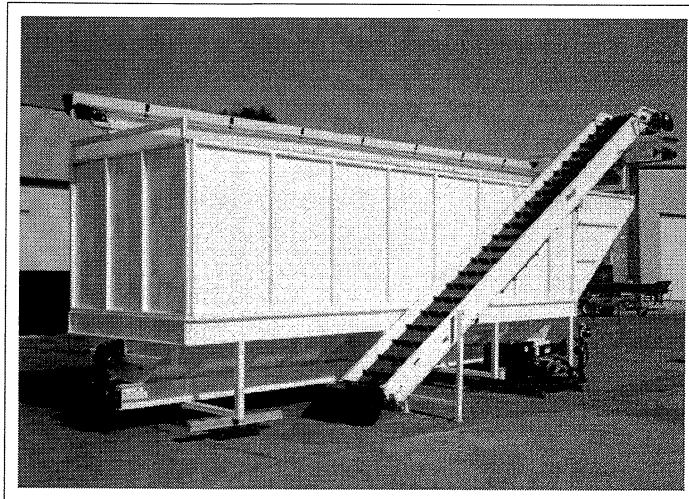


Fig. 7 ELEVATING CONVEYOR

5. **Auxiliary Equipment:**

Each customer must provide a means of bringing a flow of potatoes to the loading end and removing them from the discharge end. Normally this is done by another piece of equipment such as another conveyor. Always connect the adjacent equipment securely to the hopper to prevent movement.



Fig. 8 AUXILIARY EQUIPMENT

4.7 OPERATING



OPERATING SAFETY

- Read Operator's Manual before starting.
- Review safety instructions annually.
- 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.
- Lock Out Tag Out machine before performing any service or maintenance work.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.

Follow this procedure when using the Metering Hopper and Conveyor:

1. Review and follow the pre-operation checklist (See Section 4.5).
2. Review the location and function of all controls (See Section 4.6).
3. **Auxiliary Hydraulic System (Optional):**
An optional, self-contained hydraulic power package is available to provide power to the entire system. Always use a licensed electrician to provide electrical power to the motor. This optional power system can be used or tap into the existing power supply previously being used.

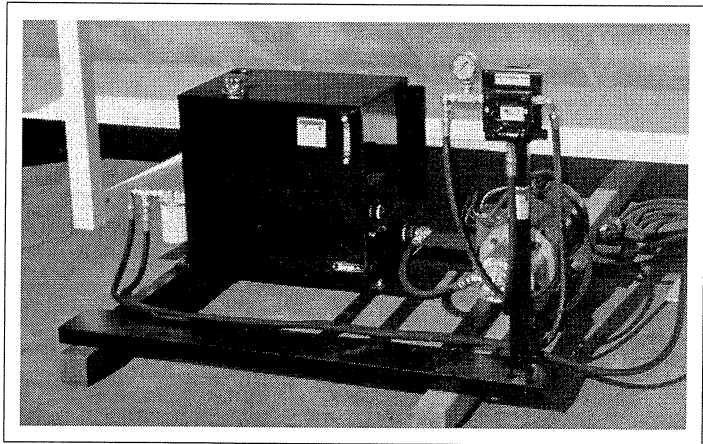


Fig. 9 HYDRAULIC POWER SYSTEM (Optional)

4. **Starting Machine:**

- a. Clear the area of bystanders. Know where everyone is before starting.
- b. Place all controls in the OFF position.
- c. Turn the power to the machine ON at the master panel.
- d. Turn the master power switch ON (refer to section 4.6 Controls).

NOTE

Be sure the red Emergency Stop switch is pulled out.

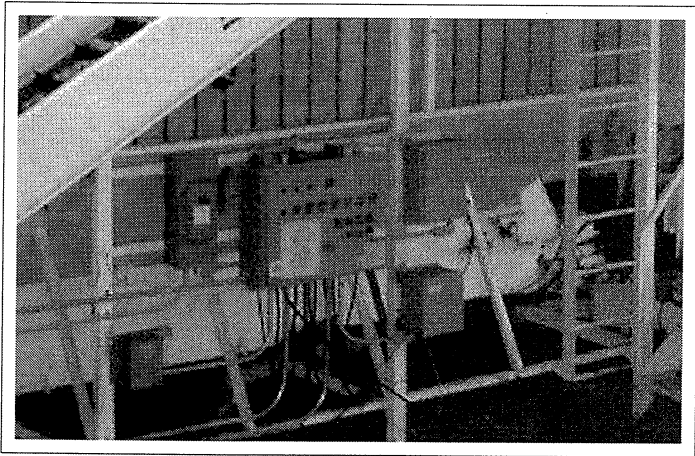


Fig. 10 CONTROL PANEL (Typical)

- e. Turn the conveyor ON that moves potatoes away from the machine.
- f. Turn the distribution and cross conveyors ON.
- g. Turn the conveyor ON that moves the potatoes up to the cross conveyor.
- h. Load potatoes into the elevating conveyor.

5. **Stopping Machine:**

- a. Turn OFF the equipment that moves the potatoes to the Hopper and Conveyor.
- b. Wait until the potatoes have moved off the end of the distributing conveyor.
- c. Turn the hopper and conveyor OFF.
- c. Turn the conveyor OFF that moves potatoes away from the machine.
- d. Turn Master Power Switch OFF.

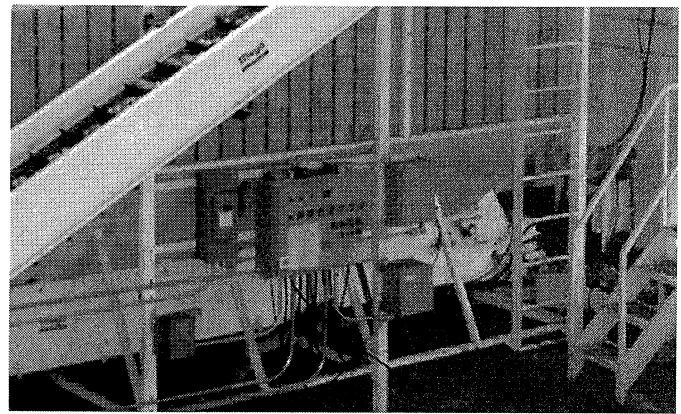
An alternative is to depress the red Emergency Stop button on the typical control panel but then the operator must go through steps a through h to turn all the controls OFF before restarting.

6. **Emergency STOP:**

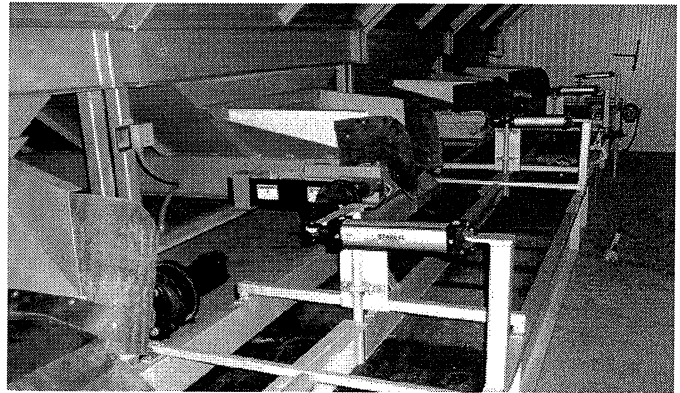
Depress the large red STOP button on the control panel. This will stop the conveyors. Be sure to turn all the individual controls OFF and pull out the Emergency Stop button before restarting the machine.

7. **Equipment Attachment:**

Provide a means for bringing a flow of potatoes into the elevating conveyor and a means of removing them from the discharge. Since the machine is positioned on the ground for operation, it will not move. Do not allow the auxiliary equipment to move. Normally, connecting them will prevent movement.



System

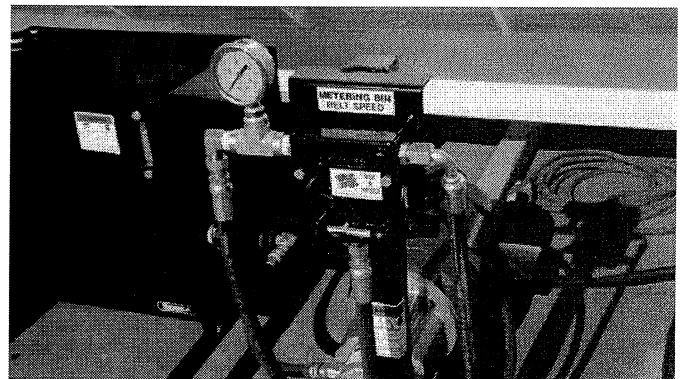


Discharge

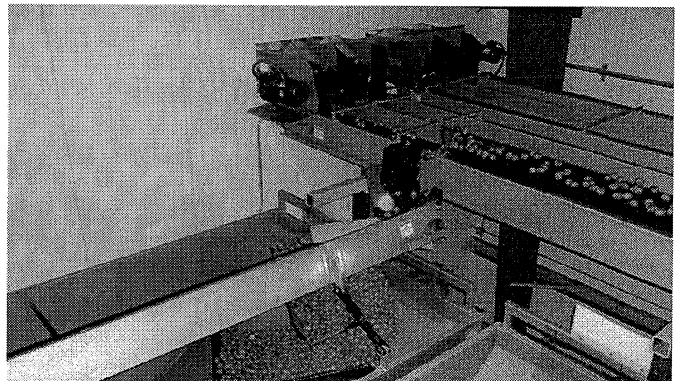
Fig. 11 AUXILIARY EQUIPMENT (Typical)

8. **Conveying Speed:**

The conveyors of the Metering Hopper and associated conveyors run at a constant speed appropriate for the machine and/or process downstream from the hopper. Use the hydraulic system flow divider to set the speed of the conveyor.



Flow Divider



Conveyor (Typical)

Fig. 12 CONVEYING SPEED

10. **Cascade:**

The discharge end of the Hopper is designed with a cascade down the tapered end to provide a path for potatoes to move from the distributing conveyor to the bottom of the frame with minimal drop height. Start moving potatoes off the distribution conveyor at the discharge end to utilize the cascade.

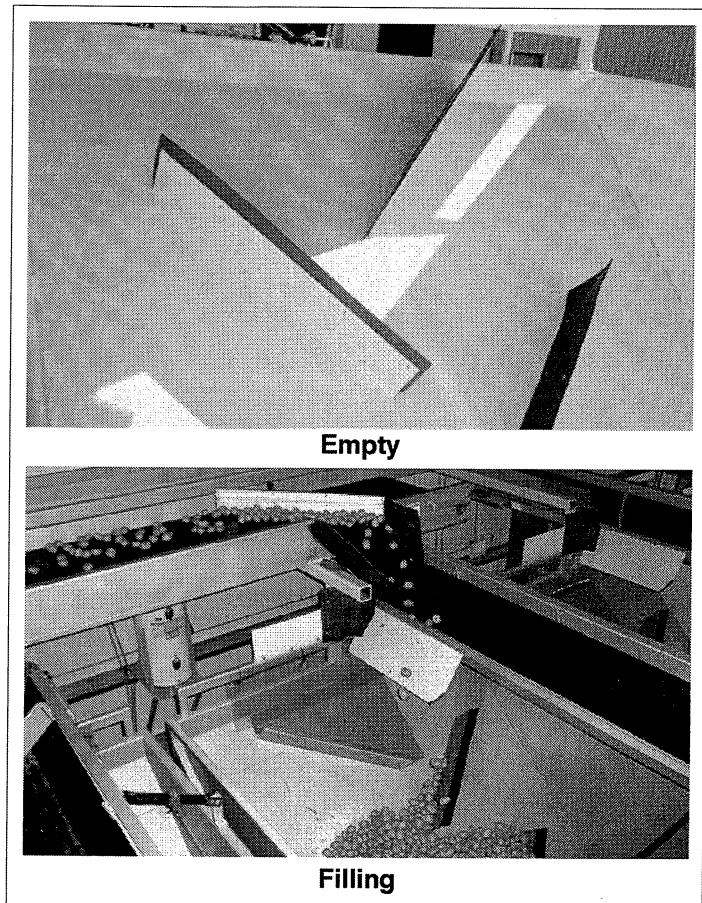


Fig. 13 CASCADE

11. **Blower:**

The unit can be equipped with a blower mounted on the bottom of the frame opposite the discharge end. Use it to cool the potatoes in the Hopper if they remain there for a period of time. Air is distributed out through holes in the top of the roost above the discharge conveyor. Air flow helps to cool the potatoes while they remain in the Hopper.

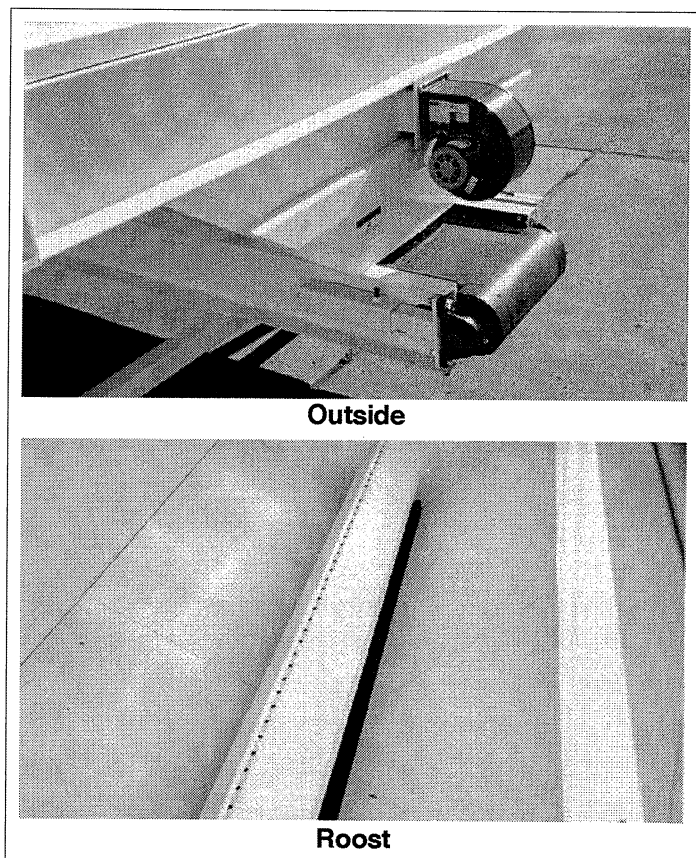


Fig. 14 BLOWER

12. Ladder Rung:

A ladder is installed in the left rear corner of the box to allow people to climb into and out of the Hopper. Be sure the machine and system are turned OFF and the power locked-out tagged-out before entering the Hopper.

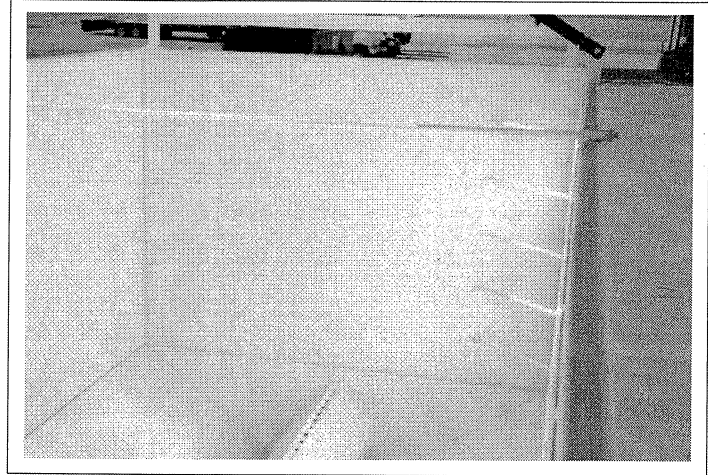
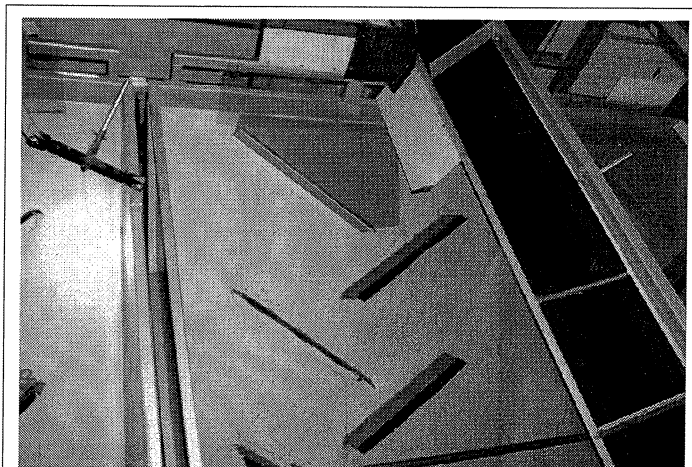


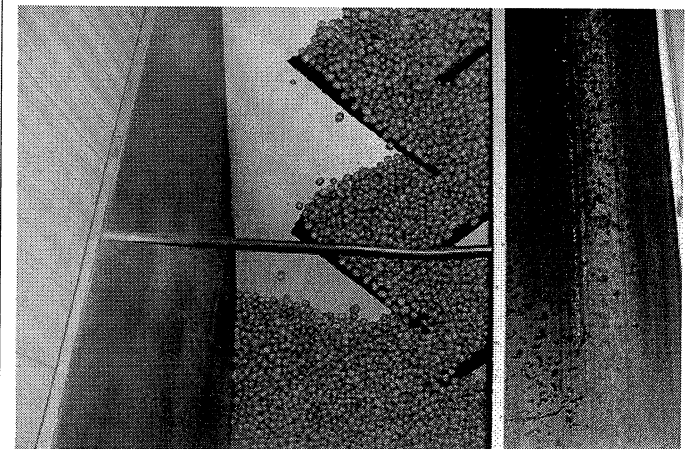
Fig. 15 LADDER

13. Bruising:

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 storage phase can be minimized by keeping the drop height between each machine and cascade as small as possible.



Cascade

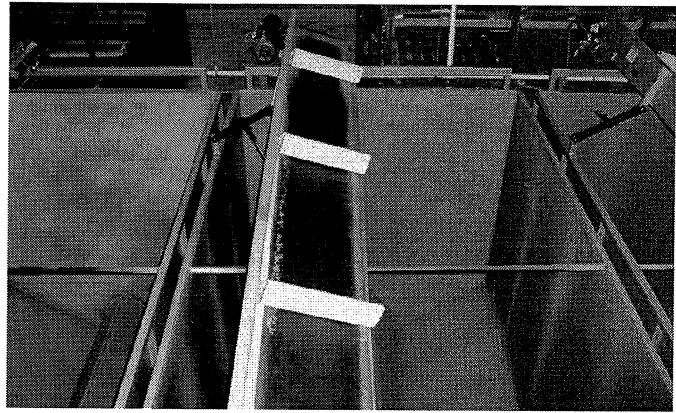


Potatoes

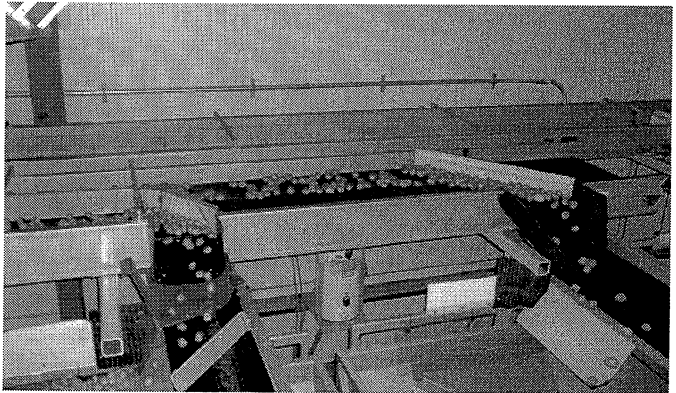
Fig. 16 DROP HEIGHT

14. Sweeper Arm:

The distribution conveyor is designed with a series of sweeper arms that move the potatoes off the conveyor into the Hopper. Extend the appropriate arm to move potatoes into the desired area of the Hopper.



Arms

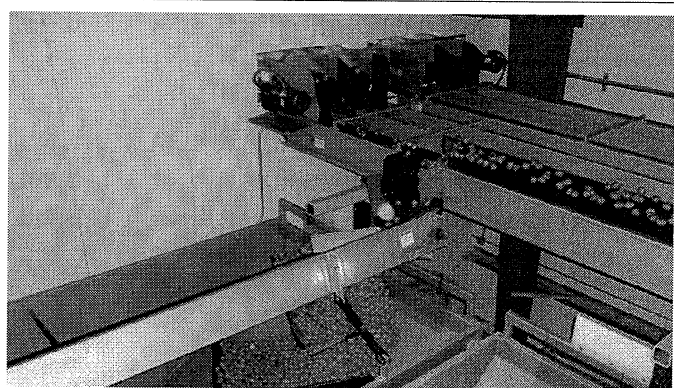


Sweeping

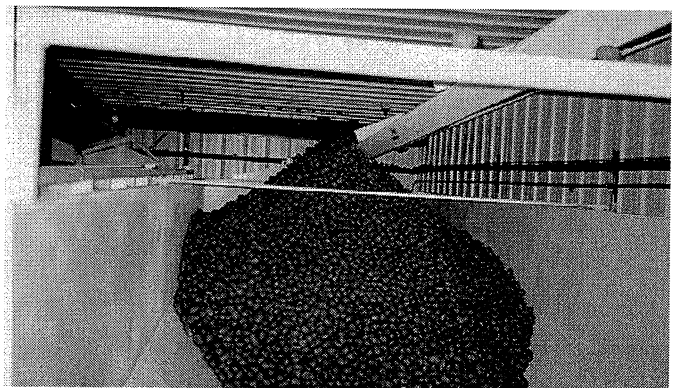
Fig. 17 SWEEPER ARM

15. 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 as dry as possible 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 conveyors and system as full as possible to minimize bruising during the transferring and storage process.
- f. Start filling the Hopper from the cascade end and gradually fill the entire Hopper. Use the sweeper arms as appropriate to fill the Hopper in stages.



Cascade



Filling

Fig. 18 FILLING

4.8 STORAGE



STORAGE SAFETY

- Store the Hopper and Conveyor on a firm level surface.
- If required, make sure the unit is firmly blocked up.
- Make certain 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 Hopper and 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 Hopper and Conveyor.

7. Inspect all the electrical cords, lines, junction boxes and motors. Tighten any loose connections. Replace any cord that is badly cut, nicked or abraded. Replace any damaged components.
8. Inspect each conveyor. Check the condition of the rollers. Replace any if badly worn. Check the alignment of the conveyors. Align if required. Properly tension each conveyor belt.
9. Touch up all paint nicks and scratches to prevent rusting.
10. Select a storage area that is dry, level and free of debris.
11. Cover with a weather-proof tarpaulin and tie down if stored outside.

4.8.1 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. Check all rotating parts for entangled material. Remove.
2. Turn the power OFF at the master electrical panel and lock out.
3. Unplug and remove power cord from machine.
4. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue. Be sure the brush rollers are cleaned.
5. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
6. Inspect all the hydraulic hoses, lines and fittings. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or separating from a fitting. Replace any damaged components.

4.8.2 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. Move to the working area if appropriate.
3. Check
 - a. Electrical systems and hydraulic components.
 - b. All drive systems.
 - c. All hardware. Tighten as required.
4. Replace any defective components.
5. Go through the pre-operation checklist (Section 4.5) before starting.

5 SERVICE AND MAINTENANCE



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), 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.
- Do not work on Metering Hopper and 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.
- Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

5.1 SERVICE

5.1.1 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 Mobil Glygoyle synthetic lubricant 150 VG 460 or equivalent.

Capacity: 2 qts. (2 L).

5.1.2 GREASING

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

1. Use only a hand-held grease gun for all greasing. 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. **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.

5.1.3 SERVICING INTERVALS

50 Hours or Weekly

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent servicing.

1. Check the oil level in the hydraulic reservoir.
Top up as required.
2. Grease the conveyor roller bearings with 1 shot of grease.
 - a. Cross conveyor driven shaft.

IMPORTANT

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

- b. Cross conveyor drive shaft.

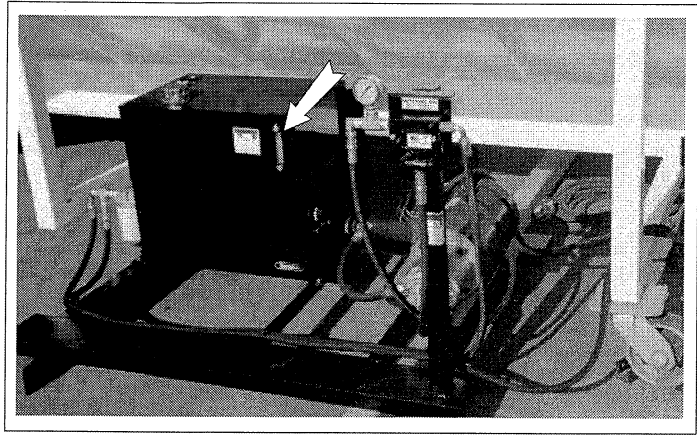


Fig. 19 SIGHT GLASS

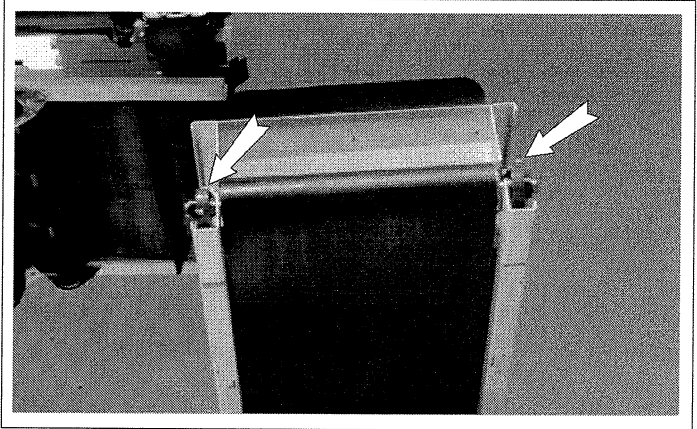
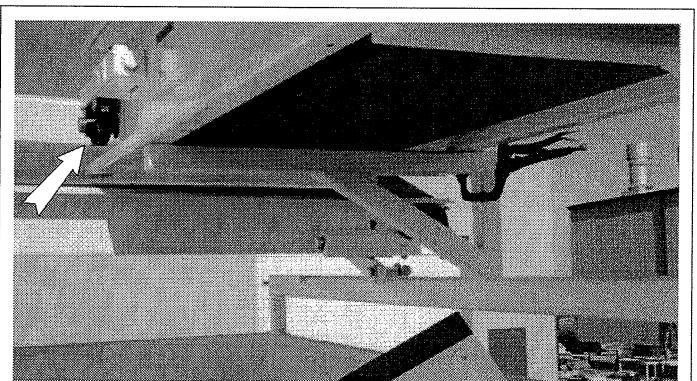
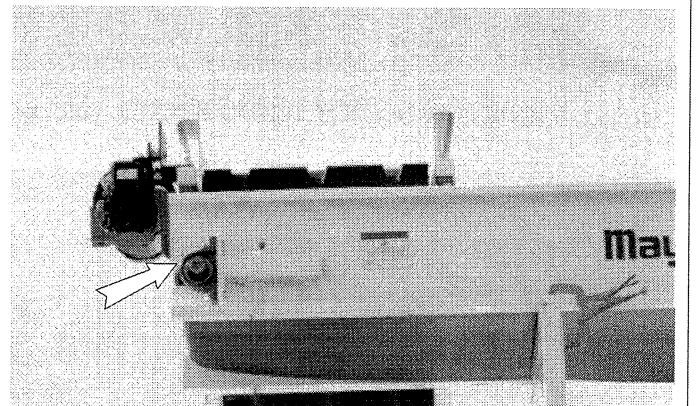


Fig. 20 CROSS CONVEYOR DRIVEN SHAFT



Driven



Drive

Fig. 21 CROSS CONVEYOR DRIVE SHAFT

- c. Distributing conveyor drive and driven shafts.

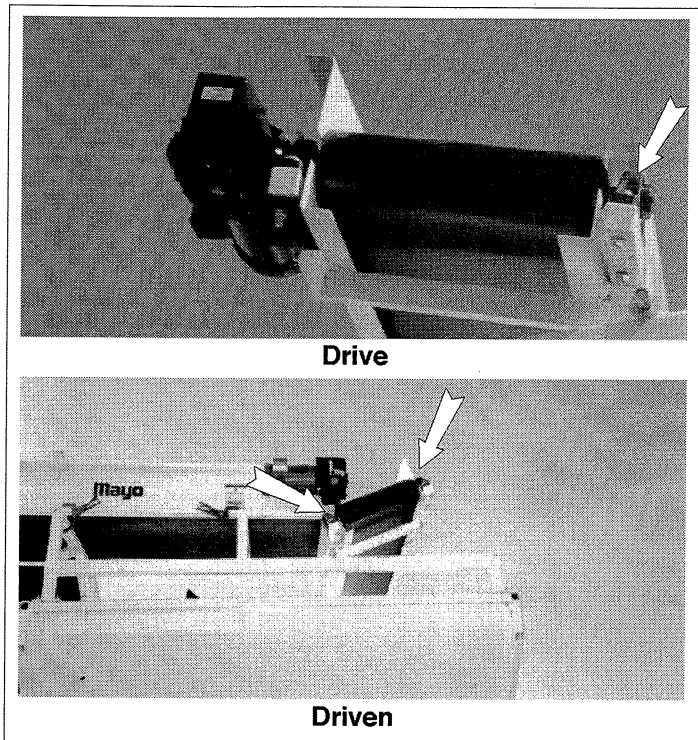


Fig. 22 DISTRIBUTING CONVEYOR

- d. Unloading conveyor drive and driven shafts.

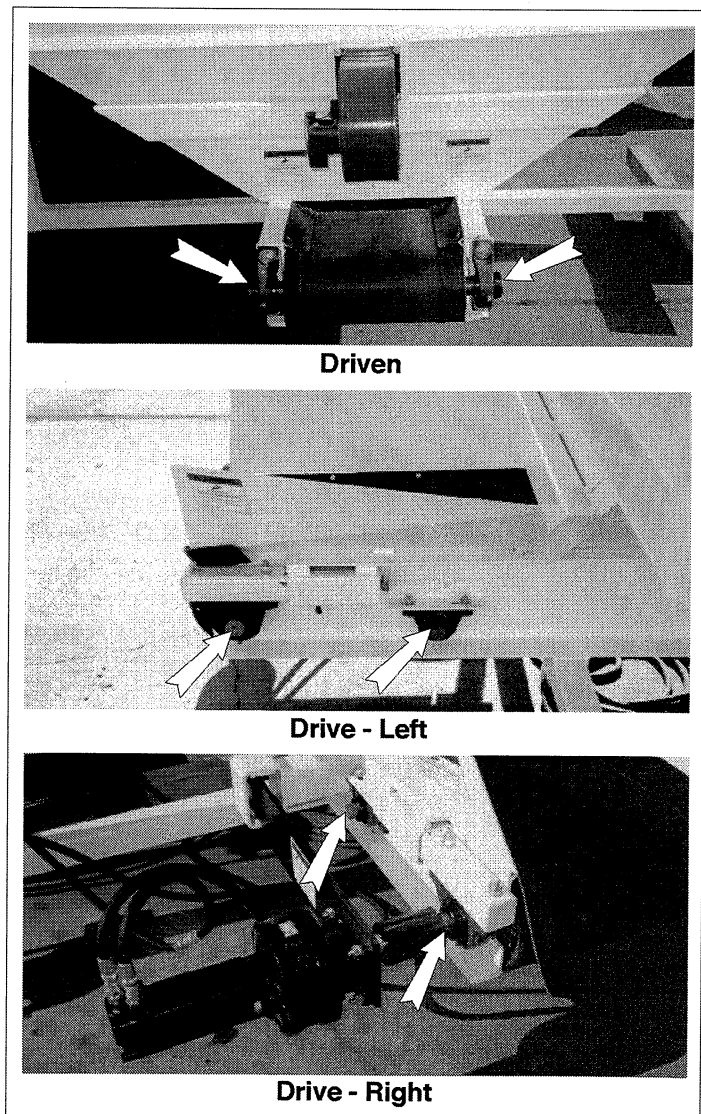


Fig. 23 UNLOADING CONVEYOR

- e. Elevating conveyor.

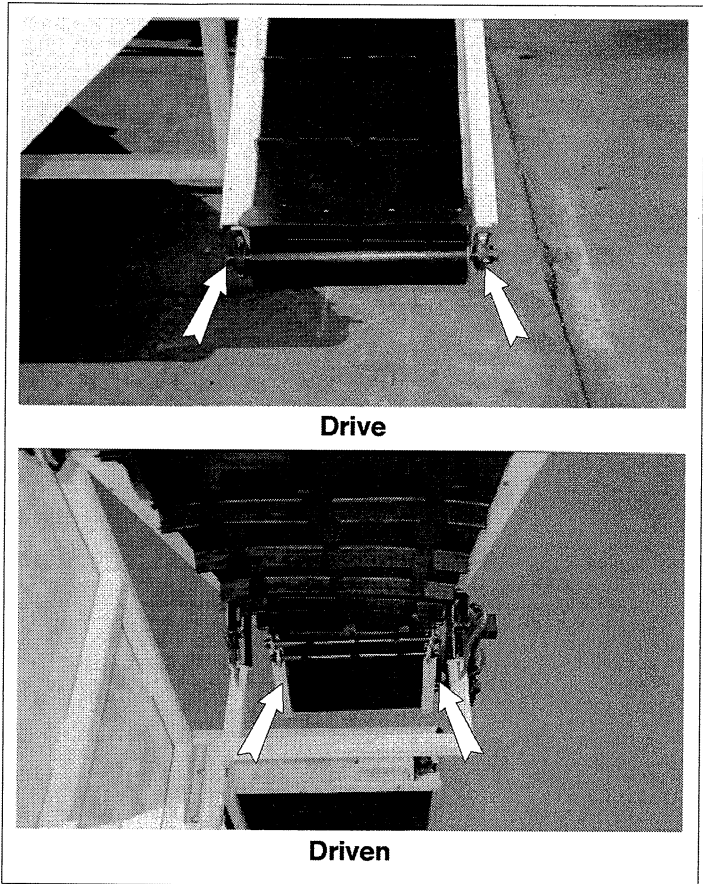
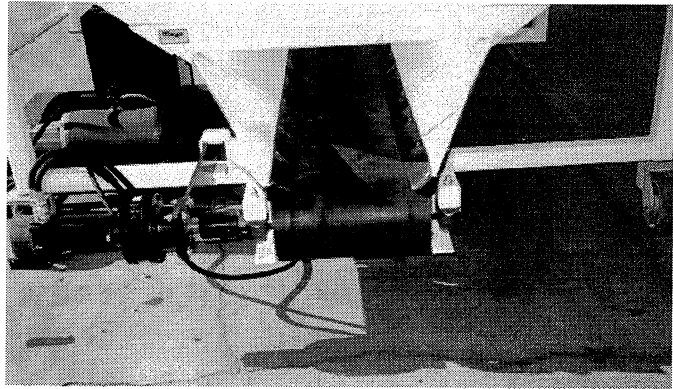


Fig. 24 ELEVATING CONVEYOR

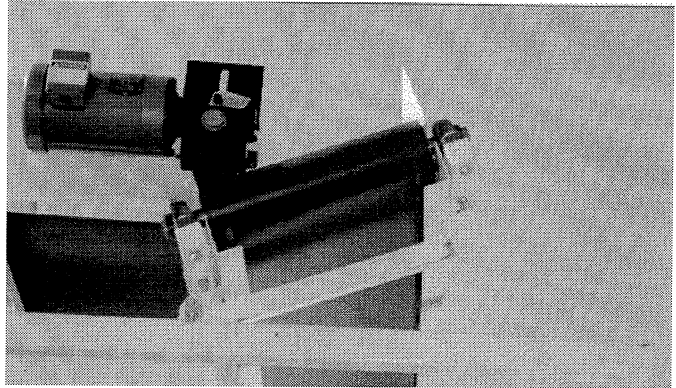
3. Check conveyor alignment.

a. Unloading conveyor.



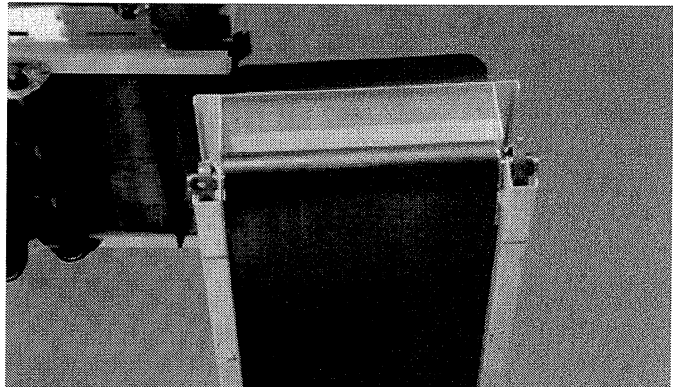
Unloading

b. Distributing conveyor.



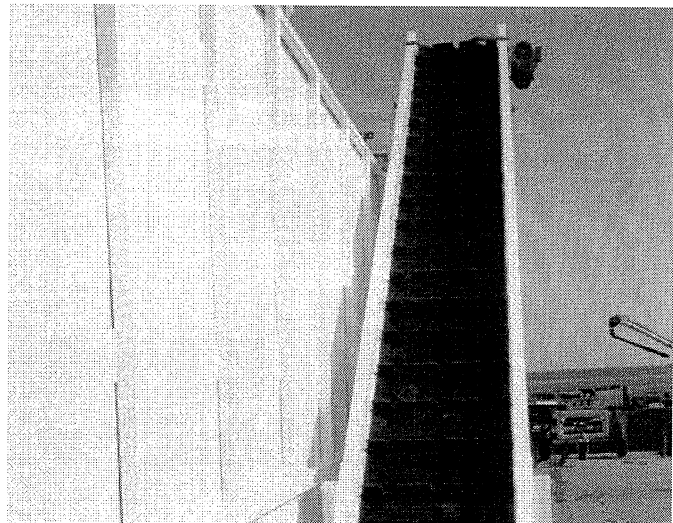
Distributing

c. Cross conveyor.



Cross

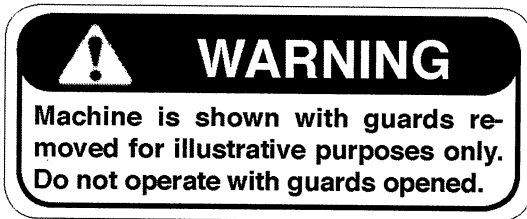
d. Elevating conveyor.



Elevating

200 Hours or Annually

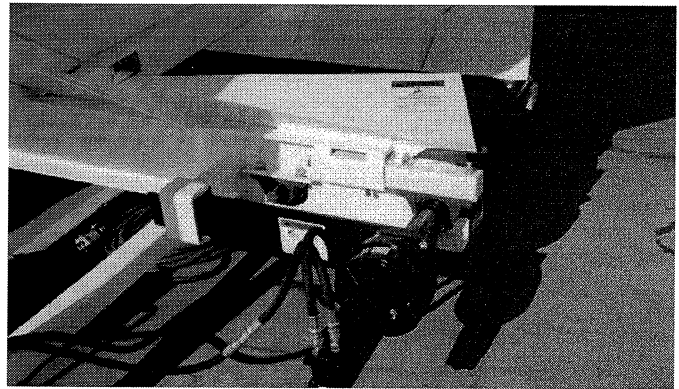
1. Check the oil level in each speed reducing gear box (1 location each gear box).
 - a. Unloading conveyor.



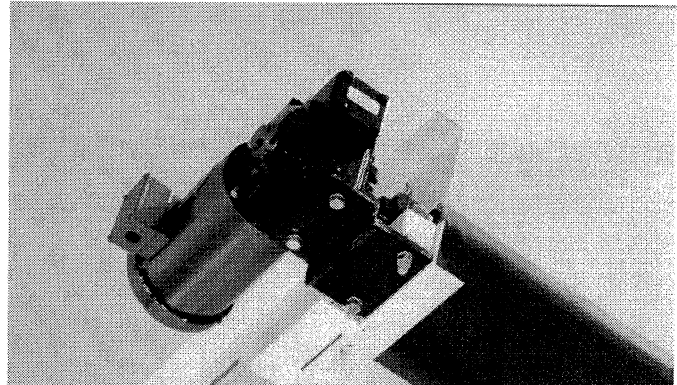
- b. Distributing conveyor.

- c. Cross conveyor.

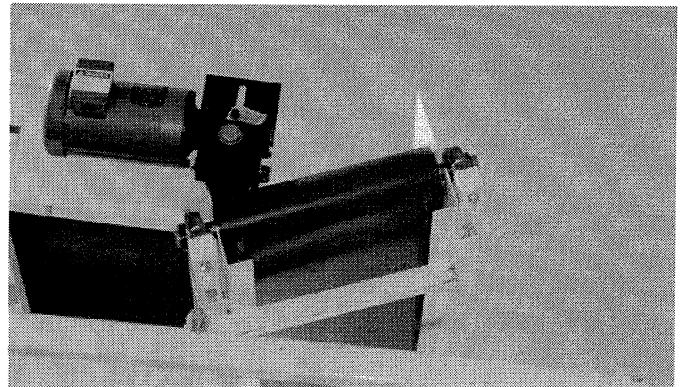
- d. Elevating conveyor.



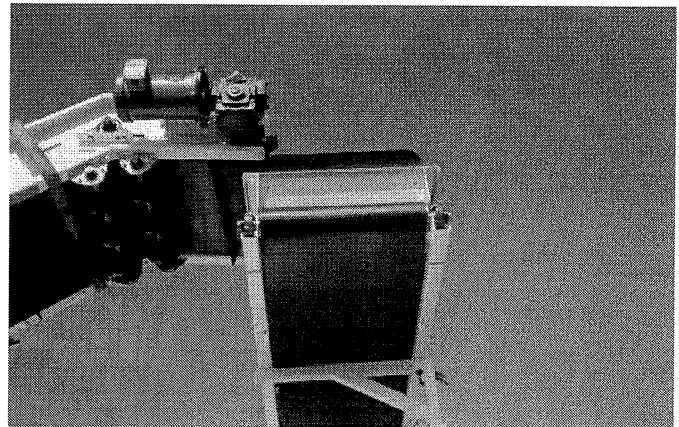
Unloading



Distributing



Cross



Elevating

Fig. 26 LEVEL PLUGS (Typical)

2. Grease turnbuckle (2 locations).

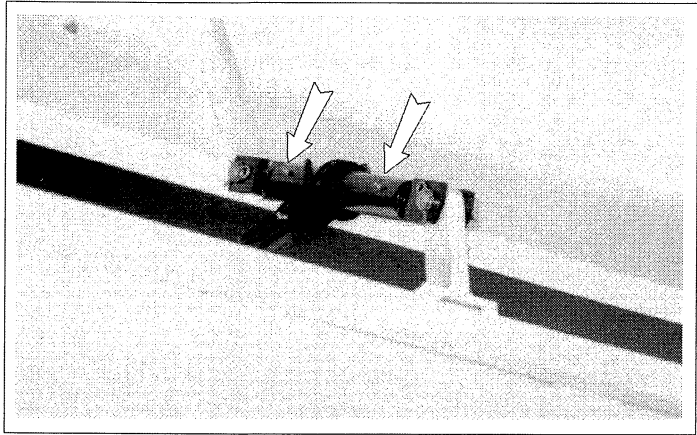


Fig. 27 TURNBUCKLE (Typical)

3. Change filter in hydraulic system.

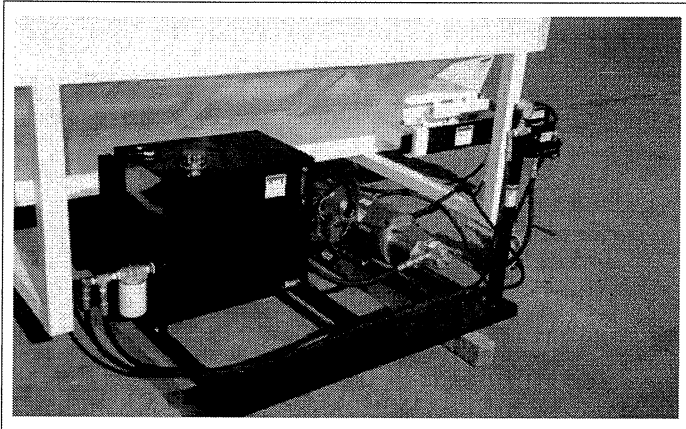


Fig. 28 FILTER

4. Wash machine.

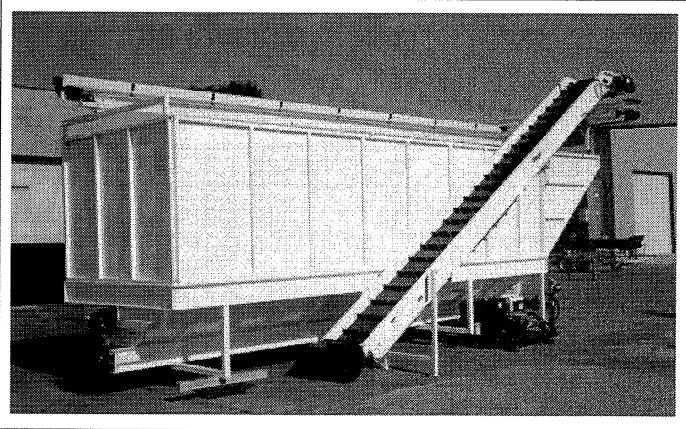


Fig. 29 MACHINE

Bi-Annually (Every 2 years)

1. Change hydraulic system oil.

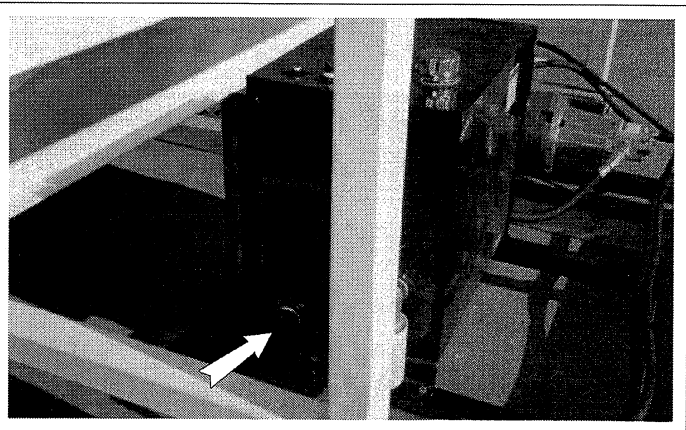


Fig. 30 DRAIN PLUG

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
 G GREASE RE RE-PACK

<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">MAINTENANCE</div> <div>HOURS SERVICED BY</div> </div>																				
	50 HOURS OR WEEKLY																			
CK Oil Level Hydraulic Reservoir																				
G Conveyor Roller Bearings (5 locations)																				
CK Conveyor Alignment (4)																				
200 HOURS OR ANNUALLY																				
CK Oil Level Speed Reducing Gearbox (4)																				
G Trunbuckle (2 locations)																				
CH Hydraulic Filter																				
CL Machine																				
BI-ANNUALLY (Every 2 years)																				
CH Hydraulic Oil																				

5.2 MAINTENANCE

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

5.2.1 ELECTRIC SYSTEM INSPECTION

Electricity provides power to all systems on the Metering Hopper and Cross 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.



WARNING

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

3. Inspect all electrical components looking for:
 - a. Damaged plugs.
 - b. Frayed 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.

5.2.2 HYDRAULIC MAINTENANCE

A hydraulic system provides power to run the machine. The system consists of an electrically powered pump, reservoir, lines, hoses, solenoid valves, directional valves, motors and cylinders. To maintain the integrity of the system and provide a safe working environment for the operator, it is important that a daily inspection be done to make sure that the entire system and all components are in good working condition.

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

1. Place all controls in the OFF or neutral position.
2. Turn power OFF at the master panel and lockout 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.

5.2.3 SPEED REDUCER GEARBOX OIL

Each conveyor drive system is driven by a hydraulic 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 200 hours, the oil level should be checked. Every 1000 operating hours 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 machine until the gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.
2. Stop the machine.
3. Place all controls in their OFF or neutral position.
4. Turn the power OFF at the master panel and lock-out tag-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

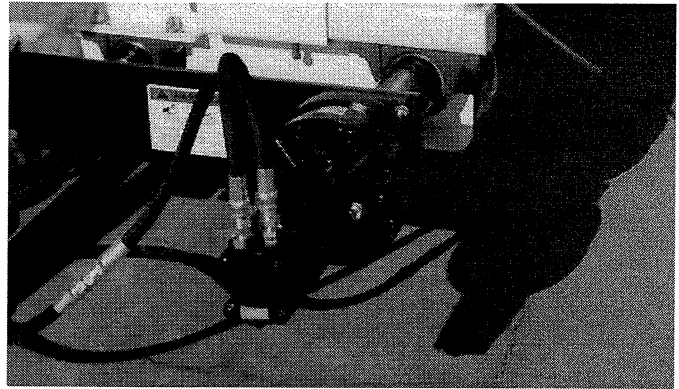
It may be necessary to add teflon tape or pipe sealant to the drain plug prior to installation to prevent leaking.

- e. Add Mobil Glygoyle 460 Synthetic Lubricant ISO VG 460. Use the level plug to determine the proper amount of oil.
- f. Check that the air passage through the breather is open.
- g. Install and tighten the fill and level plugs.
- h. Dispose of the used oil in an environmentally safe manner.

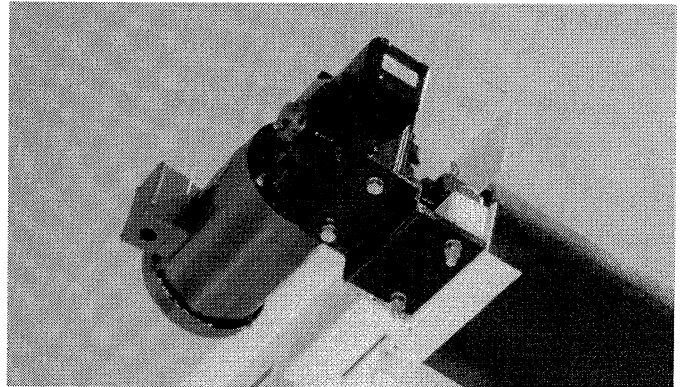


WARNING

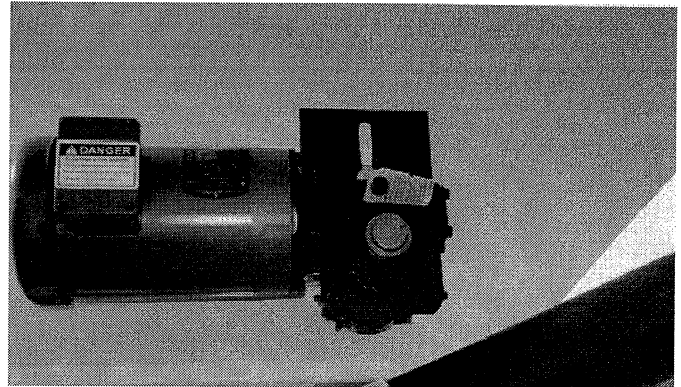
Machine is shown with guards removed for illustrative purposes only. Do not operate with guards opened.



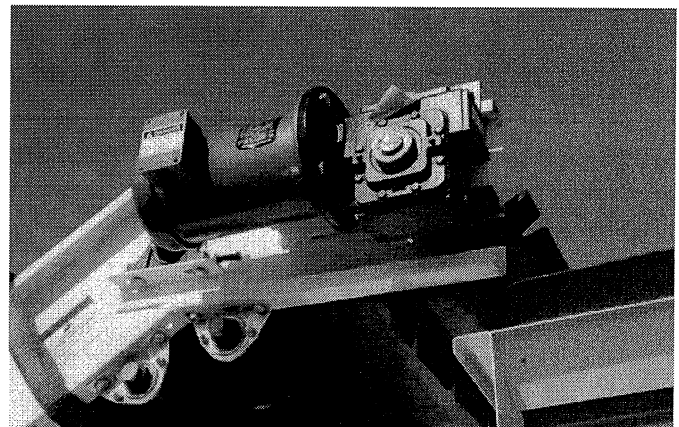
Unloading Conveyor



Distributing Conveyor



Cross Conveyor



Elevating Conveyor

Fig. 31 GEARBOXES (Typical)

5.2.4 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 tag-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.

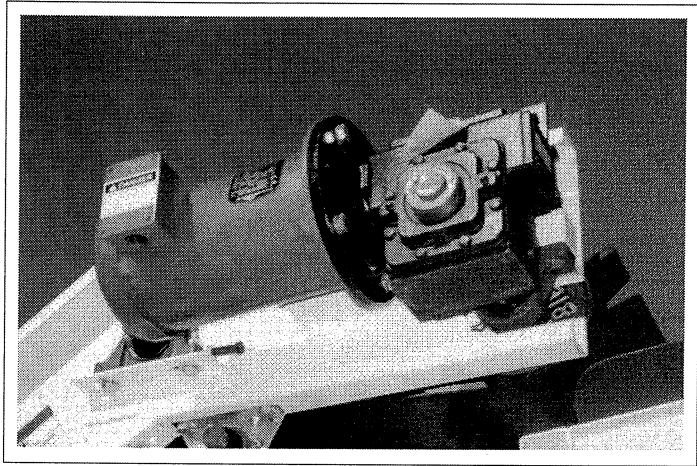


Fig. 32 BREATHER (Typical)

IMPORTANT

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



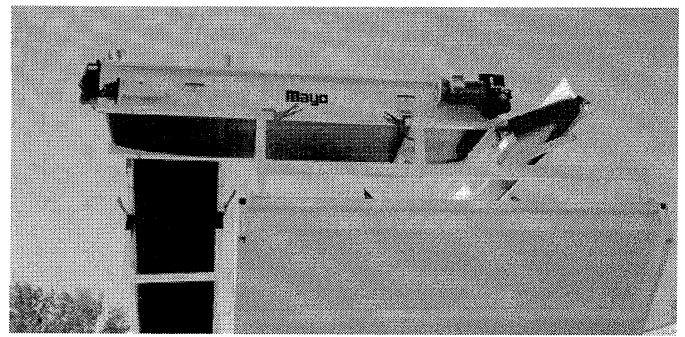
WARNING

Machine is shown with guards removed for illustrative purposes only. Do not operate with guards opened.

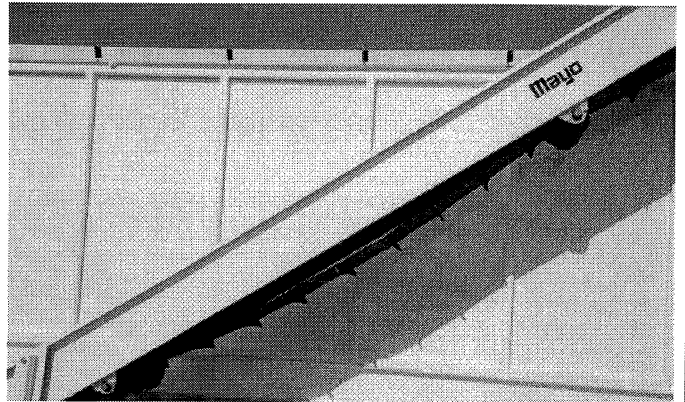
5.2.5 CONVEYOR BELT TENSION/ALIGNMENT OR REPLACEMENT

Conveyor belts are used to move potatoes with the machine. 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 belt(s), 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 tag-out.
3. **Tension:**
 - a. The belts are tensioned correctly when there is a 1 to 2 inch (25 - 50 mm) sag between the guide rollers on the bottom or slack side of the conveyor during operation.

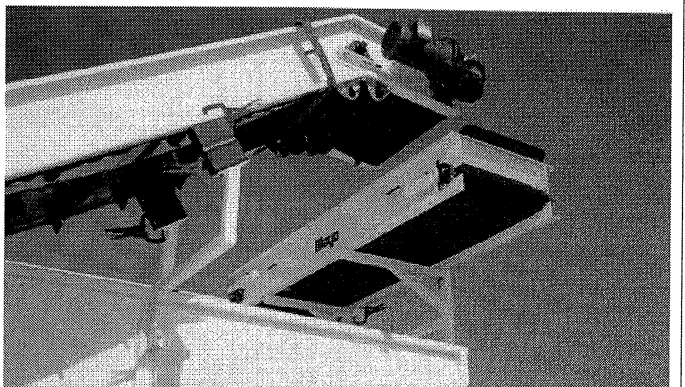


Cross Conveyor

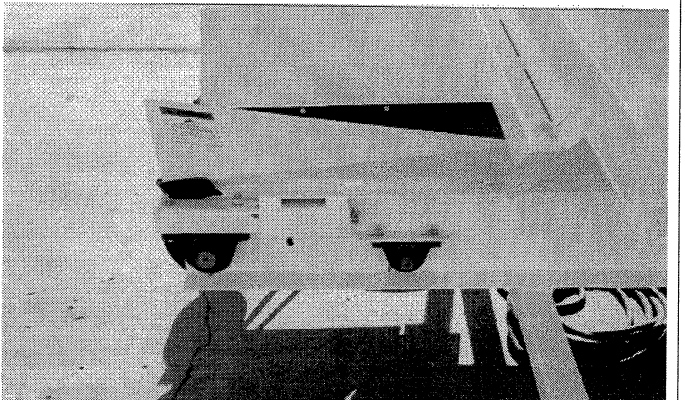


Cross Conveyor

Fig. 33 CONVEYOR TENSION



Cross/Elevating Conveyor



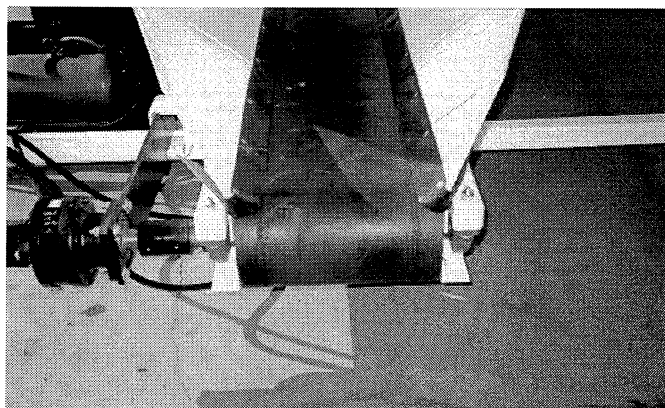
Unloading Conveyor

Fig. 33 TENSION ADJUSTING (Typical)

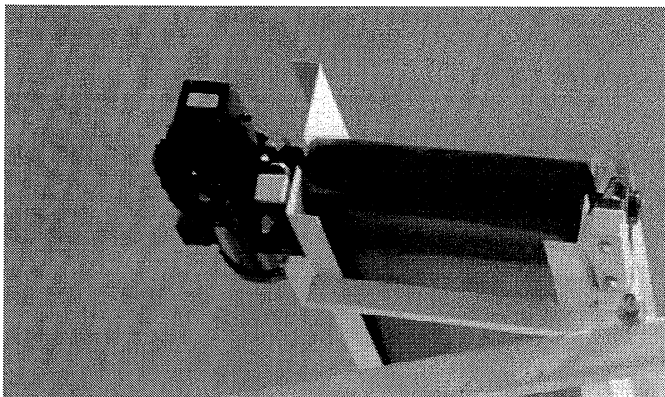
4. **Alignment:**

a. **Conveyors:**

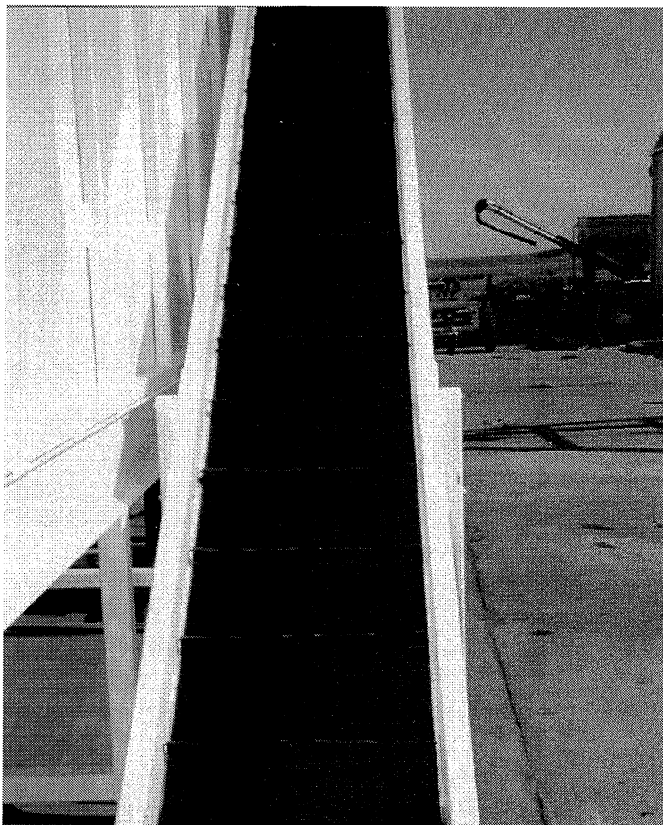
They are properly aligned when the belt runs in the center of the frame panels and the shafts. Be sure to run the conveyor a full revolution to check the entire belt. the belt can move from side-to-side while it is turning as long as it doesn't contact the sides. If it contacts the sides, it must be 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.



Unloading Conveyor



Distributing Conveyor



Elevating Conveyor

Fig. 40 CONVEYOR BELT ALIGNMENT (Typical)

5. **Replacement:**

- a. Move one or both of the shafts into their loosest position.
 - b. Open the belt by removing the connecting rod on the belt.
 - c. Attach the replacement belt to the end of the old 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 belt and secure the bearing assemblies.
-
- g. Check the tension and alignment of the belt frequently during the first 10 hours of operation and set as required. Then, go to the regular maintenance schedule. Normally a belt will seat itself during the first 10 hours of operation and then require less adjustment.

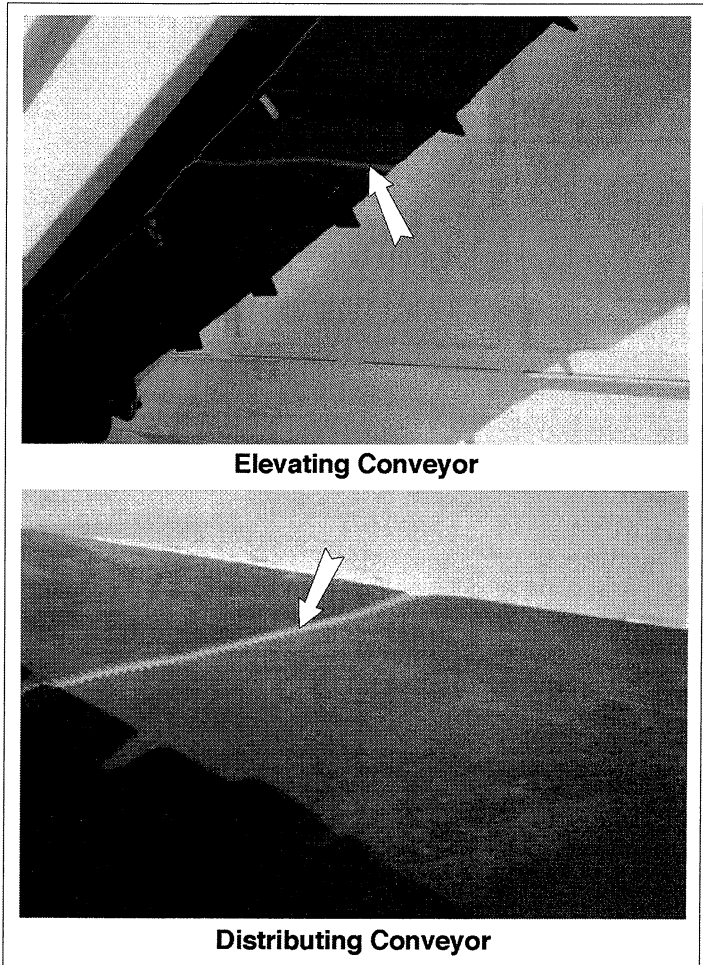


Fig. 41 BELT CONNECTOR (Typical)

5.2.6 HYDRAULIC OIL AND FILTER CHANGING

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

1. Run the hydraulic pump until the oil is warm. Warm freshly agitated oil removes more contaminants when drained than cold stagnate oil.
2. Stop the pump and place all controls in their OFF or neutral position.
3. Turn the power OFF at the master panel and lock-out.
4. Place a container under the drain plug. More than one container may be required since the tank holds 40 gals (150 liters).
5. Remove the drain plug and allow the system to drain for 10 minutes.
6. Use a banded filter removal tool to loosen and remove the filter.
7. Dip your finger in the oil and wet the rubber seal on the top of the new replacement filter to aid in sealing.
8. Install the replacement filter.
9. Hand tighten until the filter is seated. Then tighten the canister another 1/2 turn using the banded filter tool. Do not overtighten.
10. Install and tighten the drain plug. Use teflon tape or pipe sealant compound on the plug to prevent leaking.
11. Dispose of the used oil in an environmentally safe manner.
12. Fill with 15 gallons (56 liters) of Amoco All-Purpose Hydraulic Oil or equivalent.
13. Add to the oil level until it reaches the middle of the sight glass on the side of the tank or measure 1 1/2 inches (37 mm) from the fill neck to fill the tank.
14. Install the fill cap.
15. Start and run the system and check for leaks.
16. Tighten any fitting that leaks.

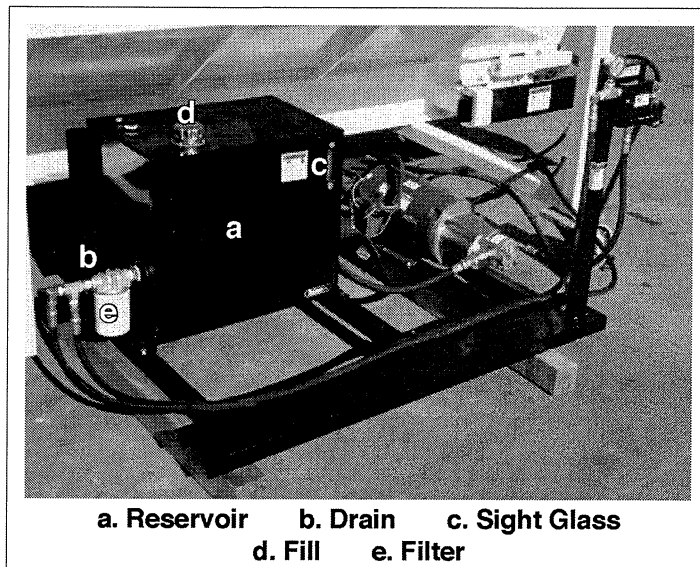


Fig. 42 HYDRAULIC SYSTEM (Typical)

6 TROUBLESHOOTING

The Mayo Metering Hopper and Cross Conveyor is a large bin that holds a large volume of potatoes and meters it out slowly as required. It is a simple and reliable system that requires minimum maintenance.

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

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

PROBLEM	CAUSE	SOLUTION
Conveyor won't run.	No power.	Plug machine in. Turn power ON at master panel.
	Tripped circuit breaker.	Reset circuit breaker.
	Low oil level.	Check oil level in hydraulic reservoir. Add as required.
	Plugged filter.	Change filter.
	Loose conveying belt.	Tighten conveying belt(s).
<hr/>		
Potatoes won't come out of hopper.	Bridging over conveyor.	Clean potatoes better before loading into Hopper.

7 SPECIFICATIONS

7.1 MECHANICAL

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

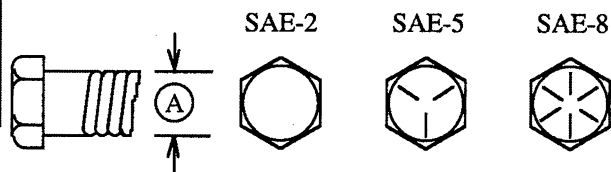
7.2 BOLT TORQUE

CHECKING BOLT TORQUE

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

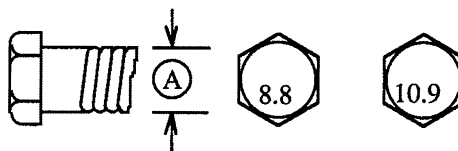
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2 (N.m) (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	575	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.

Thread Size (in.)	Across Flats (in.)	Torque Value* (N.m) (lb-ft)		Recommended Turn 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
1-1/6	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

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

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 SHC Cibus 32	All Temperatures/Oil sample guidance or 12 months
	Hydraulic Reservoir	ISO 32, Food Grade, NSF-H1	Mobil DTE FM 32	10F to 140F/Oil sample guidance or 12 months
Grease	Greased Bearings/Points	Food Grade	Mobilgrease FM 222	All/Weekly or as needed
	Greased Bearings/Points	Non-Food	Mobilgrease XHP 222	
Gear Oil	Winsmith Worm Gear Reducer	Poly Alkylene Glycol (PAG) ISO 460 NSF H1	Mobil Glygoyle 460	All/See Manual Note: Do Not Substitute
	Browning Helical Gear Reducer	Synthetic, PAO Type ISO 220 NSF H1	Mobil SHC 630 or Mobil SHC Cibus 220	All/Change Every Two Years
	Auburn Planetary Wheel Drives	SAE GL-5 75w90	Mobil Delvac Synthetic 75w90	All/Change Every Two Years
FOR SAFETY, ALWAYS LOCKOUT & TAGOUT				

7.5 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.

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