

Mayo



EVENFLOW

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.

EVENFLOW

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 _____

Dealer's Name _____

Address _____

Address _____

City, State/Prov., Code _____

City, State/Prov., Code _____

Phone Number (_____) _____

Evenflow Model _____

Serial Number _____

Delivery Date _____

DEALER INSPECTION REPORT

____ Tire Pressure Checked
____ Wheel Bolts Torqued
____ Inspect Electrical System
____ Hydraulic Hoses Free, Fittings Tight
____ Check Oil Level in Hydraulic Reservoir
____ Lubricate Machine
____ Conveyors Tensioned and Aligned
____ Speed Reducer Gearbox Oil Level Checked
____ Roller Chain Tensioned and Aligned

SAFETY

____ Guards/Shields Installed & Secured
____ All Decals Installed & Legible
____ Safety Cable on Hitch
____ 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

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SERIAL NUMBER LOCATION

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

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



SERIAL NUMBER LOCATION

Model _____

Serial Number _____

1 INTRODUCTION

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



This manual applies to all Evenflows manufactured by Mayo. Certain options may be available to specifically tailor the Evenflow to your operation and may not be included in this manual. Please contact the manufacturer regarding additional information about these options. Use the Table of Contents and Index as a guide to find specific information.

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

MACHINE ORIENTATION - The hopper end of the Evenflow is the front. All electrical controls are on the left side.

2 SAFETY

SAFETY ALERT SYMBOL

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



The Safety Alert symbol identifies important safety messages on your Mayo Evenflow 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

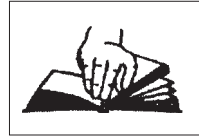
YOU are responsible for the **SAFE** operation and maintenance of your Mayo Evenflow. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the conveyor be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices while operating the Evenflow.

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 Evenflow.
- Evenflow 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 Evenflow.



2. Only trained, competent persons shall operate the Evenflow. 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.

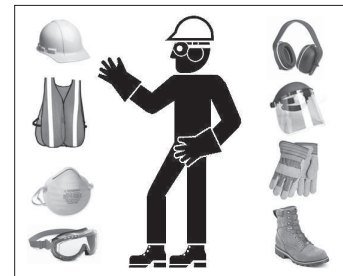


4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.



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, place all controls in their OFF position, 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. 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 Evenflows 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 Evenflow 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 Evenflow 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.



2.6 STORAGE SAFETY

1. Store the Evenflow on a firm level surface.
2. If required, make sure the unit is firmly blocked up.
3. Make certain that all mechanical locks and jacks 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 Evenflow.
6. Lock out power by turning off master control panel or junction box and padlocking the door shut to prevent electrocution or unauthorized start up of the Evenflow.

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 Evenflow 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. 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. If you are uncertain, have a licensed electrician provide power to the machine who follows ANSI/NFPA 70 Wiring Standard.
5. If using Evenflow 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 Evenflow.
3. Provide tags at the work site and a sign-up sheet to record tag out details.
4. Do not enter box, service or maintain the Evenflow unless motors are OFF and the power locked out at the master panel. Keep others away.

2.9 OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Evenflow.
2. Turn machine OFF, place all controls in their OFF position (safety lock-out devices are available through your Mayo dealer parts department), relieve hydraulic pressure, shut down and lock out power source, unplug power cord and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Keep all electrical components tight, dry and in good repair.
4. Clear the area of bystanders, especially small children.
5. Replace all worn or failed components immediately.
6. Install and secure all guards before operating.
7. Keep hands, feet, hair and clothing away from moving parts.
8. Lower and pin all outriggers before filling bin.
9. Before applying pressure to the hydraulic system make sure all components are tight and that all steel lines, hoses and couplings are not damaged.
10. Use pilot vehicles when transporting.
11. Stay away from overhead power lines and obstructions when moving or positioning. Electrocutation can occur without direct contact.
12. Do not stand between the elevator or boom and other frame members when raising or lowering the elevator or boom. Keep others away.
13. Do not stand or climb on machine when running. Keep others off.
14. Keep the working area clean and dry.
15. Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. If you are uncertain, have a licensed electrician provide power to the machine who follows ANSI/NFPA 70 Wiring Standard.
16. 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 Evenflow.
7. Do not work on Evenflow 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.



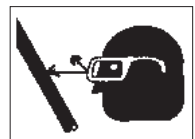
8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.



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.
6. Relieve pressure on hydraulic system before servicing, maintaining or repairing the hydraulic system.

2.12 ELECTRICAL SAFETY

1. Have only a qualified licensed electrician supply power to the machine by following ANSI/NFPA 70 Wiring Standard.
2. Make certain that the Evenflow is properly grounded at the power source.
3. Make certain that all electrical switches are in the OFF position before plugging the Evenflow in.
4. Turn machine OFF, place all controls in their OFF position, 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 Evenflow electrical system unless the power cord is unplugged or the power supply is locked-out tagged-out.
8. Stay away from overhead power lines and obstructions when moving or positioning. Electrocutation can occur without direct contact.

2.13 TIRE SAFETY

1. Inflate tires to proper pressure as specified on the side wall of each tire. Do not over-inflate or under-inflate.
2. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
3. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
4. Have a qualified tire dealer or repair service perform required tire maintenance.

2.14 TRANSPORT SAFETY

1. Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.
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 over-inflate.
3. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
4. Fully lower elevator and boom before transporting.
5. Raise and secure the elevator and tank frame outriggers and secure with lock pins before transporting or moving.
6. Wrap up and tie all loose hydraulic and electrical ends to the frame.
7. 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 on-coming and overtaking traffic.
8. Be sure that the Evenflow is positively hitched to the towing vehicle. Use a safety cable to assure a safe hitch hook-up when transporting.
9. Follow local regulations regarding maximum weight, width and length when transporting.
10. Do not exceed 15 MPH (25 Km/H). Reduce speed on rough roads and surfaces.
11. Do not allow anyone to ride on the Evenflow or towing vehicle during transport.
12. Always use hazard flashers on the towing vehicle when transporting.
13. Always use pilot vehicles in front and behind when towing on a public road.

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

[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.

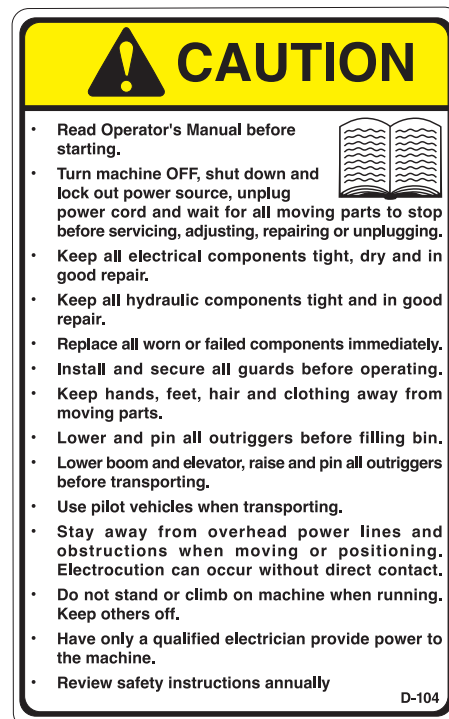
- Think SAFETY! Work SAFELY!



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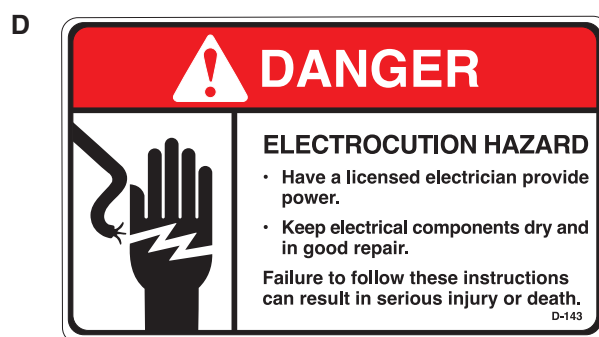
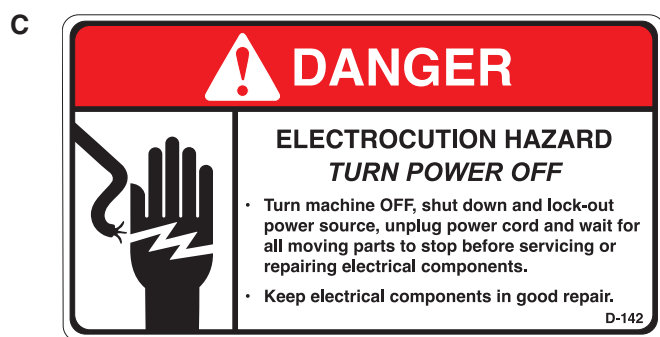
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REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

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- Think SAFETY! Work SAFELY!



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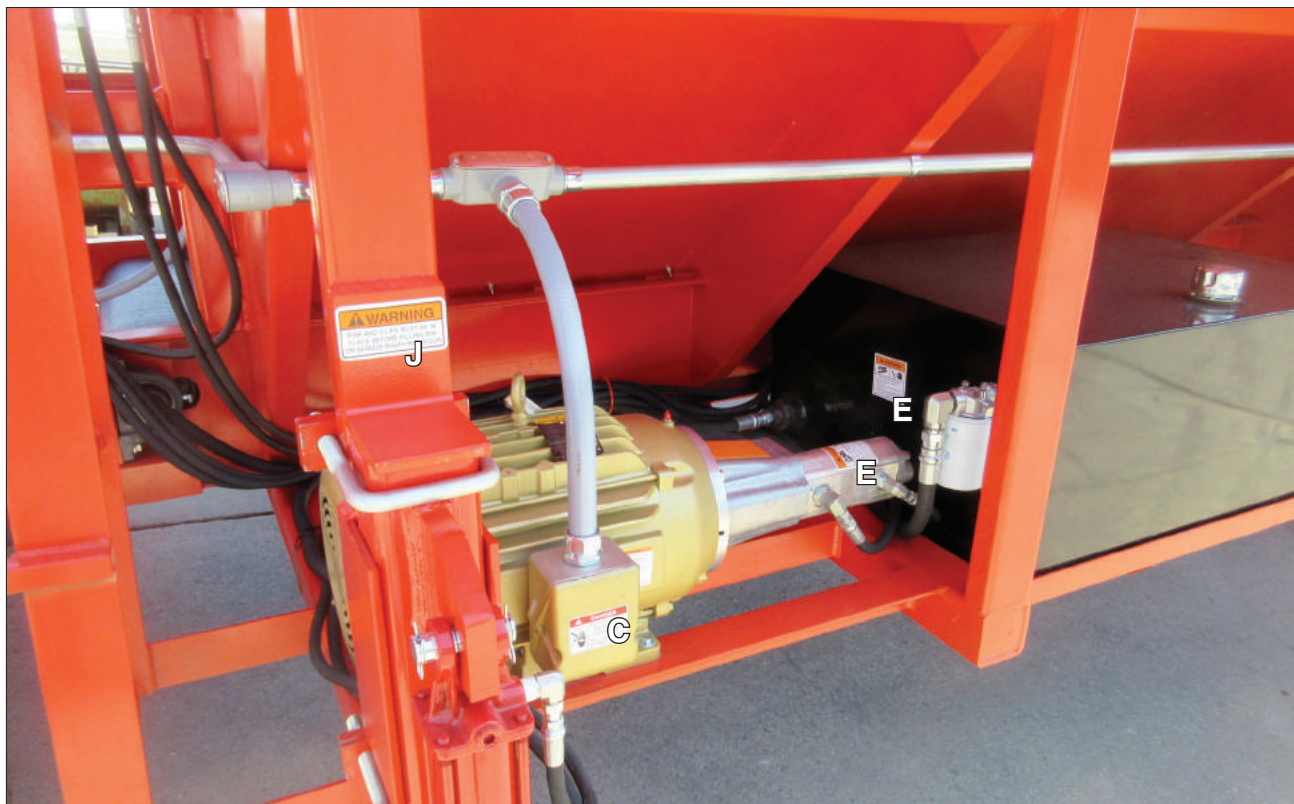
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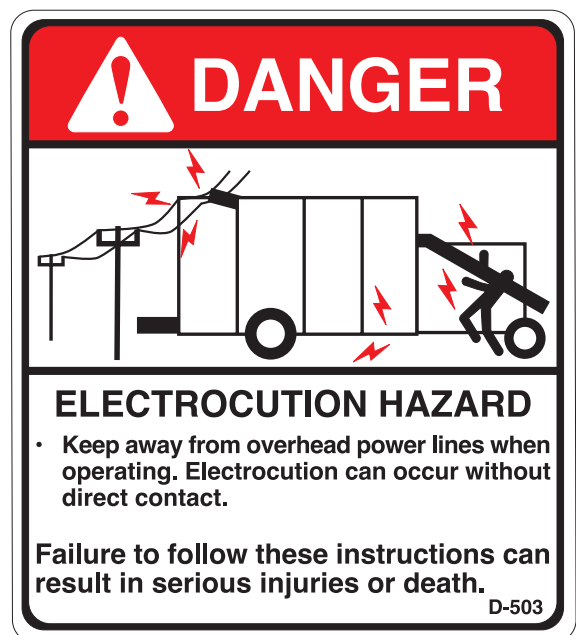
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K



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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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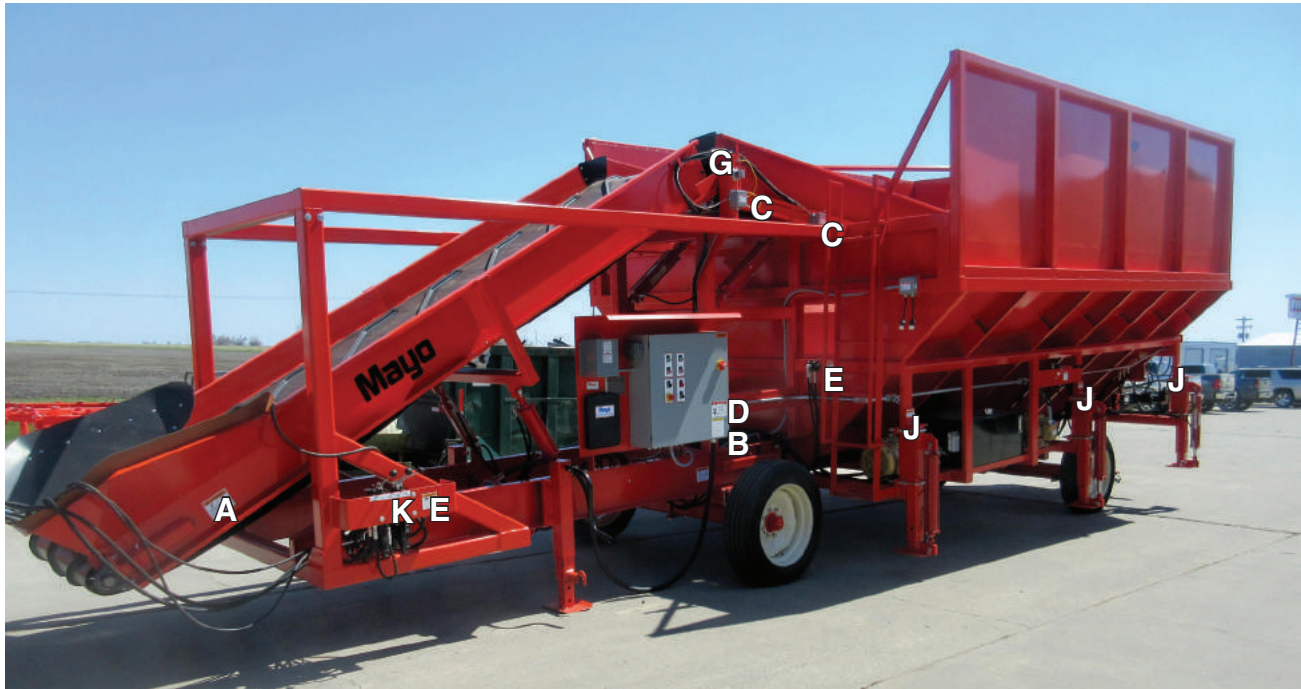
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- Think SAFETY! Work SAFELY!



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.
- 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.
- Clear the area of bystanders, especially small children.
- Replace all worn or failed components immediately.
- Keep all hydraulic components tight and in good repair.
- Replace all worn or failed components immediately.
- Install and secure all guards before operating.
- Install and secure all guards before operating.
- Keep hands, feet, hair and clothing away from moving parts.
- Lower and pin all outriggers before filling bin.
- Lower boom and elevator, raise and pin all outriggers before transporting.
- Use pilot vehicles when transporting.
- Stay away from overhead power lines and obstructions when moving or positioning. Electrocution can occur without direct contact.
- Do not stand between the elevator or boom and other frame members when raising or lowering the elevator or boom. Keep others away.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.
- Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. If you are uncertain, have a licensed electrician provide power to the machine who follows ANSI/NFPA 70 Wiring Standard.
- Review safety instructions annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Evenflow is designed as a conveyor/holding bin to receive, hold and evenly discharge product into graders, Evenflows, conveyors or other auxiliary 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 Evenflow will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Evenflow is a large holding tank that can receive a large quantity of potatoes or other produce and release it evenly in small quantities to supply other equipment in a storage or processing operation.

An intake or loading elevator on the front of the tank conveys the product into the tank. The loading elevator is designed to move up and down to accommodate the height of any conveyor or transport vehicle.

The boom end of the loading elevator is designed with a position sensor and the ability to raise and lower. This feature is designed to keep the drop height to a minimum to prevent bruising.

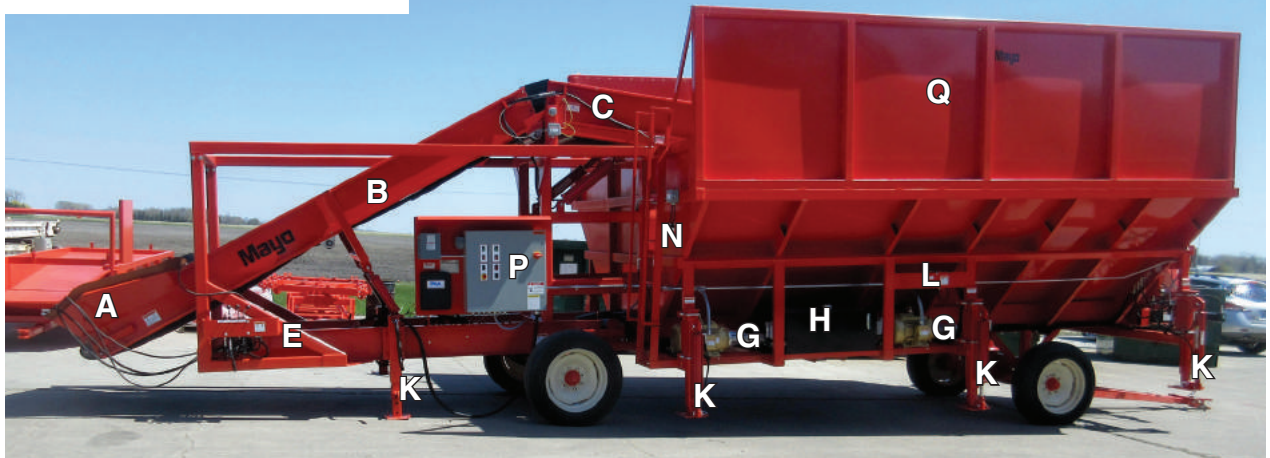
The discharge is located on the rear of the tank and the conveyor can be set to operate at any speed. This allows it to match up to any other type of auxiliary equipment in your storage or handling operation. All hydraulic and control components are located on the left side of the frame. The rear axle steers to allow for easy transporting and moving.

Outriggers along the frame and under the elevator allow the unit to be leveled for operation and support when loaded.



FIG. 1 MACHINE & TANK COMPONENTS

- A Hopper
- B Intake Elevator
- C Boom
- D Unloading Conveyor
- E Loading Controls
- F Discharge Controls
- G Hydraulic Pumps
- H Hydraulic Reservoir
- J Electronic Height Sensor
- K Outriggers
- L Outrigger Controls
- M Mechanical Height Sensor
- N Elevator/Outrigger Selector
- O Turkey Hut
- P Master Control Panel



4.3 GENERAL OPERATION THEORY

The purpose of the Even Flow is to provide a system that allows transport equipment to unload or empty quickly without overloading downstream equipment or systems. Transport equipment can then return quickly to the field or storage facilities for re-loading.

The Even Flow is positioned in the conveying line of a potato processing system to establish a consistent even flow of product into graders, Evenflows, washers, cutters, conveyors or other auxiliary equipment.

Potatoes are fed into the elevator hopper of the Even Flow by one of several different types of conveying machines which include but is not limited to a telescoping conveyor, a straight conveyor, a scale conveyor, stinger(s), a transport truck, etc.

From the elevator hopper the potatoes are carried by flighted belting up to the boom which discharges into the holding tank. A conveyor in the bottom of tank discharges the product evenly and consistently into the next machine.

The input hopper, boom discharge and tank discharge areas are designed to minimize the drop height and minimize bruising. A taper housing in the bottom of the tank minimizes the drop height when the tank is empty. It also guides the potatoes on the discharge conveyor when unloading. It also supports the weight of the potatoes in the tank so the discharge conveyor is not overloaded.

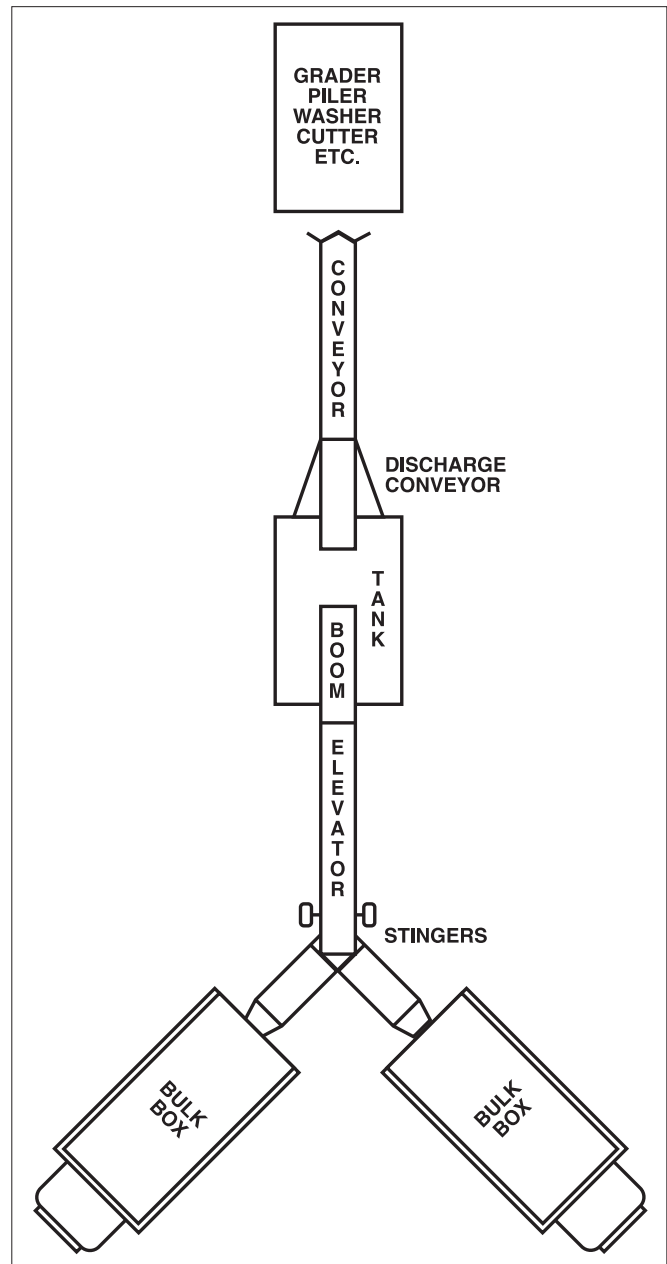


FIG. 2 POSITIONED (TYPICAL)

4.4 MACHINE BREAK-IN

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

- A. Read Evenflow and auxiliary equipment manuals before starting.
- B. **After operating for 1/2 hour:**
 1. Retorque all wheel bolts and fasteners.
 2. Check that all electrical connections are tight and cords are routed out of the way or protected.
 3. Check for leaks in hydraulic system. Retorque fittings that leak.
 4. Check that no hydraulic lines are being pinched or crimped. Reroute as required.
 5. Check oil level in hydraulic reservoir. Top up as required.
 6. Check the alignment and tension of all conveyor belts and roller chains. Realign or tighten as required.
 7. Check all drive sprockets to make sure none has moved. Re-align and tighten any sprocket that has moved.
 8. Check oil level in the speed reduction gear box. Top up as required.
 9. Lubricate all grease fittings.
- C. **After 2, 5 and 10 hours of operation:**
 1. Check items 1 through 9 of Section B.
 2. Then go to the regular servicing and maintenance schedule as defined in the Maintenance Section
- D. **After 25 hours of operation:**
 1. Change the hydraulic system oil filters.

4.5 PRE-OPERATION CHECKLIST

Safe and efficient operation of your new Evenflow 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 Evenflow. The checklist should be performed before operating the Evenflow and prior to each operation thereafter.

1. Lubricate the machine according to the schedule prescribed in the "Maintenance Section".
2. Insure that proper protective gear is in good repair and available for use by each operator. Make certain that each operator uses the protective gear. Protective gear includes but, is not limited to:

- Leather gloves
- Safety glasses or face shield
- Full length protective clothing
- Steel toed boots with slip resistant soles.



3. Check the oil level in the hydraulic reservoir as prescribed in the Maintenance Section.
4. Check for hydraulic leaks. Tighten fittings or reroute hoses as required to maintain a leak-free system.
5. Insure that all safety guards and shields are in good repair and securely in place.
6. Check that the conveyor belts are 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. Control Panel:

a. **Hydraulic Pump ON/OFF:**

These 2 buttons control the power to the pump for the Evenflow hydraulic system. Depress the top green button to turn the pump ON. Depress the bottom red button to stop the hydraulic system pump. The pump must be turned ON before using any hydraulic function.

b. **Conveyors ON/OFF:**

These 2 buttons control the power to the conveyors. Depress the top green button to turn the conveyors ON. This initiates the internal motor starting sequence that has a 2-3 second delay between the elevator, boom and conveyor discharge motors. Depress the bottom red button to stop the conveyors.

c. **Remote Control System ON/OFF:**

This 2 position rotary switch controls the power to the remote control system. Turn counterclockwise to turn OFF and clockwise to turn ON and operate the machine with the remote control system.

d. **Emergency STOP Control:**

This red 2 position push/pull switch controls the power to the machine. depress the switch and all power will be disconnected. Pull the switch out to connect the electrical power again. This switch must be pulled out for the unit to operate. Use this switch as an emergency stop switch as it disconnects the electrical power and all systems will stop.

e. **Lo Limit Alarm:**

Each machine is equipped with an electronic and mechanical sensor on the boom that sense the level of potatoes in the tank. Both sensors are linked into the control system at the pivot that moves the boom up just enough so the boom discharge clears the top of the pile. This alarm sounds when the tank is being emptied and the pile drops below the sensor field. The discharge conveyor stops and the controls on the left rear corner are used to completely empty the tank.

f. **Lights ON/OFF:**

This 2 position rotary switch controls the power to the auxiliary flood lights on the machine. Turn counterclockwise to turn the lights OFF and clockwise to turn ON.

g. **Master Power ON/OFF:**

This 2 position rotary switch controls the power to the entire machine. Turn counterclockwise to turn OFF and clockwise to turn ON.

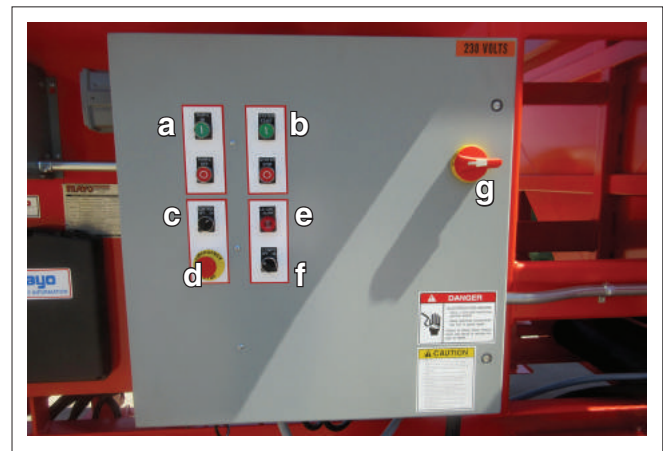


FIG. 4 CONTROL PANEL

2. Unloading Controls - Left Rear Corner:

a. Hand/Auto Switch:

This 3 position rotary switch controls the unloading operating mode. Turn the switch fully counterclockwise to operate the unloading/discharge conveyor manually (HAND). Turn the switch into its first clockwise position (vertical) to turn the unloading system off. Turn the switch fully clockwise to place in the (AUTO) mode where the unloading/discharge conveyor is control by the Even Flow itself.

NOTE

The pumps must be turned on for the unloading conveyor to operate.

b. Interlock OFF/ON:

This 2 position rotary switch controls the machine interlock mode. Each unit can operate as an independent machine or be part of a larger control system. Turn the switch counterclockwise to place in its independent machine and clockwise to link it into the larger system.

NOTE

To operate as part of the larger control system, the control cord must be plugged into or connected to the system.

c. Emergency Stop:

This red 2 position push/pull switch controls the power to the machine. depress the switch and all power will be disconnected. Pull the switch out to connect the electrical power again. This switch must be pulled out for the unit to operate. Use this switch as an emergency stop switch as it disconnects the electrical power and all systems will stop.

d. Control Cord:

This cord must be plugged into the control system circuit for the Even Flow to function as part of the larger system. Unplug when disconnecting from system or turn the Interlock switch to its OFF position.

e. Flow Control:

This rotary control is designed to split the flow of oil to the hydraulic motor on the unloading conveyor. Moving the control lever to the '0' setting (vertical) will divert all the oil back to the reservoir and the conveyor will stop. Move the control lever to the '10' position (horizontal) to run the conveyor at its maximum speed. Position the control lever at any angle between vertical and horizontal to set the conveyor at the desired speed. Use the vertical orientation to stop or turn off the unloading conveyor.



FIG. 4 UNLOADING CONTROLS



FIG. 5 FLOW DIVIDER

f. Pressure Gauge:

This gauge is plumbed into the line to the unloading conveyor hydraulic motor and displays the pressure in the circuit. Normally it will show the pressure between 2250 psi for normal operation.

3. Outrigger Position Hydraulics - Left Side:

A bank of hydraulic valves is mounted on the left side of the frame to move and control the position of the outriggers on the left side of the tank frame. Each valve is a 3 position spring-loaded-to-centre-neutral position. Move the lever up and hold to raise its respective outrigger. Move the lever down and hold to lower the outrigger. Release the lever and the outrigger will stop moving.

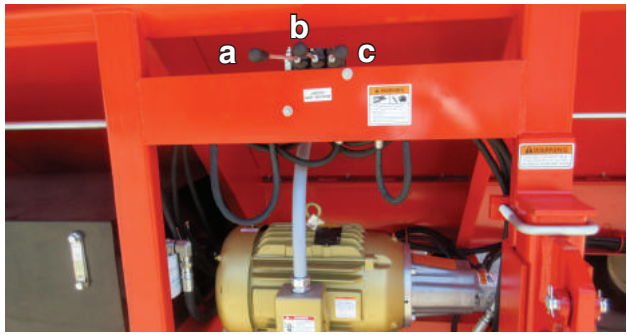
IMPORTANT

Always support the frame on the outriggers before filling the tank to prevent overloading any frame members.

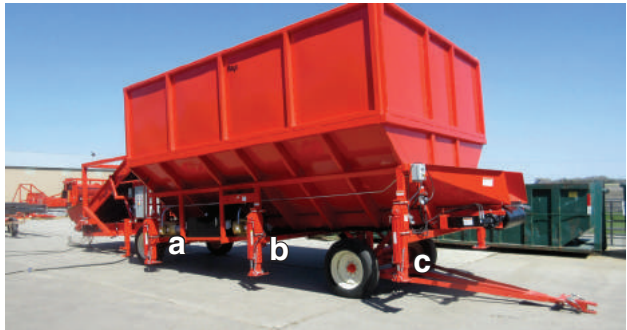
Use the control lever to relieve the load on the tires and support the frame on the outriggers. Use the pin through the outrigger frame to support the weight and relieve the load on the cylinder.

Outriggers:

- a. Front
- b. Middle
- c. Rear



Valves



Outriggers



Up



Down



Pinned

4. **Outrigger Position Hydraulics - Right Side:**

A bank of hydraulic valves is mounted on the right side of the frame to move and control the position of the outriggers on the right side of the tank frame. Each valve is a 3 position spring-loaded-to-centre-neutral position. Move the lever up and hold to raise its respective outrigger. Move the lever down and hold to lower the outrigger. Release the lever and the outrigger will stop moving.

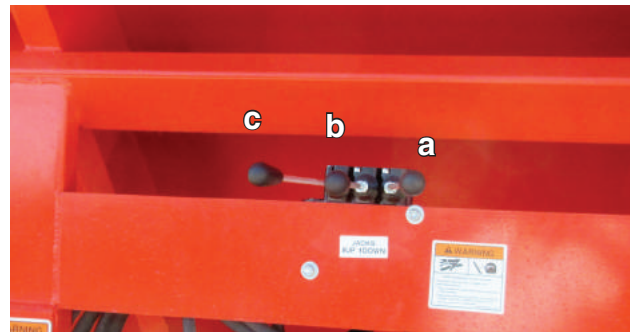
IMPORTANT

Always support the frame on the outriggers before filling the tank to prevent overloading any frame members.

Use the control lever to relieve the load on the tires and support the frame on the outriggers. Use the pin through the outrigger frame to support the weight and relieve the load on the cylinder.

Outriggers:

- a. Front
- b. Middle
- c. Rear



Valves



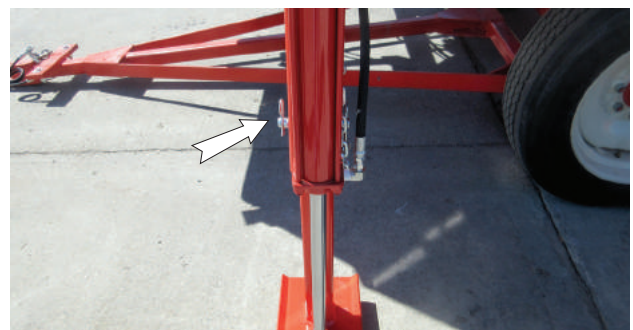
Outriggers



Up



Down



Pinned

FIG. 6 LEFT SIDE OUTRIGGER SYSTEM

5. **Elevator Frame Outriggers:**

Each side of the elevator frame is equipped with a mechanical jack that acts as an outrigger to support and level the front of the frame during operation.

To operate the mechanical jacks, follow this procedure:

- a. Pull the anchor pin out of the frame and drop the foot to the ground.
- b. Re-pin jack frame.
- c. Use the jack handle to raise or lower elevator frame as required to level the front frame and relieve the frame and front tire load.



Up



Down



Level Frame

FIG. 8 ELEVATOR FRAME OUTRIGGERS

6. **Elevator/Boom Conveyor Control:**

Each Even Flow is designed with a set of controls on the left side of the front elevator frame to control the position of the elevator and boom plus setting the elevator/boom conveyor speed. These controls work in conjunction with boom/jack system selector valve on the front of the tank frame.

a. **Boom UP/DOWN:**

This spring-loaded-to-neutral-center hydraulic valve controls the angle of the boom. Lift and hold the lever to raise the boom. Push down and hold to move the boom down. Release the lever and the boom will stop moving. Stay away from overhead power lines and obstructions when raising the boom to prevent electrocution or boom damage.



b. **Elevator UP/DOWN:**

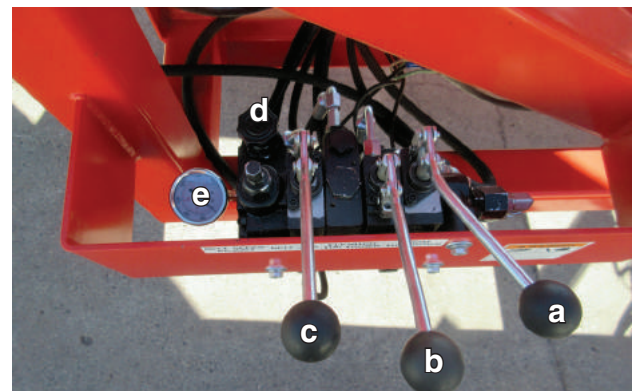
This spring-loaded-to-neutral-center hydraulic valve controls the height of the hopper on the front of the elevator. Lift and hold the lever to raise the hopper. Push down and hold the lever to lower the hopper. Release the lever and the hopper will stop moving. Use this control to match the height of the hopper to the equipment bringing potatoes to the Even Flow.

c. **Belt Jog:**

This 2 position spring-loaded-to-neutral-center is used to jog the elevator/boom conveyor for a short distance. Lift and hold the lever to move the conveyor up into the tank. Release the lever and the conveyor will stop moving. Use this control to move the conveyor a small amount.

d. **Belt Speed Adjustment:**

This dial sets the position of a needle valve in the hydraulic line to the drive motor on the elevator/boom conveyor. Turn the dial in (clockwise) to slow the conveyor and out (counterclockwise) to increase the speed.



Up



Down



Level Frame

FIG. 9 ELEVATOR FRAME OUTRIGGERS

e. **Pressure Gage:**

This gage is plumbed into the line to the conveyor hydraulic motor drive circuit and displays the pressure in the system/circuit. Normally the gage should show between 2250 psi during normal operation.

7. **Pile Height Sensing System:**

Each Even Flow machine is designed with a system of mechanical and electronic sensors to monitor the height of the potatoes in the tank and adjust the height of the boom discharge to keep the drop height at an acceptable level. The following components make up the system and should be monitored to be sure they are functioning properly.

a. **Boom Pivot Position:**

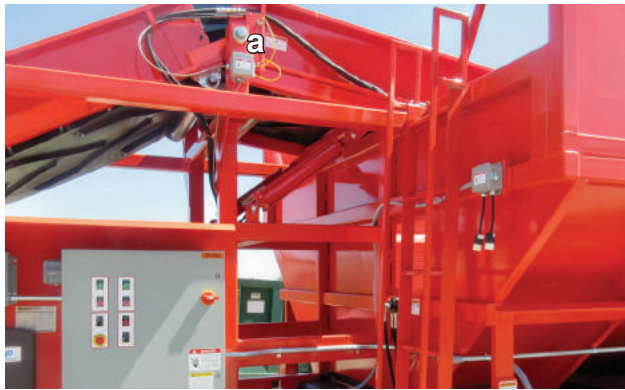
This sensor monitors the height of the loading boom in the tank and functions as a part of the automatic height control system. Loosen the jam nut on the casing and slide the sensor to its desired position. Retighten the jam nut. This sensor can be used to limit the height that the boom moves.

b. **Potato Clearance Sensor:**

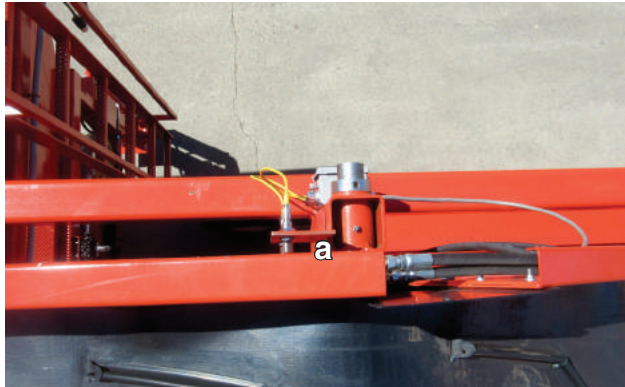
This sensor monitors the height of the boom above the potatoes. Use the support wire to set the sensor to the required height above the potatoes. A drop height of less than 6 inches minimizes bruising. The automatic height system must be turned on for the sensor to function.

c. **Pile Position Sensor:**

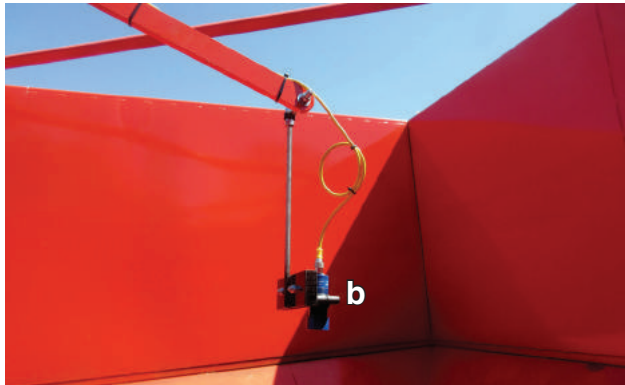
This rod extends adjacent to the end of the boom to monitor the height of the pile of potatoes. As the pile of potatoes gets larger, it pushes the rod up and the boom is moved up when the automatic system is on.



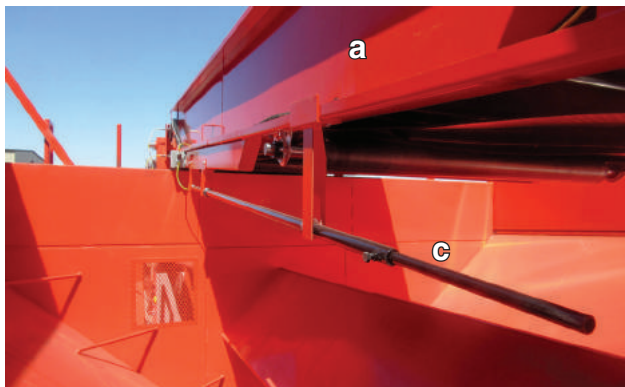
Pivot - Side View



Pivot - Top View



Electronic Sensor



Boom

FIG. 10 PILE HEIGHT SENSING SYSTEM

8. **Selector Valve:**

This 2 position selector valve directs the oil flow through the boom or jack position circuits. Push the control in to provide oil to the boom position circuits. Pull the control out to direct the oil to the outrigger position circuits.



FIG. 11 SELECTOR VALVE

9. **System Connection:**

Most operations are designed where the machines function as a system and are connected into a master control system. Each machine must be plugged into the control circuit to be part of the system.

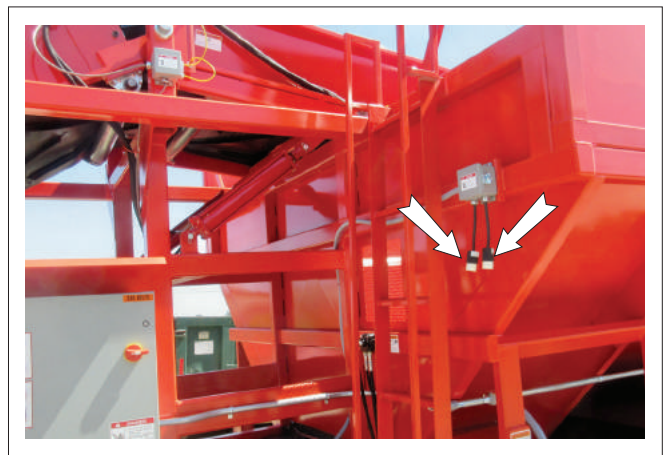


FIG. 12 SYSTEM CONNECTION

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 who follows ANSI/NFPA 70 Wiring Standard provide power at the required voltage, phase and amperage for your machine. An improper source of power will cause damage to electrical components and could create an electrical hazard to the operator, workers or bystanders.

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

2. **Training:**

Establish a lock-out tag-out policy for your work site and train all personnel in its implementation. Do not allow anyone to operate the machine unless they follow the lock-out tag-out policy.

3. **Hitch:**

Evenflows are equipped with a hitch for towing. The hitch must be removed or moved to the side prior to the Evenflow being used to prevent interfering with workers or adjacent equipment.

4. **Outriggers:**

Evenflows are designed with hydraulically positioned outriggers on each side of the frame along the main tank and mechanical ones on each side of the elevator frame. Each outrigger should be positioned down on the ground to support the frame when unit is loaded.



FIG. 13 MACHINE



FIG. 14 TOW HITCH



Hydraulic



Mechanical

FIG. 15 OUTRIGGERS DOWN (TYPICAL)

5. **Equipment Attachment:**

Each customer must provide a means of moving potatoes out of the Evenflow. Normally this is done by using another piece of equipment such as a grader or another conveyor. The Evenflow is equipped with a hitch on the rear that is used to connect the two pieces of equipment together. By connecting the equipment securely together, the Evenflow can be moved slightly in its working location without missing any potatoes flowing through the system.

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



Loading



Discharge



Attached

FIG. 16 EQUIPMENT ATTACHMENT

6. **Positioning:**

Evenflows are designed to be a bulk holding machine in a conveying line to maintain an even, steady flow of potatoes into a variety of machines including but not limited to Graders, Cutters, Washers, Scale Conveyors, etc. Transport and hauling equipment can unload quickly into the Evenflow and resume their transporting function with minimal down time.



Storage Facility



Conveying Line

FIG. 17 POSITIONING

4.8 OPERATION



OPERATING SAFETY

- 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.
- Clear the area of bystanders, especially small children.
- Replace all worn or failed components immediately
- Keep all hydraulic components tight and in good repair.
- Replace all worn or failed components immediately.
- Install and secure all guards before operating.
- Install and secure all guards before operating.
- Keep hands, feet, hair and clothing away from moving parts.
- Lower and pin all outriggers before filling bin.
- Lower boom and elevator, raise and pin all outriggers before transporting.
- Use pilot vehicles when transporting.
- Stay away from overhead power lines and obstructions when moving or positioning. Electrocution can occur without direct contact.
- Do not stand between the elevator or boom and other frame members when raising or lowering the elevator or boom. Keep others away.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.
- Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. If you are uncertain, have a licensed electrician provide power to the machine who follows ANSI/NFPA 70 Wiring Standard.
- Review safety instructions annually.

Follow this procedure when using the Evenflow:

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. 18 LOADING (TYPICAL)

4. Starting Evenflow:

- 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 on machines that remove potatoes from the Evenflow.
- e. Pull out the emergency stop switches on the master panel and on the discharge conveyor controls.
- f. Turn the hydraulic pumps ON (refer to section 4.6 Controls).
- g. Turn the System Start on.
- h. After 2 to 3 seconds the discharge conveyor will come ON.

NOTE

The control circuit is designed to wait for 2 or 3 seconds between turning each conveyor on to prevent electrical overload.

- i. Then the elevator/boom conveyor will start.
- j. Set the system to manual or auto if it is part of a conveying system.
- k. Turn the equipment ON that moves potatoes to the Evenflow.

5. Stopping Machine:

- a. Turn OFF the equipment that brings potatoes to the Evenflow.
- b. Wait until the potatoes have moved off the end of the boom conveyor.
- c. Turn the conveyor OFF.
- d. Turn the Hand/Auto switch on the left rear corner of the frame.
- e. Use the flow control to continue to empty the tank.
- f. Turn the hydraulic pumps OFF.



Main Panel



Discharge Conveyor

FIG. 19 EMERGENCY STOP

An alternative is to depress the red Master STOP button on the control panel or on the discharge unloading panel. If the red STOP switches are used to turn the machine off, they will have to be pulled out before the machine can be started.

6. Emergency STOP:

Depress the red STOP button on the control panel or the STOP button on the discharge unloading panel. This will stop all the conveyors and the hydraulic pump. Be sure to turn all the individual control switches to their OFF position before restarting the machine.

7. **Equipment Attachment:**

Although the Evenflow can be attached to adjunct machines, it is designed with hydraulic outriggers along the tank frame and mechanical outriggers along the elevator frame. All should be lowered to level the frame, support the frame, remove the load on the tires and prevent movement.

It is recommended that the Evenflow be attached to adjacent machine to maintain control of drop height and system parameters. Do not take a chance with electrical system connections.



Input



Discharge



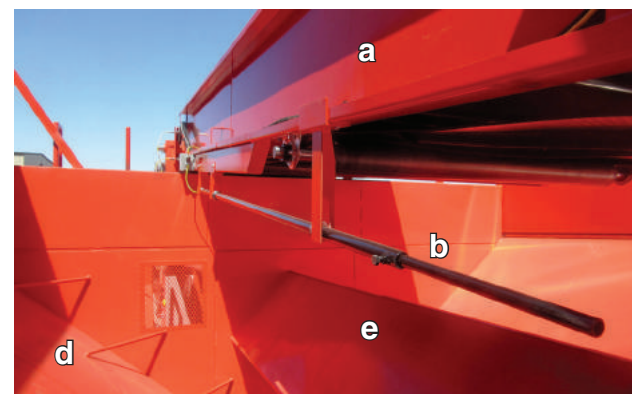
Operating

FIG. 20 EQUIPMENT ATTACHING

8. Tank Taper/Guides:

Potatoes are loaded into the tank with the boom. To minimize the drop, the boom should be placed in its lowest position to start. The automatic boom height control (both the electronic sensor and mechanical rod) will maintain the preset height from the pile during operation. Each side of the tank is designed with a taper to minimize potato movement and to assist with emptying. In addition, the center of the tank is designed with a tapered triangular slide to reduce the drop and direct the potatoes on the discharge conveyor.

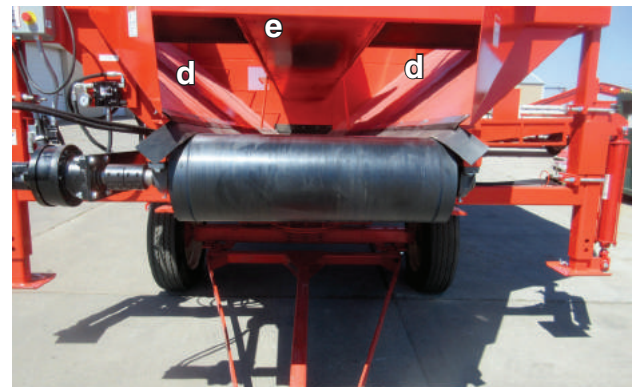
- a. Boom.
- b. Mechanical boom height indicator.
- c. Electronic sensor.
- d. Side taper.
- e. Center tank taper.



Boom



Electronic Sensor



Discharge End View

FIG. 21 TANK TAPERS/GUIDES

9. **Outriggers:**

The Evenflow is designed with hydraulic outriggers along the tank frame and mechanical outriggers on the side of the elevator frame to support the machine during operation. The outriggers should be raised and locked for moving and transporting. Extend into their lowest position and pinned during operation.

When using the outriggers, follow this procedure:

- a. Place all controls in OFF or neutral.
- b. Pull selector switch out to direct oil to the jacks.
- c. Turn the hydraulic pump ON.
- d. Use the hydraulic valve bank to move outriggers.
- e. Extend the left outriggers into their fully Down position.
- f. Extend the right outriggers into their fully Down position.
- g. Install lock pins through outrigger frames.
- h. Lower and pin the mechanical outriggers on the elevator frame.
- i. Position the loading and discharge equipment.
- j. Proceed with starting other systems to operate the Evenflow.
- k. Raise all outriggers when maneuvering in a storage facility or transporting.

IMPORTANT

Always use lock pins through outrigger frames when configured in the up or down position.



Selector Switch



Valve Bank (Typical)



Right Side



Left Side

FIG. 22 OUTRIGGERS

10. **Operating:**

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 the boom and the pile as small as possible. Use the automatic height system to maintain the preset drop height.



FIG. 22 DROP HEIGHT

11. **Boom Movement:**

The Evenflow boom is designed to move up-and-down manually or via the automatic height system. Use the hydraulic control levers on the left side of the frame or the automatic system to move the boom.



Hydraulic Levers



Boom Down



Boom Up

FIG. 23 BOOM MOVEMENT

12. **Side Extensions:**

Each machine is designed with fold-up extensions on the side of the tank to provide extra capacity when operating. Fold extensions down when moving or transporting to provide a low profile.

- a. **Remove locks and fold into the tank when transporting.**
- b. Fold up and install lock to provide extra capacity.



Down



Up

FIG. 24 SIDE EXTENSIONS

13. **Machine Pressures:**

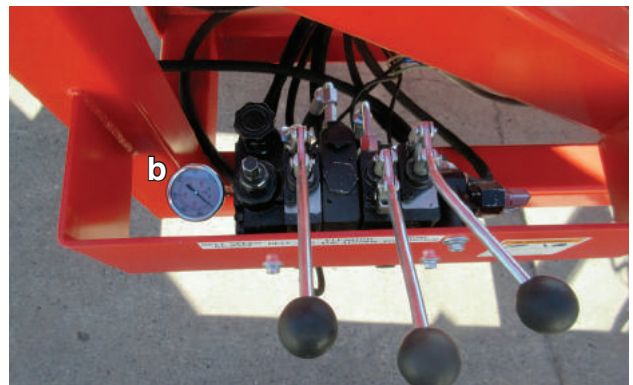
Each Evenflow is designed with an individual pump and hydraulic system for each conveyor. Each system is designed with a gauge in the circuit that provides the operator with a means to observe and monitor the system pressure. Observe the gauges when starting to operate the Evenflow to verify pressure is within the recommended range.

Both systems should operate between 2250 psi for normal operation.

- a. Discharge conveyor control system.
- b. Elevator/Boom Conveyor control system.



Discharge Conveyor



Elevator/Boom Conveyor

FIG. 25 PRESSURE GAUGES

14. 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 system as full as possible to minimize bruising during the conveying process.
- f. Use the boom position to keep the end of the boom as close to the pile as possible to minimize the drop height.
- g. Establish, train and follow a tag-out lock-out policy and procedure for the work site. Be sure everyone follows the procedure.



FIG. 26 OPERATING SYSTEM

4.9 TRANSPORT



TRANSPORT SAFETY

- Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.
- Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not under-inflate or over-inflate.
- Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
- Fully lower elevator and boom before transporting.
- Raise and secure the elevator and tank frame outriggers and secure with lock pins before transporting or moving.
- Wrap up and tie all loose hydraulic and electrical ends to the frame.
- 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 Evenflow is positively hitched to the towing vehicle. Use a safety cable to assure a safe hitch hook-up when transporting.
- Follow local regulations regarding maximum weight, width and length when transporting.
- Do not exceed 15 MPH (25 Km/H). Reduce speed on rough roads and surfaces.
- Do not allow anyone to ride on the Evenflow or towing vehicle during transport.
- Always use hazard flashers on the towing vehicle when transporting.
- Always use pilot vehicles in front and behind when towing on a public road.

Mayo Evenflows are designed to be moved from location to location. The term moving is used to describe the action of moving the machine within the working area. Transporting is used to describe when the machine is being towed by a tractor or other power unit or loaded on a flat bed. When transporting, follow this procedure:

1. Disconnect and remove all auxiliary equipment from the Evenflow and position so the tractor or tow unit can back up to the front of the machine.
2. Center the hitch.



FIG. 27 HITCH

3. Lower elevator into its lowest position.
4. Lower boom into its lowest position.

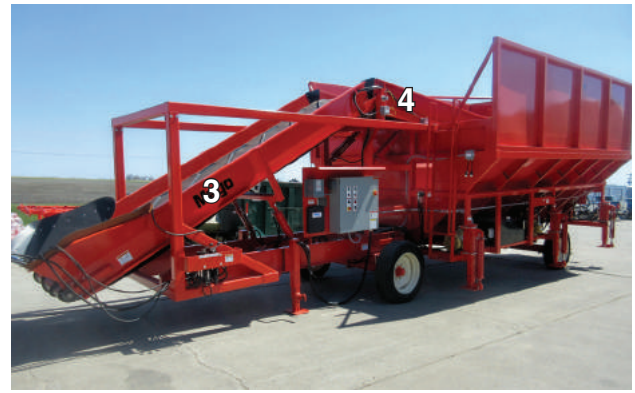
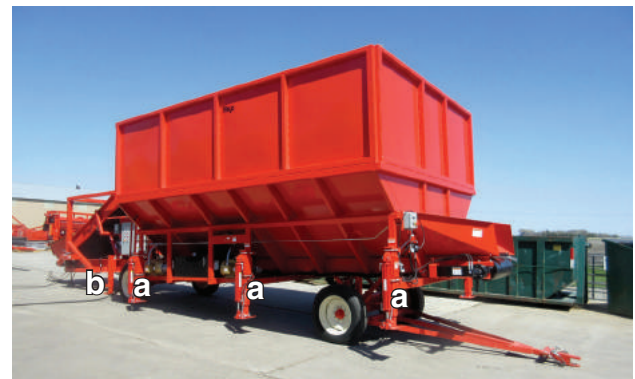


FIG. 28 BOOM LOCKS

5. Raise the outriggers and install lock pins.
 - a. Tank frame.
 - b. Elevator frame.



Left Side



Right Side



Lock Pin (Typical)

FIG. 29 OUTRIGGERS

6. Lower side extensions and fold into tank.
7. Attach the tow hitch to the tractor or truck. Be sure to use a mechanical retainer through the drawbar pin.
8. Attach the safety cables between the hitch and the drawbar cage to prevent unexpected separation.
9. Install an SMV on the rear frame if towing with a tractor.
10. Use pilot vehicles and install extra lights on the machine when transporting.
11. Clean all the reflectors.
12. Place all controls in their OFF or neutral position.
13. Turn the power OFF at the master panel and lock out.
14. Unplug and tie up the power cord.
15. Be sure all bystanders are clear of the machine.
16. 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.
17. 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.
18. 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 Evenflow weight.

IMPORTANT

The hitch weighs 300 pounds. Be sure the drawbar or hitching system can support this weight before hooking up to the tow vehicle.

19. Do not allow riders on the machine or tractor.
20. Always use hazard flashers on the tractor when transporting unless prohibited by law.
21. Stay away from overhead power lines. Electrocutation can occur without direct contact.



FIG. 30 SIDE EXTENSIONS



FIG. 31 POWER CORD

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of towing machine
Up to 25 km/h (15 mph)	1 to 1, or less
Up to 16 km/h (10 mph)	2 to 1, or less
Do not tow	More than 2 to 1



4.10 STORAGE



STORAGE SAFETY

- Store the Evenflow on a firm level surface.
- If required, make sure the unit is firmly blocked up.
- Make certain that all mechanical locks and jacks 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 Evenflow.
- 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 Evenflow.

4.10.1 PLACING IN STORAGE

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

1. Start the hydraulic pump and run for 10 minutes to bring the oil to operating temperature. Change the hydraulic filter. Change the hydraulic oil as specified in the Maintenance Section.
2. Inspect each conveyor belt. Realign if the belt is not tracking in the center of the frame. Replace if the edges are damaged from rubbing on the frame. Properly tension each belt.
3. Turn the power OFF at the master electrical panel and lock out.
4. Unplug and remove power cord from machine.
5. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
6. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.

7. Inspect all the hydraulic hoses, lines, fittings and cylinders. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or separating from a fitting. Replace any damaged components.
8. Inspect all the electrical cords, lines, junction boxes and motors. Tighten any loose connections. Replace any cord that is badly cut, nicked or abraded. Replace any damaged components.
9. Inspect the boom drive system and the condition of the roller chain. Replace if badly worn. Check the alignment of the sprockets. Align if required. Properly tension each drive chain.
10. Apply a light coat of oil to the roller chain to prevent rusting.
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.

4.10.2 REMOVING FROM STORAGE

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

1. Transport or move to the working area.
2. Check
 - a. Hydraulic tank oil level.
 - b. Hydraulic and electrical systems and components.
 - c. Conveyor belts and drive systems.
 - d. All hardware. Tighten as required.
 - e. Air pressure in tires. Add as required.
3. Replace any defective components.
4. 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), relieve hydraulic pressure and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**
- Exercise extreme caution when working around, or with, high-pressure hydraulic systems. Depressurize the system before working on it.
- Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Wear heavy gloves and eye protection when searching for suspected hydraulic leaks. Use a piece of wood or cardboard as a backstop instead of hand to isolate and identify a leak. A high pressure concentrated stream of hydraulic fluid can pierce the skin. If such happens, seek immediate medical attention as infection and toxic reaction could develop.
- Make sure all guards and doors are in place and properly secured when operating the Evenflow.
- Do not work on Evenflow 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.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.

5.1 SERVICE

5.1.1 FLUIDS AND LUBRICANTS

1. Grease:

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance meeting or exceeding the NLGI #2 rating for all requirements per ISO 32, Fuel Grade, NSF-H1.

2. Hydraulic Oil:

Use - Mobil DTE FM32 Hydraulic Oil or Equivalent.

Reservoir Capacity: 60 US gallons.

3. Speed Reducer Gear Box Lubricant:

Per SAE GL-5 75W90, use Mobil Deluxe Synthetic 75W90 lubricant or equivalent.

Capacities: 17 oz 0.5 qt each gear box.

4. Roller Chain Lubricating Oil

CHAIN TYPE*	AMBIENT TEMP. RANGE		
	14°F-32°F	32°F-104°F	104°F-122°F
RS-50-less	SAE 10	SAE 20	SAE 30
RS-60/RS-80	SAE 20	SAE 30	SAE 40
RS100	SAE 20	SAE 30	SAE 40
RS120/MORE	SAE 30	SAE 40	SAE 40

* Stamped on chain link side plate

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.

5.1.2 GREASING

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

1. Use only a hand-held grease gun for all greasing. Air powered greasing systems can damage the seals on bearings and lead to early bearing failure.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If a fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. **Conveyor Bearings:**
Only sealed bearings are used on the conveyor bearings. Sealed bearings should never be greased more often than weekly or every 50 hours. Do not over-grease. Do not give bearing more than 1 shot of grease each time it is greased. Once the bearing seal is broken, the bearing must be greased each day or the bearing will fail.

5.1.3 SERVICING INTERVALS

8 Hours or Daily

1. Check the conveyor tension and alignment.
Tension or align as required.
2. Inspect hydraulic system and all components.
3. Inspect electrical system and all components.
4. Check oil level in hydraulic reservoir.



Conveyor /Tension



Elevator/Boom - Alignment



Discharge Conveyor - Alignment

FIG. 32 CONVEYOR TENSION AND ALIGNMENT

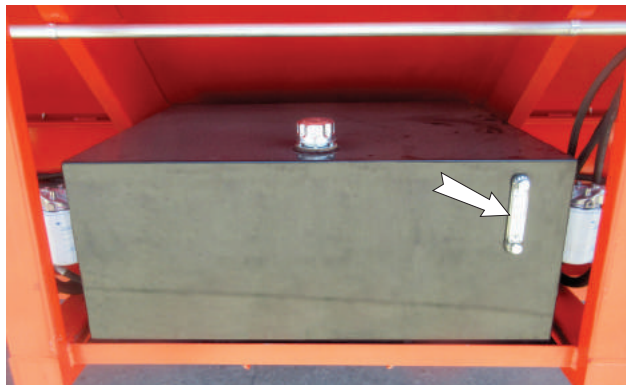


FIG. 33 OIL LEVEL

Weekly or 50 Hours

1. Oil each conveyor drive system roller chains.



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

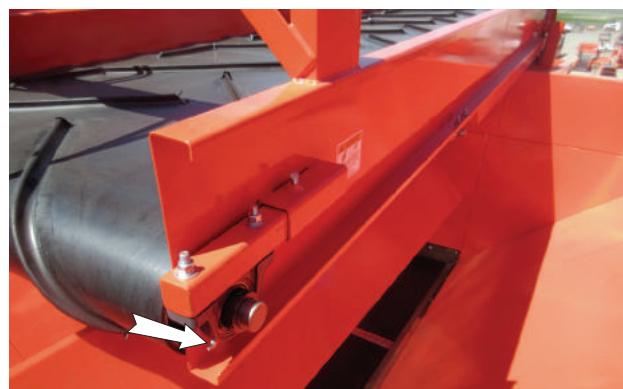
IMPORTANT

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

- a. Elevator/bloom drive and driven shafts (2 locations each shaft).



FIG. 34 CONVEYOR DRIVE ROLLER CHAINS



Drive End (Right)



Drive End (Left)



Tail Shaft

FIG. 35 ELEVATOR/BOOM CONVEYOR SHAFTS

- b. Discharge drive and driven shafts (2 locations each shaft).



Drive - Left Side



Drive - Right Side



Tail - Right Side

FIG. 36 DISCHARGE CONVEYOR SHAFTS

3. Check hydraulic oil level.

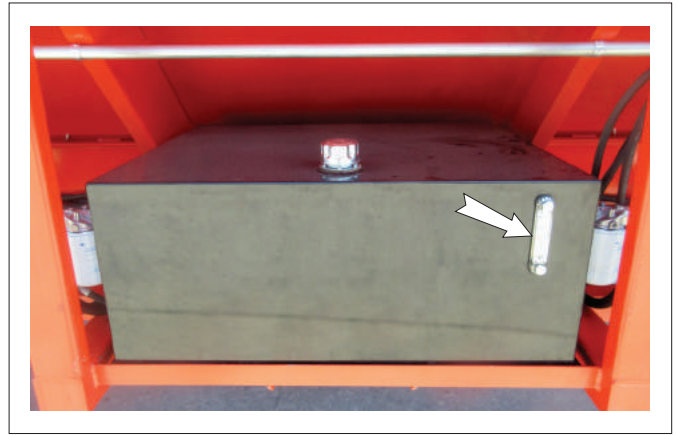


FIG. 37 HYDRAULIC OIL LEVEL

4. Check roller chain tension on the elevator/bloom conveyor drive system.

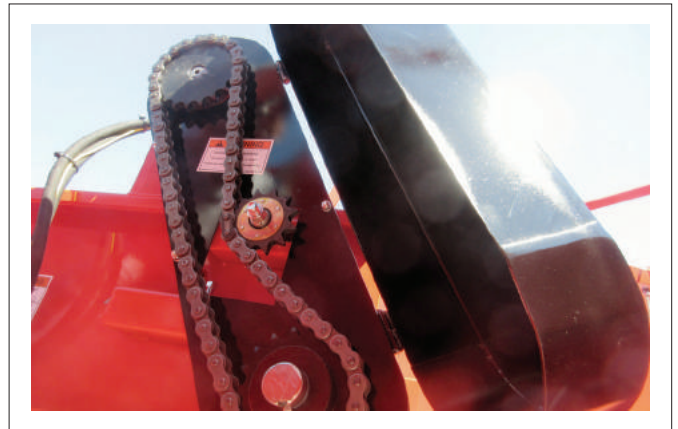


FIG. 38 CHAIN TENSION

5. Change the oil in the speed reducer gearbox after the first 50 hours of operation then check the oil level in the speed reducer gear box every 50 hours thereafter.

IMPORTANT

Speed Reducer Gearbox Oil is to be changed after first 50 hours of operation with subsequent changes every 1000 hours or yearly, whichever comes first, when operating under normal temperature ranges between 0 to 120° F (-18 to 49° C). Power Wheel is to be half full of oil when unit is mounted level and horizontal. Use drain and fill plugs located in cover. Note: the drain plug is magnetic and should be mounted at the lowest spot on the gearbox.

If ambient conditions are outside the specified range, contact Mayo Mfg. or call 1-800-662-4525 for Mobil Product Info. or visit www.mobilindustrial.com

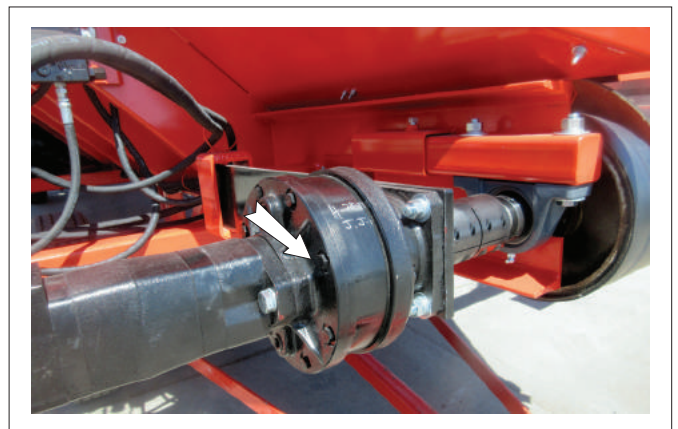


FIG. 39 LEVEL PLUG

100 Hours or Annually

1. Grease the hitch steering wheel spindle shaft.

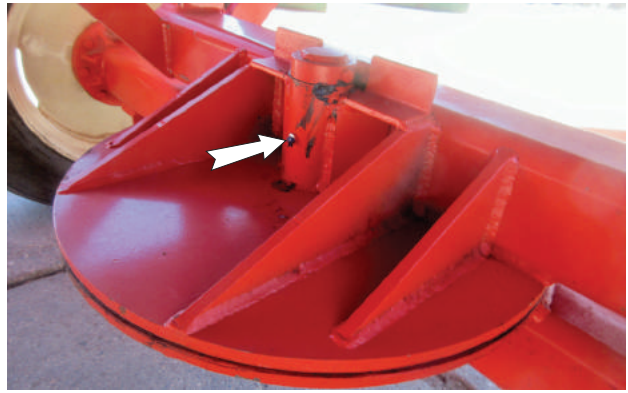
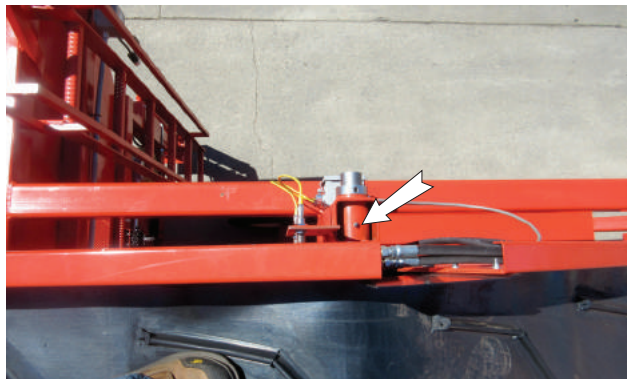
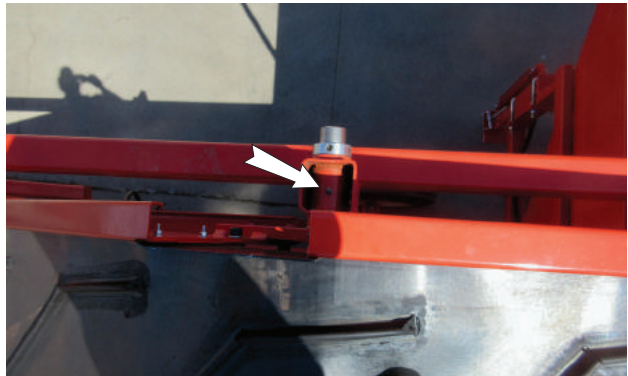


FIG. 40 STEERING SPINDLE SHAFTS (TYPICAL)

2. Grease the elevator raise/lower pivot bushings.



Left



Right

FIG. 41 ELEVATOR RAISE/LOWER PIVOTS

3. Change filters in hydraulic system:
 - a. Elevator/boom drive.
 - b. Discharge drive.



FIG. 42 HYDRAULIC FILTERS

500 Hours or Annually

1. Change the oil in the hydraulic system.
 - a. Filters.
 - b. Sight Glass.
 - c. Fill Cap.

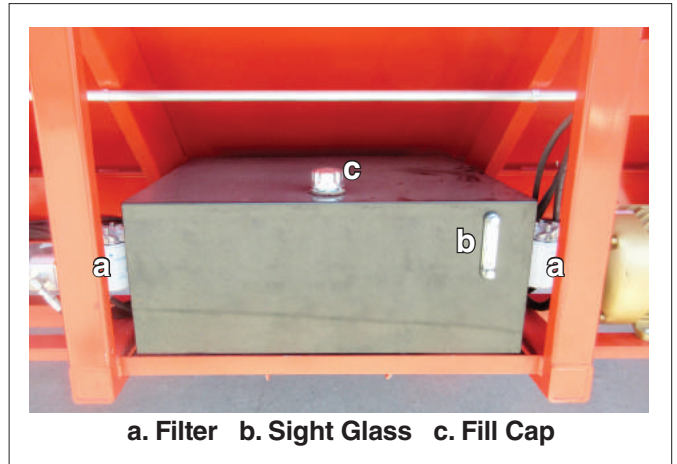


FIG. 43 HYDRAULIC SYSTEM (TYPICAL)

2. Repack each wheel bearing.



FIG. 44 WHEELS (TYPICAL)

1000 Hours or Annually

1. Change the oil in the gearbox (discharge conveyor).

IMPORTANT

Speed Reducer Gearbox Oil is to be changed after first 50 hours of operation with subsequent changes every 1000 hours or yearly, whichever comes first, when operating under normal temperature ranges between 0 to 120° F (-18 to 49° C). Power Wheel is to be half full of oil when unit is mounted level and horizontal. Use drain and fill plugs located in cover. Note: the drain plug is magnetic and should be mounted at the lowest spot on the gearbox.

If ambient conditions are outside the specified range, contact Mayo Mfg. or call 1-800-662-4525 for Mobil Product Info. or visit www.mobilindustrial.com



FIG. 45 GEARBOX

5.1.4 SERVICE RECORD

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

ACTION CODE: CL CLEAN CK CHECK G GREASE R REPACK CH CHANGE

Maintenance

[illegible]

5.2 MAINTENANCE

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

5.2.1 HYDRAULIC MAINTENANCE

A hydraulic system provides power to turn the conveyors and move the elevator, boom and outriggers. 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:

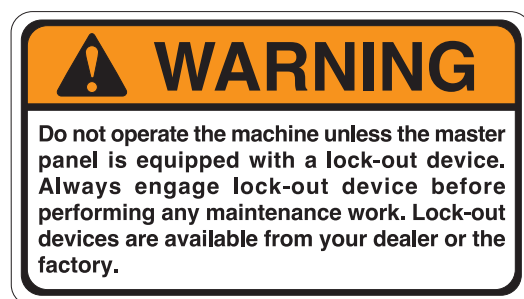
1. Place all controls in the OFF or neutral position.
2. Turn power OFF at the master panel and lockout before starting the inspection.
3. Inspect all hydraulic components looking for:
 - a. Leaks.
 - b. Damaged hoses or lines.
 - c. Damaged or leaking cylinders.
 - d. Leaking motors or fittings.
 - 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 filter every 100 hours and oil 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 Even-flow. 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:
 - 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 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 HYDRAULIC OIL & FILTER CHANGE

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 60 gallons.
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 filters.
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 filters.

NOTE

Always use genuine Mayo replacement parts to insure proper oil filtration.

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 60 gallons of Mobil DTE FM32 Hydraulic Oil or equivalent (see Section 7.4 Mayo Recommended Fluids).
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.

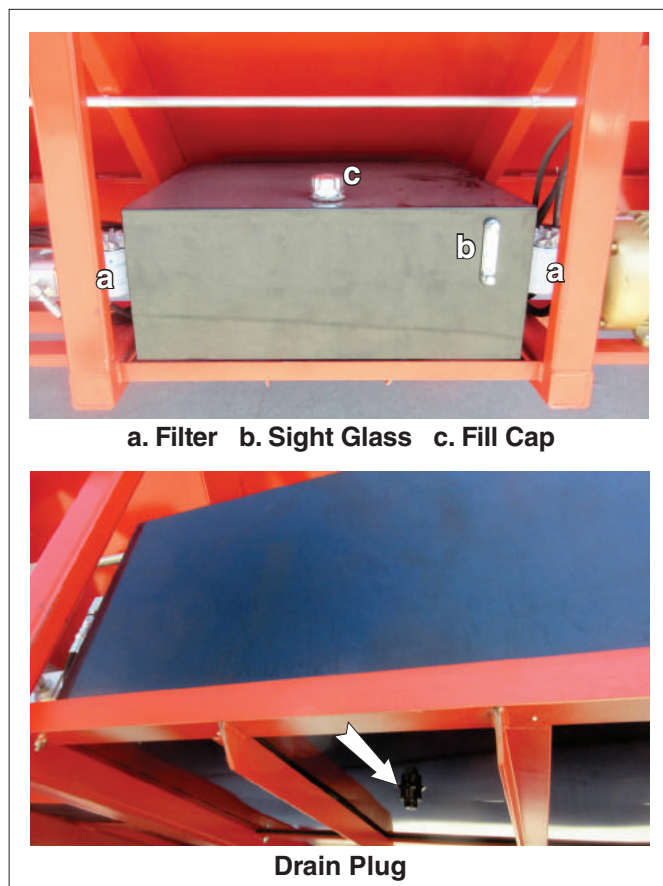


FIG. 46 HYDRAULIC SYSTEM (TYPICAL)

15. Start and run the system and check for leaks.
16. Tighten any fitting that leaks.

5.2.4 SPEED REDUCER GEARBOX OIL

The discharge conveyor is driven by an hydraulic motor that is attached to a high ratio speed reducing gearbox to give the required operating speed. The gearbox is equipped with a drain, level and fill plug. Change gearbox oil after operating for first 50 hours, then every 50 hours thereafter, the oil level should be checked. Every 1000 operating hours or annually, whichever comes first, the oil should be replaced. Check more frequently if there are leaks around any of the plugs or shaft seals. When checking oil level or changing oil, follow this procedure.

1. Run the hydraulic system and conveyors until the gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.
2. Stop the conveyors and pump.
3. Place all controls in their OFF or neutral position.
4. Turn the power OFF at the master panel and lock-out.

5. Gearbox Plugs:

- a. Drain.
- b. Level.
- c. Fill.

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.

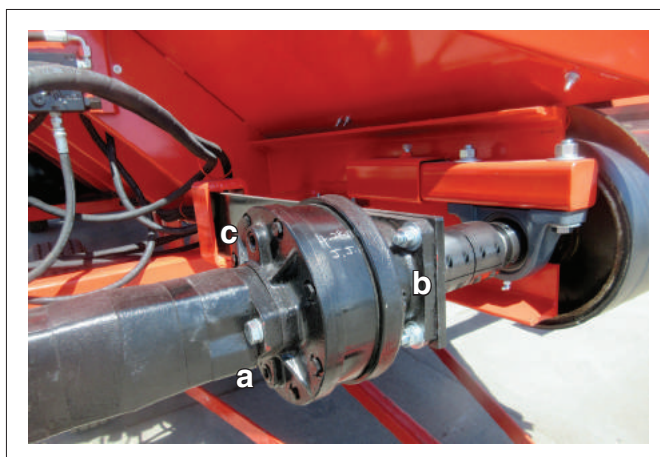


FIG. 47 GEARBOX (TYPICAL)

- e. Add approximately 17 oz. or 0.5 qt. of Mobil Deluxe Synthetic 75W90 lubricant or equivalent. Use the level plug to determine the proper amount of oil.
- f. Install and tighten the fill and level plugs.

IMPORTANT

Insure the metallic plug is at the bottom.

- h. Dispose of the used oil in an environmentally safe manner.

5.2.5 CONVEYOR BELT TENSION/ALIGNMENT OR REPLACEMENT

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

1. Place all controls in their OFF or neutral position.
2. Turn the power OFF at the master panel and lock-out.
3. **Tension:**
The belts are tensioned correctly when they do not slip during operation.

Move the drive or tail shaft to set belt tension. Loosen set screw on bearing housing mount, move bearing and retighten set screw.

- a. Elevator/Boom Conveyor.



Elevator Tail - Right



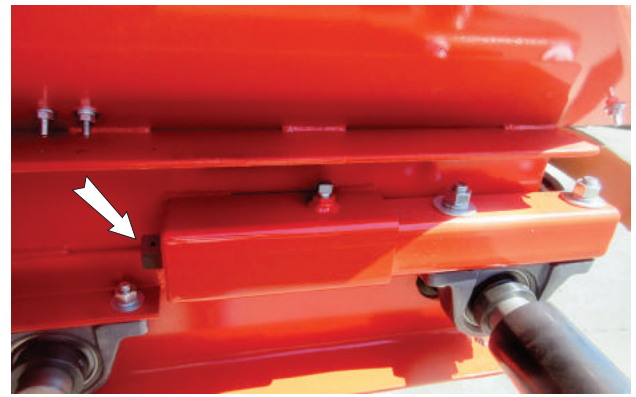
Elevator Tail - Left



Elevator Drive

FIG. 48 ELEVATOR TENSION ADJUSTMENT

- b. Discharge conveyor.



Discharge Drive - Left



Discharge Drive - Right



Discharge Tail - Right

FIG. 49 DISCHARGE TENSION ADJUSTMENT

4. Alignment:

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



Discharge - Drive



Discharge Tail

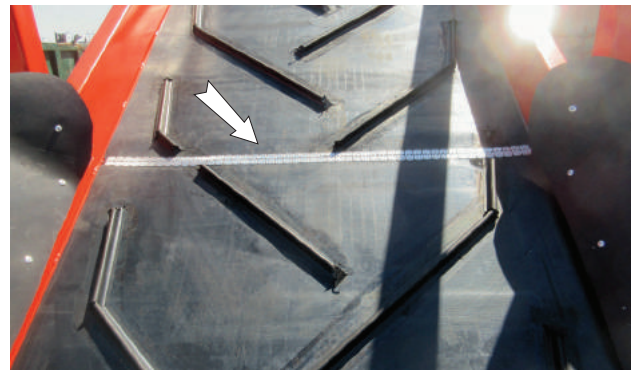


Elevator

FIG. 50 CONVEYOR ALIGNMENT

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/chain.
- d. Slowly pull the old conveyor out of the machine and thread the new one into position.
- e. Disconnect the old conveyor and connect the ends of the new one together.
- f. Move the shaft into position to set the tension of the conveyor and secure the bearing assemblies.
- g. Check the tension and alignment of the conveyor frequently during the first 10 hours of operation and set as required. Then, go to the regular maintenance schedule. Normally a conveyor will seat itself during the first 10 hours of operation and then require less adjustment.



Elevator



Discharge

FIG. 51 BELT CONNECTOR (TYPICAL)

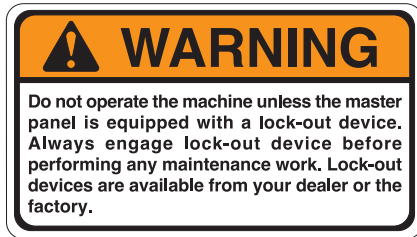
5.2.7 CONVEYOR DRIVE ROLLER CHAIN

The elevator boom conveyor on the Evenflow is powered by hydraulic motors through a roller chain drive system. The system should be oiled every week or 50 hours and tension and alignment checked every 100 hours.

When maintaining the roller chain drive system, follow this procedure:

1. Weekly Oiling:

- a. Place boom in its fully down position.
- b. Turn machine and controls off, lock-out tag-out master power source.
- c. Open the guard over the drive system.



- d. Use an oil can or brush to apply oil to the slack side of the chain.
- e. Refer to the following table for oil type.

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

* Stamped on chain link side plate

- f. Install and secure the guards.

2. Weekly Roller Chain Tension:

The roller chain drive system is equipped with an idler sprocket to maintain the required tension on the chain during operation. Check the idler when the machine is OFF and not moving. The chain should be snug to the sprockets when the machine is not running. To set the tension:

- a. Open guard over drive system.
- b. Loosen lock nut on the idler sprocket mounting bolt.
- c. Slide or tap the sprocket to the desired position.
- d. Tighten lock nut to its specified torque.
- e. Close and secure guard.

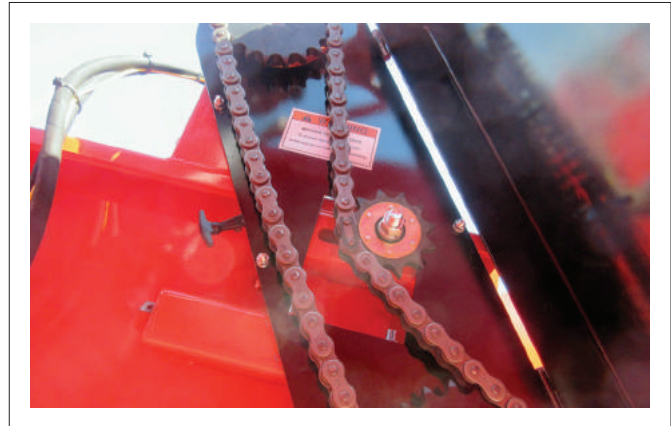


FIG. 52 ROLLER CHAIN DRIVE SYSTEM

3. **Check alignment by:**

- a. Lay a straight edge across the faces of the sprockets. When the straight edge is flush with the sprocket faces they are aligned, or
- b. Visually sight across the sprocket faces. If the sprockets are in the same plane, they are aligned.
- c. Loosen set screw in sprocket hub if alignment is required.
- d. Move sprockets to required position.
- e. Tighten set screw to specified torque.
- f. Install and secure the guard.



FIG. 53 ALIGNMENT (TYPICAL)

6 TROUBLE SHOOTING

The Mayo Evenflow uses an elevator and boom to rapidly move potatoes into a large holding tank. A conveyor in the bottom of the holding tank slowly and evenly unloads the 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
Evenflow won't run.	No power.	Plug machine in. Turn power ON at master panel.
	Tripped circuit breaker.	Reset circuit breaker.
Conveyor(s) won't run.	No power.	Plug machine in. Turn conveyor ON.
	Emergency Stop switch(es) depressed.	Pull Stop switches out.
	Tripped motor starter.	Reset starter.
	Binding.	Align conveyor.
	Debris on conveyor(s).	Clean conveyor(s).
	Low oil.	Add oil to hydraulic reservoir.
Elevator/boom conveyor won't run.	Oil filter(s) plugged.	Replace oil filter(s).
	Failed drive chain.	Install chain on sprockets. Set chain tension and alignment. Replace if worn or failed.

7 SPECIFICATIONS

7.1 MECHANICAL

7 SPECIFICATIONS

7.1 MECHANICAL

Description	Unit of Measure	Model		Comment
		450	460	
Features of the machine				
Capacity of holding tank	Cwt	600	1000	Cwt = (lbsx100)
Product hourly input/output (potatoes)	Cwt/hr	5000	5000	Varies by customer equipment
Total length of the machine - transport	Ft-in	42' 10"	47' 1"	With removable tow hitch
Total length of the machine - operating	Ft-in	39' 10"	43' 6"	Infeed hopper to discharge
Total width of the machine	Ft-in	13' 2"	13' 2"	
Total height of the machine - Conditlon-1a	Ft-in	13' 7"	13' 7"	Sides ↑, Boom ↓, Wheels
Total height of the machine - Condition-2a	Ft-in	15' 8"	15' 8"	Sides ↑, Boom ↓, Wheels
Total height of the machine - Condition-3a	Ft-in	22' 2"	22'11"	Sides ↑, Boom ↓, Wheels
Machine weight and mass balance				
Total Weight of Machine (no product)	Lbs	18000	21000	Estimated shipping weight
Total Weight of Machine (with product max)	Lbs	78000	121000	With product
Weight of hitch	Lbs	300	300	Removable for shipping
Weight on tongue	Lbs	175	175	Tongue weight (installed)
Machine Tire and Wheel Information				
Tire - 255/70R-22.5	Lbs	5510	5510	Max Operating Load
Tire - Inflation pressure	Psi	120	120	Max Pressure (cold)
Machine Outrigger Information				
Leveling Jacks (option is manual)	Lbs	25000	25000	Max Operating Load
Machine Hydraulic System				
Hydraulic Tank Capacity	Gal	60	60	Design Tank Capacity
Hydraulic Relief Set Point	Psi	2250	2250	Main Relief pressure set point
Machine Electrical System				
Incoming Power Supply 208-240 V/480V 3PH	Amps	100/50	100/50	(2) 15 HP 3 PH motors plus elec.
Onboard Control System 120V 1PH	Amps	3/1.5	3/1.5	Integrated transformer
Remote control / Interlock				Per customer specification

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

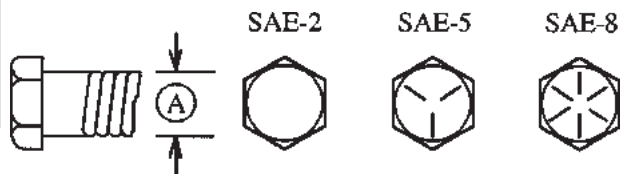
7.2 BOLT TORQUE

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.

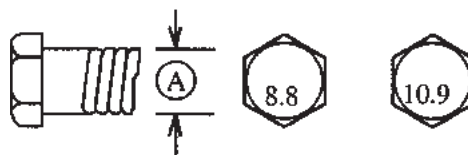
ENGLISH TORQUE SPECIFICATIONS

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

Tube Size OD	Nut Size Across Flats	Torque Value*		Recommended Turns To Tighten (After Finger Tightening)	
(in.)	(in.)	(N.m)	(lb-ft)	(Flats)	(Turn)
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/16	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12

7.4 RECOMMENDED FLUIDS

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

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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MAYO MANUFACTURING CO.

**BUS HIGHWAY 2 BOX 497
EAST GRAND FORKS, MN 56721**

**PHONE (218) 773-1234
TOLL FREE (800) 223-5873
FAX (218) 773-6693**