

Mayo



BEAN SCREENER

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 STATUTE, 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 fulfillment 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
BEAN CLEANER MODEL 485

WARRANTY REGISTRATION FORM & INSPECTION REPORT

WARRANTY REGISTRATION (please print)

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

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

DEALER INSPECTION REPORT

____ Inspect Electrical System
____ Machine Lubricated
____ Drive Belts Tensioned and Aligned
____ Speed Reducer Gearbox Oil Level Checked
____ Lubricate Machine
____ Conveyors Tensioned and Aligned

SAFETY

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

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date _____ Dealer's Rep. Signature _____

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date _____ Owner's Signature _____

WHITE	YELLOW	PINK
MAYO MFG., INC	DEALER	CUSTOMER

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Mayo Bean Cleaner 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 _____

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1 INTRODUCTION

Congratulations on your choice of a Mayo Model 485 Bean Cleaner and welcome to Mayo's quality line of bean cleaning equipment. This equipment is designed and manufactured to meet the needs of a discriminating buyer in the agricultural industry for the cleaning of beans.

Safe, efficient and trouble free operation of your new 485 Bean Cleaner requires that you, and anyone else who will be operating or maintaining the Cleaner, read, understand and practice ALL of the Safety, Operation, Maintenance and Trouble Shooting recommendations contained within this Operator's Manual.



This manual applies to most Model 485 Bean Cleaners manufactured by Mayo. Certain options may be available to specifically tailor the Bean Cleaner 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 hitch end of the Bean Cleaner is the front.

2 SAFETY

SAFETY ALERT SYMBOL

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



The Safety Alert symbol identifies important safety messages on your Mayo Bean Cleaner 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 Bean Cleaner. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Bean Cleaner 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 Bean Cleaner.

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

- Read and understand the Operator's Manual and all & safety signs before supplying power, operating, maintaining or adjusting the Bean Cleaner.
- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate this machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think **SAFETY!** Work **SAFELY!**

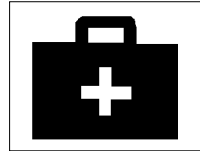
2.1 GENERAL SAFETY

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

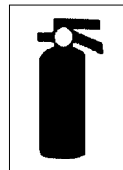


2. Only trained, competent persons shall operate the Bean Cleaner. An untrained operator is not qualified to operate this machine.

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



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



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

6. Wear appropriate protective gear. This list includes but is not limited to:

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




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

2.2 EQUIPMENT SAFETY GUIDELINES

1. Safety of the operator and bystanders is one of the main concerns in designing and developing a machine. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.
2. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
3. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.
4. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
5. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works. Review the safety instructions with all users annually.**
6. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with farm machinery and trained in this equipment's operations. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.
7. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**
8. Do not modify the equipment in any way. Unauthorized modification result in serious injury or death and may impair the function and life of the equipment.
9. In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the auxiliary equipment and machine Manuals. Pay close attention to the Safety Signs affixed to the auxiliary equipment and the machine.

2.3 SAFETY TRAINING

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your auxiliary equipment, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself. It is the machine owner's responsibility to make certain that the operator, prior to operating:**
 - a. **Reads and understands the operator's manuals.**
 - b. **Is instructed in safe and proper use.**
5. Know your controls and how to stop auxiliary conveyors 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

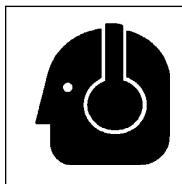
1. Never operate the Bean Cleaner and auxiliary equipment until you have read and completely understand this manual, the auxiliary equipment Operator's Manual, and each of the Safety Messages found on the safety signs on the Bean Cleaner and auxiliary equipment.

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



3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

Motors or equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80 db. Noise over 85 db on a long-term basis can cause severe hearing loss. Noise over 90 db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss. **NOTE:** Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.



4. Clear working area of debris, trash or hidden obstacles that might be hooked or snagged, causing injury, damage or tripping.

5. Operate only in daylight or good artificial light.
6. Be sure machine is properly anchored, adjusted and in good operating condition.
7. Ensure that all safety shielding and safety signs are properly installed and in good condition.
8. Before starting, give the machine a "once over" for any loose bolts, worn parts, cracks, leaks, loose chains and make necessary repairs. Always follow maintenance instructions.

2.6 INSTALLATION SAFETY

1. Remove all transport devices that would hinder or prohibit the normal functioning of the Machines upon start up. Serious damage to the machines and/or personal injury to the operator and bystanders may result from attempting to operate the machines while transport locking devices are still in place.
2. Position the machines on firm, level ground before operating.
3. Use the jacks on each corner of the frame to level the frame before starting to operate.
4. Make certain that sufficient amperage, at the proper voltage and frequency (60Hz) is available before connecting power. All wiring should comply with ANSI/NFPA 70 electrical requirements. Follow local, state/provincial and Federal electrical codes. If you are uncertain, have a licensed electrician provide power to the machine.
5. If using Bean Cleaner as part of material handling system, anchor securely to other conveying equipment before starting.

2.7 OPERATING SAFETY

1. Make sure that anyone who will be operating the Bean Cleaner or working on or around the units reads and understands all the operating, maintenance and safety information in the operator's manual. Also read and follow the instructions in the manuals of other equipment in the system.
2. **Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department) and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**
3. Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before servicing the unit or working around loading/unloading equipment.
4. **Make sure all control switches are in the OFF position before connecting power supply.**

Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it. If you do not know or are unsure, consult a licensed electrician.
5. Keep working area clean and free of debris to prevent slipping or tripping.
6. Keep hands, feet, hair and clothing away from rotating and moving parts. Keep others away.
7. Install and secure all guards before starting.
8. Review safety related items annually with all personnel who will be operating, using or maintaining the Bean Cleaner.

2.8 TRANSPORT SAFETY

1. Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.
2. Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not underinflate or overinflate.
3. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
4. Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.
5. Raise and secure all jack stands.
6. Wrap up and bind to the frame all loose electrical ends.
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 oncoming and overtaking traffic.
8. Be sure that the Bean Cleaner is positively hitched to the towing vehicle. Use a proper safety chain to assure a safe hitch hook-up when transporting.
9. Adhere to local regulations regarding maximum weight, width and length.
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 Bean Cleaner or towing vehicle during transport.
12. Always use hazard flashers on the towing vehicle when transporting.
13. The use of a lighting bar and pilot vehicles front and rear is recommended when transporting on a public roadway.

2.9 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good shop practices:

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

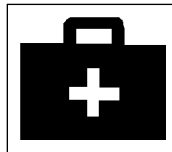
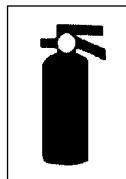


3. **Turn machine OFF, shut down and lock out power supply (safety lock-out devices are available through your Mayo dealer parts department) and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**

4. **Do not work on Bean Cleaner electrical system unless the power cord is unplugged or the power supply is locked out. Lock-out tag-out power source before performing any maintenance work.**



5. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.
6. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.



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

2.10 LOCK-OUT TAG-OUT SAFETY

1. Establish a formal Lock-Out Tag-Out program for your operation.
2. Train all operators and service personnel before allowing them to work around the unloading system.
3. Provide tags on the machine and a sign-up sheet to record tag out details.
4. Do not climb into unit unless motors are OFF and the power is locked out at the master panel. Never perform any maintenance or service work while power is connected. Keep others away.

2.11 STORAGE SAFETY

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

2.12 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.

2.13 ELECTRICAL SAFETY

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

2.16 EMPLOYEE SIGN-OFF FORM

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

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

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

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

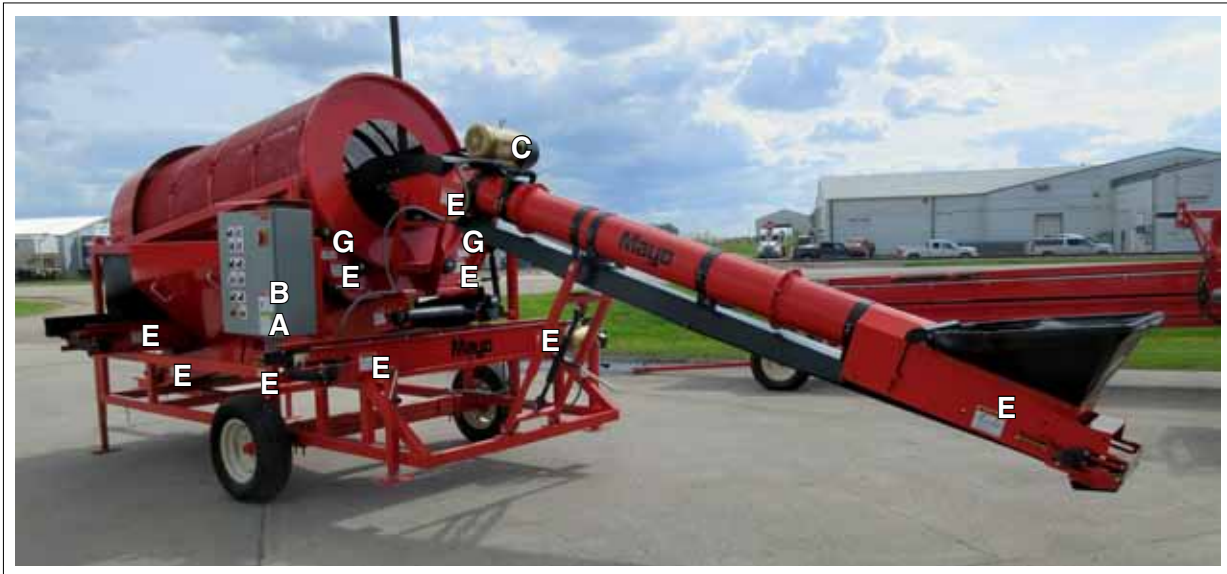
SIGN-OFF FORM

[illegible]

3 SAFETY SIGN LOCATIONS

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

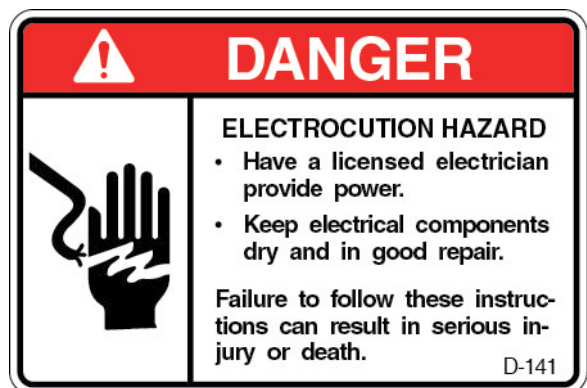
- Think SAFETY! Work SAFELY!



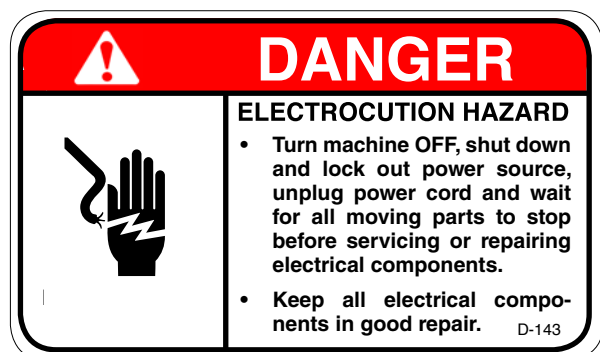
A



B



C



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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- Think SAFETY! Work SAFELY!



D



E



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- Think SAFETY! Work SAFELY!



F



G



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

4 OPERATION



OPERATING SAFETY

- Read Operator's Manual before starting.
- Review safety instructions annually.
- Turn machine OFF, shut down and lock out power source, unplug power cord and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Keep all electrical components tight, dry and in good repair.
- Replace all worn or failed components immediately.
- Install and secure all guards before operating.
- Keep hands, feet, hair and clothing away from moving parts.
- Lock Out Tag Out machine before performing any service or maintenance work.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.

4.1 TO THE NEW OPERATOR OR OWNER

The Mayo Manufacturing Bean Cleaner is designed to clean the flow of beans as they move through the machine. 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 Bean Cleaner will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Mayo Manufacturing Bean Cleaner is used to clean a flow of beans as they move through the machine and removes the pods, stems and other debris from the beans. Beans are placed into the intake of the belted tube elevator and moved into the screen drum cleaner. The screen drum is positioned at an angle to use gravity to move beans across the screen. Large debris is removed by the inner screen as the beans fall through. Small debris and the beans go through the inner screen and onto the outer screen. Small debris falls through the outer screen and is directed on to the longitudinal conveyor.

Clean beans are conveyed across the outer screen and drop on to the front cross conveyor where they are moved out the left side. Large debris moves out through the inner screen and small debris through the outer screen onto the longitudinal conveyor. Debris then drops on the rear cross conveyor and is moved out the right side.

Turnbuckles on the intake conveyor and on rear corners of the drum frame allow the operator to set the positions appropriate for the operating conditions. Power to the drum and conveyors is provided by electric motors through a speed reducing gearbox. The control panel is mounted on the left side of the frame. Jacks on each corner of the frame allow the operator to level the frame during set-up.



Fig. 1 MACHINE COMPONENTS

4.3 GENERAL OPERATION THEORY

A Bean Cleaner can be used to remove debris from material that is being placed into storage or taken out of storage. Beans to be cleaned are placed into the hopper of the belted tube conveyor from a transport vehicle, storage facility or another conveyor. From there they are raised and placed inside the inner screen of the rotating drum. The beans and fines fall through the coarse inner screen onto the finer outer screen.

As the drum continues to turn, the coarse debris is conveyed down the inner screen and is placed on the longitudinal trash conveyor. Clean beans are conveyed across the outer fine screen and placed in the cross conveyor where they will move to the next stage. Fines fall through the rotating outer screen and are funnelled onto the longitudinal debris conveyor. This debris is then placed on the rear cross conveyor and discharged.



Cleaning



Placement

Fig. 2 POSITIONED (TYPICAL)

4.4 MACHINE BREAK-IN

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

A. When machine is received:

1. Tighten all fasteners.



FIG. 3 TIGHTEN

2. Open breather on gearboxes by turning breather 1/4 turn.
3. Connect power to the unit and 'bump' the ON switch to momentarily run the machine. Observe the direction the conveyors move. If running in reverse, consult licensed electrician to reverse direction of motor (If reversing switch is not installed.).



FIG. 4 BREATHER (TYPICAL)

B. Read Bean Cleaner and auxiliary equipment manuals before starting.

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

1. Re-torque all other fasteners and hardware.
2. Check that all electrical connections are tight and cords are routed out of the way or protected.
3. Check the alignment and tension of all conveying belts. Realign or tighten as required.
4. Check oil level in each speed reduction gear box for each drive. Top up as required.
5. Lubricate all grease fittings.

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

1. Re-torque all fasteners and hardware.
2. Check that all electrical connections are tight and cords are routed out of the way or protected.
3. Check the alignment and tension of all conveying belts. Realign or tighten as required.
4. Check oil level in each speed reduction gear box for each drive. Top up as required.
5. Then go to the regular servicing and maintenance schedule as defined in the Maintenance Section.

4.5 PRE-OPERATION CHECKLIST

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

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

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



3. Insure that all safety guards and shields are in good repair and securely in place.
4. Check that all conveying belts are properly tensioned and aligned. Adjust if required.
5. Check for and remove all entangled material.
6. Make sure that all electrical switches are in the OFF position before supplying power.
7. Check that all electrical connections are tight and cords are routed out of the way or protected.
8. 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. Master Power Switch:

This 2 position rotary switch controls the power to the panel. Turn fully counterclockwise to turn the power off and clockwise to turn on.

b. Mode Selector:

This 3 position rotary switch selects the machine operating mode. Turn fully counterclockwise to operate the machine manually. Turn to direct the pointer straight up to turn the machine off. Turn fully clockwise to run in the automatic mode.

c. System Running Light:

This blue light is illuminated when the power is on and the machine is running. When the power and the machine are turned off, the light will go off.

d. System Start:

This greenish button switch controls the power to the machine. Depress the switch to turn the power on and start the machine.

e. System Stop:

This red push button switch controls the power to the machine. Depress this switch to turn the power off and stop the machine.

f. Discharge Direction:

This 2 position rotary switch determines the direction the of the discharge conveyor. Turn counterclockwise to run the conveyor in the reverse direction. Turn counterclockwise to run in the foreword direction. Turn clockwise to run in the forward direction.

g. Drum Direction:

This 2 position rotary switch determines the direction of the rotation of the drum. Turn counterclockwise to run in the reverse direction and clockwise to run in the forward direction.

h. Speed Control:

This rotary dial controls the speed of the discharge conveyor. Turn the dial fully counterclockwise to slow and stop the discharge conveyor. Turn the dial fully clockwise to increase the conveyor speed until it is at maximum speed.



FIG 5 CONTROL PANEL

i. Speed Control:

This rotary dial controls the speed of the drum. Turn the dial fully counterclockwise to slow and stop the drum. Turn the dial fully clockwise to increase the drum speed until it is at maximum speed.

j. Tare Direction:

This 2 position rotary switch determines the direction the of the tare conveyor. Turn counterclockwise to run the conveyor in the reverse direction. Turn clockwise to run in the forward direction.

k. Elevator On/Off:

This 2 position rotary switch turns the elevator on and off. Turn counterclockwise to turn the elevator on. Turn clockwise the turn the elevator off.

l. Emergency Stop:

This combination push-pull rotary switch controls the power to the machine. Push the red switch in to stop the machine and disengage electrical power. Turn 90° clockwise to release the switch. It will pop out and power will be restored to the machine.

IMPORTANT

Be sure the Discharge, Drum, Tare and Elevator controls are placed in their off positions before restoring power to the machine.

m. Speed Control:

This rotary dial controls the speed of the elevator. Turn the dial fully counterclockwise to slow and stop the elevator. Turn the dial fully clockwise to increase the elevator speed until it is at maximum speed.

2. **Turnbuckles:**

Turnbuckles are used to set the height of the intake conveyor and the angle of the cleaning drum. Set the center pawl in the appropriate position and ratchet the handle until the desired angle is reached.

- a. Intake Conveyor.
- b. Drum Angle.



FIG. 6 TURNBUCKLES

3. **Auxiliary Equipment:**

Each customer must provide a means of bringing a flow of beans to the intake end and removing debris and clean beans from the discharge end. Normally this is done by another piece of equipment such as another conveyor. Always secure the auxiliary equipment to prevent movement.



FIG. 7 AUXILIARY EQUIPMENT

4.7 OPERATING



OPERATING SAFETY

- Read Operator's Manual before starting.
- Review safety instructions annually.
- Turn machine OFF, shut down and lock out power source, unplug power cord and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Keep all electrical components tight, dry and in good repair.
- Replace all worn or failed components immediately.
- Install and secure all guards before operating.
- Keep hands, feet, hair and clothing away from moving parts.
- Lock Out Tag Out machine before performing any service or maintenance work.
- Do not stand or climb on machine when running. Keep others off.
- Have only a qualified electrician provide power to the machine.

Follow this procedure when using the Bean Cleaner:

1. Review and follow the pre-operation checklist (See Section 4.5).
2. Review the location and function of all controls (See Section 4.6).
3. Position the machine at the worksite with sufficient space to allow conveyors to bring beans to the machine and remove cleaned beans and debris.



FIG. 8. POSITIONED

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

IMPORTANT

Be sure the Discharge, Drum and Tare switches are in the OFF position before turning ON.

- e. Turn the Discharge switch ON to start the conveyors and move trash and beans out of the machine.
 - f. Turn the Drum switch ON to start drum.
 - g. Turn the Tare switch ON to start the belted tube intake conveyor.
 - h. Load beans into the belted tube intake conveyor.
5. **Stopping Machine:**
 - a. Turn OFF the equipment that moves the beans into the belted tube intake conveyor.
 - b. Wait until the beans have moved out of the end of the belted tube intake conveyor.
 - c. Turn the belted tube intake conveyor OFF.
 - d. Wait until the beans have moved through the cleaning drum.
 - e. Turn the drum OFF.
 - f. Wait until all the debris and beans have moved off the conveyors.
 - g. Stop the conveyors.
 - h. Turn red Master Power switch OFF.

An alternative is to depress the red Emergency Stop button on the control panel but then the operator must go through steps a. through h. of section 4 to turn all the controls OFF before restarting.



FIG. 9 CONTROL PANEL



Fig. 10 STARTING / STOPPING

6. **Emergency STOP:**

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

7. **Leveling:**

The machine is designed with jacks on each corner of the frame to provide a means to level and support the frame if the operating terrain is not even. Extend each jack as required to level the frame, support each corner and take the weight off each tire. Use a level on the frame to verify machine is level.

- a. Front
- b. Rear

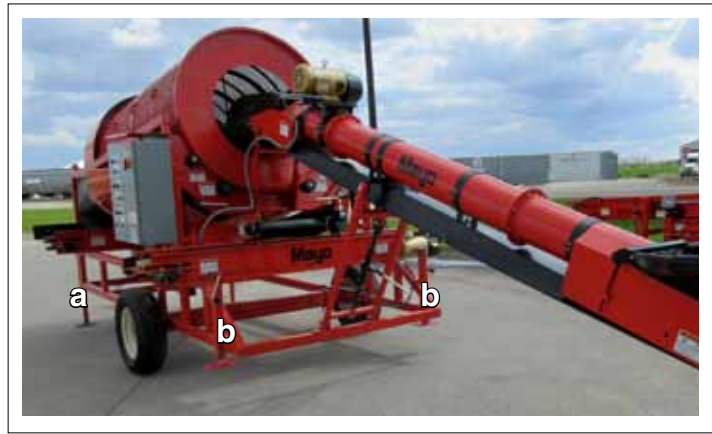


FIG. 11 JACKS

8. **Start-Up:**

The machine comes from the factory with the drum angle in its lowest position, the drum and conveyor speeds at their mid-range settings. When starting:

- a. Move the drum into its mid-range position / angle.
- b. Start operating cleaner.
- c. Adjust as required to provide a clean sample:
 - If the sample is clean, the cleaning rate can be increased by raising the intake end of the drum and/or increasing the drum rotating speed.
 - If the sample is not clean, lower the intake end of the drum and/or decrease the drum rotating speed.
- d. Always use the drum rotating speed and drum angle to control the speed and amount of cleaning to the flow of beans. Increasing the drum angle increases the speed of the beans through the drum. Increasing the drum rotating speed increases the amount of cleaning the beans receive as they move through the drum. Use both parameters in combination to control the cleaning of the beans.



System



Discharge



Inside Drum

FIG. 12 START-UP

8. **Equipment Placement:**

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



Intake



Discharge

FIG. 13 AUXILIARY EQUIPMENT (TYPICAL)

9. **Conveyor System Speeds:**

The conveyors of the Bean Cleaner and run at a dialed-in speed appropriate to bring beans to the machine and discharge clean beans and trash. Use the rheostat on the front of the control panel to set the speed of the conveyor(s). Increase the speed if beans or trash are building up on any of the conveyors.



Control Panel



Conveyor (Typical)

FIG. 14 CONVEYING SPEED

10. **Cleaning Drum Rotation Speed:**

The Cleaning Drum is designed with a variable speed drive which allows the operator to set the speed appropriate for the application. Increase the speed to increase the cleaning action of the drum. Decrease speed if the beans aren't clean as they exit the drum.



Control Panel



Drum



Beans

FIG. 15 CLEANING DRUM

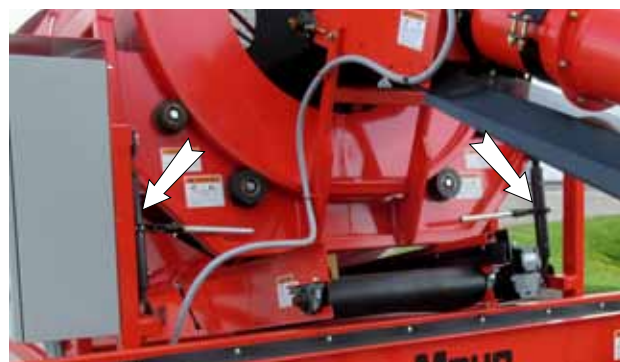
11. Drum Angle:

The drum frame is hinged to allow it to have its angle set appropriate for the application. Use the 2 turnbuckles on the drum frame to set the angle. Always set both turnbuckles the same to keep the frame level.

Increase the angle to decrease the time the beans spend in the drum. Decrease the angle to increase the cleaning time in the drum.



Angle



Turnbuckles

FIG. 16 DRUM ANGLE

12. Input Conveyor Height:

The belted intake tube conveyor height is controlled and set by a turnbuckle under the frame. Use the turnbuckle to position the intake hopper under the system bringing beans to the cleaner.



FIG. 17 TURNBUCKLE

13. Screen Changing:

Both inner and outer screens of the drum can be changed to different-sized holes to accommodate any crop size and application. Use screens with a large hole for large-sized crops and small holes for small-sized crops.

To change outer screens follow this procedure:

- a. Turn machine off and disconnect power.
- b. Remove side panels and place in a secure location.



Side Panels (Typical)



Side Panels Removed

- c. Remove the clamps on the straps over the rear screen.
- d. Slide the clamping straps to the center of the drum (use 2 people to prevent binding).

NOTE

Always use 2 people to handle the large screen components.

- e. Remove the anchor screws through the screen.
- f. Remove the rear screen.
- g. Release the over-center clamps on straps over front screen.
- h. Slide straps to the center of the drum.
- i. Remove front screen.



Clamps and Screws

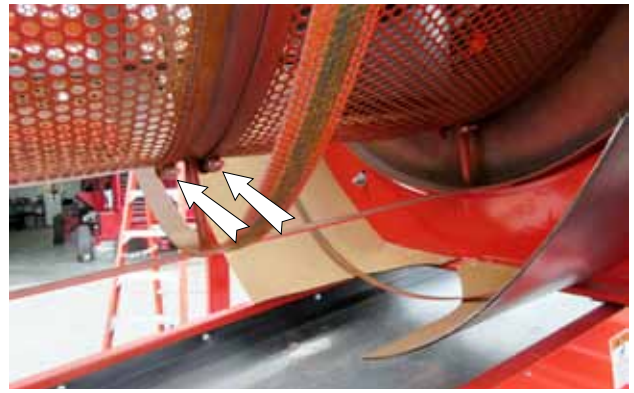


Screen Removed

FIG. 18 REAR SCREEN

To change inner screens:

- a. Remove clamps around rear inner screen.
- b. Remove anchor screws through inner screen.
- c. Remove clamps around front inner screen.
Remove screen.
- d. Install new screens by reversing the previous procedures. Be sure all components are aligned before clamping in position.



Over-Center Clamps



Anchor Screws



Inner Screen

FIG. 19 INNER SCREEN

14. **Product Removal:**

The operator is responsible to put the systems in place to remove clean beans and trash from the cleaner. Conveyors work well to remove material from the machine but a variety of methods can be used.



Trash Pile



Input



Cleaned

FIG. 20 PRODUCT REMOVAL

15. Conveyor Speeds:

The speed of the conveyors can be controlled by the rotary dial on the control panel. Set the speed to clear the clean beans and debris from the machine.



FIG. 21 CONVEYOR SPEEDS

16. Operating Hints:

- a. Be sure that all workers and operators are supplied with and use the required safety gear.
- b. Keep the working area clean and as dry as possible to prevent slipping and tripping.
- c. Train all operators before starting. An untrained operator is not qualified to operate this machine and can expose himself and others to needless hazards.
- d. Secure all pieces of equipment together to prevent unexpected movement and separation.
- e. Use the drum angle and drum rotation speed in combination to control the quality of cleaning being performed by the machine.



Discharge



Trash Conveyor



Cleaning

FIG. 22 OPERATING

4.8 STORAGE



STORAGE SAFETY

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

4.8.1 PLACING IN STORAGE

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

1. Check all rotating parts for entangled material. Remove.
2. Turn the power OFF at the master electrical panel and lock out.
3. Unplug and remove power cord from machine.
4. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris or residue.
5. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from the washing.
6. Inspect all the 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.

7. Inspect each conveyor. Check the condition of the rollers. Replace any if badly worn. Check the alignment of the conveyors. Align if required. Properly tension each conveyor belt.
8. Touch up all paint nicks and scratches to prevent rusting.
9. Select a storage area that is dry, level and free of debris.



FIG. 23 STORED (TYPICAL)

4.8.2 REMOVING FROM STORAGE

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

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

4.9 TRANSPORT



TRANSPORT SAFETY

1. Make certain that you are in compliance with local, state/provincial and federal regulations regarding transporting agricultural equipment on public roadways.
2. Make certain that all wheels and tires are in good repair and that tires are inflated to proper pressure. Do not underinflate or overinflate.
3. Make certain that all wheel bolts/lug nuts are tightened to proper torque specifications (refer to specification chart in Section 7.2).
4. Make certain that all mechanical locks and integral anchor chains are safely and positively connected before loading or transporting.
5. Raise and secure all jack stands.
6. Wrap up and bind to the frame all loose electrical ends.
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 oncoming and overtaking traffic.
8. Be sure that the Bean Cleaner is positively hitched to the towing vehicle. Use a proper safety chain to assure a safe hitch hook-up when transporting.
9. Adhere to local regulations regarding maximum weight, width and length.
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 Bean Cleaner or towing vehicle during transport.
12. Always use hazard flashers on the towing vehicle when transporting.

Mayo Bean Cleaners are designed to be easily and conveniently moved from location to location. Transporting is used to describe when the machine is being towed by a tractor. When transporting, follow this procedure:

1. Disconnect and remove all auxiliary equipment from the machine.
2. Extend tow hitch and secure with anchor pin and retainer.
3. Place all controls in their OFF or neutral position.
4. Turn the power OFF at the master panel and lock out.
5. Unplug and remove the power cord. Stow power cord on frame.



Extended



Retracted

FIG. 24 TOW HITCH

6. Attach the tow hitch to the tractor. Be sure to use a mechanical retainer through the drawbar pin.
7. Attach a safety chain between the hitch and the drawbar cage to prevent unexpected separation.
8. Install an SMV on the rear frame.
9. Use pilot vehicles and install extra lights on the machine when transporting. A lighting bar is recommended.
10. Clean all the reflectors.
11. Be sure all bystanders are clear of the machine.
12. 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.
13. 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.
14. 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 machine weight.
15. Do not allow riders on the machine or tractor.
16. Always use hazard flashers on the tractor when transporting unless prohibited by law.

Table 1 Travel Speed vs Weight Ratio

<u>Road Speed</u>	<u>Weight of fully equipped or loaded implement(s) relative to weight of towing machine</u>
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

5 SERVICE AND MAINTENANCE



MAINTENANCE SAFETY

- Make sure that anyone who will be operating the Bean Cleaner or working on or around the units reads and understands all the operating, maintenance and safety information in the operator's manual. Also read and follow the instructions in the manuals of other equipment in the system.
- **Turn machine OFF, shut down and lock out power supply (safety lockout devices are available through your Mayo dealer parts department) and wait for all moving parts to stop before servicing, adjusting, maintaining or repairing.**
- Establish a lock-out tag-out policy for the work site. Be sure all personnel are trained in and follow all procedures. Lock-out tag-out all power sources before servicing the unit or working around loading/unloading equipment.
- **Make sure all control switches are in the OFF position before connecting power supply.**

Before supplying electrical power to the machine, be sure that you have adequate amperage at the proper phase and voltage to run it. If you do not know or are unsure, consult a licensed electrician.

- Keep working area clean and free of debris to prevent slipping or tripping.
- Keep hands, feet, hair and clothing away from rotating and moving parts. Keep others away.
- Install and secure all guards before starting.
- Review safety related items annually with all personnel who will operating, using or maintaining the Bean Cleaner.

5.1 SERVICE

5.1.1 FLUIDS AND LUBRICANTS

1. Grease

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

2. Speed Reducer Gear Box Lubricant

Use a Mobil Glygoyle synthetic lubricant 150 VG 460 or equivalent.

Drum Drive:

Capacity: 2 qts. (2 L).

Conveyor Drives:

Capacity: 1 qt. (1 L).

5.1.2 GREASING

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

1. Use only a hand-held grease gun for all greasing. Air powered greasing systems can damage the seals on bearings and lead to early bearing failure.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If a fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

5. Storing Lubricants:

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

5.1.3 SERVICING INTERVALS

50 Hours or Weekly

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

1. Grease the conveyor roller bearings with 1 shot of grease.
 - a. Rear cross conveyor shafts.

IMPORTANT

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

- b. Rear cross conveyor shaft.



Drive (Typical)



Driven (Typical)

FIG. 25 FRONT CROSS CONVEYOR SHAFTS



Drive (Typical)



Driven (Typical)

FIG. 26 REAR CROSS CONVEYOR DRIVE SHAFT

- c. Longitudinal conveyor drive and driven shafts.



FIG. 27 LONGITUDINAL CONVEYOR (TYPICAL)

- d. Feed conveyor shafts.

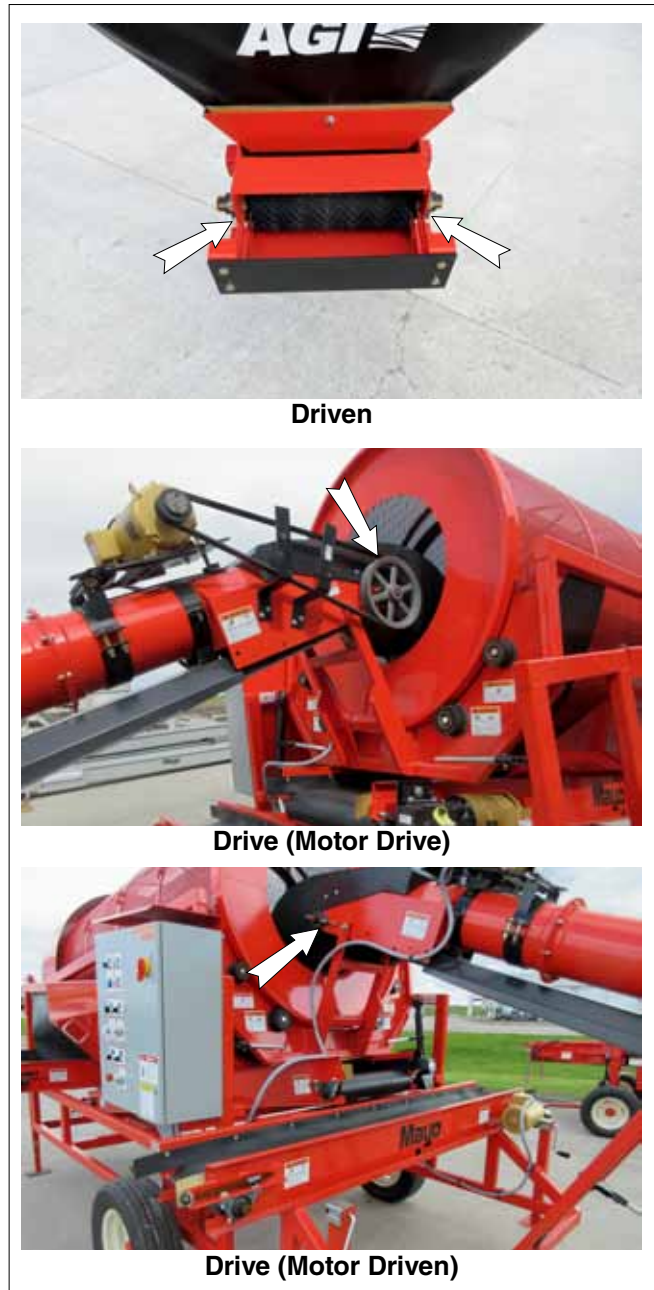


FIG. 28 CONVEYOR SHAFTS

2. Grease the drum drive bearing.



FIG. 29 DRUM DRIVE BEARING

3. Check feed conveyor drive belt tension.



FIG. 30 DRIVE BELT TENSION



3. Check conveyor alignment.

a. Clean bean conveyor.



Clean Bean

b. Longitudinal conveyor.



Longitudinal

c. Debris cross conveyor.



Debris Cross

d. Feed conveyor.



Feed

FIG. 31 CONVEYOR ALIGNMENT

200 Hours or Annually

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

- a. Front cross conveyor.



- b. Longitudinal conveyor.

- c. Rear cross conveyor.

- d. Drum drive.



Front Cross



Longitudinal



Rear Cross



Drum Drive

FIG. 32 LEVEL PLUGS (TYPICAL)

2. Grease turnbuckle (2 locations each turnbuckle).
 - a. Drum Frame.
 - b. Input feed.



FIG. 33 TURNBUCKLE (TYPICAL)

3. Wash machine.



FIG. 34 MACHINE

5.1.4 SERVICE RECORD

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

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

Maintenance

[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 ELECTRIC SYSTEM INSPECTION

Electricity provides power to all systems on the Bean Cleaner. To maintain the integrity of each system and provide a safe working environment for the operator, it is important that a daily inspection be done to make sure that all systems and components are in good working condition. To provide a safe working environment, have a licensed electrician provide power to the machine.

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

1. Place all controls in the OFF or neutral position.
2. Turn power OFF at the master panel and lock-out before starting the inspection.



WARNING

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

3. Inspect all electrical components looking for:
 - a. Damaged plugs.
 - b. Frayed or loose wires.
 - c. Cut or cracked insulation.
4. Replace any damaged components immediately.
5. Be sure all components are grounded.
6. Be sure there is no water or moisture in any junction box or enclosure. Dry the components before turning power on. Be sure that all compartments seal properly when closed.

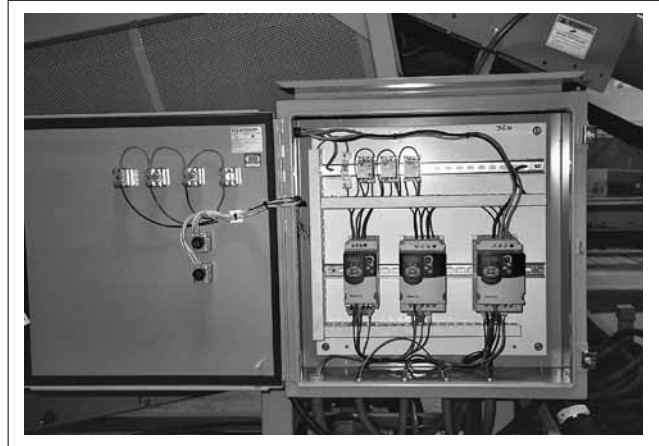


FIG. 35 CONTROL PANEL (TYPICAL)

5.2.2 SPEED REDUCER GEARBOX OIL

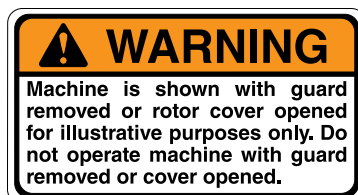
Each conveyor drive and the drum rotation drive systems are driven by an electric motor that is attached to a high ratio speed reducing gearbox to give the required operating speed. Each gearbox is equipped with a drain, level and fill plug. Every 200 hours, the oil level should be checked. Every 1000 operating hours the oil should be replaced. Check more frequently if there are leaks around any of the plugs or shaft seals. When checking oil level or changing oil, follow this procedure.

1. Run the machine until the gearbox is warm. Warm oil will remove more contaminants than cold stagnate oil.
2. Stop the machine.
3. Place all controls in their OFF or neutral position.
4. Turn the power OFF at the master panel and lock-out tag-out.
5. **Checking oil level:**
 - a. When the gearbox is cold, remove the level plug from the side of the gearbox.
 - b. When the oil just fills the threads of the level plug, it is at the correct level.
 - c. Add oil through the fill plug as required.
 - d. Install and tighten level and fill plugs.
6. **Changing oil:**
 - a. Place a container under the drain plug.
 - b. Remove the drain.
 - c. Allow 10 minutes to drain.
 - d. Install and tighten the drain plug.

NOTE

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

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



Front Cross Conveyor



Longitudinal Conveyor



Rear Cross Conveyor



Drum Drive

FIG. 36 GEARBOXES (TYPICAL)

5.2.3 BREATHER CLEANING

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

1. Place all controls in their OFF or neutral position.
2. Turn the power OFF at the master panel and lock-out tag-out.
3. Remove the fill plug/breather from the gearbox.
4. Check that the vent passage through the plug is open.
5. If plugged, soak in a solvent over night.
6. Use a high-pressure air hose to blow the passage open. Use a probe to clear the passage if the hole is caked with dirt.
7. Install and tighten the breather plug.

IMPORTANT

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



FIG. 37 BREATHER (TYPICAL)

5.2.3 CONVEYOR BELT TENSION/ALIGNMENT OR REPLACEMENT

Conveyor belts are used to move beans into and out of the machine. The tension and alignment of the conveyors should be checked daily to insure proper function. Replace the conveyor belt when damaged or badly worn. To maintain conveyor belt(s), follow this procedure:

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



Elevator



Front Cross Conveyor

FIG. 38 TENSION ADJUSTING (TYPICAL)

4. **Alignment:**

a. **Conveyors:**

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



Front Cross Conveyor



Longitudinal Conveyor



Feed Tube Conveyor

FIG. 39 CONVEYOR BELT ALIGNMENT (TYPICAL)

5. **Replacement:**

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



Front Cross Conveyor



Longitudinal Conveyor



Elevator

FIG. 40 BELT CONNECTOR (TYPICAL)

5.2.4 OUTER SCREEN CHANGING

The outer screen of the drum can be changed to 4 different-sized holes to accommodate any crop size and application. Use screens with a large hole for large-sized crops and small holes for small-sized crops.

To change screens follow this procedure:

1. Turn machine off and disconnect power.
2. Remove side panels and place in a secure location.
3. Release the over-center clamps on the straps over the rear screen.
4. Slide the clamping straps to the center of the drum (use 2 people to prevent binding).

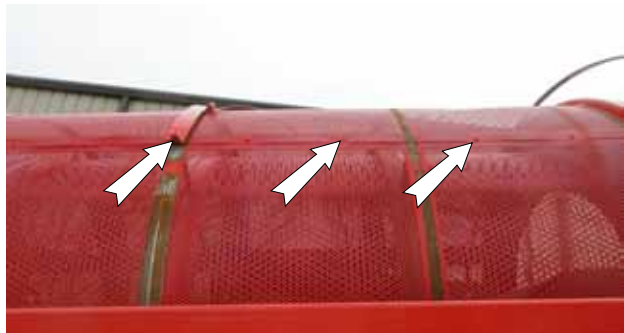
NOTE

Always use 2 people to handle the large screen components.

5. Remove the rear screen.
6. Release the over-center clamps on straps over front screen.
7. Slide straps to the center of the drum.
8. Remove front screen.
9. Install new screens by reversing the above procedure. Be sure all components are aligned before clamping in position.



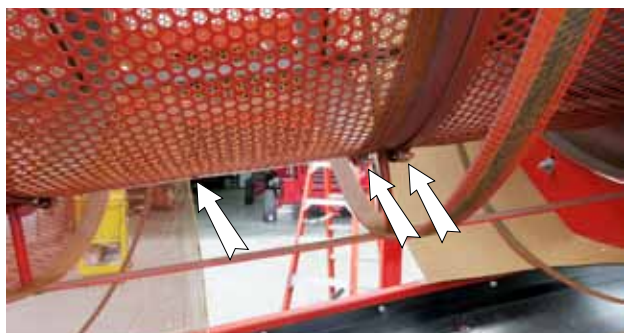
Side Panels



Clamps and Anchor Bolts



Outer Screen Removed



Inner Clamps and Anchor Bolts



Inner Screen Removed

FIG. 41 SCREEN CHANGING

5.2.5 DRIVE BELT TENSION AND ALIGNMENT

A V-belt transmits rotational power to the upper drive shaft. It must be kept properly tensioned and the pulleys aligned to obtain the expected performance and life.

To check the tension and alignment, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Turn all controls OFF.
3. Turn the power off at the Master panel and lock-out tag-out.
4. Remove guard over belt.
5. Push on the belt in the center of the span. The belt should deflect approximately 1 inch (25 mm) when pushed on with about 10 lbs. force to be properly tensioned.

IMPORTANT

The belt should not slip when the conveyor is being used.

5. To adjust belt tension:

- a. Loosen jam nut on the motor mounting plate.
- b. Use the adjusting bolt to move motor to the required position to set belt tension.
- c. Check and set pulley alignment as required.
- d. Tighten jam nut to its specified torque.

6. To replace belt:

- a. Move motor mount to its loosest position.
- b. Replace belt.
- c. Check and set pulley alignment as required.
- d. Use motor mount adjusting bolt to set belt tension.
- e. Tighten jam nut on adjusting bolt to its specified torque.
- f. Check frequently during the first 10 hours and set belt tension as required.



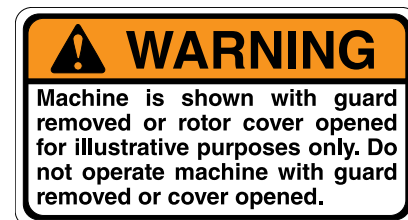
Belt



Jam Nut

FIG. 42 BELT DRIVE SYSTEM

7. Lay a straight edge across the pulley faces to check the alignment or sight across the pulleys. Adjust alignment if pulley faces vary more than 1/32 inch (.7 MM).



6 TROUBLESHOOTING

The Mayo Bean Cleaner is a large double-hulled rotating drum for removing large and small debris from beans. It is a simple and reliable system that requires minimum maintenance.

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

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

PROBLEM	CAUSE	SOLUTION
Conveyors won't run.	No power.	Plug machine in. Turn power ON at master panel.
	Emergency STOP switch engaged.	Disengage STOP switch.
	Tripped circuit breaker.	Reset circuit breaker.
	Speed set at OFF.	Adjust speed dial to mid-range.
	Loose conveying belt.	Tighten conveying belt(s).
<hr/>		
Feed conveyor won't run.	No power.	Turn power ON at control panel.
	Loose drive belt.	Adjust drive belt.
<hr/>		
Beans not clean.	Wrong screen used.	Change screen to appropriate size.
	Drum turning too fast.	Reduce drum speed.
	Drum angle too steep.	Lower drum angle.
<hr/>		
Beans bunching on conveyor discharge.	Conveyor running too slow.	Increase conveyor speed.
<hr/>		
Debris bunching on discharge conveyor.	Conveyor running too slow.	Increase conveyor speed.

7 SPECIFICATIONS

7.1 MECHANICAL

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

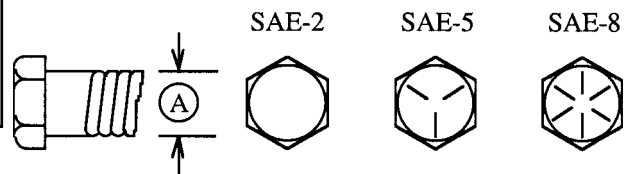
7.2 BOLT TORQUE

CHECKING BOLT TORQUE

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

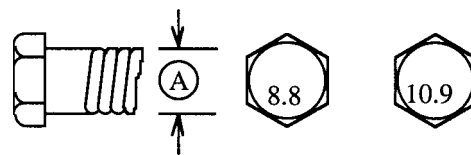
ENGLISH TORQUE SPECIFICATIONS

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



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8 (N.m) (lb-ft)		10.9 (N.m) (lb-ft)	
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	575	1550
M36	2600	1917	3675	2710



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

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

7.3 LUBRICANT SPECIFICATIONS

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

7.4 ELECTRICAL SCHEMATIC

Line phasing, line voltage, control voltage, and accessory options can vary substantially for each machine.

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

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