



Art's-Way Manufacturing Co., Inc.

CATTLE MAXX
Model 7165 Grinder Mixer

Operator's Manual
623730
Issued 07-2020

O P E R A T O R ' S M A N U A L



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW.

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ABOUT SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE AND CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE.

It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Art's-Way Manufacturing Co., Inc. dealer or Art's-Way Manufacturing Co., Inc. for additional operator's manuals, illustrated parts catalogs, and service manuals.

TO THE OWNER

Congratulations on the purchase of your new Art's-Way 7165 Cattlemaxx Grinder Mixer. You have selected a top quality machine that is designed and built with pride to ensure you have many years of efficient and reliable service.

Many people have worked on the design, production, and delivery of this 7165 Cattlemaxx Grinder Mixer. The information in this Manual is based on the knowledge, study, and experience through years of specializing in the manufacturing of farm machinery. This Manual is designed to provide you with important information regarding safety, maintenance, and machine operation so you can and will get the best possible performance from your 7165 Cattlemaxx Grinder Mixer.

Even if you are an experienced operator of this or similar equipment, we ask that you **read this manual before operating the 7165 Cattlemaxx Grinder Mixer.** The way you operate, adjust, and maintain this unit will have much to do with its successful performance. Any further questions you may have about this product of Art's-Way equipment should be directed to your local Art's-Way dealer or to Art's-Way Manufacturing Co., Inc., Armstrong, Iowa, 50514, (712) 864-3131.

SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE

Art's-Way Manufacturing Co., Inc. is continually making product improvements. In doing so, we reserve the right to make changes and/or add improvements to our products without obligation for the equipment previously sold.

Modifications to this 7165 Cattlemaxx Grinder Mixer may affect the performance, function, and safety of its operation. Therefore, no modifications are to be made without the written permission of Art's-Way Manufacturing Co., Inc. Any modification made without the written permission of Art's-Way Mfg. Co. shall void the warranty of this product.

In the interest of continued safe operation of this 7165 Cattlemaxx Grinder Mixer, pay particular attention to the safety alert symbol(s) throughout this Manual.

ART'S-WAY MANUFACTURING CO., INC. STATEMENT OF PRODUCT LIABILITY

Art's-Way Manufacturing Co., Inc. recognizes its responsibility to provide customers with a safe and efficient product. Art's-Way Manufacturing Co., attempts to design and manufacture its products in accordance with all accepted engineering practices effective at the date of design. This statement should not be interpreted to mean that our products will protect against the user's own carelessness or failure to follow common safety practices nor will Art's-Way Manufacturing Co., be liable for any such act. In addition, Art's-Way Manufacturing Co. assumes no liability for any altered product or any modified product by users or anyone other than an authorized dealer.

IMPORTANT WARRANTY INFORMATION

The warranty for this 7165 Cattlemaxx Grinder Mixer appears on page 3 of this Manual. In order to establish proper warranty registration, the Warranty Registration must be completed and returned to the factory. Failure to comply with this requirement may result in reduced warranty allowances.

LIMITATIONS OF THIS MANUAL

This Manual contains operating instructions for your 7165 Cattlemaxx Grinder Mixer only. Any mention of other machinery in this manual other than the 7165 Cattlemaxx Grinder Mixer is for reference only. This manual does not replace nor is it to be used for any machinery that may be attached to or used in conjunction with the 7165 Cattlemaxx Grinder Mixer.

PARTS & SERVICE

As the purchaser of your new 7165 Cattlemaxx Grinder Mixer, it is very important to consider the following factors:

A. Original Quality

B. Availability of Service Parts

C. Availability of Adequate Service Facilities

Art's-Way Manufacturing Co., Inc. has an excellent dealership network ready to answer any questions you may have about your 7165 Cattlemaxx Grinder Mixer. Parts for your machine may be ordered through our dealers. When placing a parts order, please have the **model** and **serial number** ready. This will allow the dealer to fill your order as quickly as possible.

For your convenience, we have provided this space for you to record your model number, serial number, and the date of purchase, as well as your dealer's name and address.

Owner's Name: _____

Owner's Address: _____

Purchase Date: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone No.: _____

7165 Cattlemaxx Grinder Mixer Serial Number Location

The placard containing the serial and model number is located on the front left-hand side of the 7165 Cattlemaxx grinder mixer next to ladder. Enter the serial and model number of your 7165 Cattlemaxx grinder mixer within the space provided.



Figure 1 - Serial Number Placard.



Figure 2 - Serial Number Placard Location.

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SAFETY FIRST

“A careful operator is the best insurance against an accident”

(National Safety Council)

Most accidents can be prevented if the operator:

- Fully understands how the machine functions
- Can anticipate situations which may produce problems
- Can make necessary corrections before problems develop



**THIS SYMBOL MEANS
ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!**

Figure 3 - Universal Safety Alert Symbol.

The American Society of Agricultural Engineers has adopted the Universal Safety Alert Symbol as a way to identify areas of potential danger if the equipment is not operated correctly (see Figure 3). Please be alert whenever you see this symbol in the manuals or on your Grinder Mixer.

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as possible. The Art's-Way 7165 CattleMaxx Grinder Mixer conforms to applicable safety standards at the time of manufacturing. A safety conscious equipment operator makes an effective accident-prevention program complete.

Safety features and instructions for the Grinder Mixer are detailed in the section of this Operator's Manual. It is the responsibility of the owner to ensure that all operators read and understand the manual before they are allowed to operate the Grinder Mixer. (Occupational Safety and Health Administration (OSHA) regulations 1928.57.)

NOTICES OF DANGER, WARNING, AND CAUTION

Signal Words: Note the use of signal words **DANGER**, **WARNING**, and **CAUTION** on the Grinder Mixer and in this manual. The appropriate signal word for each has been selected using the following guidelines:



**DANGER: IMMEDIATE AND SPECIFIC HAZARD WHICH
WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH
IF PROPER PRECAUTIONS ARE NOT TAKEN.**



**WARNING: SPECIFIC HAZARD OR UNSAFE PRACTICE
COULD RESULT IN SEVERE PERSONAL INJURY OR
DEATH IF PROPER PRECAUTIONS ARE NOT TAKEN.**



**CAUTION: A REMINDER OF GOOD SAFETY PRACTICES.
PERSONAL INJURY COULD RESULT IF PROPER
PROCEDURES ARE NOT FOLLOWED.**



SAFETY GUIDELINES



Remember:

“The Best Operator is a Safe Operator”



CAUTION: READ AND UNDERSTAND OPERATOR'S MANUAL AND ALL SAFETY DECALS BEFORE OPERATING GRINDER MIXER. REVIEW SAFETY INSTRUCTIONS WITH OPERATORS ANNUALLY.

BEFORE OPERATING

- Do not wear loose fitting clothing as it may catch in moving parts.
- Make sure to install and/or secure all guards, doors and shields, including the tractor power take-off (PTO) master shield, before starting or operating the Grinder Mixer.
- Be sure that the correct implement driveline parts are used and that they are properly secured.
- Install the safety chain when attaching the Grinder Mixer to the tractor.
- Clear the area of bystanders, especially children, when making repairs, adjustments or performing maintenance on the Grinder Mixer.
- Do not allow riders.
- Put all tractor and machine controls in “neutral” and disengage the PTO before starting. Follow the starting instructions according to your tractor Manual.
- Operate the Grinder Mixer only while seated on the tractor seat.
- Make sure the unit is adequately supported with safety blocks or safety stands when changing tires or performing maintenance.



CAUTION: KEEP CLEAR OF MOVING PARTS. SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING MACHINE OR MAKING ADJUSTMENTS.

DURING OPERATION

- Keep hands, feet, hair, and clothing away from moving parts.
- Keep all guards, doors and shields in place and in good working condition.

- Keep all bystanders, especially children, away from the grinder mixer while in operation.
- Do not allow riders while the grinder mixer is in operation.
- Do not attempt to unclog, clean, or adjust the grinder mixer while it is running.
- Stay away from overhead power lines. Electrocution can occur even without direct contact.
- Keep all hydraulic lines, fittings, and couplers tight and free of leaks. (Refer to - Hydraulic Safety.)
- Use caution when ascending or descending on the grinder mixer. Wet shoes or boots are slippery.

MAINTENANCE SAFETY

- Follow all operating, maintenance and safety instructions found in this Manual.
- Before servicing, adjusting, repairing or unclogging the machine, always make sure the tractor engine is stopped, the parking brake is set, and all the moving parts have stopped.
- Use sufficient tools, jacks, and hoists that have the capacity for the job.
- Use support blocks or safety stands when changing tires or performing maintenance.
- Follow good shop practices of keeping the service area clean and dry and use adequate light for the job at hand.
- Before applying pressure to the hydraulic system, make sure all lines, fittings and couplers are tightly secured and in good condition.
- Make sure all guards, doors and shields are in place and properly secured when performing maintenance.

HYDRAULIC SAFETY

- Make sure components in the hydraulic system are kept clean and in good working condition.
- Relieve pressure from the hydraulic system before servicing or disconnecting from the tractor.
- Keep all hydraulic lines, fittings, and couplers tightly secured and free of leaks.
- Replace any worn, cut, abraded, flattened or crimped hoses.
- Do not make any temporary repairs to the hydraulic lines, fittings or hoses using tape, clamps, or cement. The hydraulic system operates under extremely high pressure and temporary repairs may fail suddenly and create a hazardous and or dangerous situation.
- 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 identify and isolate a leak. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop if hydraulic fluid penetrates the surface of the skin.
- Before applying pressure to the system, make sure all components are tight and that the hydraulic lines, hoses, and couplings are not damaged.

TRANSPORTATION SAFETY

- Make sure the grinder mixer complies with all local regulations regarding the transportation of equipment on public roads and highways.
- Make sure the Slow Moving Vehicle (SMV) emblem and all lights and reflectors required by local highway and transportation authorities are properly in place, clean, and clearly visible to traffic.
- Do not allow riders on any machinery during transport.
- Make sure the grinder mixer is securely attached to the tractor and install a safety chain to the grinder mixer.
- Make sure the tractor brake pedals are latched together.
- Do not exceed 20 mph (32 km/h) when transporting the grinder mixer. Always reduce speed on rough roads and surfaces, or when going down inclines.
- Use caution when turning and always use the turn signals on the tractor to indicate your turning intentions to the other traffic.

- The weight of the trailed machine should NEVER exceed the weight of the towing vehicle.
- Check all clearances carefully whenever the machine is towed.
- Lower the elevator into the transport position before transporting the harvester on the highway.
- Stay away from overhead obstructions and power lines during transport. Electrocution can occur even without direct contact.

STORAGE SAFETY

- Store the grinder mixer in an area away from human activity.
- Do not permit children to play on or around the stored machine at any time.
- Make sure that the grinder mixer is stored in an area with a firm and level base to prevent the machine from tipping or sinking into the ground.
- Block the wheels to prevent the machine from rolling.

TIRE SAFETY

- Have only a qualified tire dealer or tire repair service perform tire repairs.
- Do not attempt to install a tire on a wheel or rim unless you have the proper equipment and experience to do the job.
- Follow proper procedures when installing a tire on a wheel or rim to prevent an explosion that could result in serious injury.
- Do not substitute tires with a lesser road rating and/or capacity for the original equipment tires.



CAUTION: FAILURE TO FOLLOW PROPER PROCEDURES WHEN INSTALLING TIRE ON WHEEL OR RIM CAN PRODUCE EXPLOSION THAT MAY RESULT IN SERIOUS INJURY OR DEATH. DO NOT ATTEMPT TO INSTALL TIRE WITHOUT PROPER EQUIPMENT AND EXPERIENCE TO PERFORM JOB. REPLACEMENT, REPAIR, AND/OR MAINTENANCE SHOULD BE DONE BY QUALIFIED TIRE DEALER OR QUALIFIED REPAIR SERVICE.

ASSEMBLY SAFETY

- Use adequate manpower to perform assembly procedures safely.
- Assemble the grinder mixer in an area with sufficient space to maneuver the largest

components and allow easy access to all sides of the machine.

- Use only forklifts, lift cranes, jacks and tools with sufficient capacity for the loads.
- Do not allow spectators, especially children, in the working area.

Remember:

“The Best Operator is a Safe Operator”

SAFETY DECALS

DECAL LOCATIONS & IDENTIFICATION

The different types of safety decals for your 7165 CattleMaxx Grinder Mixer are illustrated on the following pages. Please familiarize yourself with the appearance of each decal, the warning it describes, and the area where it is located on the grinder mixer (see Figure 4, Figure 5, and **Error! Reference source not found.**).

Safety awareness is the responsibility of each operator of the grinder mixer. Keep safety decals and signs clean and legible and be sure replacement parts display the current safety decals and signs as well.

Remember: Always replace missing, damaged or illegible safety decals. New decals and signs are available from an authorized dealer.

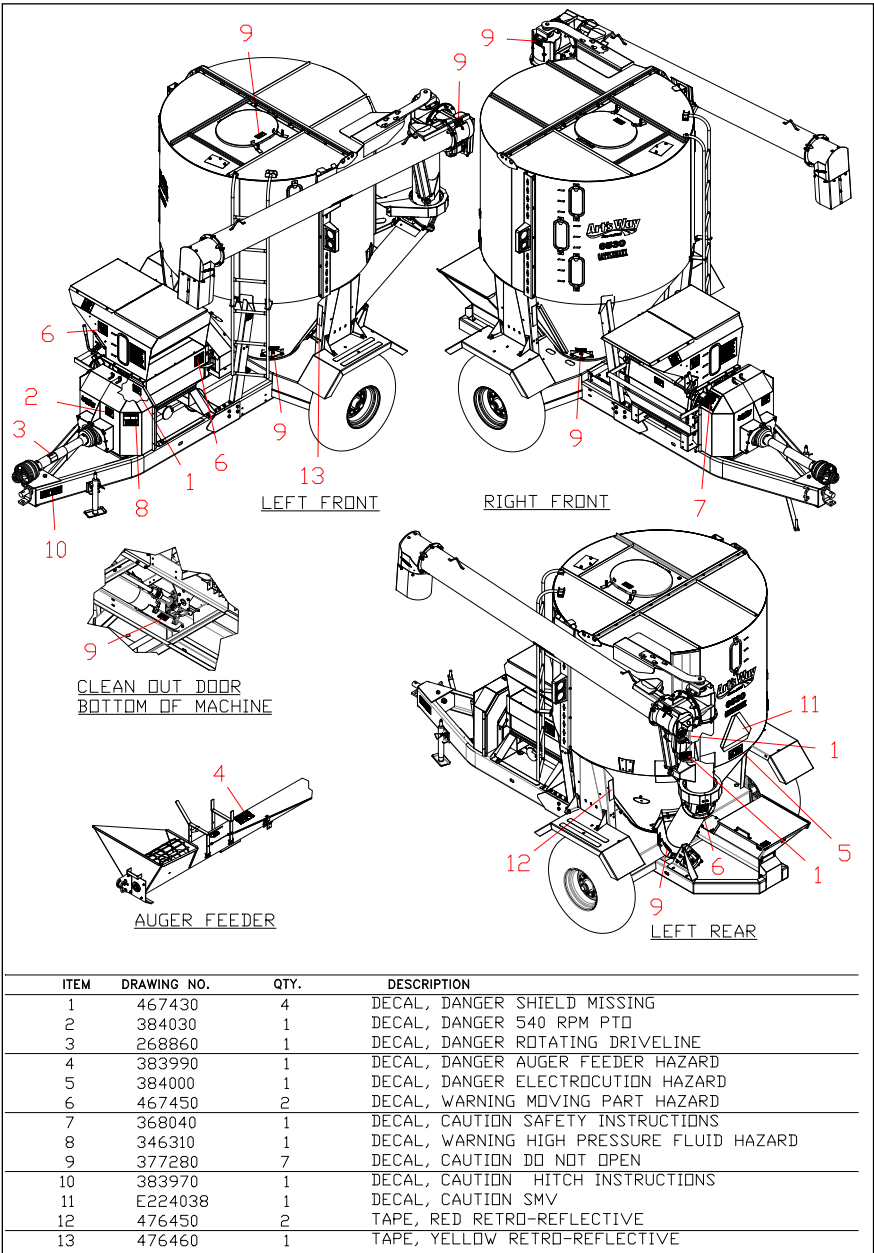


Figure 4 - Safety Decal Locations.

NOTE: Keep all decals clean and free of dirt for maximum visibility. Replace all individual decals that are no longer legible. Read and obey all safety decals and be familiar with their meaning.



1. DANGER – Shield Missing (467430)



2. DANGER – 540 RPM PTO (384031)



3. DANGER – Rotating Driveline (268860)



4. DANGER – Auger Feeder Hazard (383990)



5. DANGER – Electrocution Hazard (384001)

NOTE: Keep all decals clean and free of dirt for maximum visibility. Replace all individual decals that are no longer legible. Read and obey all safety decals and be familiar with their meaning.

Figure 5 - Safety Decals.



6. WARNING – Moving Part Hazard (467450)



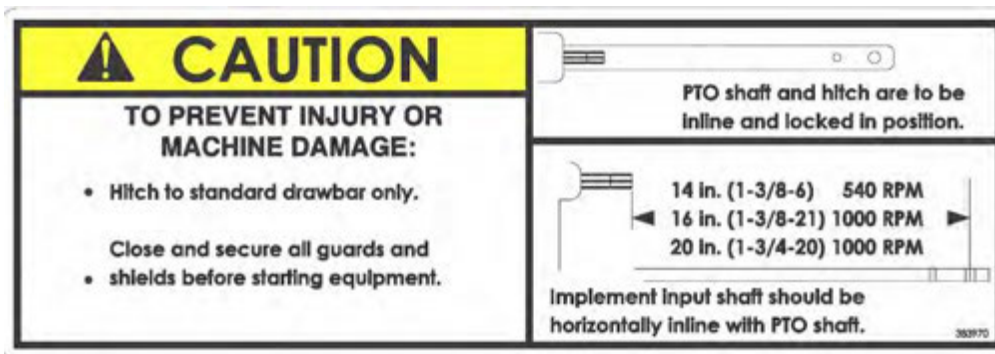
7. CAUTION – Safety Instructions (368040)



8. WARNING – High Pressure Fluid Hazard (346310)



9. CAUTION – Do Not Open (377281)



10. CAUTION – Hitch Instructions (383970)

Figure 6 - Safety Decals.

NOTE: Keep all decals clean and free of dirt for maximum visibility. Replace all individual decals that are no longer legible. Read and obey all safety decals and be familiar with their meaning.

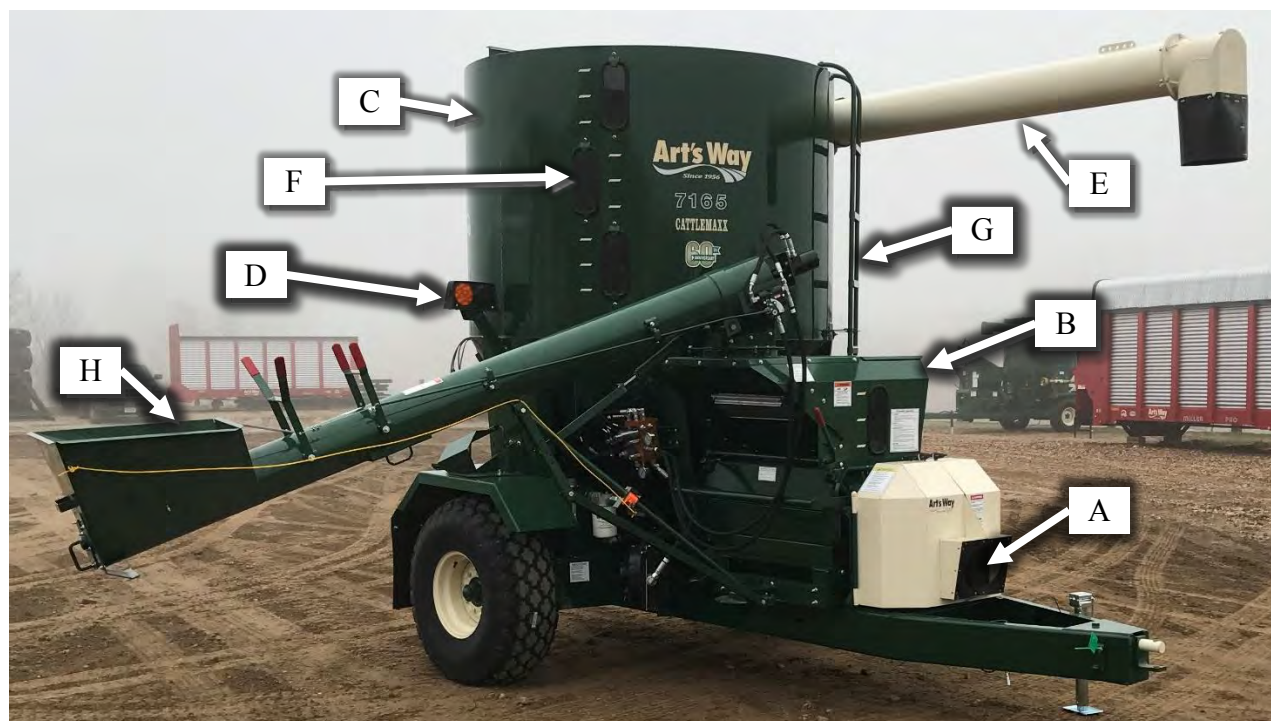


Figure 7 - Model 7165 CattleMaxx with Auger Feeder (A – PTO Driveline; B – Rollermill and Hopper; C – Mixing Tank; D – LED Highway Lights; E – Discharge Auger; F – Viewing Windows; G – Ladder; H - Auger Feeder).

INTRODUCTION

This manual has been prepared to make you familiar with the proper operation, adjustment, lubrication and service of your grinder mixer. Take time to be careful and better understand the efficient operation and care of your machine.

Whenever the terms “*Left*” and “*Right*” are used, it should be understood to mean standing behind the machine and facing the direction of forward travel.

Some pictorials are used to show guards, doors and shields removed for easy identification. Make sure that all guards, doors and shields are in place before operating the machine. They are for your protection.

The Art's-Way 7165 Cattlemaxx Grinder Mixer is driven by a PTO driveline of 80 hp to 130 hp tractors. (Figure 7, Detail A.) When using a tractor over 150 hp, limit input and is factory available with 540 RPM drive only.

Always operate at full speed while rolling grain.



CAUTION: NEVER OPERATE 540 RPM PROCESSOR WITH 1000 RPM TRACTOR.

The rollermill (Figure 7, Detail B) is precision built of tough, cast iron construction, designed to give a high degree of control over the quality of feed produced.

It is important that you become acquainted with your rollermill before operating at full capacity. The rollermill will not start with grain between the rolls.

If supplement is to be added to the ration, a hopper with a sack cutter is located at the right rear of the mixing tank. The best mixing will result if the supplement is added before grinding.

The rolled feed is mixed continuously until the tractor PTO is disengaged.

The discharge auger (Figure 7, Detail E) pivots at the left rear of the mixing tank and can swing 225 degrees in a horizontal arc and in a vertical arc to the limit of the lift cylinder. Unloading rates up to 50 bushels per minute can be obtained depending upon position of the discharge and the type of material processed.

Five viewing windows (Figure 7, Detail F) are around the mixing tank to observe the feed level during grinding and mixing from anywhere on the site.

A non-slip ladder (Figure 7, Detail G) is located at the front left corner of the mixing tank to gain access to the spring-loaded mixing tank lid.



CAUTION: DO NOT OPEN SPRING-LOADED MIXING TANK LID WHILE PTO IS ENGAGED AND TRACTOR IS RUNNING.

Many convenient features are standard equipment on the Art's Way 7165 CattleMaxx grinder mixer including:

7165 CattleMaxx

1. Heavy Duty 540 RPM implement driveline with shear clutch.
2. 30 inch heavy duty roller mill.
3. Roll scrapers
4. Roller mill hopper magnet system.
5. Feed inspection tube under roller mill.
6. Ingredient supplement hopper.
7. Plated side-winder tongue jack
8. Ladder and fenders.
9. Five large inspection windows in tank.
10. Spring loaded tank lid.
11. 13.5 x 16.1 tires.
12. Hydraulic positioning of discharge auger. This includes a hydraulic cylinder for lift and hydraulic motor for swing.
13. Hydraulically driven discharge auger.
14. Tractor run hydraulics or temperature regulated self-contained hydraulics with electric activated discharge and wireless remote control.
15. Discharge auger hood with spring loaded relief door.
16. LED highway transport light kit.

Below is a list of optional attachments available:

1. Auger feeder (hydraulic). (See Figure 8.)
2. Electronic scale, with digital readout.
3. Horn, light, or horn and light for electronic scale.
4. Positioning arm for electronic scale.
5. Unloading auger extensions; 3 ft. or 6 ft. folding or bolt-on.
6. 20' extension harness to operate backup or complete control box from tractor (self-contained hydraulic units).

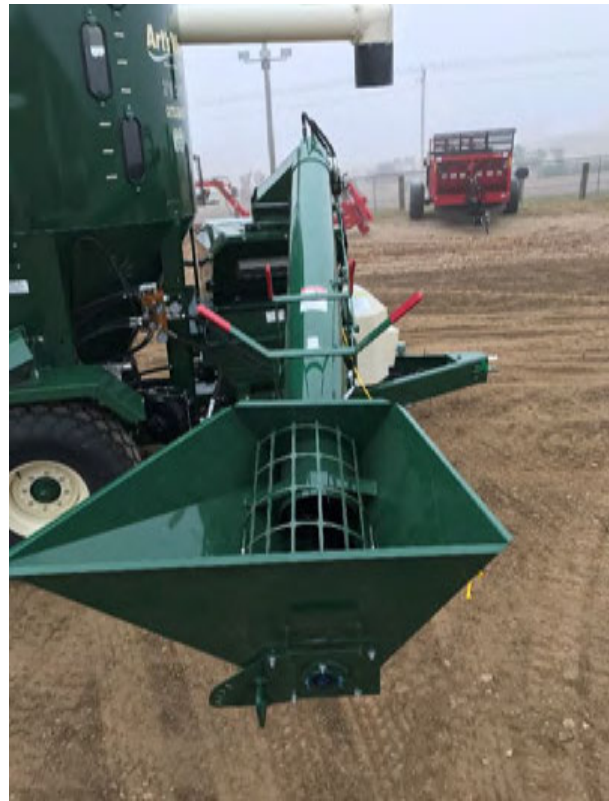


Figure 8 - Model 7165 Cattlemaxx with Self-Contained Hydraulics, Auger Feeder.

PREPAIRING THE GRINDER MIXER FOR OPERATION

Remove the shipping banding or wire from the auger feeder (if equipped), rear discharge cover and the unloading tube to saddle at the side of the tank.

IMPORTANT: Remove the bag from the supplement hopper. A wrench (see Figure 9) is provided for adjusting the roll gap spacing of the roller mill. Install the PTO driveline storage bracket under the front hitch with 1/2 inch x 1-1/2 inch bolt and lock nut (see Figure 10). Maintain tension with the lock nut to allow movement with 15 lbs. pull.



Figure 9 – Rollermill Wrench.



Figure 10 - PTO Driveline Storage Bracket.

Install any option that was ordered with the grinder mixer and shipped as loose equipment. See package instructions with the specific options for installation.

Install the implement end of the PTO driveline by fastening it to the input jackshaft with the 5/16 inch x 3-1/2 inch clevis pin and cotter pin provided.

Spread the cotter pin and make sure the proper PTO is used.



CAUTION: NEVER OPERATE 540 RPM PROCESSOR WITH 1000 RPM TRACTOR.

NOTE: Height of the unloading auger tube needs to be checked. Move the saddle on the side of the mixing tank so the tube will properly clear the tractor and cab.

If equipped with a folding extension, hydraulic auger feeder, or roll feed, refer to OPERATION OF

GRINDER MIXER, Unloading Auger Hood, and Auger Feed Operation sections as well as the ATTACHMENTS section for instructions.

TIRES

Keep tires properly inflated. Lack of pressure can result in torn valve stems, fabric breaks and uneven tread wear. Too much pressure can cause undue strain on fabric, excessive tread wear and allows the tire to cut in more on wet surfaces. Equal tire pressure reduces grinder mixer sway when towing.

Recommended tire inflation pressure is as follows:

13.5 x 16.1 8 – PR tires – 28 psi

GUARDS, DOORS, AND SHIELDS

Make sure that all of the guards, doors, and shields are in place and functioning.

BOLTS AND NUTS

Cap screws, except for shear bolts, used on the grinder mixer are Grade 5 and if replaced, cap screws of equal or greater strength should be used. Grade 5 cap screws are identified by three radial dashes on the hex head. Refer to the SAE bolt identification guide (see Figure 11).




IDENTIFICATION OF SAE BOLT GRADES; HEAD MARKINGS	
Grades 0, 1, and 2 no markings	
Grades 5: 3 radial dashes 120° apart	
Grades 8: 6 radial dashes 60° apart	

Figure 11 - SAE Bolt Identification.

IMPORTANT: Shear bolts must be replaced with bolts of the same grade

Before operation of the grinder mixer, make sure all bolts and nuts are properly tightened. Make sure all cotter pins are spread and not damaged. After operation of the grinder mixer for several hours, make sure all bolts are set to proper torque. Refer to the torque guide (see Table 1).

Size	Clamp Load	Plain GR 5	Plated GR 5
1/4 – 20 (.250)	2,025	8 ft. lbs.	76 in. lbs.
5/16 – 18 (.3125)	3,338	17 ft. lbs.	13 ft. lbs.
3/8 – 16 (.375)	4,950	31 ft. lbs.	23 ft. lbs.
7/16 – 14 (.4375)	6,788	50 ft. lbs.	37 ft. lbs.
1/2 – 13 (.500)	9,075	76 ft. lbs.	57 ft. lbs.
9/16 – 12 (.5625)	11,625	109 ft. lbs.	82 ft. lbs.
5/8 – 11 (.625)	14,400	150 ft. lbs.	112 ft. lbs.
3/4 – 10 (.750)	21,300	266 ft. lbs.	200 ft. lbs.
7/8 – 9 (.875)	29,475	430 ft. lbs.	322 ft. lbs.
1 – 8 (1.00)	38,625	644 ft. lbs.	483 ft. lbs.
1-1/8 – 7 (1.125)	42,375	794 ft. lbs.	596 ft. lbs.

Table 1 - Torque Specification Guide for Grade 5 Bolts.

Lubricate the grinder mixer at regular intervals as instructed in the lubrication sections. (Refer to **LUBRICATION** section.)

PREPARING THE TRACTOR

The tractor must be equipped with a 540 RPM PTO to match the grinder mixer as described in the previous section. Make sure the grinder mixer and the tractor are equipped and set for the proper RPM.



CAUTION: NEVER OPERATE 540 RPM GRINDER MIXER WITH 1000 RPM TRACTOR PTO.

TRACTOR HITCH

The hitch for the grinder mixer is designed to attach to any SAE – ASAE standardized tractor drawbar. Adjust the drawbar so it is 13 to 17 inches above the ground (see Figure 12). Extend or shorten the tractor drawbar so the horizontal distance from the end of the tractor PTO shaft to the center of the hitch pin hole is 14 inches for 540 RPM.

Lock the drawbar in its crossbar, parallel with the centerline of the PTO. Place locking pins on each side of the drawbar. If the tractor has an offset drawbar, the offset should be down for PTO work.

IMPORTANT: An improperly located hitch point may cause damage to the universal joints (U-Joints) of the PTO driveline.

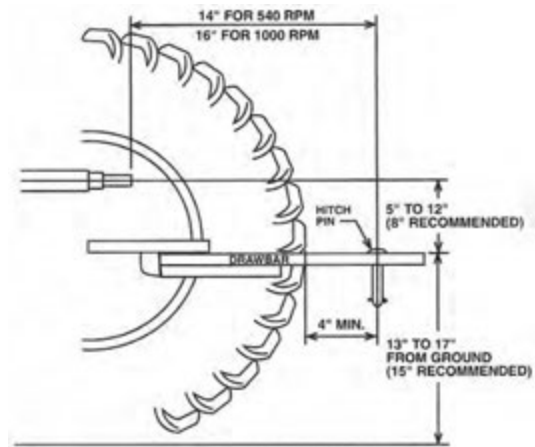


Figure 12 - Hitch Point Locations

ATTACHING TO THE TRACTOR

NOTE: Height of the unloading auger tube needs to be checked. Move the saddle on the side of the mixing tank so the tube will properly clear the tractor and cab.

Carefully back the tractor up to the hitch. Use the crank of the jack to raise or lower the grinder mixer hitch into position to engage the tractor drawbar.

Fasten the grinder mixer hitch to the drawbar with a hitch pin that cannot bounce out. Raise the jack and lock into the transport position (see Figure 13). Attach the safety chain from the grinder mixer to the tractor (see Figure 14).



CAUTION: ALWAYS FOLLOW STATE AND LOCAL REGULATIONS REGARDING SAFETY CHAIN WHEN TOWING FARM EQUIPMENT ON PUBLIC HIGHWAYS.



Figure 13 - Tongue Jack



Figure 14 - Attached to the Tractor with Safety Chain.

If the Cattlemaxx is equipped with an electronic scale, plug the scale power supply cord into the electrical outlet on the tractor or to the battery on the Cattlemaxx frame.

IMPORTANT: On electronic scale applications, if a bolt and nut are used in place of a hitch pin, the nut must not be tightened to where it hits against the underside of the weigh bar clevis.

Connect the PTO driveline to the tractor PTO shaft. The PTO operating speed of the tractor and grinder mixer must be the same. The tractor half of the PTO is equipped with 6-splines for 540 RPM operation.



CAUTION: NEVER OPERATE 540 RPM CATTLEMAXX WITH 1000 RPM TRACTOR.

After connecting PTO driveline to tractor, anchor driveline implement shield chain in main shield base slot and the tractor shield chain to the tractor drawbar.

Plug 7-Pin connector for lights into tractor receptacle.

If equipped with an electronic scale plug it into the receptacle on tractor.

It is possible to combine accessory plugs into the 7-Pin connector. Follow tractor wiring harness for correct pin out of receptacle and maintain the proper fuses in each circuit added to 7-Pin connector.

ROLLER MILL

Check that the roller mill feed control gate is closed and remove any debris on top of the gate. The roller mill will not start if there is any material or debris in the rolls (See Figure 15).

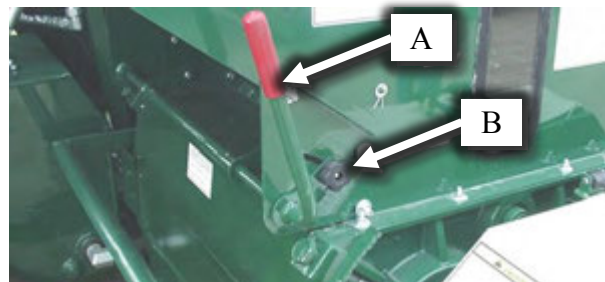


Figure 15 Roller mill in Closed Position (A-Gate Lever; B-Gate Locking Knob).

BEFORE PROCESSING

New machines should be operated before preparing feed. A few hundred pounds of coarse material such as shelled corn or ground cobs should be ran through the grinder mixer. This will remove the protective oil coating from the mixer cone and any metal particles that may be in the machine. This will help polish the cone and prevent bridging. After several minutes of running the grinder mixer, unload the mixture and discard. **Do not feed this mixture to the livestock.**

DETACHING FROM THE TRACTOR



CAUTION: SHUT OFF POWER SOURCE, REMOVE KEY, AND PLACE KEY IN POCKET.

Disconnect the PTO driveline and front shield anchor chain from the tractor and place it on the PTO driveline support bracket (see Figure 16). The PTO driveline support should be tight enough to remain in position when rotated from storage against the frame to use position.

Disconnect the electronic scale power cord from the tractor (if equipped).

Disconnect the hydraulic hoses from the tractor outlets (if equipped with tractor hydraulic functions).

Make sure the discharge auger and the auger feeder are in their saddles before disconnecting.

Block the tires. Lower the jack stand to the ground. Turn the handle of the jack stand to raise the grinder mixer tongue off of the tractor hitch. Remove the hitch pin and safety chain.



Figure 16 - PTO Support.

OPERATION OF CATTLEMAXX



CAUTION: KEEP CLEAR OF MOVING PARTS. KEEP ALL CHILDREN AND BYSTANDERS AWAY FROM MACHINE BEFORE RUNNING CATTLEMAXX.

TRACTOR PTO ENGAGEMENT

The Cattlemaxx may be operated by engaging the PTO. Always engage the tractor PTO with the tractor engine at idle speed. After the PTO is engaged, increase the engine speed gradually until the desired operating speed is obtained. Reverse the PTO engagement steps to disengage the PTO.

Before processing, position the tractor straight with the frame of Cattlemaxx. This will allow smoother PTO operation and prolong PTO driveline life.

IMPORTANT: If mixing while in transport, avoid sharp and unnecessary turns that may damage the PTO driveline.

The Cattlemaxx does not have a main drive clutch, so the rollermill, supplement hopper auger and mixing tank auger will run whenever the tractor PTO is engaged. The unloading auger will only operate when the unloading auger clutch is engaged.

PROCESSING

A rollermill processor is designed to process grains without the fines and deviations in particle size experienced with hammermills. However, a rollermill is limited in capacity compared to a hammermill in that the rate of feed processing is restricted by the roll gap and roll selection, and more horsepower will not increase capacity of the mill. It is important that you become familiar with the rollermill before operating it at full capacity.

All projected particle sizes will vary depending on the quality and moisture content of the grain, roll gap, power input, roll speed differential drive, and the general operation of the mill.

Always operate the rollermill at full speed (540 RPM) when processing. Slower speeds will increase power requirements and may cause damage or excessive wear to mill components.

ROLLERMILL

The rollermill drive is a direct drive without a drive clutch, so the rolls will turn at all times. The drive consists of a direct driven drive roll, which drives the eccentric (Adjustable) roll and hopper agitator shaft through a rear belt drive. Always start and stop the Cattlemaxx at low speeds so as not to damage any drive components.

To operate the rollermill, engage the tractor PTO at a low RPM and increase speed to the full rated 540 RPM. Start to fill the hopper with grain, allowing the full width of the hopper to fill to just above the magnet before operating the grain control gate. Open the grain control gate to the desired opening and lock the knob (see Figure 17). When processing is complete, allow the hopper to empty completely and close the grain control gate fully, locking the knob to keep the gate closed. Stop the rollermill and disengage the PTO at a low RPM only after the grain control gate has been closed and all grain in the rollermill has been processed.

IMPORTANT: Never stop the rollermill with grain in the rolls. The rollermill will not start if any grain is wedged in the apex of the rolls.

The rollermill will not start if there is any material between the rolls. If material does get into the rolls without the PTO engaged, the roll gap must be opened or the material cleaned from the rolls before the rolls can be turned.

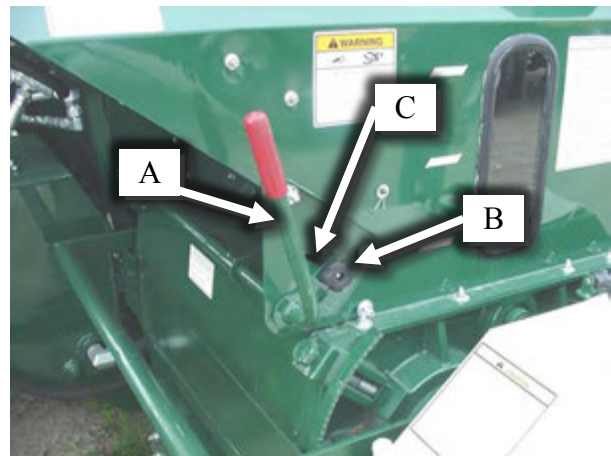


Figure 17 - Grain Control Gate Operation (A - Gate Lever; B - Gate Locking Knob; C - Lever Gauge).

DRIVELINE PROTECTION

The Cattlemxx driveline is protected from overloading by a shear clutch located at the end of the PTO driveline on the drive roll (See Figure 18). Always replace the shear clutch bolt with a metric M10-1.5 x 60 bolt. Two replacement bolts are supplied with Cattlemxx; they are located inside the front left drive shield on the left side of the lower stop.

Use of any other type or size of shear bolt will compromise the driveline protection of the machine.



Figure 18 - PTO Driveline Shear Clutch

HOPPER MAGNETS

Two plate magnets are located in the hopper above the rollermill (see Figure 19). Always load the hopper from the right-hand side to utilize these magnets. A magnet assembly is also located in the hopper throat just above the rollermill rolls. This is standard equipment on all machines to help protect the mill from tramp metal. It is important to keep the magnets clean and monitor their condition.

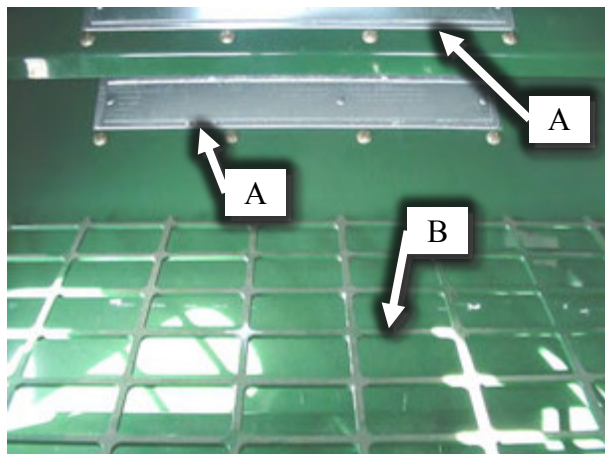


Figure 19 - Magnets in Hopper (A - Plate Magnets; B - Throat Magnet).

GRAIN CONTROL GATE

The grain control gate is used to regulate the flow of grain into the rollermill. The grain control gate lever is located at the front right corner of the mill (see Figure 20). To adjust the grain control gate, loosen the knob and push or pull the lever to close or open the gate. Each slot on the grain control gate lever gage is approximately 0.25 inch of gate opening. Tighten the knob to hold the gate in place once the desired opening is set.

Open the grain control gate after the rollermill has been started and the hopper as about half full (grain showing in the hopper inspection window). Open the control gate enough to allow a smooth grain flow into the rollermill. Recommended control gate opening is 0.5 inch to 1.0 inch. A high grain flow rate will cause grain to boil on top of the rolls and decrease capacity of the rollermill.

IMPORTANT: The grain control gate should be opened only enough to provide the rate of processing required, with a maximum gate opening of 1.0 inch.

Opening the grain control gate more than 1.0 inch will overload the mill and cause mill vibrations, and also result in lower capacity, larger grain particle size, undo drive stress, shortened roll life, and excessive power requirements. When the Cattlemxx is operated for the first time, the feed rate from the auger feeder or bin should be restricted until you become acquainted with the capacity of the unit.

Always ensure that the grain control gate is closed during transport or when not in use. This will prevent material from falling into the apex of the rolls and preventing the rollermill from starting.

ROLL GAP

Roll gap is the space between the rollermill rolls, which is used to control the particle size of the rolled feed. A roll gap of 0.014 inch is set at the factory and should never be set less than 0.008 inch. This setting is determined by the adjustment of the eccentric roll handle stops (See Figure 20). Use this minimum setting for fine processing and open the roll gap for coarser processing. Use the roll gauge for wider roll gap setting reference. (See Figure 20).

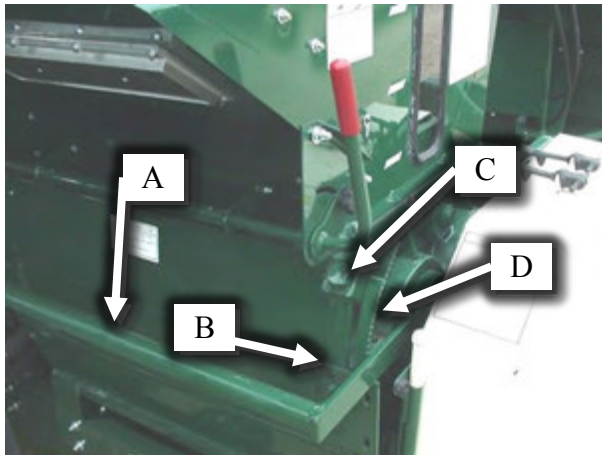


Figure 20 - Eccentric Roll Settings (A - Eccentric Handle; B - Eccentric Handle Stops; C - Eccentric Roll Lock Bolt, D – Roll Gauge).

The minimum roll gap on the roller mill must be maintained to ensure a consistent particle size. This should be monitored as the rolls wear and will also need to be adjusted for any replacement rolls.

Roll gap should be set for each type of grain. It is not recommended to process mixed grains as greater particle size deviation will occur. You are encouraged to experiment with the roll gap setting to meet the requirements of rolling different grains in your operation. Particle size can be monitored by using the grain inspection trough under the left-hand side of the roller mill to take feed samples (see Figure 21).



Figure 21 - Grain Inspection Trough.

Be careful not to over roll grains with too small of a roll gap setting on the roller mill. Over rolling takes more power, reduces capacity, and causes unnecessary roll wear. The roller mill should be ordered with the rolls grooved for the smallest grains to be rolled.

Be careful when adjusting the roll gap to always pull on the eccentric roll handle evenly, either from both ends or from the center. Do not pull up on the eccentric roll handle from only one end, as twisting or bending the handle will move one of the eccentric roll more than the other and cause the rolls to become out of parallel with each other. Parallel rolls must be maintained to achieve uniformity in the feed particle size.



CAUTION: NEVER ADJUST ROLL GAP WHILE CATTLEMAXX IS RUNNING.

The roller mill is equipped with a positive pressure eccentric roll release to automatically open the gap between the rolls. This is to minimize damage to the rolls and drive train from the induction of tramp metal or other foreign objects into the rolls. Opening the grain control gate too far and overloading the rolls can also cause the eccentric roll release to trip. Indications that the eccentric roll release has been tripped are a sudden higher particle size in the processed feed and the eccentric roll handle has moved up. The eccentric roll release must be reset if this occurs.

The eccentric roll release is set by tightening the eccentric lock bolts after the eccentric roll handle has been positioned for desired roll gap (See Figure 20). The lock bolts tighten down on a brass plug, which pushes against a knurled surface on the eccentric roll bearing housing. Excessive pressure between the roll will shear the brass plug and open the roll gap.

Do not over-tighten the eccentric lock bolts, as this will render the eccentric roll release ineffective. Tighten the eccentric lock bolts only until they are snug. Use only the wrench (see Figure 9) provided to tighten the eccentric lock bolts so as not to over torque the bolts.

ROLLERMILL ROLLS

The roller mill rolls in the Cattlemaxx are made of heat treated cast iron. The rate of wear on the roll is dependent upon the hardness or abrasiveness of the grain, the amount of overloading done, and damage resulting from foreign objects such as tramp metal, stones, etc. Increase in particle size and horsepower requirements are signs of increased roll wear. Rolls should be replaced when they become worn down and the surface is slick and shiny.

ROLL SELECTION

Rollermill rolls can be purchased with either a sharp or flat groove cut. The sharp groove rolls offer a higher capacity and finer particle size while the flat groove rolls are for flaking or cracking grains.

Rollermill rolls can be cut with 5, 7, or 10 grooves per inch. The 10 groove roll will take any small grain and is recommended for wheat, Milo, Barley, Oats, etc. The 7 groove roll will also take these small grains as well as shell corn; however the smaller kernels may pass through the rolls uncracked. It is suggested to use a combination of one 7 and one 10 groove roll when using multiple grains such as Corn and Milo. The 5 groove roll is recommended for use with shell corn. The courser groove rolls will have a higher capacity than the fine groove rolls (See Table 2).

When using roll combinations with different grooves (sharp to sharp or flat to flat) the coarser grooved roll is the drive roll. When combining sharp and flat rolls with the same number of grooves, the drive roll is the sharp roll.

Capacity of the roller mill is dependent upon the roll selection as well as the roll gap, roll speed differential, condition of the rollermill, and quality of material.

Rolls	Material	Aprox. Bu./Hr.
10 Groove	Oats	200 to 300
	Wheat/Barley	200 to 300
	Milo/Corn	300 to 400
7 Groove	Milo/Corn (Dry)	350 to 450
	Milo/Corn (Hi)	300 to 400
5 Groove	Milo/Corn (Dry)	400 to 600
	Milo/Corn (Hi)	350 to 550

Table 2 - Roll Capacity Chart

ROLL SPEED DIFFERENTIAL

Your Cattlemaxx rollermill may be equipped with a belt driven roll speed differential. This increases the speed of the eccentric roll, which causes a scrubbing effect on the rolls helping to keep them clean. The Cattlemaxx rolls should be equipped with a roll speed differential if high moisture grain is to be used. A roll speed differential has also been found to decrease particle size and increase capacity of the rollermill.

ROLL SCRAPERS

The Cattlemaxx rollermill is equipped with roll scrapers to help prevent material from packing onto

the rolls. With course or dry material, the spiral design of the roll groove cut keeps the rolls clean and roll scraper setting is not as critical. For fine or high moisture material, a higher tolerance roll scraper setting should be maintained. Allowing material to build up on the rolls will cause a loss of capacity and excess load on the drive components.

Roll scraper setting needs to be monitored as the rolls wear and should be adjusted after changes in a minimum roll gap setting or when replacing rolls. The main drive roll scraper should be set at 0.006 inch clearance and the eccentric roll scraper should be set at 0.050 inch clearance.

PROCESSING WITHOUT MIXING

To process any material without mixing, engage the unloading auger lever, open the tank unloading auger door and start the processing operation.

The feed will be augered into the mixing tank cone and then out through the unloading augers without mixing. Position the unloading auger tube as needed to direct the feed.

ADDING CONCENTRATE OR SUPPLEMENT

Concentrate or supplement should be added to the ground feed through the supplement hopper located at the right rear corner of the grinder mixer (see Figure 22). A serrated sack cutter is located in the hopper opening. A grate is positioned below the sack cutter to keep the bag from falling into the auger.



CAUTION: KEEP HANDS AND FEET CLEAR OF AUGER. ALWAYS KEEP GRATE IN PLACE.

Note: For best results, add the concentrate or supplement before grinding operation. Do not add ingredients to the supplement hopper while grinding, this will over load the auger.



Figure 22 - Supplement Hopper Located on Center Rear Right Hand Side of Machine

Addition of very fine ingredients or commodities that do not need to be processed should be added to the mixer either through the supplement hopper or through the roller mill with an increased roll gap. Fine ingredients or commodities will tend to pack onto the rolls set with a narrow roll gap and may cause the eccentric roll release to trip if the roll gap is less than the roll scraper clearance.

If micro-ingredients are to be added to the feed, the best results are obtained with a pre-mix, or by adding the supplements and micro-ingredients at the same time. If the micro-ingredients are desired without a pre-mix or other supplement, open the mixing tank lid and add the ingredients directly into the mixer. This should be done at the beginning of the operation with the tractor turned OFF. Make sure to close the lid before starting the operation. The supplement hopper lid should always be closed when not in use.

If strong additives are not desired in the batch that follows, clean out the tank cone and unloading augers through the clean-out doors (see Figure 23) at lower left and right front of tank cone.



Figure 23 - Tank Cone Clean-Out Door (Left-Hand Side Shown).



Figure 24 - Cleanout Door Located Under Right Hand Side of Tank Assembly.

Located under the right hand side frame and tank assembly is a hinged door on the bottom of the auger trough (see Figure 24). Release two spring clamps and allow door to drop. Keep away from the opening. Run the mixer slowly until the trough and the mixing tank are cleaned out. Keep all bystanders away from the machine until all unwanted feed is removed and tractor is turned OFF.



CAUTION: DISENGAGE PTO, SHUT OFF POWER SOURCE, AND PLACE KEY IN POCKET BEFORE OPENING OR CLOSING CLEAN-OUT DOOR.

165 BU. – APPROXIMATE CAPACITY CALIBRATION – IN POUNDS*

Actual weights may vary due to material, moisture, and screen size. Ration weight is not included and is variable.

Window Position	Ground Oats 22.5 lbs/bu	Ground Barley 36 lbs/bu	Ground Milo 56 lbs/bu	Ground Shelled Corn 50 lbs/bu	Ground Ear Corn 38 lbs/bu	Un-ground Shelled Corn 56 lbs/bu
Full	3777	6043	9400	8393	6378	9400
9	3554	5686	8845	7897	6002	8845
8	3302	5282	8217	7337	5576	8217
7	3047	4876	7585	6772	5147	7585
6	2768	4429	6890	6152	4676	6890
5	2528	4044	6291	5617	4269	6291
4	2287	3659	5692	5082	3862	5692
3	1985	3176	4941	4412	3353	4942
2	1744	2791	4342	3877	2947	4342
1	1504	2406	3743	3342	2540	3743

NOTE: * Above weights are approximate and are to be used as a guide only. Variations may occur due to test weight of grain, slope of machine, moisture content, or screen size. For best ration control use an electronic scale.

Table 3 - Approximate Calibration Capacity.

Dimension

FILLING THE MIXER TANK

Make sure the mixing tank unloading door is closed. As the mixing tank is filling, watch the processed feed through the mixing tank windows. If the top window is covered, this does not mean the tank is full as the mixing auger throws material away from the center of the tank. Continue loading until the top window clears (feed drops) and then becomes covered again about half-way (see Figure 25). Stop feeding material into the processor at this point, but continue operating until the processor has had time to clear. *Do not overload the mixer.* An overload can cause damage to the machine. To estimate the number of bushels that are in the tank, refer to Table 3.

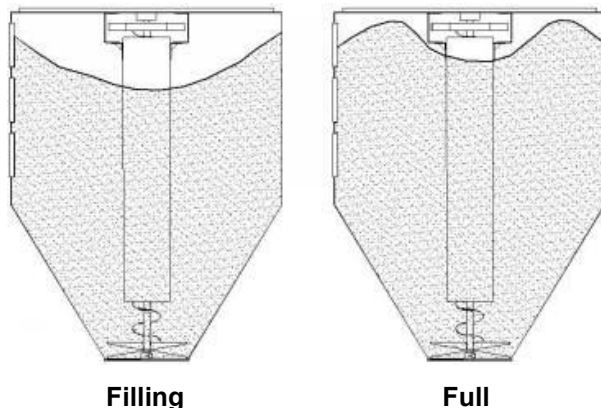


Figure 25 - Filling pattern

For the best mixing results, always add lightweight bulky materials first. Always add high moisture corn or grain last. Excessive amounts of wet or bulky material may cause *bridging* in the mixing tank.

SPRING LOADED TANK LID



CAUTION: DISENGAGE ALL DRIVES, SHUT OFF POWER SOURCE, AND PLACE KEY IN POCKET BEFORE OPENING MIXING TANK LID.

If the mixing tank is accidentally overfilled, it is equipped with a spring loaded tank lid (see Figure 26). The lid also allows access to the inside of the mixing tank. Keep the lid closed and latched at all times.



CAUTION: SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND DISCONNECT PTO DRIVELINE BEFORE ENTERING TANK.



Figure 26 - Spring Loaded Tank Lid.

After the processing is completed and the desired ration is in the mixing tank, allow the mixer to operate until it is ready to unload. Run the mixer 2 to 3 minutes to ensure the feed and supplements have been thoroughly mixed.

IMPORTANT: Avoid sharp and unnecessary turns which may damage the PTO driveline during transport.

DISCHARGE AUGER POSITIONING

After mixing, the finished feed may be unloaded into storage bins, wagons, or feeders. Positioning (lift and swing) and drive of the discharge auger is controlled hydraulically (see Figure 27).



Figure 27 - Unloading Auger Positioning (Shown in Upper 60° to -11° Configuration).

TRACTOR HYDRAULIC LIFT AND SWING

Connect six hydraulic hoses (eight if equipped with an Auger Feeder and not using the Selector Valve (see Figure 28)) with the appropriate male connectors to the tractor (hoses are marked with different colored zip ties to help with identification). Make sure the proper hoses are connected to the same tractor hydraulic circuit. Activate the appropriate tractor valve to lift the Discharge Auger, and then use the other hydraulic valve to swing the Discharge Auger to the desired position.

Hose Color Markings:

Discharge Auger Pressure	Auger	Blue (2X)
Discharge Auger Return		Blue (1X)
Discharge Cylinder Raise		Red (2X)
Discharge Cylinder Lower		Red (1X)
Discharge Swing Left		Yellow (2X)
Discharge Swing Right		Yellow (1X)

TRACTOR HYDRAULIC SELECTOR VALVE

Hydraulic lift and swing is accomplished by using the tractor's hydraulic system valves. If a hydraulic

Auger Feeder is present, a double selector valve (see Figure 28) is required to direct flow of the hydraulic fluid. The Discharge Auger or the Auger Feeder may either be operated independently, but not at the same time. Position the selector valve control "IN" to direct fluid to the Discharge Auger or "OUT" for the Auger Feeder.

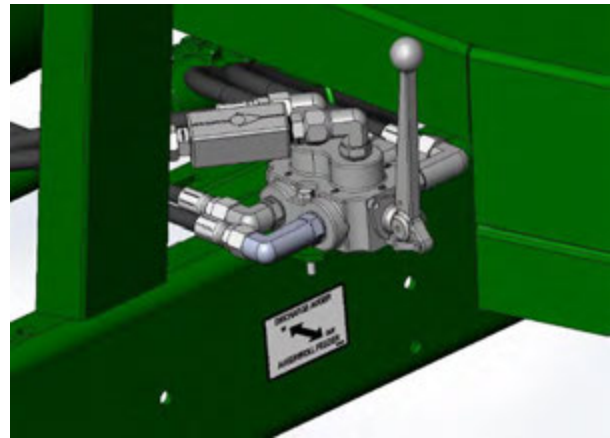


Figure 28 – Tractor Hydraulics Selector Valve (Lever Shown in the 'IN' Position – Discharge Auger).

TRACTOR HYDRAULIC DISCHARGE AUGER LIFT AND SWING ADJUSTMENT

Turning the flow control valves adjustment knobs changes the speed at which the lift cylinder raises or lowers the Discharge Auger and the rate at which the Discharge Auger swings left and right. (see Figure 29) for which Flow Control Valve adjusts each function. Turning the knob clockwise restricts flow and slows the function. Conversely turning the knob counter-clockwise increases flow and speeds up the function.

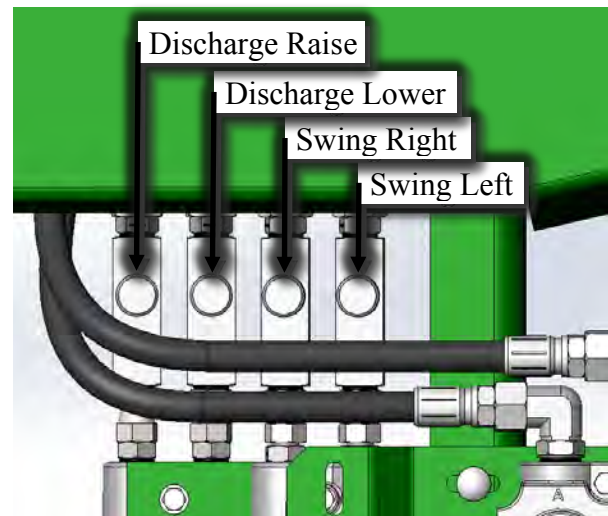


Figure 29 – Tractor Hydraulics Flow Control Valves (Shown with Selector Valve).

DISCHARGE GATE FUNCTION

When the discharge auger is in position to unload the tank the gate can be open or closed by an electric actuator (see Figure 30). The actuator is controlled by either a Control Box (Tractor Hydraulics (see Figure 31)) or the Complete Control Box System (see Figure 85) with Remote Control (Self-Contained Hydraulics (see Figure 87)).

IMPORTANT: Be careful with finer ground feed as it can stall out the Discharge Auger if the gate is open to far.



Figure 30 - Discharge Gate with Electric Actuator in Closed Position.

TRACTOR HYDRAULIC ACTUATOR CONTROL

Mount the Actuator Control Box (see Figure 31) in the tractor cab in a convenient location with the supplied parts. Connect the power as shown in Figure 32. Flipping the toggle switch up opens the gate and moving the switch down closes the gate.

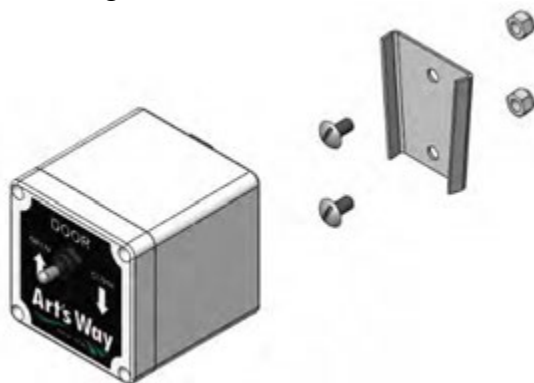


Figure 31 – Tractor Hydraulics Actuator Control Box and Mounting Parts.

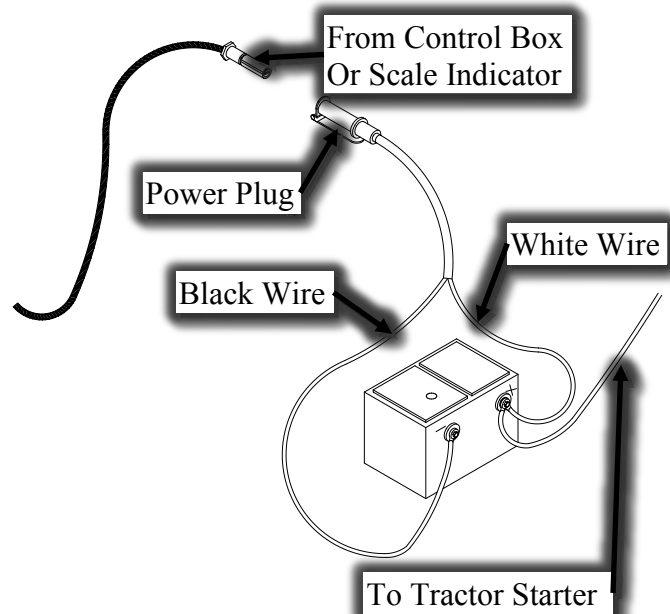


Figure 32 - 12-Volt System Power Wire Hookup to Battery.

FOLDING AUGER EXTENSION

Optional extensions for the unloading auger include a 3 to 6 feet folding or bolt-on extension (see Figure 33). For discharge heights of the optional extensions (see Figure 34 and Table 4)

If the grinder mixer is equipped with a folding auger extension, make sure the outer auger drive cog is properly engaged and the extension tube is locked before engaging the Discharge Auger Drive.

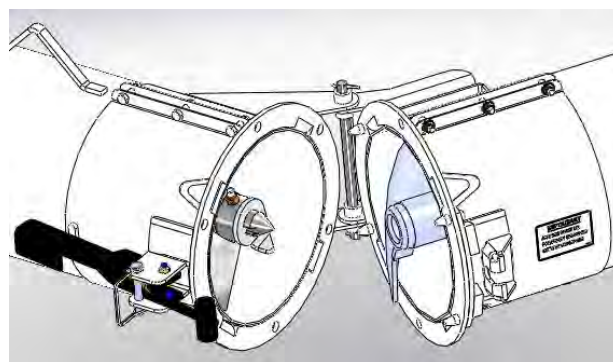


Figure 33 - Folding Auger Extension.

Unloading Auger Configuration	Tube & Elbow Combined Length (10 ft. /12 ft.)	Discharge at 46° High Angle Vertical Height (10 ft. /12 ft.)	Discharge at 60° High Angle Vertical Height (10 ft. /12 ft.)
Standard 10 ft. or 12 ft. Long Discharge Tube – No Extensions	11 ft. 5 in./13 ft. 5 in.	16 ft. 10 in./18 ft. 3 in.	18 ft. 6 in./ 20 ft. 3 in.
3 ft. Auger Extension	14 ft. 5 in./ 16 ft. 5 in.	19 ft. 0 in./ 20 ft. 5 in.	21 ft. 1 in./ 22 ft. 10 in.
6 ft. Auger Extension	17 ft. 5 in./ 19 ft. 5 in.	21 ft. 2 in./ 22 ft. 7 in.	23 ft. 8 in./ 25 ft. 5 in.

Table 4 - Unloading Auger Heights.

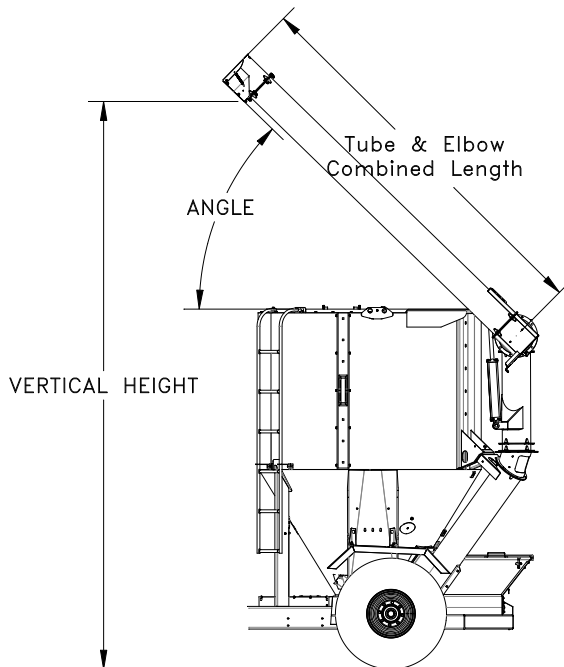


Figure 34 - Unloading Auger Heights (Refer to Table 4 for Detailed Heights).

UNLOADING AUGER HOOD

When the unloading auger tube becomes overloaded, a spring loaded door opens on the end to prevent damage to the drive (see Figure 35).



Figure 35 - Unloading Auger Hood.

AUGER FEED OPERATION

NOTE: The grinder mixer may be equipped with a hydraulic auger feeder.

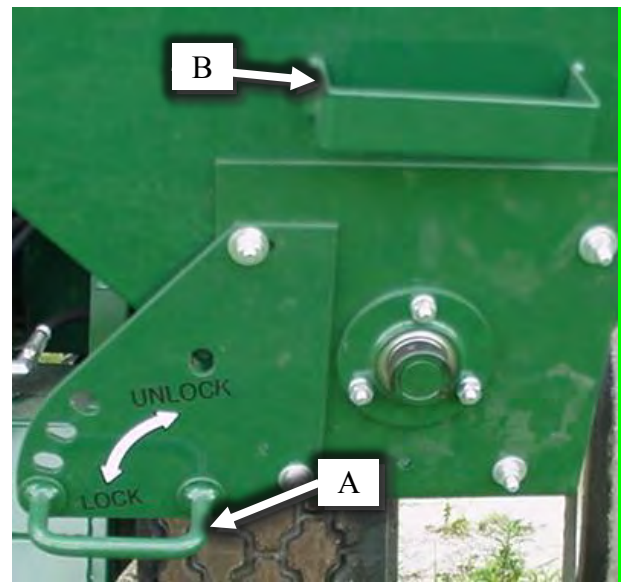


Figure 36 – A - Auger Feeder Latch Handle (shown in locked position), B – Positioning Handle.

To position the Auger Feeder, pull Latch Handle (see Figure 36) toward you and turn to right to Unlock Auger Feeder. Grip the positioning handle (see Figure 36) and raise the bottom of the auger feeder slightly so the latch can clear the fender mount. Swing the auger feeder outward, away from the tank to ensure it will clear the fender when it is lowered. Lift the auger feeder slightly and pull the rope on the right hand side to disengage the height adjustment spring lock (see Figure 37). Raise or lower to the desired height and release the rope.

To place Auger Feeder back in transport position do the reverse of above, and be sure to lock the Auger Feeder down by pulling the Latch Handle (see Figure 36) toward you and turn to left until it is secured in one of the four Locking positions.



DANGER: TO PREVENT INJURY OR DEATH:

1. KEEP GRATE IN PLACE DURING OPERATION.
2. KEEP HANDS AND FEET OUT OF HOPPER AREA. NEVER CLIMB ON OR OVER HOPPER.
3. KEEP CHILDREN AND BYSTANDERS AWAY FROM MACHINE WHILE MACHINE IS IN OPERATION.

Make sure the auger feeder clutch handle will stop the auger feeder. If it doesn't, loosen the cable clamps to re-adjust.



Figure 37 – Cattlemaxx Auger Feeder

The auger feeder swing brake prevents the auger from swinging. Tighten or loosen as desired (See Figure 38).



Figure 38 - Auger Feeder Swing Brake

NOTE: If the machine is equipped with an electronic scale, to obtain a more accurate reading,

DO NOT rest the auger feeder on the ground. Place it in the desired position and set the swing brake (See Figure 38).

The auger feeder is counter balanced by a spring (See Figure 39). Adjust the spring by loosening the nut on the lower bolt, turn the bolt in to increase the spring tension, and relock the nut.



Figure 39 – Auger Feeder Counter Balance Spring

Shut off handles are provided at the auger feeder hopper and at the flow control valve at the top of the auger feeder housing. To shut off the auger feeder pull the handle at the hopper area or move the flow control lever to off (see Figure 40 and Figure 41). Make sure the shutoff handle at the hopper will stop the auger feeder. Loosen cable clamps to readjust.

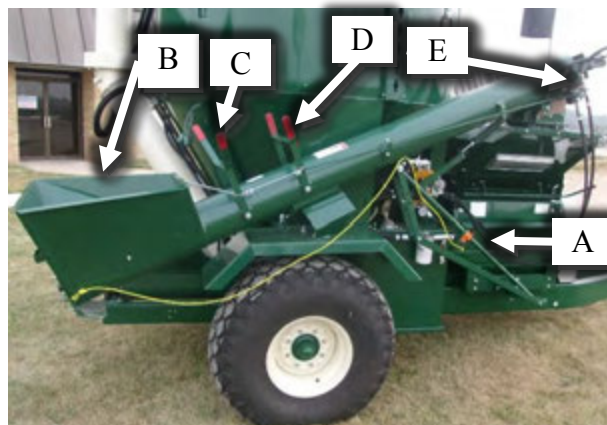


Figure 40 - Auger Feeder Positioning and Adjustment (A – Spring Lock; B – Positioning Handle; C – Shut-Off Handle; D – Throttle Handle; E – Flow Control Lever).



Figure 41 - Auger Feeder Flow Control Valve (Shown In "OFF" Position).

To start the auger feeder, the flow control handle is moved forward (clockwise) until the desired speed is reached or the throttle handle is pushed away from the auger feeder hopper.

Adjust the speed of the auger feeder to keep the roller mill hopper about half full or the grain level

visible through the hopper inspection window (See Figure 42). Under filling the hopper will cause uneven roll wear and higher particle size deviation while over filling the hopper will cause the hopper plate magnets to be covered with material and making them ineffective.



Figure 42 - Hopper Inspection Window.

CATTLEMAXX ADJUSTMENTS



CAUTION: SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING MACHINE OR MAKING ADJUSTMENTS.

DRIVE CHAIN ADJUSTMENTS

The mill to mixer auger/supplement hopper drive chain and the mixing auger drive chain are tensioned with either an idler sprocket or idler roller (see Figure 43). Adjust the chain tension to 1/2 inch total deflection by positioning the idler.

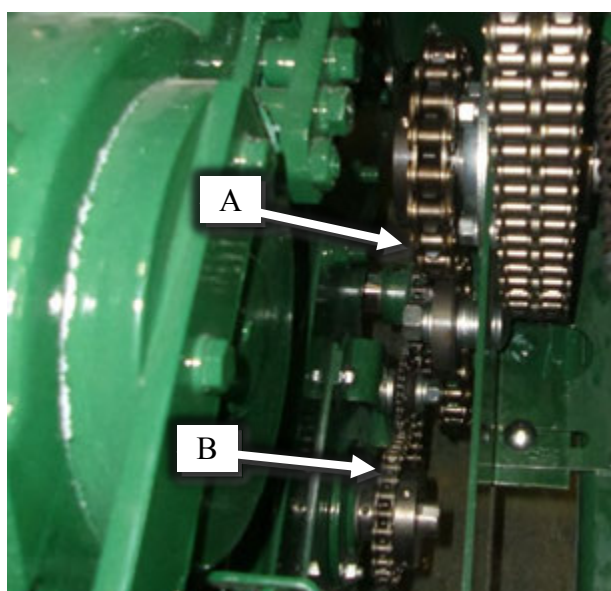


Figure 43 – A – Mixing Auger Drive Chain and B - Mill to Mixer Auger Drive Chain (Shield Removed for Clarity).

MAIN DRIVE CHAIN

Adjust the tension of the main drive chain by doing the following steps (see Figure 44). Make sure the chain deflection is 1/2 inch total at the longest span.

- Loosen locking nut “A” (see Figure 44). Adjust nut “B” on j-bolt “C” to compress spring “D” increasing the tension of roller “E” on chain.
- Adjust bolt “A” (see Figure 44) until the proper chain deflection is achieved.
- Retighten locking nut “A”.

NOTE: Chain should be checked and oiled daily.

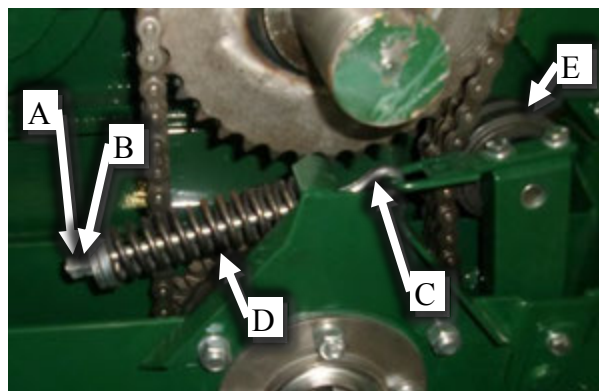


Figure 44 - Drive Chain Adjustment (Shield Removed for Clarity).

ROLL SPEED DIFFERENTIAL

Your Cattlemaxx may be equipped with a belt driven roll speed differential that increases the speed of the eccentric roll. Be certain to maintain proper belt tension with stretch loaded idler (see Figure 45) as the belts will stretch during their break-in period. Improper tensioning or overloading the mill will cause the belts to slip causing premature wear and reduced belt life.



Figure 45 - Drive Chain Adjustment (Shields Removed For Clarity).

ROLL GAP

The minimum roll gap on the mill must be maintained to ensure a consistent fine particle size. This should be monitored as the rolls wear and also need to be adjusted for any replacement rolls.



DANGER: DO NOT MAKE ADJUSTMENTS WHILE CATTLEMAXX IS IN OPERATION.

To open the roll gap, loosen the eccentric lock bolts with the wrench provided (see Figure 46) and pull

up on the eccentric roll handle. A pointer gauge (see Figure 46) on the front roll stop can be used as a reference for wider roll gaps. Each mark on the gauge is approximately 0.015 inch of additional roll gap. Always re-tighten the eccentric lock bolts when processing, otherwise the roll gap will open and feed particle size will increase.

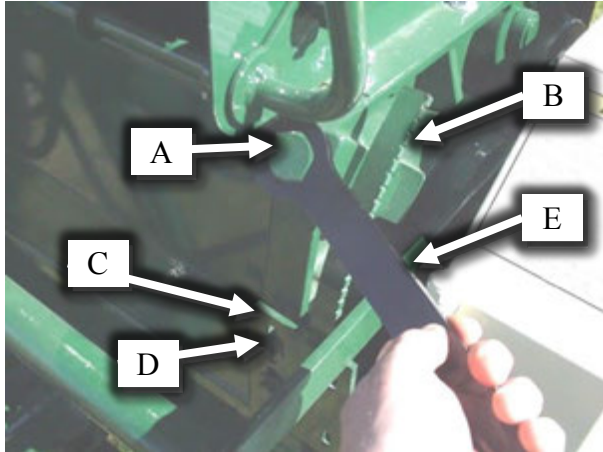


Figure 46 - Roller mill Housing Eccentric Bearing adjustment. A - Eccentric Lock Bolt, B - Roll Gauge, C - Front Stop, D - Stop Bolts, E - Wrench.

To check the roll gap, lift the grate and remove the 30 inch magnet assembly (see Figure 47) from the hopper throat. Using a feeler gage, check the current roll gap with the eccentric roll handle down on the stops and the eccentric lock bolts snugged down. Be sure to check the roll gap at the front and back of the rolls. Also rotate the rolls to check several different places on the roll diameter, as there may be 0.001 to 0.002 inch difference in the concentricity of the rolls.

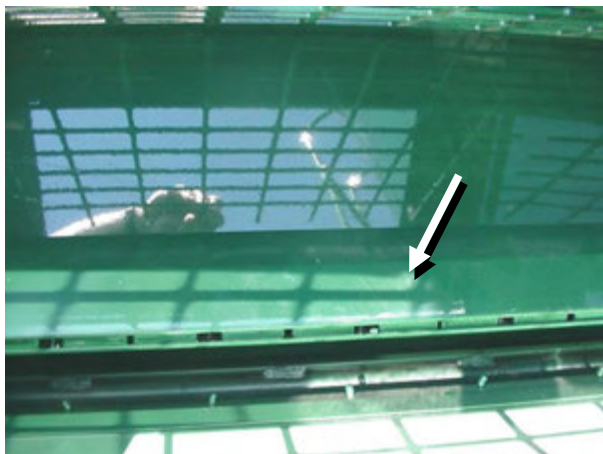


Figure 47 - Removing Magnet To Check Roll Spacing.

To change the minimum roll gap, loosen the eccentric lock bolts and pull the eccentric roll handle up and out of the way. Loosen the stop bolts (see Figure 46) and move both the front and rear stops evenly, up for a wider roll gap and down for a smaller roll gap. Lower the eccentric roll handle to the stops and re-tighten the eccentric lock bolts.

Re-check the roll gap and repeat as necessary until the desired roll gap is attained. Make sure that the stop bolts are tight when finished.

NOTE: Rolls must not be set closer than 0.008 inch gap. Never adjust the minimum roll gap setting with the tractor PTO engaged. The roller mill rolls will be severely damaged if they ever touch while the PTO is engaged.

ROLL PARALLELISM

If the roll gap is different from front to back on the rolls, the rolls are out of parallel and need to be adjusted. This can occur from the eccentric roll handle getting bent or twisted, or uneven roll wear from not keeping the hopper full across the whole width while processing. To adjust roll parallelism, reset one stop up or down. Be certain to push down on each corner of the eccentric roll handle when tightening the eccentric lock bolts to ensure both sides of the handle are in contact with the stops. The eccentric roll handle may have to be twisted to accommodate an excessive stop adjustment.

ROLL SCRAPERS

Roll scraper clearance needs to be monitored as the rolls wear and should be adjusted after changes in a minimum roll gap setting or when replacing rolls. The main drive roll scraper should be set at 0.006 inch clearance and the eccentric roll should be set at 0.050 inch clearance. Be sure the minimum roll gap is set and the rolls locked in place before setting the scrapers.

To adjust the roll scrapers, loosen the nuts on the front and rear scraper adjustment bolts (see Figure 48). Remove the mill side covers. Lift up evenly on the adjustment bars to bring the scraper closer to the roll. Turn the roll by hand while adjusting the scraper. When the scraper contacts the roll, lower the adjustment bar slightly until no scraper to roll contact can be heard. Retighten the nuts on the scraper adjustment bolts. Repeat the procedure for the other roll scraper. Replace the mill side covers.

NOTE: Do not adjust rolls scrapers with the tractor PTO engaged. Roll to scraper contact with the PTO engaged will severely damage the rolls and scrapers.

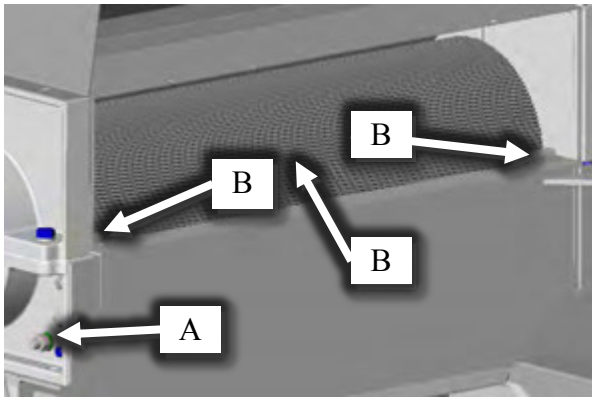


Figure 48 - Roll Scraper Adjustment. A – Adjustment Bolt Nut, B – Adjustment Bars, C – Roll, (Shown with Mill Side Cover Removed).

HYDRAULIC SWING ADJUSTMENT

If any problem is encountered with the hydraulic swing adjustment drive, adjust and/or check as follows (see Figure 49):

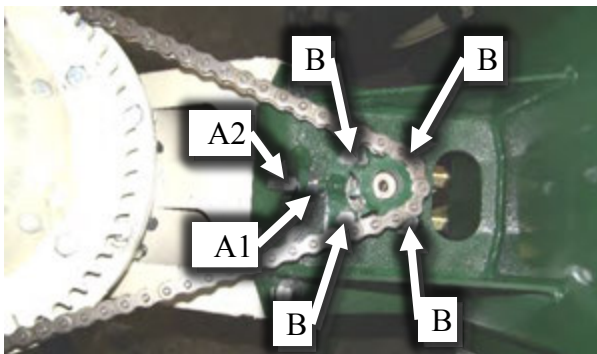


Figure 49 - Hydraulic Swing Adjustment (Shields Removed For Clarity).

1. Loosen the two tension nuts “A1” & “A2”, and the four hydraulic motor bolts “B”, and then remove the #60 chain.
2. Wrap the #60 chain completely around the 58 tooth sprocket. Inspect the chain, matching the sprocket teeth in the two areas where the sprocket is split. If the rollers on the chain do not seat into the root of the sprocket teeth, loosen the 6-bolts that hold the sprocket to the upper ring; holding the chain across the split areas, re-tighten the bolts so the chain properly seats into the sprocket teeth.
3. Tighten tension nut “A1” to set the proper tension on chain. Re-tighten the hydraulic motor bolts “B”, and then check the alignment of the sprocket. If the sprocket is not aligned properly, loosen the set screws on the 10 tooth sprocket and re-align. Tighten tension nut “A2” to lock hydraulic motor in place.

SWIVEL STOP

An unloading auger swivel stop prevents the unloading auger from contacting the mixing tank when moved from the storage position (see Figure 51). Relocate the swivel stop so it makes contact with the bracket before the unloading auger contacts the tank.



Figure 50 - Hydraulic Swing Adjustment (Shields Removed for Clarity).

SWIVEL STOP ADJUSTMENT

Loosen the bolts holding the Lower Stop (see Figure 51). (Do not loosen the bolts for Upper Stop, it is fixed.) Adjust the Lower Stop so it makes contact with the Upper Stop when the Discharge Auger is in the Saddle.

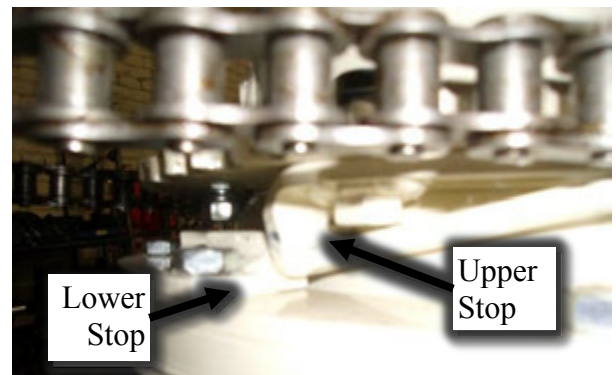


Figure 51 - Swivel Stop (Shield Removed for Clarity).

DISCHARGE AUGER DRIVE ADJUSTMENT

There is an upper and lower location for the Discharge Auger Drive chains (see Figure 52).



Figure 52 – Discharge Auger Drive Chain Locations (see arrows).

If chain drive “A” (see Figure 53) for the Discharge Auger Drive becomes loose. Loosen the Hydraulic Motor bolts “B” holding the Hydraulic Motor. Then loosen nuts “C”. Screw in bolts “D” equally until chain is tight. Retighten nuts to lock bolts in place. Retighten Hydraulic Motor bolts “B”.

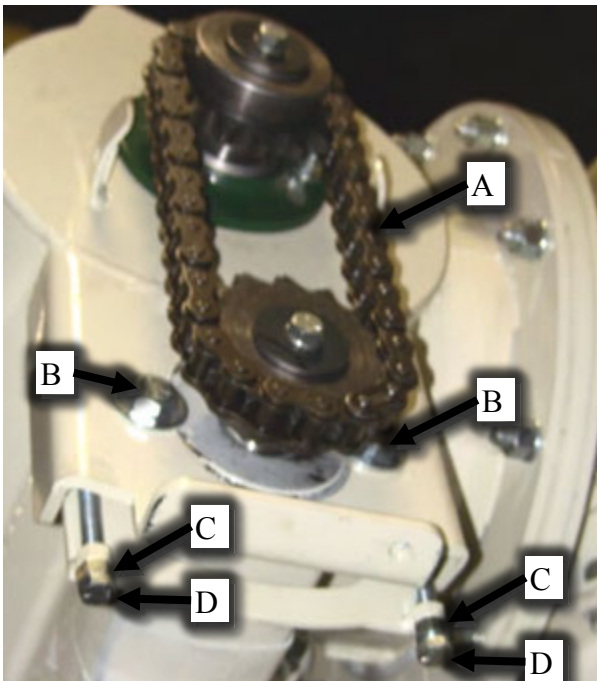


Figure 53 – Discharge Auger Drive Chain (Shield Removed for Clarity).

DISCHARGE AUGER HEIGHT SETTINGS

There is an upper 60° max. to -11° min. configuration (for unloading into high storage bins) and lower 46° max. to -27° min. configuration (for lower storage bins and feed troughs) for the Discharge Auger elevations.

NOTE: The 7165 is shipped from the factory in the upper configuration (see Figure 54).

If Discharge Auger needs to be changed to the lower configuration do the following steps (see Figures 54 & 55):

1. Rest Discharge Auger in Saddle.
2. Unpin Cylinder Clevis from Lug.
3. Unbolt Lug and Support Mount.
4. Move Support Mount to upper position.
5. Bolt parts back together as shown in Figure 58.
6. Reattach Cylinder Clevis with Pin.
7. Discharge is ready for operation.

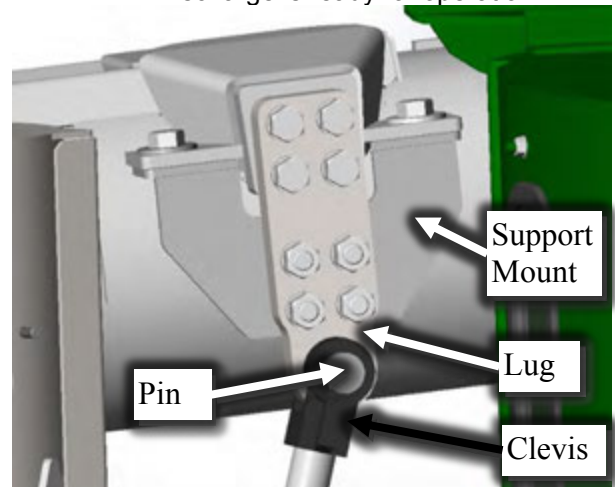


Figure 54– Upper Discharge Auger Configuration.

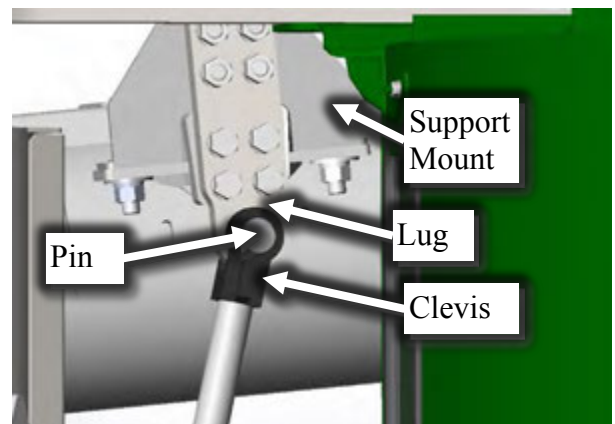


Figure 55 – Lower Discharge Auger Configuration.

OPEN AND CLOSED CENTER TRACTOR HYDRAULICS

As the standard, this machine is equipped for tractor “Open Center” hydraulic operation. If the operation of the Auger Feeder or Roll Feeder is to be with a tractor that is equipped with a “Closed Center” hydraulic system, a revision to the plumbing at the Flow Control Valve bypass should be made. *Refer to the tractor operator’s manual or consult your local tractor dealer to make sure which system the tractor is equipped with.*

To convert to “Closed Center” hydraulic system, revise by removing the Tee that goes into the Flow Control Valve and replace it with a Plug (SAE -10 ORB) in the Flow Control Valve and connecting the two hose together with a Union (SAE -8 JIC) fitting (see Figure 56 & 57).

If the system has two control valves for the Auger Feeder and Roll Feeder, change only the Roll Feeder Flow Control Valve.

IMPORTANT: *When hydraulics are revised for “Closed Center” operation, do not use on a tractor with “Open Center” hydraulics.*

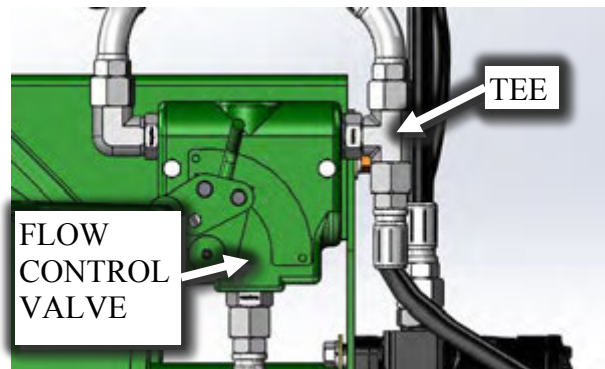


Figure 56 – Open Center Hydraulic System.

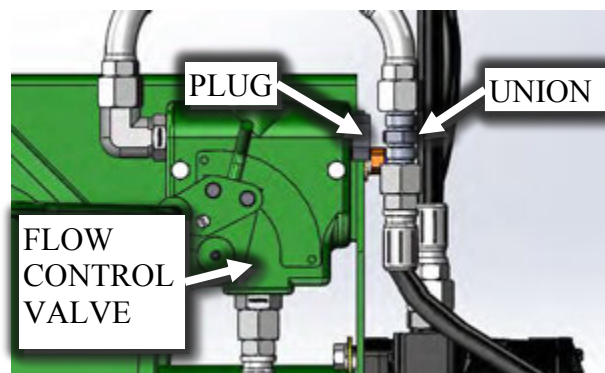


Figure 57 – Closed Center Hydraulic System.

WHEEL BEARINGS

Raise the frame and make sure it is blocked securely so the wheels may turn freely (make sure the opposite wheel is also blocked securely). To tighten the wheel bearing, remove the hub cap. Remove the cotter pin from the slotted nut and tighten the slotted nut while rotating the wheel. Loosen or back-off the nut to the nearest slot, insert and spread the cotter pin.

There should be a slight drag on the bearing following the adjustment. Replace the hub cap (see Figure 58).



Figure 58 - Wheel Bearing Adjustment.

LUBRICATION



CAUTION: SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND DISCONNECT IMPLEMENT INPUT DRIVELINE BEFORE LUBRICATING MACHINE.

The grinder mixer is designed to require a minimum amount of lubrication. The points that are to be lubricated should be serviced regularly at the specified intervals listed in this manual.

Keep your supply of lubricating oil and grease in clean containers and covered to protect them from dust and dirt.

Keep the lubricating gun nozzle clean and free from dirt at all times. Wipe all of the dirt from the grease fittings before lubricating them.

PTO DRIVELINE

Grease PTO sliding shafts every 20 hours. Zerk is located on the outer shaft and is accessible through cutout slots in spin shields (see Figure 59).



Figure 59 - PTO Driveline Shaft (See Arrow).

Grease the bearing crosses and plastic shaft bearings every 20 hours. The bearing cross zerk can be accessed through round hole in PTO spin shield (see Figure 60).

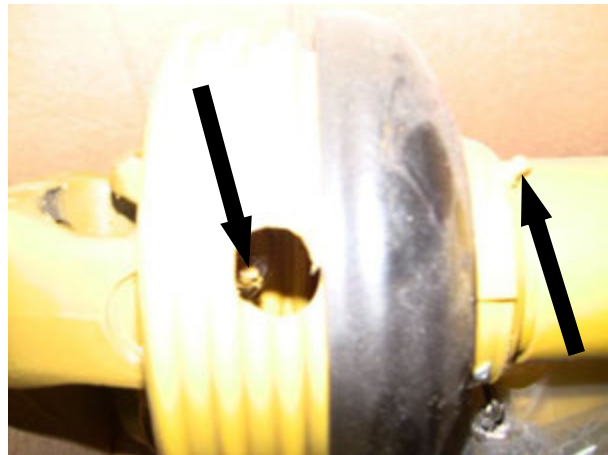


Figure 60 – PTO Driveline Cross Bearing (Left Arrow) and Plastic Shaft Bearings (Right Arrow).

GRAIN CONTROL GATE

Grease the pivot points and slide on the grain control gate once a year or every 100 hours of operation (See Figure 61).



Figure 61 - Grain Control Gate Lubrication (2-Zerks and Slide Guides).

ROLL BEARINGS

The roller mill roll shaft bearings are a sealed bearing and require no additional lubrication. Monitor the condition of these bearings and replace if overheating of the shaft or roller mill housing occur. New bearings are supplied with replacement rolls.

ECCENTRIC BEARING HOUSINGS

The bearing housings on the eccentric roll shaft are greased at the factory and should not require additional lubrication under normal operating conditions. These housings should be cleaned and re-lubricated if the eccentric roll becomes hard to move or whenever the mill is torn down for service (See Figure 62).

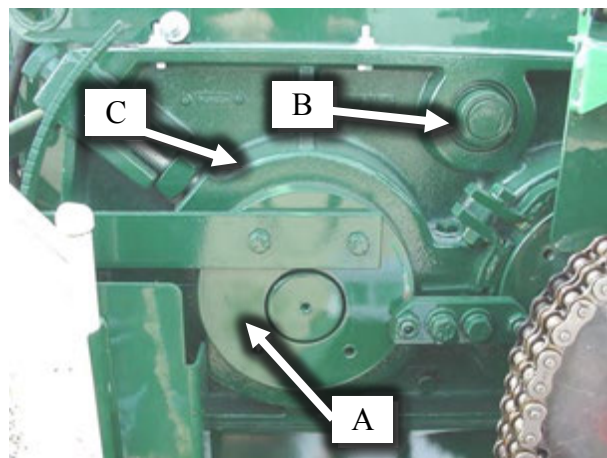


Figure 62 - A - Roller mill Bearings, B - Agitator Shaft Bearings, C - Eccentric Housing (Shield Opened for Clarity).

AGITATOR SHAFT BEARINGS

The agitator shaft bearings are a sealed bearing and require no additional lubrication. Monitor the condition of these bearings and replace if overheating of the shaft or roller mill housing occurs.

ROLLERMILL BELT DRIVE

Be certain to maintain the proper belt tension on the roller mill eccentric drive, as belts will stretch during their break in period. Keep the spring-loaded idler properly tensioned and lubricated to pivot freely (See Figure 63). Improper tensioning or overloading will cause the belts to slip and causing premature wear and reduced belt life.

The idler pulley bearings on the roller mill belt drive are a sealed bearing and require no additional lubrication. Monitor the condition of these bearings and replace as necessary.



Figure 63 – Roller mill Belt Drive (Shield Removed for Clarity).

HOPPER MAGNETS

Periodically check the hopper magnets for tramp metal and debris and clean as necessary. Open the hopper lid to inspect the hopper plate magnets. Always clean the plate magnets with the throat magnet installed to keep tramp metal and debris out of the rolls. Then remove the throat magnet for cleaning and inspection. Be sure not to let any material from the magnets fall into the roller mill (See Figure 64).

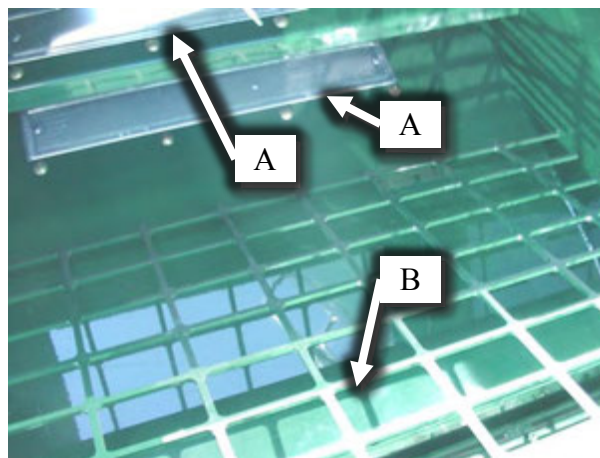


Figure 64 - Cleaning Magnets (A - Plate Magnets; B - Throat Magnet).

DRIVE SHAFT BEARINGS

Grease pillow block bearings on the lower line shaft once a month or every 25 hours of operation (see Figure 65 and Figure 66). Use SAE multi-purpose type grease for these lubrications.

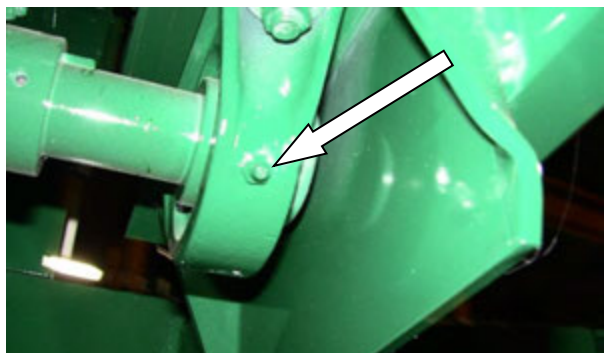


Figure 65 - Mixer Drive Shaft Bearing, Front.

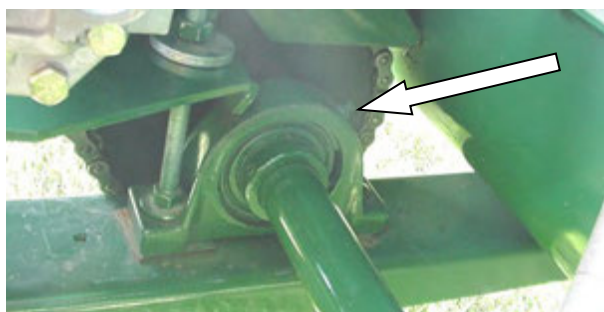


Figure 66 - Mixer Drive Shaft Bearing, Rear (Shield Removed for Clarity).

CHAINS

Chains should be lubricated at frequent intervals. Apply light engine oil to the chain. Oil the chain on the inside located in the upper side of lower the strand (see Figure 67).

The chains should also be cleaned regularly. Remove the chains and dip or soak them in kerosene. Once the chains have been cleaned, dry and oil them thoroughly.

**Oil Roller Chain on
Upper Side of
Lower Strand**

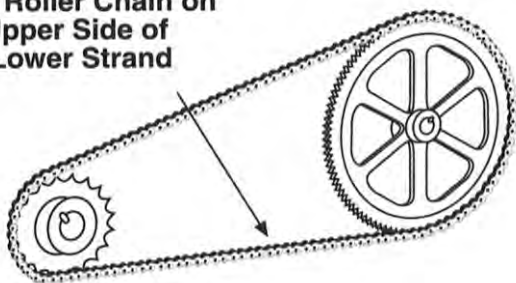


Figure 67 - Oiling Roller Chains.

The split end of the chain clip must face the direction opposite of the chain travel. Make sure the clip is properly seated in the groove on the ends of the pin (see Figure 68).

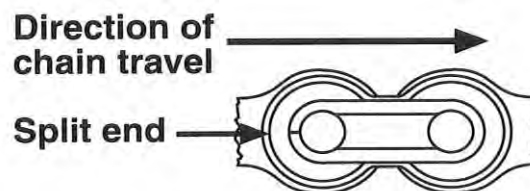


Figure 68 - Chain Spring Clip.

GEARBOX

Make sure to check the oil level of the gearbox at the base of the mixing tank every 24 hours of operation by removing the check plug on the side of the gearbox. Add SAE 90 weight gear oil if necessary and until oil runs out of the check hole (see Figure 69). Change the oil after the first 50 hours of operation. Routine oil change intervals will vary depending on the severity of the environment. Normal changes should occur between 250 and 1000 hours of operation. The longest life at continuous service will be realized when the oil temperature does not exceed 200° F.

IMPORTANT: Do not overfill.

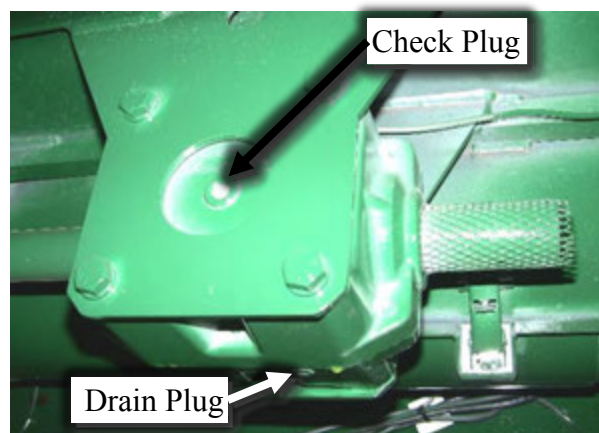


Figure 69 - Gearbox Lubrication.

Grease upper gearbox bearing weekly or every 10 hours of operation with SAE multi-purpose type grease, through remote grease zerk located on rear base housing of mixer (see Figure 70).

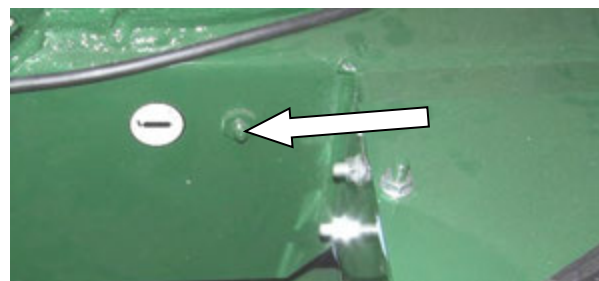


Figure 70 - Gearbox Lubrication Upper Bearing Remote location (next to Supplement Hopper).

LOWER VERTICAL MIXING AUGER

Refill the grease seal at the bottom of the vertical mixing auger every six months with SAE multi-purpose type grease. This is to reduce the amount of feed to pack underneath the mixing auger (this location is not a bearing). Access to this fitting can be gained through the clean-out door in the mixing tank cone, below the large bottom flight of the mixing auger (see Figure 71).

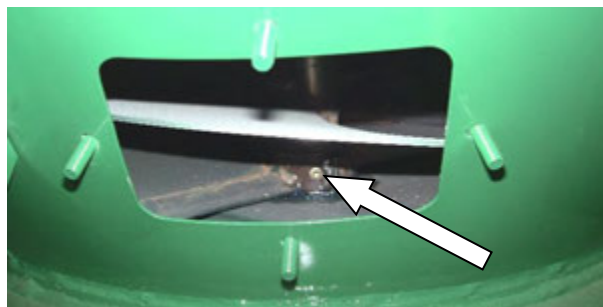


Figure 71 - Clean-Out Door in Mixing Tank Cone and Grease Zerk for Seal at Bottom of Vertical Mixing Auger.

UPPER VERTICAL MIXING AUGER

Grease the upper vertical mixing auger bearing weekly or every 10 hours of operation with SAE multi-purpose type grease. Access to this bearing can be gained through the top of the mixing tank (see Figure 72).

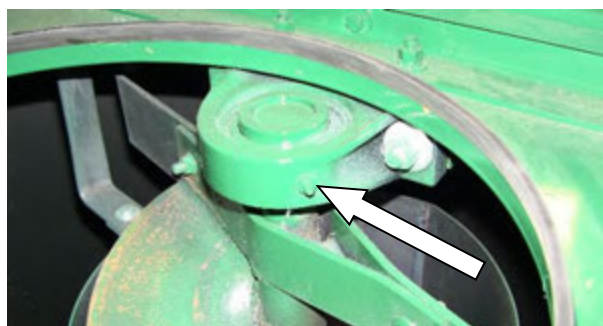


Figure 72 – Upper Vertical Mixing Auger Bearing.

TANK VENT

The mixing tank is vented through the left ladder rail (right-hand when facing ladder). Periodically blow air through this tube and check the opening in the tank to ensure that the vent is clear of dust and debris. A clogged tank vent may cause the spring loaded tank lid to open or windows to pop out from the side of the Cattlemaxx (See Figure 73).



Figure 73 - Left Ladder Vent (Right-Hand When Facing Ladder).

DISCHARGE U-JOINT

Grease the Discharge U-Joint weekly or every 10 hours of operation with SAE multi-purpose type grease. Access to this u-joint can be gained through the transition door (see Figure 74). There are two lube points on u-joint. **Note there is a third zerk in one of the yokes that is just a spare.**

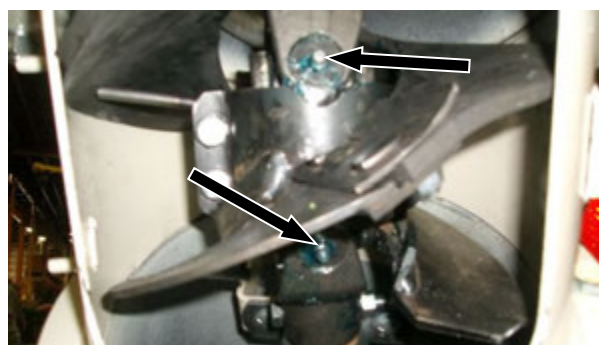


Figure 74 – Discharge U-Joint (Door Open for Clarity).

DISCHARGE PIVOT PIN

Lubricate the Discharge Pivot Pin periodically with light machine oil (see Figure 75).

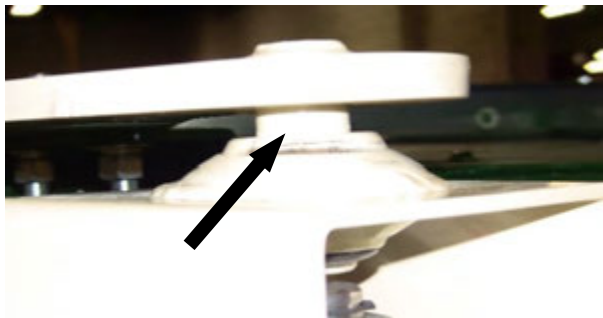


Figure 75 – Discharge Pivot Pin.

WHEELS

Remove, clean, and repack the wheel bearings once a year or every 100 hours of operation using SAE multi-purpose type grease (See Figure 76).



Figure 76 - Wheel Bearing Lubrication.

SERVICE

TORQUE SPECIFICATIONS



CAUTION: DISENGAGE ALL DRIVES, SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND DISCONNECT PTO DRIVELINE PRIOR TO SERVICING GRINDER MIXER.

When performing service on the grinder mixer and its components, take time to use and comply with the torque specification guide. (Refer to Table 5.)

Size	Clamp Load	Plain GR 5	Plated GR 5
1/4 – 20 (.250)	2,025	8 ft. lbs.	76 in. lbs.
5/16 – 18 (.3125)	3,338	17 ft. lbs.	13 ft. lbs.
3/8 – 16 (.375)	4,950	31 ft. lbs.	23 ft. lbs.
7/16 – 14 (.4375)	6,788	50 ft. lbs.	37 ft. lbs.
1/2 – 13 (.500)	9,075	76 ft. lbs.	57 ft. lbs.
9/16 – 12 (.5625)	11,625	109 ft. lbs.	82 ft. lbs.
5/8 – 11 (.625)	14,400	150 ft. lbs.	112 ft. lbs.
3/4 – 10 (.750)	21,300	266 ft. lbs.	200 ft. lbs.
7/8 – 9 (.875)	29,475	430 ft. lbs.	322 ft. lbs.
1 – 8 (1.00)	38,625	644 ft. lbs.	483 ft. lbs.
1-1/8 – 7 (1.125)	42,375	794 ft. lbs.	596 ft. lbs.

Table 5 - Torque Specification Guide for Grade 5 Bolts.

SHEAR BOLTS



WARNING: SHEAR BOLTS MAKE LOUD NOISES WHEN SHEARED. IMMEDIATELY SHUT OFF TRACTOR IGNITION AND DETERMINE CAUSE OF SHEARING BEFORE RESTARTING.

Shear bolts will make a loud noise when they shear. This is your warning to turn off the tractor ignition immediately and determine the cause of the shear.

Shear bolt locations on the Cattlemaxx are:

- The PTO driveline shear clutch (two spare bolts & lock nuts are supplied. They are located inside the front left drive shield on the left side of the lower stop).

- The mixer drive #80 sprocket on the lower drive shaft
- The mill to mixer and supplement auger drive #40 sprocket on the lower driveshaft

Drive	Location	Bolt/Pin	Part No.
PTO Driveline	PTO Shear Clutch	Bolt, M10-1.5 x 60 Grade 8.8	407760
Mixer Drive	#80 Sprocket, Lower Driveshaft	Bolt, 1/4-20 x 1-1/2 Grade 5	047000
Mill To Mixer Auger	#40 Sprocket, Lower Driveshaft	Bolt, 1/4-20 x 1 Grade 5	042960

Table 6 - Replacement Shear Bolts

If these designed shear points are not the problem then most likely a sheared keyway in an individual components is the problem. Clear the obstruction that caused the overloading and repair/replace components as necessary.

When replacing sheared bolts, always tighten them securely using lock nuts. The shear bolts must be the correct hardness to ensure safety (see Figure 77).

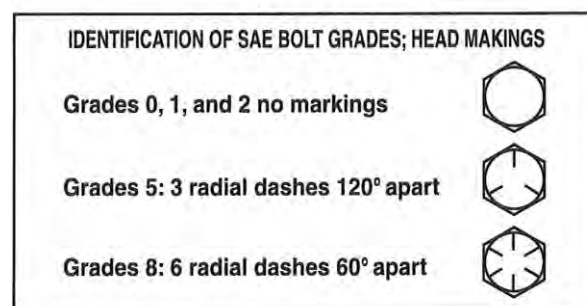


Figure 77 - SAE Bolt Identification.

SPROCKET AND CHAIN ALIGNMENT

Make sure the sprockets are in line with each other (see Figure 78 and Figure 79). If the sprockets are not aligned a sideways pull will develop and will concentrate the load on sides of the sprocket teeth and on the side of the chain (see Figure 79). This faulty alignment will result on excessive wear on both the chain and sprockets.

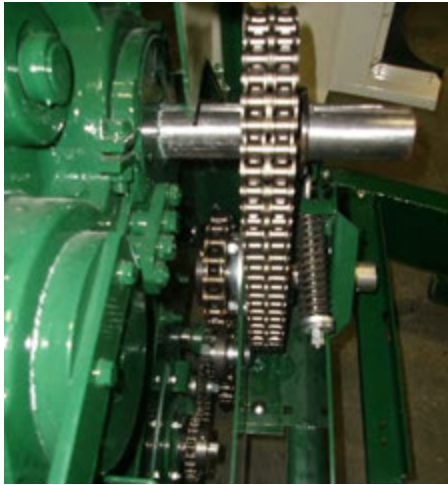


Figure 78 – Sprocket and Chain Alignment (shield opened for clarity).

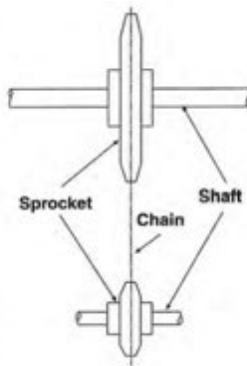


Figure 79 - Sprocket Alignment.

REPLACEMENT ROLLS

Worn rolls can only be replaced with new rolls.



Figure 80 - Replacement Rolls

ROLL REPLACEMENT

When using roll combinations with different grooves (sharp to sharp or flat to flat) the coarser grooved roll is the drive roll. When combining sharp and flat rolls with same number of grooves, the drive roll is

the sharp roll. Ensure rolls and shafts are the proper combination before installing.

Replacement 30 inch rolls are shipped without the bearings and shafts as they attach to the shafts with taper lock hubs. To replace the rolls, perform the following:

1. Remove the PTO; front and rear guards, rear belts drive, and front drive chain.
2. If the Cattlemaxx is equipped with an auger feeder, remove the pivot pin at the top of the hopper and support the auger feeder off to the side.
3. Remove the 4 bolts on the front and rear roller mill castings that hold the top and bottom halves of the mill together. Lift the top half off in one assembly. Pick up and save the two brass plugs that were in the upper castings beneath the eccentric tightener bolts.
4. Lift out the rolls and remove any pulleys, sprockets, and bearing housings. For 30 inch rolls remove shaft and taper lock hubs. The roll handle is a press fit into the bearing housings. Use care when removing the bearing housings as they can be easily damaged by hammer blows.
5. Thoroughly clean the machined surfaces of the top and bottom castings. Press the bearing housing onto the new roll assemblies. Replace the adjusting handle on the eccentric roll.
6. Grease the outside of the bearing housings and place the roll assemblies in the bottom half of the mill. The dowel spacers in the bottom casting will position the rolls front to back.
7. Replace the top half of the mill and securely bolt into place. Check that the rolls will turn without interference and the eccentric handle will move freely.
8. Replace all pulleys, sprockets, belts, and chains as well as the two brass plugs below the eccentric lock bolts. Replace the front and rear guards.
9. Replace the auger feeder to the hopper lid if applicable.
10. Set the roll gap as described in the “adjustment” section of this manual. Set the rolls for proper minimum gap and parallelism.
11. Set the roll scrapers for the new rolls as described in the “Adjustments” section of this manual.

TROUBLESHOOTING GUIDE

The majority of difficulties are caused by improper adjustments. When you encounter trouble, perform a systematic check of all possible adjustments using the chart that follows. If difficulties cannot be corrected by making the adjustments that follow, consult your local Art's Way authorized dealer for further assistance.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
PTO driveline is hard to telescope and hard to connect	Shafts are twisted due to overloading of the mill	Replace PTO driveline if necessary. Check for proper shear bolt in PTO shear clutch.
	Lack of grease on the sliding halves	Lubricate as necessary
	Tractor drawbar improperly adjusted.	Adjust tractor drawbar.
Excessive noise when turning the mixer while it is in operation	Turning the mixer too sharply	Avoid sharp turns
	Lack of grease on sliding halves	Lubricate as necessary
	Tractor drawbar improperly adjusted	Adjust tractor drawbar.
Tractor engine RPM falls below the rated PTO speed while grinding	Overloading mill	Close grain control gate.
	Drive belts too loose	Tighten belts
	Drive belts wore	Replace drive belts.
	Material packing on rolls	Adjust scrapers Open roll gap Install roll speed differential.
Shear pins break	Foreign objects and debris (nuts, bolts, etc.) in mill, mixers, or augers	Remove foreign objects.
	Grain in mill on start-up	Open eccentric roll to let grain flow through. Clean material from rolls.
	High RPM starts and stops	Lower RPM PTO to engage and disengage. Gradually speed up and slow down.
Mill vibrates excessively while in operation	PTO driveline is not properly aligned	Front of Cattlemaxx main shield must be parallel to tractor axle
	PTO driveline is bent	Replace the PTO driveline
	Overloading mill (low rumbling)	Close down grain control gate/open roll gap.
	Tractor drawbar is not adjusted properly	Adjust the tractor drawbar.
Rollermill loses capacity	Grain gate open too far	Close grain control gate
	Material packing on rolls – high moisture material	Adjust roll scrapers
	Rolls are worn, gouged, and smooth	Replace with new rolls.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Rolls making load or unusual noises	Rolls are touching	Check roll gap and adjust as needed.
	Roll scrapers touching rolls	Adjust roll scrapers
	Overloading mill (low rumbling)	Close down control gate/open roll gap.
Rollermill suddenly chokes	Material packed on the rolls – high moisture material	Clean rolls. Adjust roll scrapers Install roll speed differential.
Mill will not maintain roll gap setting	Eccentric lock bolts loose	Tighten lock bolts
	Brass shear plug worn or missing	Inspect and/or replace shear plug. Clean knurled surface of eccentric bearing housing.
Drive belt squeals when the mill is engaged	PTO drive may not be fast enough	Speed up tractor to 540 RPM
	Drive belts are too loose	Tighten the drive belts
	Drive belts worn	Replace drive belts
	Material packed on rolls	Open roll gap Clean rolls Adjust roll scrapers
	Overloading mill	Close down grain control gate
Drive belts show excessive wear	Belts are out of alignment	Align the pulleys
	Belts are slipping	Tighten belts.
Whole grain kernels in feed	Large roll gap	Adjust belts.
	Rolls out of parallel	Check roll parallelism and adjust as needed.
	Eccentric roll moving/increased roll gap	Tighten eccentric lock bolts Check and replace brass shear plug as needed Clean knurled surface of eccentric bearing housing.
	Rolls worn	Inspect rolls and replace as needed.
Material bridges in the tank	High moisture content material	Process high moisture material last or run straight through tank.
Mill runs but unloading auger and mixing auger do not run	Pin(s) sheared in drive	Correct cause of sheared pin and replace.
Unloading auger runs but feed is not unloading	Mixer tank door closed	Open door
	Mixer auger not turning	Check for sheared key in coupler sprockets.
Auger feeder does not engage	Hydraulic flow control valve disengaged	Engage flow control valve
	Selector valve position (tractor hydraulic units only)	Change position of selector valve (OUT for auger feeder).

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Discharge auger jerks when it is raised or lowered	Excessive hydraulic flow rate to lift cylinder	Adjust the flow rate with the needle valves if equipped (See Note)
	Air in hydraulic line or cylinder	Run grinder mixer at low rpm 5-10 minutes. During this time, activate discharge lift cylinder to ensure that air is removed from system
	UHMW washers in joint worn or damaged	Replace UHMW washers in joint
Discharge auger raises and lowers too slowly	Incorrect hydraulic flow rate to the lift cylinder	Adjust the flow rate with the needle valves if equipped (See Note)
	Air in hydraulic lines	Run grinder mixer at low rpm 5-10 minutes. During this time, activate discharge lift cylinder to ensure that air is removed from system

NOTE: Both valves should be set to the same flow rate. Unequal settings will cause excessive motor backpressure and shaft seal failure.

NOTE: SELF-CONTAINED TROUBLE SHOOTING STARTS ON PAGE 55.

SELF-CONTAINED: INTRODUCTION

This section of the manual has been prepared to acquaint you with the proper operation, adjustment, lubrication, and service of the 7165 Cattlemaxx with self-contained hydraulics. Take time to read and understand both this manual and efficient operation of your portable unit. The best insurance from an accident is a careful and knowledgeable operator.

Note: Some pictorials used show guards and shields removed for easy identification. Be sure that all shields and guards are in place before operating. These are for your protection.

The self-contained hydraulic system features a hydraulically driven discharge positioning lift and swing, and an auger feeder with or without roll feed. Also available are electric linear actuator used to operate the discharge door. All controls, except for the auger feeder control valve, are within easy access to the operator by remote control. The

remote control system consists of two components: the ergonomically designed mini-remote control device and the equipment mounted receiver module. There is also a backup remote control box (that replaces the wireless remote control) included for emergencies.

This system can be used with any tractor that can maintain a rated PTO speed when grinding. There is no hydraulic connection between the mixer and the tractor, the must also provide a minimum of 12-15 volts DC and 30 amperes to operate the electrical activated flow control valve and linear actuator.



WARNING: STAY CLEAR OF OVERHEAD POWER LINES, FARM BUILDINGS, AND ANYONE IN AREA WHEN LOCATING DISCHARGE TUBE INTO POSITION.

SELF-CONTAINED: PREPARING FOR OPERATION

Prepare the grinder mixer and tractor as instructed in the grinder mixer sections of this manual. Additional preparation is needed to operate the self-contained option.



WARNING: DISENGAGE PTO, SHUT OFF POWER SOURCE, AND PLACE KEY IN POCKET WHEN PREPARING TRACTOR AND GRINDER MIXER FOR OPERATION.

Preparing the Tractor

The tractor must be equipped with a 540 rpm PTO to match the grinder mixer. Make sure the proper PTO is used.

Connect the power cord to a suitable 12 VDC power supply. The tractor must be able to provide 12-15 volts DC and 30 amperes to operate the electrical activated control valve. The Control Box (see Figure 85) is equipped with an internal 30 amp fuse. See figure 81 for direct connection to battery.

Note: The electrical system of the tractor must be in good working order. If voltage of less than 12.0 volts DC is provided to the actuator or solenoids on hydraulic control valves, the system will not operate properly.

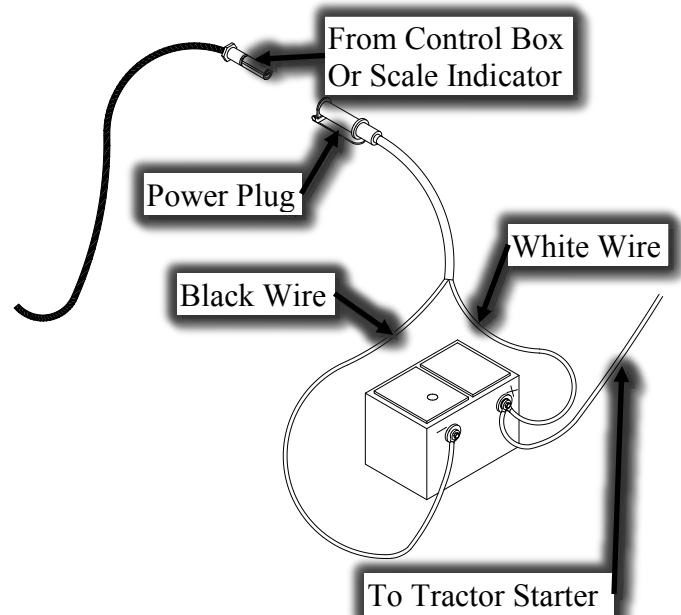


Figure 81 - 12-Volt System Power Wire Hookup to Battery

Note: The Control Box power cord can be wired into Scale Box power connector or 7165 7-Pin Light Harness Plug.

Preparing the Grinder Mixer

Electrical Components

Linear Actuator is shipped in Supplement Hopper. Install Actuator base end to the brackets located on the Diagonal Discharge Tube and rod end to the Tabs on the Discharge Gate (see Figure 82). Connect Wire Coupler to coupler on actuator. Apply silicon sealant to the threads of the Indicator Tube and screw it onto the threaded stud on the Discharge Gate.

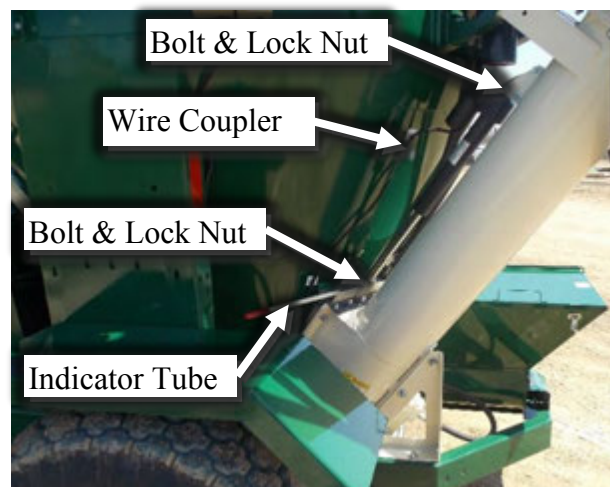


Figure 82 - Actuator Installation (Shown with the Gate in the Open Position).

Activate the electric linear actuator to open and close discharge gate. It will ratchet when actuator is fully retracted at this point the gate should be fully opened.

The actuator can be limited in travel by the use of cylinder stops. This will allow for more consistent opening when metering of the flow is needed.

An onboard hydraulic oil cooler is powered by the tractor's electrical (12V) system. This allows oil to be regulated to the same temperature to maintain consistent hydraulic oil temps.

The control valve is electrically actuated from a Remote Control device (See Figure 83).



WARNING: TO PREVENT INJURY OR ACCIDENT PLEASE BE AWARE THAT LOADS CONNECTED TO RECEIVER MAY BE CYCLED ON AND OFF DURING PROGRAMING PROCESS AND SHOULD BE DISCONNECTED FIRST.

REMOTE CONTROL & RECEIVER SETUP

The Remote Control is has a 9-button sealed membrane keypad, a red diagnostics LED and a green transmit LED. The green LED indicator flashes rapidly whenever there is communication

between the Remote Control and the Receiver. The red LED indicator starts blinking once every second when the battery voltage is low and requires replacement. It also blinks when there is a problem with the system in the form of an error code. *Refer to the **ERROR CODE CHART** in the **SELF CONTAINED: TROUBLE SHOOTING** portion of this manual for more information.*

NOTE: An internal **rechargeable lithium ion battery** supplies power for the **Macro-Remote Control** (Figure 83).

NOTE: How often the Remote Control is used and how long it is used each time determine the operating life of the battery. To conserve battery power, it is designed to shut off (sleep) after 15 minutes if no buttons are pressed. To check for low battery, turn the Receiver off and leave the Remote Control on. If the Remote Control red LED continues to blink, the battery is low and requires replacement. If the red LED blinks only when the Receiver is on, count the number of blinks and refer to the **ERROR CODE CHART**.

DISCHARGE START/STOP BUTTON LATCHING MODE

To set Discharge Start/Stop button to latching mode the remote must be in configuration mode. Remove the cover from the Receiver so the LED's are clearly visible (see Figure 84).

1. Disconnect power to the Receiver.
2. Turn power on Remote Control (POWER button Figure 83).
3. Simultaneously push buttons #1, #4, & #8 (see Figure 83).
4. The Red LED should be flashing on the Remote Control.
5. Reconnect power to the Receiver before proceeding.
6. Push button #8 (Discharge Auger Start/Stop) (see Figure 83).
7. Wait for confirmation by a 1 second flash of green LED on Remote Control.
8. Press and release the POWER button to send these settings to the Receiver.
9. The Receiver will indicate it has learned this by 4 short flashes of its red LED

NOTE: If the Receiver does not show the 4 short flashes after pressing the POWER button (to send settings to Receiver) as specified above, it has not learned that setting. It will default to the previous setting. For best results, allow about 3 seconds between pushing the #8 button and pressing the POWER (send) button.

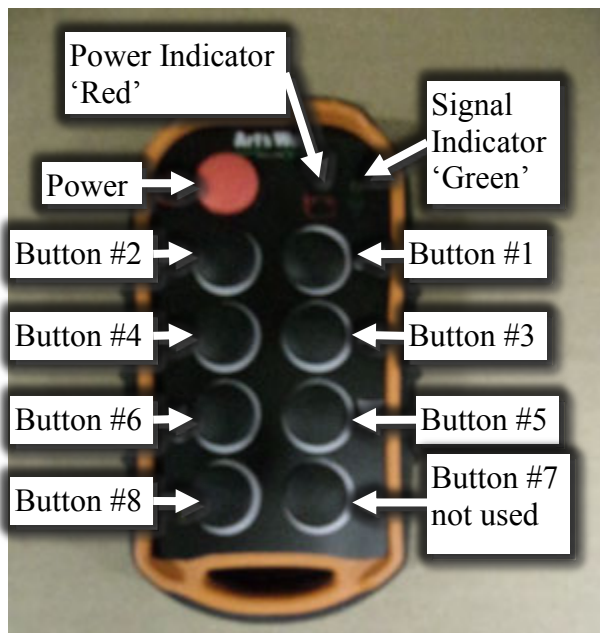


Figure 83 – Macro-Wireless Remote Control Device Button Programming (for Functions see Figure 87).

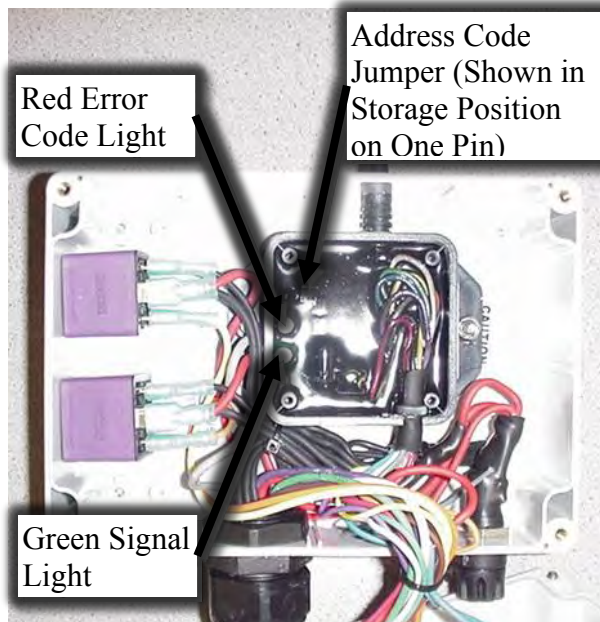


Figure 84 – Receiver in Complete Control Box with Covers Removed.

NOTE: Each Remote Control is preprogrammed with a unique radio ID code. The Receiver is programmed to respond only to the Remote Control with the ID code for which it is set. Only one Remote Control at a time can be synchronized to the Receiver. This feature allows multiple systems to work in close proximity to one another without interference. In the event that a Remote Control becomes damaged and a new one is needed or the two are not synchronized, the Receiver can be reprogrammed to respond to the new Remote Control.

SYNCHRONIZING RECEIVER TO REMOTE CONTROL

If the Remote Control needs to be synchronized to the Receiver do the following:

1. Remove the cover from both the Complete Control Box and the integrated Receiver (see Figure 84).
2. Apply power to the Receiver.
3. Place the jumper across the both address code pins inside the Receiver (see Figure 98). Both green and red lights will toggle inside the Receiver.
4. Remove the jumper and store it back on one pin.
5. On the Remote Control press and hold the POWER button, button #1, & button #8 (see Figure 83). At this point, both lights will blink on the Remote Control transmitter.
6. Release the POWER button and wait for 1 second or until the green and red lights stop toggling in the Receiver.
7. Release buttons #1 & button #8.
8. Synchronizing is complete.
(Test remote, if not synced, go back and start over at step 1.)
9. Replace the cover on the Receiver.

RESETTING REMOTE CONTROL SLEEP/SHUTOFF TIME

To set the Sleep/Shutoff time of the Remote Control, do the following:

1. With the Remote Control power off press and hold buttons #3, #4, and #8 and then POWER (see Figure 83).
2. Release all the buttons. At this point both lights will blink once per second.
3. Press one of the following buttons to set the sleep time:
 - a. #1 = 15 minutes
 - b. #2 = 30 minutes
 - c. #3 = 1 hour
 - d. #4 = 2 hours
 - e. #8 = sleep disabled
4. Sleep time programming complete.



Figure 85 – Complete Control Box with Internal Receiver.

NOTE: Complete Control Box with internal Receiver can be run from tractor with an optional 20' extension harness.

COMPLETE CONTROL BOX AS BACKUP REMOTE CONTROL BOX

7165 Grinder Mixer units equipped with the Complete Control Box (see Figure 99) need to flip the **Mode Switch** at the lower left hand corner of the box (see Figure 86) to change control mode settings. Flip the switch to the **Left** for **Remote** control and to the **Right** to run the hydraulics **Manually** from the box.

Switch flipped to **Manual** will shut-off power to **Receiver** in the Complete Control Box.

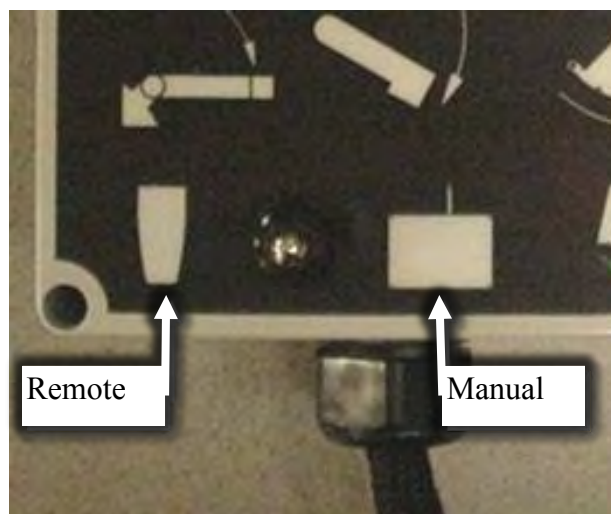


Figure 86 – Mode Switch Operation Settings for Complete Control Box with Internal Receiver.

HYDRAULIC COMPONENTS

Check all connections and fittings for oil leaks.

Check oil level in reservoir. Oil level should be maintained 1-2 inches below top of reservoir.

Run grinder mixer at low rpm 5-10 minutes. During this time, activate all hydraulic motors and cylinders (discharge, lift & swing, auger feeder, and roll feed) to ensure that air is removed from system.

Adjustable valves to control the rate of swing are located in hydraulic control valve. For faster swing, turn control screw out. Set both valves at approximately the same setting. (See **Self Contained: Operation – Discharge Auger Swing Adjustment.**)

Adjustable valve to control the rate of lift and drop of the discharge auger is located in hydraulic control valve. For slower lift, turn control screw in. (See **Self Contained: Operation – Discharge Auger Lift Cylinder Adjustment.**)

Set the pressure relief bypass in valve bank to protect the discharge auger from damage if it contacts an obstacle. (See **Self Contained: Operation – Discharge Auger Lift Cylinder and Swing Pressure Relief Adjustment.**)

Recheck all hydraulic connections and fitting for leaks.

Recheck oil level reservoir.

SELF-CONTAINED: OPERATION



CAUTION: ALWAYS OPERATE PTO AT SPEED FOR WHICH MACHINE IS EQUIPPED: 1000 RPM. NOTE SPEED DECAL ON FRONT SHIELD.

The grinder mixer should be run at a slow idle for a few minutes when the temperature drops below 0° F to allow the hydraulic oil to warm up.

For information on operating the auger feeder, if your machine is so equipped, see the “**Operation of Cattlemaxx**” section, and “**Attachments**” section.

All discharge operations (lift, swing, gate, and discharge auger) of the grinder mixer, except for the auger feeder, are functions of the hydraulic control valve. The control valve is electrically activated from a Wireless Remote Control device (see Figure 87) which transmits a signal to the Receiver in the Complete Control Box (see Figure 89), which electrically activates the valves of the Electro-Hydraulic Valve Bank (see Figure 91).

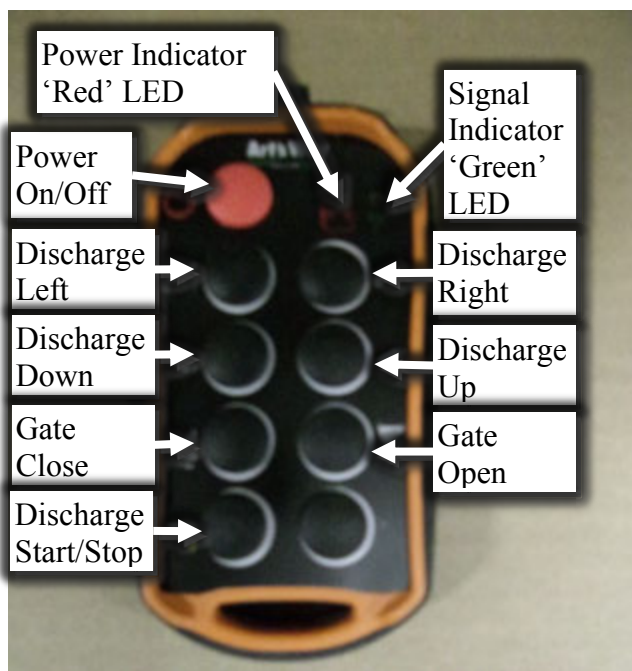


Figure 87 – Macro-Remote Control device functions.



Figure 88 – Macro-Remote Control Device with Charger.



Figure 89 – Complete Control Box with Internal Receiver Mounted on Left Rear Side of Tank.

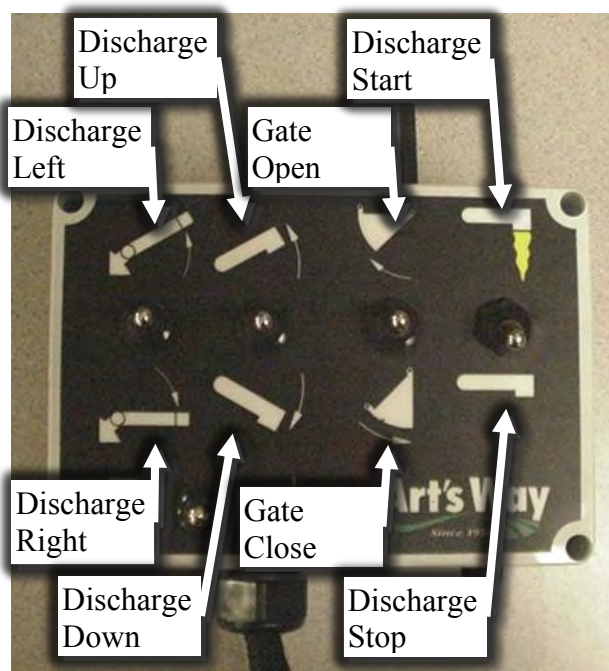


Figure 90 – Switch Functions for Complete Control Box with internal Receiver.

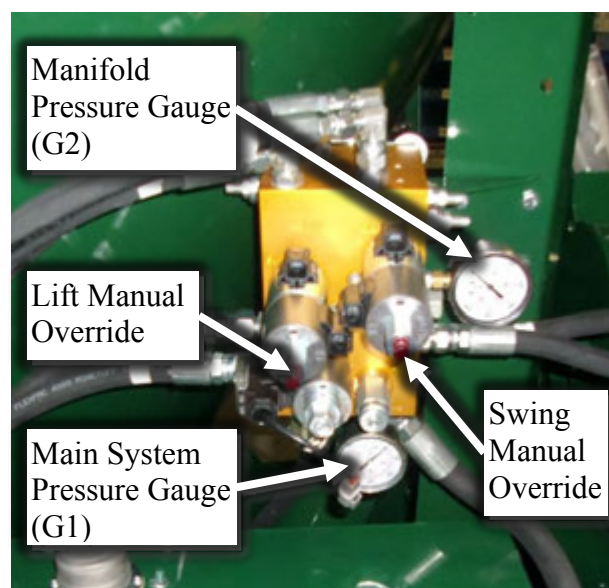


Figure 91 – Electro-Hydraulic Manifold Valve, Manual Overrides, and Pressure Gauges.

If discharge auger or auger feeder becomes clogged with material or foreign objects, the hydraulic motor will stall. When this occurs, the operator must disengage the tractor immediately so the pump and motor will not be damaged from excessive heat. The overloaded material and/or obstruction must be removed before the operation can be continued.

Note: The electrical system of the tractor must be in good working order. If voltage of less than 12.0 volts DC is provided to the actuator or solenoids on hydraulic control valves, the system will not operate properly.

IMPORTANT: Hydraulic cooler fan needs to be operated with a good working charged 12 volt electrical system (i.e. alternator) to function properly.



WARNING: DISENGAGE PTO, SHUT OFF POWER SOURCE, AND PLACE KEY IN POCKET BEFORE ATTEMPTING TO CLEAR BLOCKED AUGER. FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY.

To **Engage** the Discharge Auger push the Discharge Start/Stop Button on the Remote Control (see Figure 87) or flip the switch up on the Complete Control Box (see Figure 90).

To **Disengage** the Discharge Auger push the Discharge Start/Stop Button on the Remote Control (see Figure 87) or flip the switch down on the Complete Control Box (see Figure 90).

Note: The manifold valve has manual override function if a coil fails on the valve bank. Manual override for each function is the 'red' colored button extending from the end of the solenoid valve (see Figure 91).

Pushing in on the button activates the **swing right** on swing function or the **discharge lower** on the raise/lower function.

Pulling the button out will activate the **swing left** on the swing function or the **discharge raise** on the raise/lower function. A 9/64" dia. hole is located at end of the 'red' colored override button for a 1/8" diameter rod or 1/8" hex wrench sized instrument to help pull the button out with sufficient force to activate the desired function.

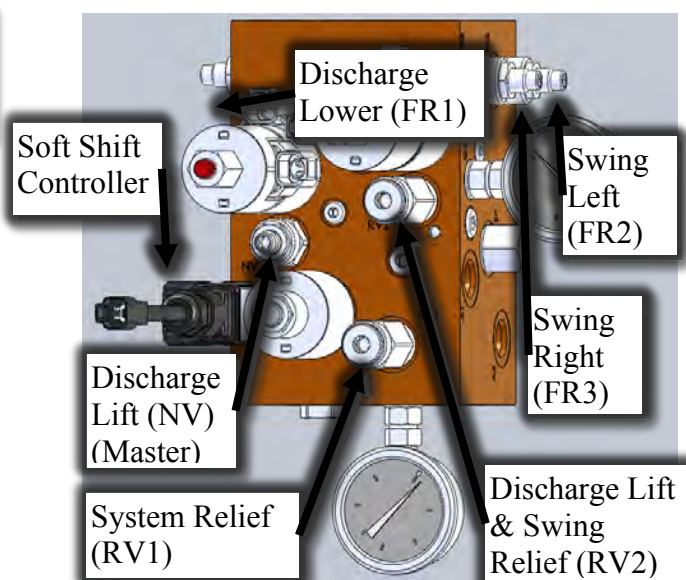


Figure 92 – Adjustment Screws and Manual Override for Discharge Cylinder Lift and Discharge Auger Swing Right.

Note: The discharge lift flow control (NV) is also the master flow control for both the discharge lift cylinder and swing motor (see Figure 92).

DISCHARGE AUGER LIFT CYLINDER ADJUSTMENT

To adjust the speed at which the lift cylinder raises or lowers the discharge auger, loosen the lock nut and turn the valve flow adjustment screw with 1/4" hex wrench for discharge lift (NV) or 3/16" hex wrench for discharge lower (FR1), (clockwise restricts flow, counter-clockwise increases flow). Start by adjusting the discharge lift flow control first (see note above). Then adjust the discharge lower flow control (FR1). The valve flow, when properly adjusted, will also reduce or eliminate jerkiness in the lift cylinders operation.

DISCHARGE AUGER SWING MOTOR ADJUSTMENT

There are two swing flow control valves (see Figure 104), swing right (FR3) and swing left (FR2). To adjust loosen lock nut and turn the valve flow adjustment screw with 3/16" hex wrench to control the speed at which the swing motor turns the discharge auger (clockwise restricts flow, counter-clockwise increases flow). This should be a slow speed to eliminate jump and bounce when activated. The valve flow, when properly adjusted, will also reduce or eliminate jerkiness in the swing motor operation.

DISCHARGE AUGER LIFT CYLINDER AND SWING MOTOR PRESSURE RELIEF ADJUSTMENT

To protect the Discharge Auger from damage when it contacts an obstacle, the relief pressure in the manifold valve needs to be set to the lowest possible setting that still allows the Discharge Auger to both lift and swing properly. Relief valve (RV2) is factory set to 1000-1200 PSI. To adjust the relief, loosen the lock nut and turn the valve flow adjustment screw with 5/16" hex wrench. Turning the screw in increases the relief bypass pressure and conversely turning the screw out will lower the bypass relief pressure (250 to 3500 PSI range).

CAUTION: Setting the relief bypass pressure to too high of a setting can cause damage to the Discharge Auger if an obstacle is contacted.

HYDRAULIC SYSTEM PRESSURE RELIEF ADJUSTMENT

To protect the overall hydraulic system from damage, the relief pressure in the manifold valve (RV1) is factory set to 2500 PSI. To adjust the relief, loosen the lock nut and turn the valve flow

adjustment screw with 5/16" hex wrench. Turning the screw in increases the relief bypass pressure and conversely turning the screw out will lower the bypass relief pressure (250 to 3500 PSI range).

HYDRAULIC DISCHARGE AUGER SOFT SHIFT CONTROLLER

The manifold valve on the 7165 GM is equipped with an electronic soft shift controller (see Figures 92, 93, & 94) that slowly opens the solenoid valve controlling the hydraulic discharge auger motors eliminating the 'bangs' or hydraulic shocks associated with operating a hydraulic valve. The controller is set to jump to a preset 'step' voltage then 'ramp' up to maximum at a preset rate.

The Step Point UP is preset to zero and Ramp UP rate is preset to 6 seconds.

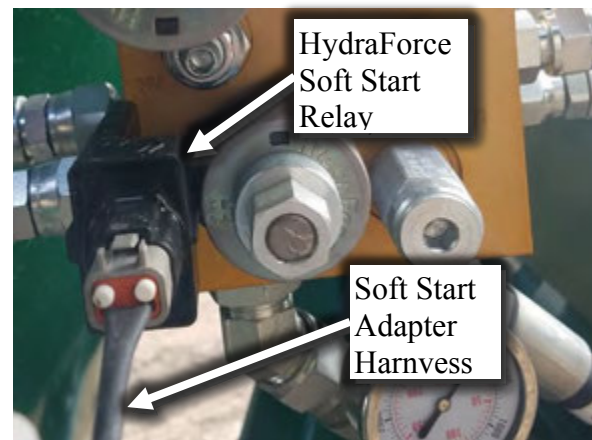


Figure 93 – Discharge Auger Soft Shift Controller.

The HydraForce Controller (see Figure 94) is preprogrammed from the factory and cannot be adjusted.

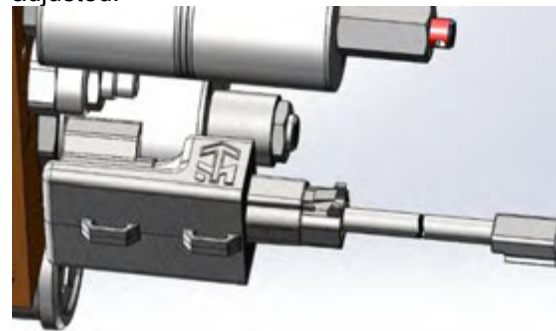


Figure 94 – Discharge Auger Soft Shift Controller (HydraForce)

HYDRAULIC OIL COOLER OPERATION

A hydraulic oil cooler (see Figure 108) is standard with any self-contained hydraulic option. The cooler engages when the hydraulic oil temperature rises above 115°F. At that point the cooler fan will run in a "forward/pulling" direction up to approximately 10 minutes or until the oil has cooled below the 115°F

setting. If the fan runs the full 10 minutes, it will automatically shut down and run in a “reverse/pushing” direction for approximately 30 seconds to help aid in cleaning the oil cooler fins from dust/debris which may be affecting air movement.

IMPORTANT: Hydraulic cooler fan needs to be operated with a good working charged 12 volt electrical system (i.e. alternator) to function properly. Low voltage output and/or weak battery can cause the fan to “twitch” in either direction.

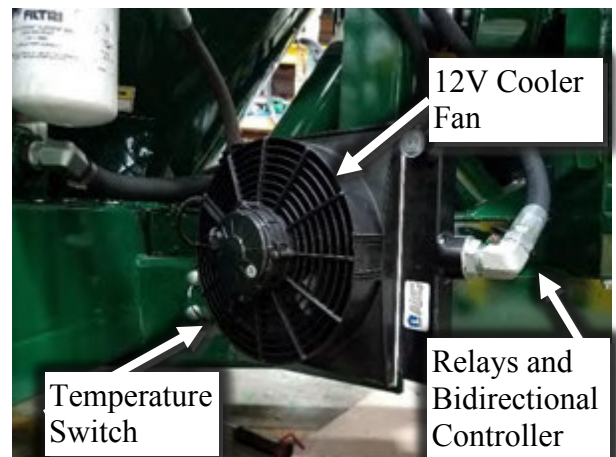


Figure 108 – Hydraulic Oil Cooler.

SELF-CONTAINED: ADJUSTMENT/SERVICE & LUBRICATION



CAUTION: DO NOT CLEAN, ADJUST, OR LUBRICATE MACHINE WHILE IT IS RUNNING. SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND DISCONNECT IMPLEMENT INPUT DRIVELINE BEFORE CLEANING, ADJUSTING, OR LUBRICATING MACHINE.

MAIN DRIVE CHAIN

Adjust mounting bracket of hydraulic pump so that the sprocket on the main drive shaft and sprocket on the hydraulic pump are running on center. Tighten bearing and mounting bracket bolts and replace shield. Run grinder mixer slowly and observe hydraulic pump. If pump is in need of further adjustment to better align sprockets; for position of the sprockets (see Figure 95). Excessive wear of chain, sprockets, and hydraulic pump will result if sprockets are not centered properly.

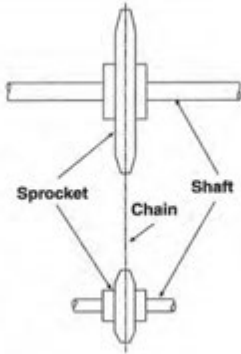


Figure 95 – Sprocket Alignment

HYDRAULIC VALVES

All valves are preset; if they need to be adjusted refer to “Self-Contained Operation” Section.

LUBRICATION

The chain on the pump coupling should be lubricated daily with light engine oil.

For other lubrication see the “Lubrication” section of this manual.

HYDRAULIC FILTRATION

The return line filter, mounted on the side of the hydraulic reservoir, traps contaminants before the oil returns to the tank. It is recommended that the element be replaced after the first 100 hours of operation and each 1000 hours or yearly thereafter, whichever occurs first (see Figure 96).

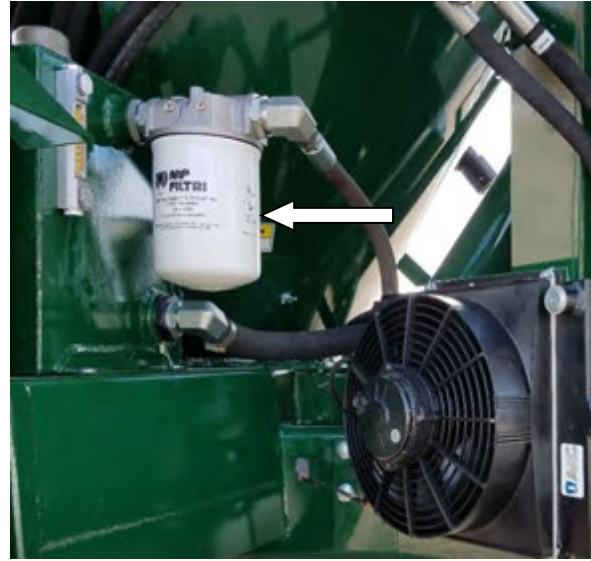


Figure 96 – Reservoir Filter (see Arrow)

A suction strainer is located in the suction port of the hydraulic reservoir tank. Periodically remove and clean it with compressed air, blowing from inside out. If it is damaged or does not cleanup well, replace it with a new strainer (see Figure 97).

IMPORTANT: A clogged strainer increases the chances of cavitation occurring in the intake line and subsequent damage to, and failure of the hydraulic pump caused by a lack of hydraulic fluid flowing through the pump.



Figure 97 – Reservoir Strainer (Black Arrow) and Drain Underneath Reservoir Tank Base (Red Arrow).



Figure 98 – Drain Underneath Reservoir Tank Base (Red Arrow).

Installed in the drain port of the hydraulic reservoir tank is a magnetic pipe plug. When hydraulic oil is changed, this plug should be removed and any metal particles removed from it (see Figures 97 & 98).

NOTE: New hydraulic oil is not necessarily free from contaminants. New hydraulic oil straight from the drum has a typical cleanliness level of ISO 4406 23/21/18. To add hydraulic oil, and not the dirt, always filter new oil prior to use in a hydraulic system. This can be accomplished by pumping the oil into the hydraulic reservoir through the system's return filter. The easiest way to do this is to install a

tee in the return line and attach a quick-connector to the branch of this tee. Attach the other half of the quick-connector to the discharge hose of a drum pump. When hydraulic oil needs to be added to the reservoir, the drum pump is coupled to the return line and the oil is pumped into the reservoir through the return filter. As well as filtering the oil, spills are avoided and the ingress of external contamination is prevented.

FILLER/BREATHER FILTER

When adding hydraulic oil, back blow through the filler cap with low pressure air. If the filler screen is dirty, remove the ten (10) – 5/16" whiz nuts on the access cover and flush screen with solvent and allow too dry before installing. Prior to replacing the access cover, remove the old gasket material from the cover and tank, then replace gasket material using silicone blue (see Figure 99).

If lack of pressure or flow is experienced, check strainer and/or replace filter. Regular servicing of the filter and preventing contaminants from entering the hydraulic oil is the best assurance of reliable and economic operation.

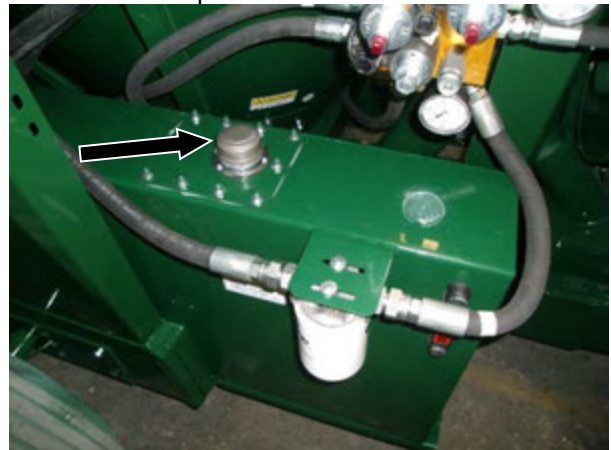


Figure 99 – Hydraulic Reservoir Cap (see Arrow)

HYDRAULIC COOLER MAINTENANCE

EXTERNAL CLEANING

Visually check the cooling fins daily for excessive dust/debris build up which may decrease the cooling efficiency of the oil cooler. Use pressurized air to remove the loose dust and debris. If dust and debris cannot be removed with air, use a small amount water with a mild cleaner (compatible with aluminum) to clean out the cooler fins. Rinse thoroughly after washing oil cooler. Cooler needs to be completely dry before restarting operation.

INTERNAL CLEANING

Cooler must be disconnected from the hydraulic circuit and flushed with clean compatible oil. Flushing in the opposite direction of standard flow is recommended. Reconnect system, making sure to orientate the flow in the proper direction.

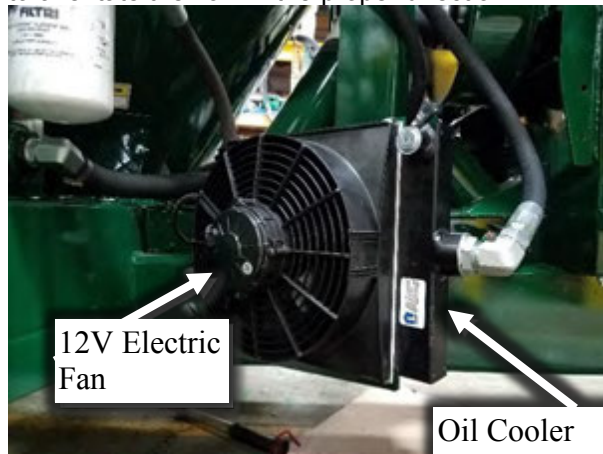


Figure 113b – Hydraulic Cooler.

Electric fan motor has sealed bearings and will not require any lubrication.

NOTE: Avoid running machine in wet conditions or with water/moister in the oil cooler. Dust and or dirt can become “caked” in cooler and clog the air pathway through the cooler. If necessary to operation in wet conditions, be sure to inspect oil cooler for blockages and clean often to reduce extreme heat build-up in the hydraulic system.



CAUTION: IF CLEANING COOLER WITH HIGH PRESSURE OR DIRECT JETS OF WATER, DIRECT STEAM OF WATER PARALLEL TO COOLING FINS. FAILURE TO DO SO COULD DAMAGE COOLING FINS AND/OR COOLER COMPONENTS.



CAUTION: DO NOT CLEAN, ADJUST, OR LUBRICATE MACHINE WHILE IT IS RUNNING. SHUT OFF POWER SOURCE, PLACE KEY IN POCKET, AND DISCONNECT IMPLEMENT INPUT DRIVELINE BEFORE CLEANING, ADJUSTING, OR LUBRICATING MACHINE.

SELF CONTAINED: TROUBLESHOOTING GUIDE

The majority of difficulties are caused by improper adjustments. When you encounter trouble, perform a systematic check of all possible adjustments using the chart that follows. If difficulties cannot be corrected by making the adjustments that follow, consult your local Art's Way authorized dealer for further assistance.

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
No functions work on wireless remote control	Wireless remote control is turned off	Turn power on wireless remote control
	Batteries in wireless remote control are weak or drained	Replace two AAA batteries in wireless Mini-remote control or recharge internal batteries on Micro-remote control
	Something is blocking signal from wireless remote control to receiver	Move to location with clear line of site from wireless remote control to receiver
	No power to receiver, control box, and/or electro-hydraulic valve bank	Flip mode switch to Remote Control on Complete Control Box Check connections to battery Check connections from tractor to grinder Check connections on control box Check connections on electro-hydraulic valve bank Check for severed wires
	Wireless remote control is not synchronized with receiver	Resynchronize wireless remote control with receiver (see Synchronizing Remote Control to Receiver)
	Fault in system	Check LED status display for possible fault or error indication of system status (see Remote Control Error Codes below)
	Mode Switch is on Off or Manual	Flip switch to Remote (see Figure 87A)
Certain functions on wireless remote control do not work or Functions operate intermittently	Something is blocking signal from wireless remote control to receiver	Move to location with clear line of site from wireless remote control to receiver
	Bad wire or loose connection to valve coil	Check the wiring connection from the Control Box to the valve coil for the output function that does not work
		Reseat connector at valve coil
	Receiver antenna improperly connected or damaged	Check Receiver connections Replace Receiver
	Fault in system	Check LED status display for possible fault or error indication of system status (see Remote Control Error Codes below)
	Bad valve coil	Replace coil
Discharge auger will not lift and/or swing	Wireless remote control and/or receiver not working	Check wireless remote control/receiver as above
	Improper voltage or amperes	Use tractor that will provide 12-15 volts DC and 30 amperes
	Loose electrical connections	Check connections to battery Check connections from tractor to grinder Check connections on control box Check connections on electro-hydraulic valve bank Check for severed wires

	Low hydraulic fluid level	Fill reservoir to proper level
	Hydraulic fluid leak	Check all fittings and hoses for leaks
	Relief bypass in control valve bank set at too low of pressure	Open valve
	Faulty relief valve	Replace relief valve
	Adjustable valves closed	Open valves
	Air in hydraulic lines	Run grinder mixer at low rpm 5-10 minutes. During this time, activate all hydraulic motors and cylinders to ensure that air is removed from system.
	Bad valve coil	Replace coil
Discharge auger will not run	Improper voltage or amperes	Use tractor that will provide 12-15 volts DC and 30 amperes
	Loose electrical connections	Check electrical connection as above
	Low hydraulic fluid level	Fill reservoir to proper level
	Hydraulic fluid leak	Check all fittings and hoses for leaks
	Bad manifold coil	Replace coil
Discharge door will not open	Actuator not operating	Check electrical connection as above
	Improper voltage or amperes	Use tractor that will provide 12-15 volts DC and 30 amperes
Hydraulic motors run hot	Low hydraulic fluid level	Fill reservoir to proper level
Hydraulic system runs slow	RPM's from tractor has fallen below required level	Increase PTO's speed to: -1000 but not more than 1050 RPM for 1000 RPM PTOs -540 but not more than 565 RPM for 540 RPM PTOs
	Clogged filter or strainer	Replace filter Clean strainer
	Low hydraulic fluid level	Fill reservoir to proper level
	Hydraulic fluid has thickened from the cold (winter operation)	Run for 10 to 15 minutes to warm up and thin fluid
Oil temperature high (>180°F)	Clogged cooler fins	Inspect cooling fins and clean if applicable
	Low hydraulic fluid level	Fill reservoir to proper level
	Fan not running or is "twitching"	Check fuse Check circuit (tractor/machine) for good connections Low voltage supply (check alternator and/or battery output)

SELF CONTAINED: REMOTE CONTROL ERROR CODES

Count the number of blinks on the receiver or the wireless remote control red LED.

ERROR CODE	PROBABLE CAUSE
1 Blink	Radio signal problem
2 Blink	Short or open connection at output 1 (White Wire to Receiver)
3 Blink	Short or open connection at output 2 (Green Wire to Receiver)
4 Blink	Short or open connection at output 3 (Blue Wire to Receiver)
5 Blink	Short or open connection at output 4 (Brown Wire to Receiver)
6 Blink	Short or open connection at output 5 (Yellow Wire to Receiver)
7 Blink	Short or open connection at output 6 (Orange Wire to Receiver)
8 Blink	Short or open connection at output 7 (Gray Wire to Receiver) <u>NOT USED</u>
9 Blink	Short or open connection at output 8 (Purple Wire to Receiver)

There are no user-serviceable parts inside the wireless remote control or the receiver. Return the units for service.

ATTACHMENTS

ELECTRONIC SCALE ATTACHMENT

A solid state electronic scale attachment, digital type, is available for your grinder mixer. The scale attachment consists of weigh bar sensors mounted on the grinder mixers axle spindles and hitch. They are electronically connected to the indicator bars. The indicator alarm system is available with the electronic scale attachment. Scale accuracies of 1 percent or less are obtained. Complete installation and operating instructions are included with the attachment.

ADJUSTABLE SCALE ARM ATTACHMENT

The optional scale arm allows the electronic scale to be positioned along a 180° arc off the side of the grinder (see Figure 100). Drill two 13/32" holes no higher than 2.5" from top of tank brace. Use the mount as a template to properly space holes. Tension on the pivot point spring can be increased or decreased by tightening or loosening the nut. Periodic grease needs to be applied to the zerk on the pivot point.

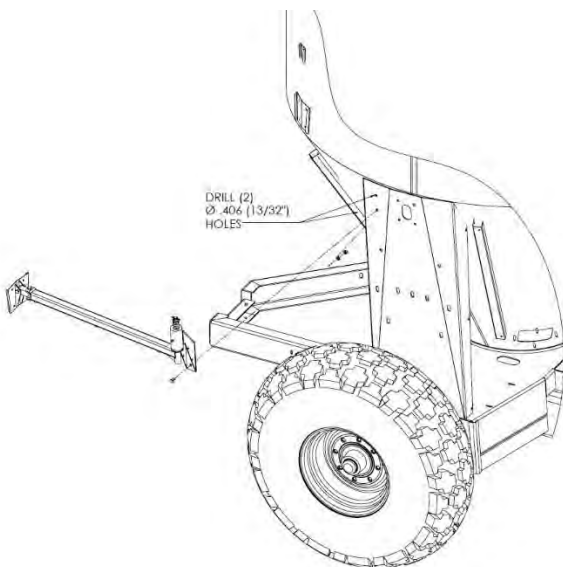


Figure 100 – Adjustable Scale Arm Attachment

DISCHARGE UNLOADING AUGER EXTENSIONS

3 foot and 6 foot folding and 3 foot and 6 foot bolt-on discharge auger extensions are available (see Figure 101). For unloading height obtainable with various extensions added to the unloading auger system, refer to Table 4. For unloading auger instructions, refer to OPERATION OF section.

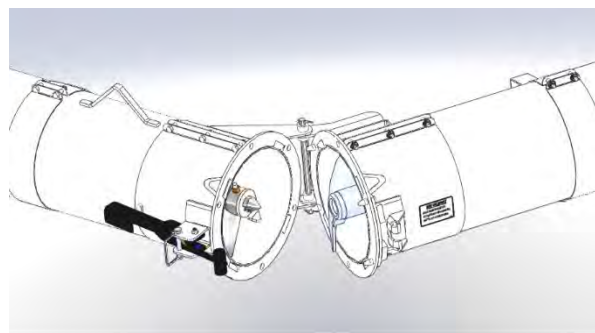


Figure 101 - Folding Auger Extension.

SPECIFICATIONS

TANK AND FRAME

- Capacity of mixing tank: 165 bu. /206 cu. ft.
- Height (variable with tire size): 126 inches.
- Width without auger feeder: 111 inches.
- Overall length: 175 inches.
- Weight: 6150 lbs.

DISCHARGE AUGER

- Auger diameter: 9-3/16 inches.
- Auger tube diameter: 10 inches.
- Horizontal operating arc: 225°
- Vertical operating arc: +46° to -27° or +60° to -11°

AUGER FEEDER

- Auger length: 100 inches.
- Auger diameter: 10 inches.
- Hopper width open: 43 inches.
- Height of hopper from ground in down position: 16-1/2 inches.
- Height of hopper from ground in up position: 60 inches.

MIXING AUGER

- Auger width 12 inches.
- Mixing base 24 inches.

SUPPLEMENT HOPPER

- Auger diameter 7 inches.
- Hopper size 21 inches X 24 inches
- Height from ground 39 inches

ROLLER MILL

- Width of mill 30 inches
- Roll Diameter 10 inches
- Operating speed of PTO 540 RPM
- Operating speed of mill 540 RPM
- Roll Grooves Available 5, 7, and 10
- Type drive PTO /Chain

POWER REQUIRED 80 hp minimum

SPECIFICATIONS: SELF-CONTAINED HYDRAULICS

PUMP

- **Type:** Gear Driven Positive Displacement
- **Displacement:** 3.869 cu. in. per revolution
- **Flow (GPM):** 15.6 gallons per minute @ 1000 RPM
- **Input HP Required:** 26.43 HP @ 2500 PSI

HYDRAULIC RESERVOIR

- **Type:** Fabricated pickled and oiled steel
- **Capacity:** 9 gallons
- **Ports:**
 - Suction: -24 ORB (1-7/8-12 SAE)
 - Return: -20 ORB (1-5/8-12 SAE)
 - Drain: 3/4" NPT

FILTERS/STRAINERS/BREATHERS/ INDICATORS

Tank Mounted Suction Strainer

- **Flow Capacity:** 15 GPM
- **Style:** Suction Type
- **Screen Size:** 100 Mesh
- **Thread Size:** -24 ORB (1-7/8-12 SAE) male
 - -16 ORB (1-5/16-12 SAE) female

Tank Mounted Filler Breather

- **Breather Filler:** 40 Micron
- **Strainer Basket:** 30 Mesh

Tank Mounted Temperature/Level Gauge

- **Material:** 40 Micron
- **Strainer Basket:** 30 Mesh

Return Line Filter

- **Material:** Head-Cast Aluminum, Spin-on Canister-Steel, Seals-Nitrile, standard
- **Pressure Rating:** 250 PSI maximum operating, Caution: 80 PSI with Blocked Bypass
- **Temperature Range:** -40°F to +250°F
- **Filtration:** 10 Micron nominal
- **Flow:** 20 GPM
- **Internal Bypass:** Relieves at 15 PSI differential
- **Port Size:** -12 ORB (1-1/16-12 SAE)

HYDRAULIC MOTORS

Auger Feeder

- **Type:** Gear, low speed high torque
- **Displacement:** 11.3 cu. in. per revolution
- **Flow (GPM):** 15 GPM cont., 20 GPM inter.
- **Pressure Rating:** 1600 PSI cont., 2150 PSI inter.
- **Ports:** -10 ORB (7/8-14 SAE)

Discharge Auger

- **Type:** Gear, low speed high torque
- **Displacement:** 9.6 cu. in. per revolution
- **Flow (GPM):** 20 GPM cont., 30 GPM inter.
- **Pressure Rating:** 3000 PSI cont., 3750 PSI inter., 4500 max.
- **Ports:** -10 ORB (7/8-14 SAE)

Discharge Swing

- **Type:** Gear, low speed high torque
- **Displacement:** 22.6 cu. in. per revolution
- **Flow (GPM):** 15 GPM cont., 20 GPM inter.
- **Pressure Rating:** 1250 PSI cont., 1500 PSI inter.
- **Ports:** -10 ORB (7/8-14 SAE)

MANIFOLD VALVE ASSEMBLY

Directional Valve Assembly: Consisting of (2) solenoid operated 3-position 4-way tandem center spool valves and (1) solenoid operated proportional 2-way poppet valve mounted on a common manifold with (3) pressure compensated flow controls, (1) needle valve (2) built-in relief valves and (2) stem mount 3000 PSI pressure gauges.

Manifold Valve Assembly

- **Type:** Custom Manifold Block
- **Material:** 6061-T6 Aluminum, Gold Anodized
- **Solenoids:** 12 VDC Electric
- **Flow:** System design 16-20 GPM, Max. 25 GPM
- **Max. Pressure:** 3000 PSI @ A1,A2,D1,D2,S1,S2, LD,UD, 3500 PSI @P, T
- **Max. Fluid Contamination:** Class 21/18/15 to ISO 4406
- **Temperature Range:** -40°F to +248°F Seals

- **Port Sizes:** P: -12 ORB (1-1/16-12 SAE)
 - T: -12 ORB (1-1/16-12 SAE)
 - LD,UD: -10 ORB (7/8-14 SAE)
 - A1,A2,D1,D2,S1,S2: -8 ORB (3/4-16 SAE)

Solenoid Valve SP (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Proportional solenoid-operated, 2-way, poppet-type, normally open, hydraulic cartridge
- **Solenoid:** 12 VDC Electric w/DIN 43650 connector
- **Flow:** 70 GPM Max.
- **Operating Pressure:** 3625 PSI

Soft Start Controller (Manifold Valve Assembly)

- **Housing Material:** High impact resistance ABS
- **Input Voltage:** +10 to +30 VDC
- **Solenoid Connector:** DIN 43650 connector
- **Wire Connector:** Deutsch DTO4-2P connector
- **Preset Ramp up Rate:** 6 sec.
- **Preset Ramp down Rate:** 0 sec.
- **Temperature Range:** -4°F to +158°F
- **NEMA/IP Rating:** NEMA 6/IP65 when assembled

Solenoid Valves SV1 & SV2 (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Solenoid-operated, 4-way, 3-position, direct-acting, spool-type, tandem center, w/manual override
- **Solenoid:** 12 VDC Electric w/Deutsch DTO4-2P connector
- **Flow:** 5 GPM Max.
- **Operating Pressure:** 3500 PSI

Flow Control Valves FR1, FR2, & FR3 (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Cartridge-style, adjustable, pressure-compensated, restrictive-type hydraulic flow regulating
- **Flow Range:** 0.1-3 GPM
- **Maximum Pressure:** 5000 PSI

Needle Valve NV (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Cartridge-style, variable orifice, hydraulic flow restrictor
- **Flow Range:** 12 GPM
- **Maximum Pressure:** 3500 PSI

Relief Valves RV1 & RV2 (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Cartridge-style, direct-acting, differential area poppet-type hydraulic relief
- **Pressure:** Preset @2500 PSI
- **Adjustable Pressure Range:** 250 - 3500 PSI

Logic Element EP (Manifold Valve Assembly)

- **Material:** Steel cartridge with anodized high-strength 6061-T6 aluminum body
- **Type:** Spool-type, cartridge-style, hydraulic directional element
- **Flow Range:** 0-20 GPM
- **Pressure Setting:** 80 PSI
- **Maximum Pressure:** 3000 PSI

Check Valve CV (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Cartridge-style, hydraulic check
- **Flow Range:** 0-20 GPM
- **Pressure Setting:** 5 PSI
- **Maximum Pressure:** 3500 PSI

Pilot Check Valve PC (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** Cartridge-style, pilot operated, hydraulic check
- **Pilot Ratio:** 4:1
- **Flow Range:** 0-8 GPM
- **Pressure Setting:** 30 PSI
- **Maximum Pressure:** 3500 PSI

Pressure Gauges G1 & G2 (Manifold Valve Assembly)

- **Material:** Steel
- **Type:** 2-1/2 inch stem mount
- **Pressure Range:** 0 - 3000 PSI

Adjustable Flow Control (Auger Feeder)

- **Material:** Steel
- **Flow Range:** 0-16 GPM
- **Maximum Pressure:** 3000 PSI
- **Port Size:** -10 ORB (7/8-14 SAE)

Hydraulic Oil Cooler (Electric)

- **Max Working Pressure:** 250 PSI
- **Max Working Temperature:** 250°F
- **Motor:** 12VDC
- **Amp Draw:** 17 Amps (50 Amp fuse recommended)
- **Port Size:** -16 SAE O-ring (2)

ELECTRIC ACTUATOR

- **Type:** 12 VDC
- **Load Rating:** 250 lbs.
- **Stroke Length:** 12 inches
- **Overload Protection:** Ball detent overload clutch
- **Drive:** Acme screw thread

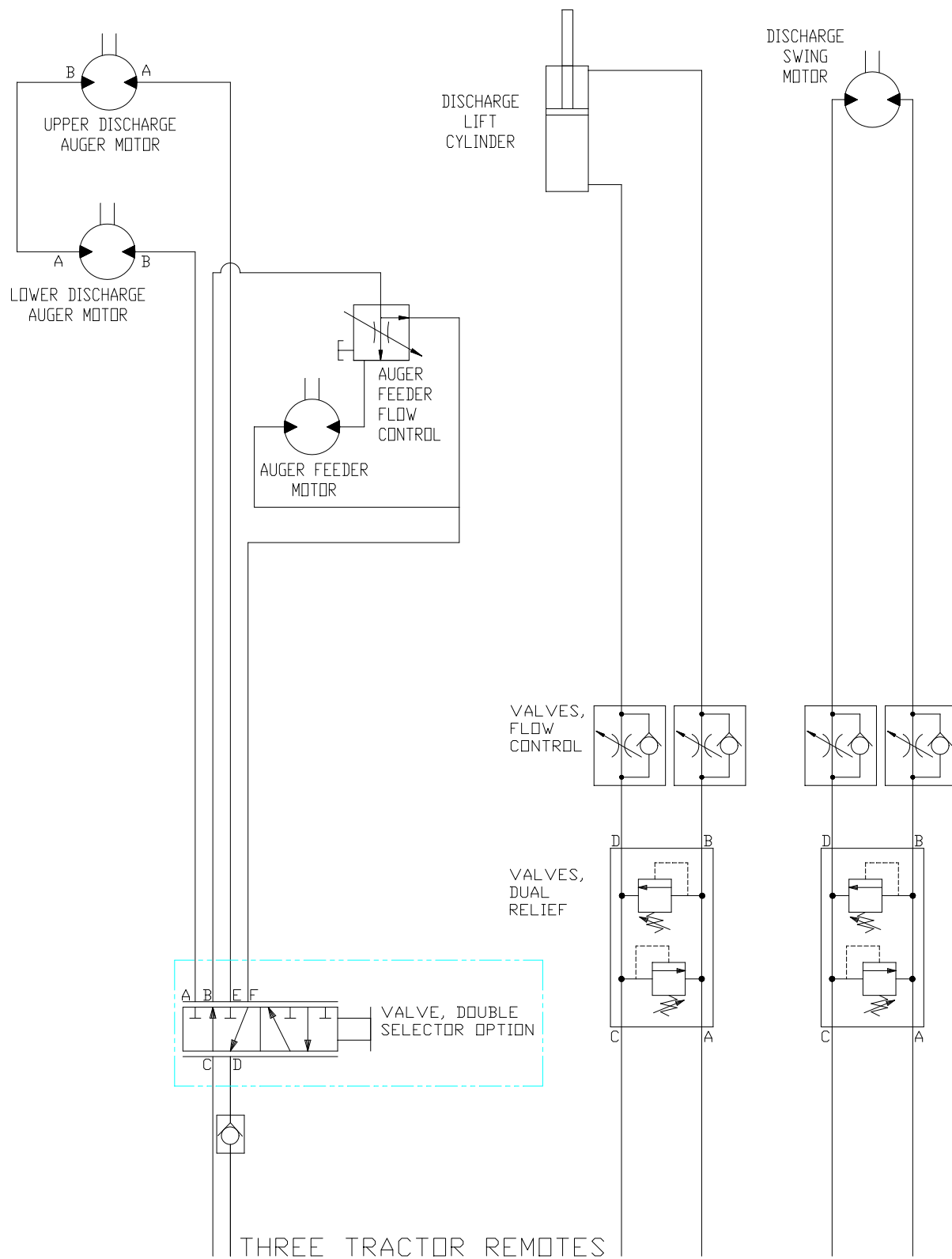
ELECTRIC CONTROL BOX

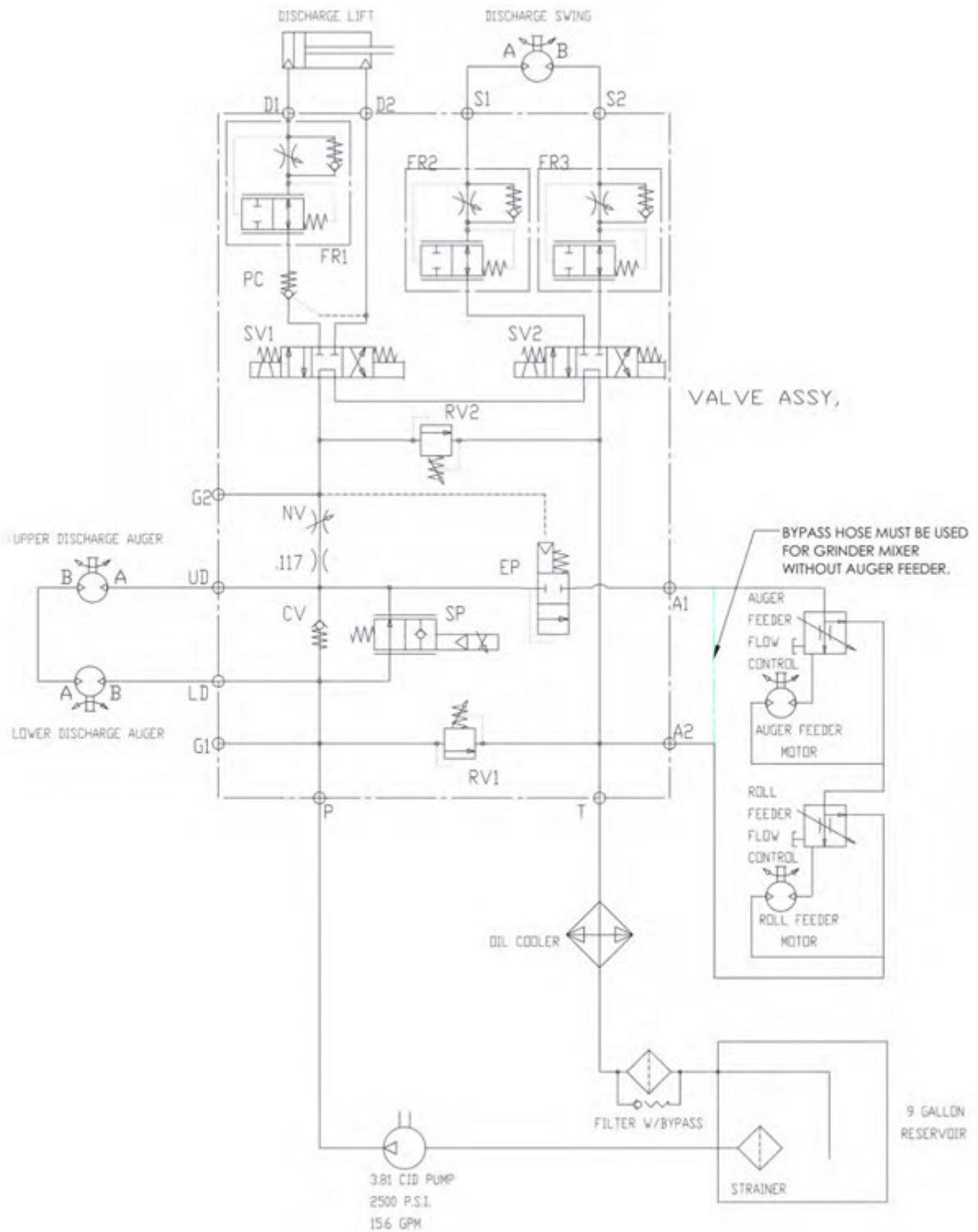
- **Type:** 12 VDC
- **Circuit Breaker:** 30 amp Fuse in Complete Control Box

WIRELESS REMOTE CONTROL

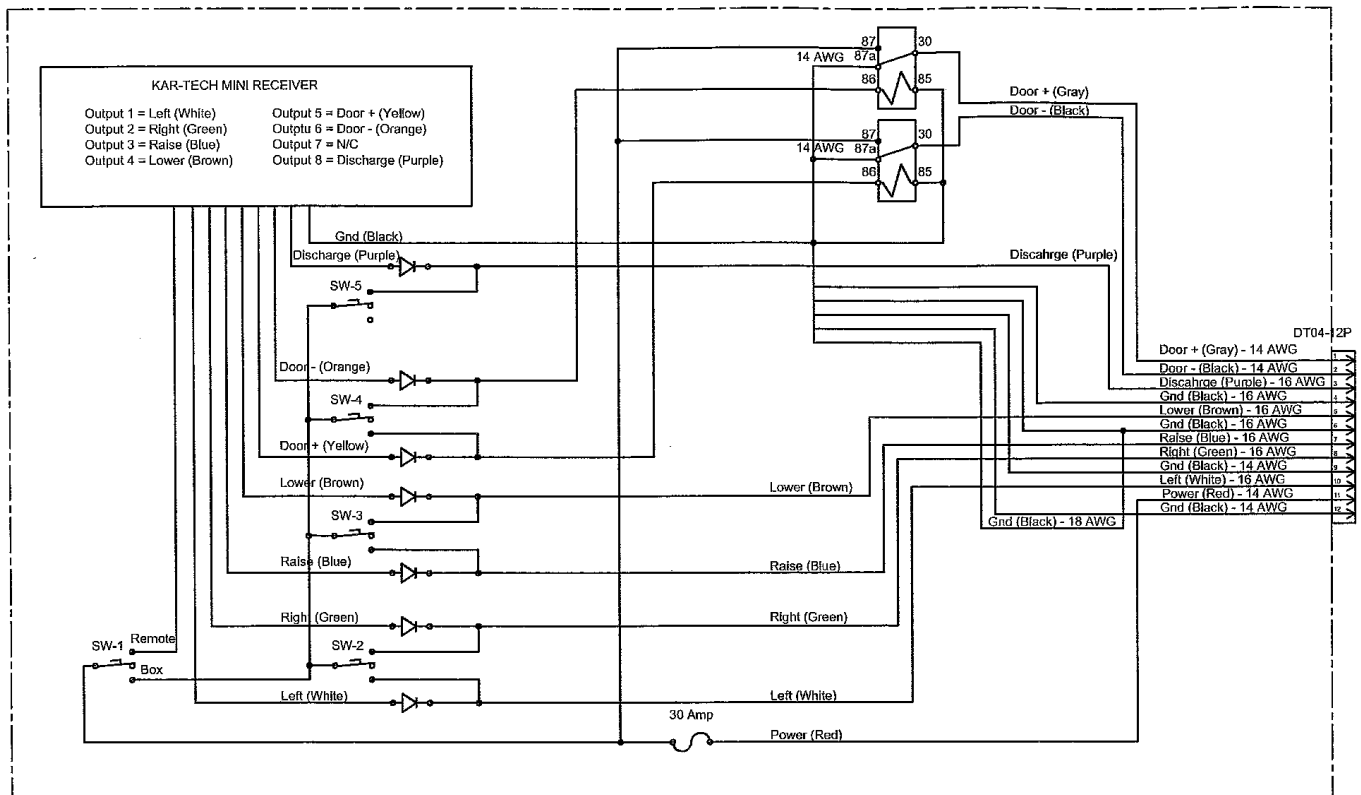
- **Power Supply:** Internal rechargeable lithium ion battery. **Battery Life continuous operation:** 35-40 hours.
- **Operating Temperature - Radio:** -40°F to +185°F
- **Storage Temperature:** -40°F to +212°F
- **RF Frequency:** 902-928 MHz
- **RF Transmit power (EIRP):** 10 mW
- **Range:** 100 m (328 ft.) nominal, greater line of sight
- **Vibration:** 3G to 200Hz
- **Shock:** 50G
- **Ingress Protection:** IP65 Remote Control Receiver
- **Power Supply Voltage:** 9-30VDC
- **Operating Temperature:** -40°F to +185°F
- **Storage Temperature:** -40°F to +212°F
- **Outputs:** 3.0-5.0A, sourcing (20A system max.)
- **RF Frequency:** 902-928 MHz
- **RF Transmit power (EIRP):** 10 mW
- **Range:** 100 m (328 ft.) nominal, greater line of sight
- **Vibration:** 3G to 200Hz
- **Shock:** 100G

SCHEMATICS: TRACTOR HYDRAULICS

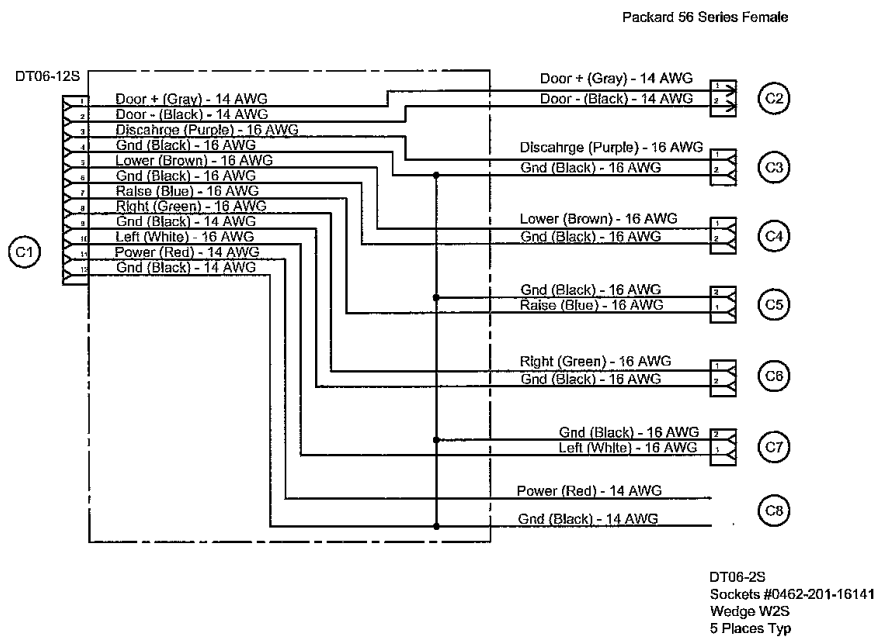


SCHEMATICS: SELF-CONTAINED HYDRAULICS

SCHEMATICS: SELF-CONTAINED WIRING

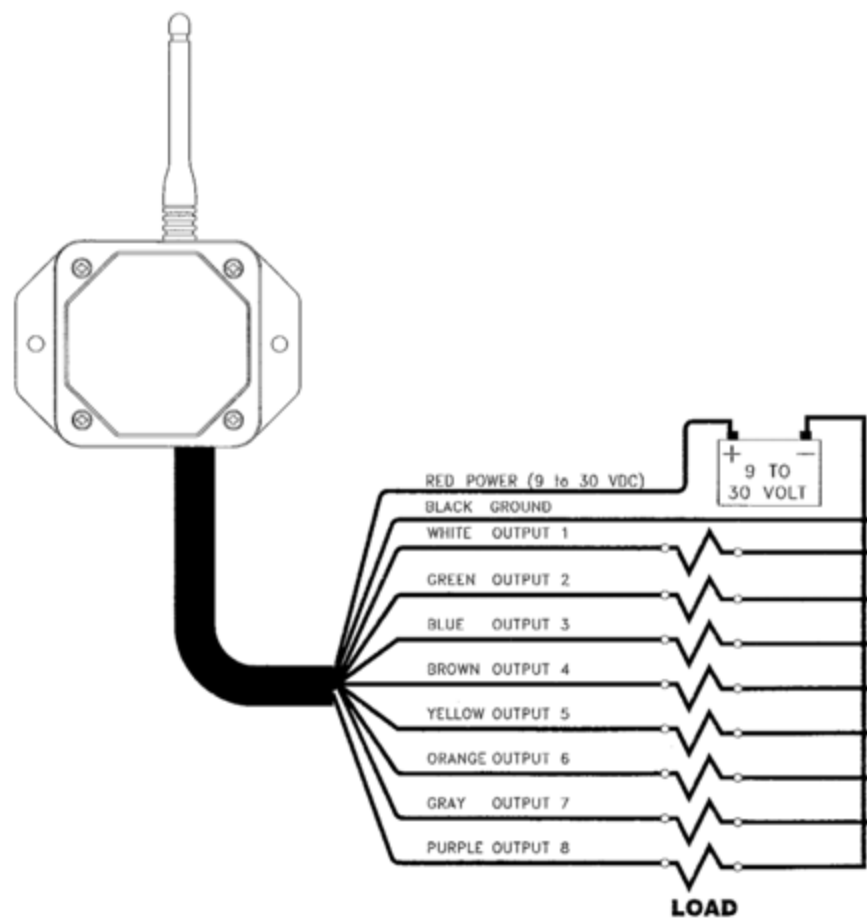


CONTROL BOX WITH 4 FT. WIRING HARNESS



WIRING HARNESS VALVE BANK, MANIFOLD, & ACTUATOR

SCHEMATICS: SELF-CONTAINED WIRING



RECEIVER 8-OUTPUT

DT06-12S		DT04-12P
1	Door + (Gray) - 14 AWG	1
2	Door - (Black) - 14 AWG	2
3	Discharge (Purple) - 16 AWG	3
4	Gnd (Black) - 16 AWG	4
5	Lower (Brown) - 16 AWG	5
6	Gnd (Black) - 16 AWG	6
7	Raise (Blue) - 16 AWG	7
8	Right (Green) - 16 AWG	8
9	Gnd (Black) - 14 AWG	9
10	Left (White) - 16 AWG	10
11	Power (Red) - 14 AWG	11
12	Gnd (Black) - 14 AWG	12

OPTIONAL 20 FT. WIRE HARNESS EXTENSION



ART'S-WAY MANUFACTURING CO., INC. TECHNICAL MANUALS

Manuals are available from your local dealer or Art's-Way Manufacturing Co., Inc. for the operation, service, and repair of your machine. For prompt convenient service, contact your local dealer for assistance in obtaining the manuals for your machine.

Your local dealer can expedite your order for operator manuals, illustrated parts catalogs, service manuals, and maintenance records.

Always give the Machine Name, Model, and Serial Number so your local dealer can provide the correct manuals for your machine.

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**ART'S-WAY MANUFACTURING CO., INC.
HWY 9 WEST - PO Box 288
Armstrong, IA. 50514 U.S.A**

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