



Art's-Way Manufacturing Co., Inc.

Model 5105
Grinder Mixer

Operator's Manual
560500

Issued 05-07

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 5105 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 5105 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 5105 Grinder Mixer.

Even if you are an experienced operator of this or similar equipment, we ask that you **read this manual before operating the 5105 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 5105 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 5105 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 5105 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 5105 Grinder Mixer only. Any mention of other machinery in this manual other than the 5105 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 5105 Grinder Mixer.

PARTS & SERVICE

As the purchaser of your new 5105 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 5105 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.: _____

5105 Grinder Mixer Serial Number Location

The placard containing the serial and model number is located on the front left-hand side of the 5105 grinder mixer. Enter the serial and model number of your 5105 grinder mixer within the space provided.



Building on a

Art's-Way

Tradition of Quality

SERIAL NO.

MODEL NO.

Manufactured By
Art's-Way Manufacturing Co., Inc.
Armstrong, IA

Figure 2 - Serial Number Placard.



Figure 1 - Serial Number Placard Location.

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LIMITED WARRANTY

Art's-Way Manufacturing Co., Inc. warrants the products it sells to be free from defects in material and workmanship for a period of one (1) year after the date of delivery to the first (original) purchaser, subject to the following conditions:

- Art's-Way Manufacturing Co., Inc. obligation and liability under this warranty is to repair or replace (at the company's option) any parts that upon manufacture were defective in material or workmanship.
- All parts and repairs under this warranty shall be supplied at Art's-Way Manufacturing Co., Inc. or an authorized Art's-Way Manufacturing Co., Inc. dealer, at the option of Art's-Way Manufacturing Co., Inc.
- Art's-Way Manufacturing Co., Inc. warranty does not extend to parts and elements not manufactured by Art's-Way Manufacturing Co., Inc. and which carry the warranty of other manufacturers.
- Transportation or shipping to an authorized dealer for necessary repairs is at the expense of the purchaser.
- Art's-Way Manufacturing Co., Inc. makes no other warranty expressed or implied and makes no warranty of merchantability or fitness for any particular purpose beyond that expressly stated in this warranty. Art's-Way Manufacturing Co., Inc. liability is limited to the terms set forth in this warranty and does not include any liability for direct, indirect, incidental or consequential damages or expenses of delay and the Company's liability is limited to repair or replacement of defective parts as set forth herein.
- Any improper use and/or maintenance, including operation after discovery of defective or worn parts, operation beyond the rated capacity, substitution of parts not approved by Art's-Way Manufacturing Co., Inc., or any alternation or repair by other than an authorized Art's-Way Manufacturing Co., Inc. dealer which affects the product materially and adversely, shall void the warranty.
- No dealer, employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Art's-Way Manufacturing Co., Inc.
- Some states do not allow limitations on how long an implied warranty lasts or exclusions of, or limitations on relief such as incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you the specific legal rights and you may have other rights that vary from state to state.

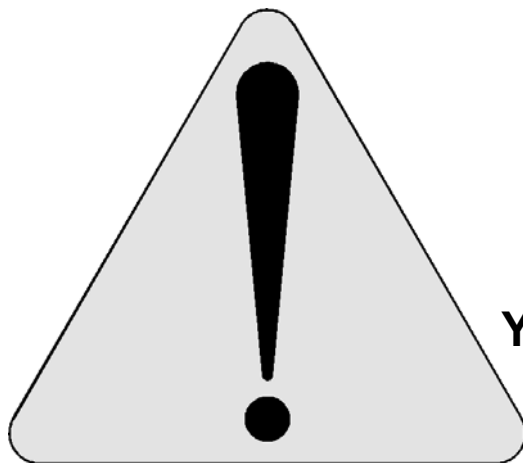
SAFETY FIRST

“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 5105 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 THE OPERATOR'S MANUAL AND ALL THE SAFETY DECALS BEFORE OPERATING THE GRINDER MIXER. REVIEW ALL SAFETY INSTRUCTIONS WITH ALL 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 WELL CLEAR OF MOVING PARTS. BE SURE TO SHUT OFF THE TRACTOR AND SET THE PARKING BRAKE. REMOVE THE TRACTOR KEY WHILE MAKING ANY ADJUSTMENTS. WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING THE MACHINE.

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. Electrocutation 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 A TIRE ON A WHEEL OR RIM CAN PRODUCE AN EXPLOSION THAT MAY RESULT IN SERIOUS INJURY OR DEATH. DO NOT ATTEMPT TO INSTALL A TIRE UNLESS YOU HAVE THE PROPER EQUIPMENT AND EXPERIENCE TO PERFORM THE JOB. REPLACEMENT, REPAIR, AND/OR MAINTENANCE SHOULD BE DONE BY A 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 5105 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 and Figure 5.)

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.

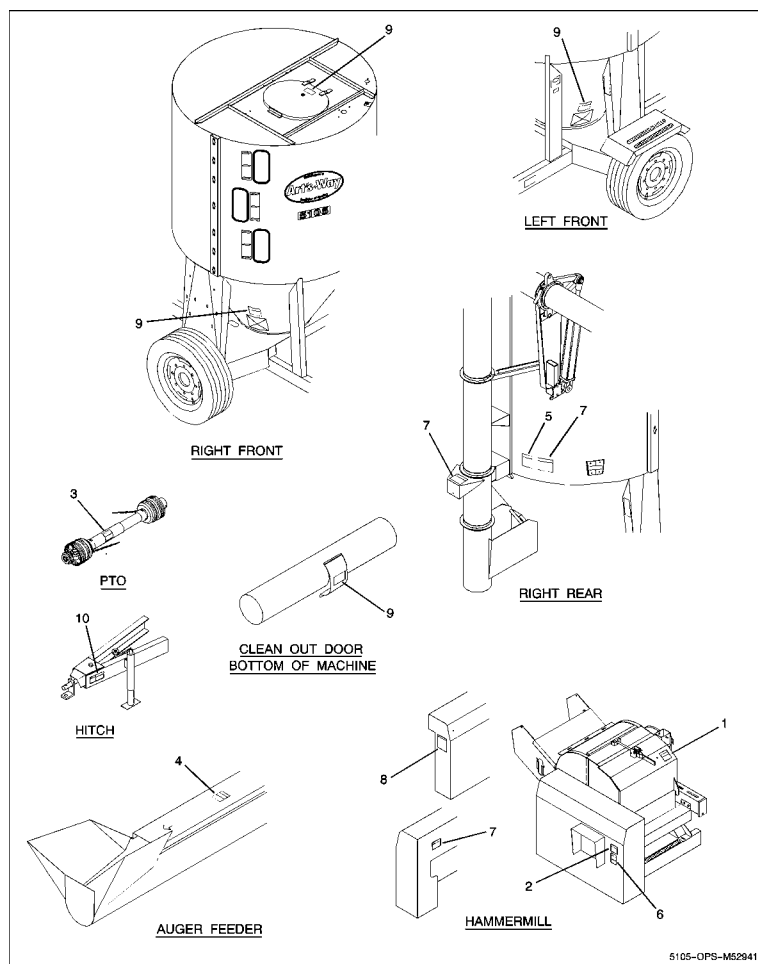


FIG ITEM	PART NUMBER	NOMENCLATURE	UNITS PER ASSY
1	041601	DECAL, PATENT NUMBERS	1
2	041620	DECAL, ELECTRONIC SCALE BRACKET	1
3	117720	TAPE, ANTI -SKID	3
4	146670	DECAL, GREASE SYMBOL	4
5	158520	DECAL, AUGER FEEDER STOP	1
6	158530	DECAL, START-STOP AUGER	1
7	159460	DECAL, VALVE DI RECTI ON	1
8	212350	DECAL, SUPPLEMENT I NSTRUCTI ONS	1
9	268860	DECAL, DANGER ROTATI NG DRIVE LI NE	1
10	363000	DECAL, DANGER ROTATI NG MECHANI SM	1

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 - Rotation Mechanism



2. DANGER - 540 RPM PTO



3. DANGER - Rotating Driveline



5. DANGER - Electrocution Hazard



6. WARNING - Moving Flywheel Hazard



4. DANGER - Auger Feeder Hazard



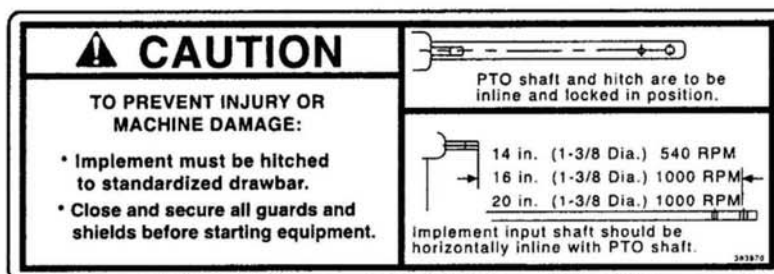
7. WARNING - Moving Part Hazard



8. CAUTION - Safety Instructions



9. CAUTION - Do Not Open



10. CAUTION - Hitch Instructions

Figure 5 - 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.

INTRODUCTION

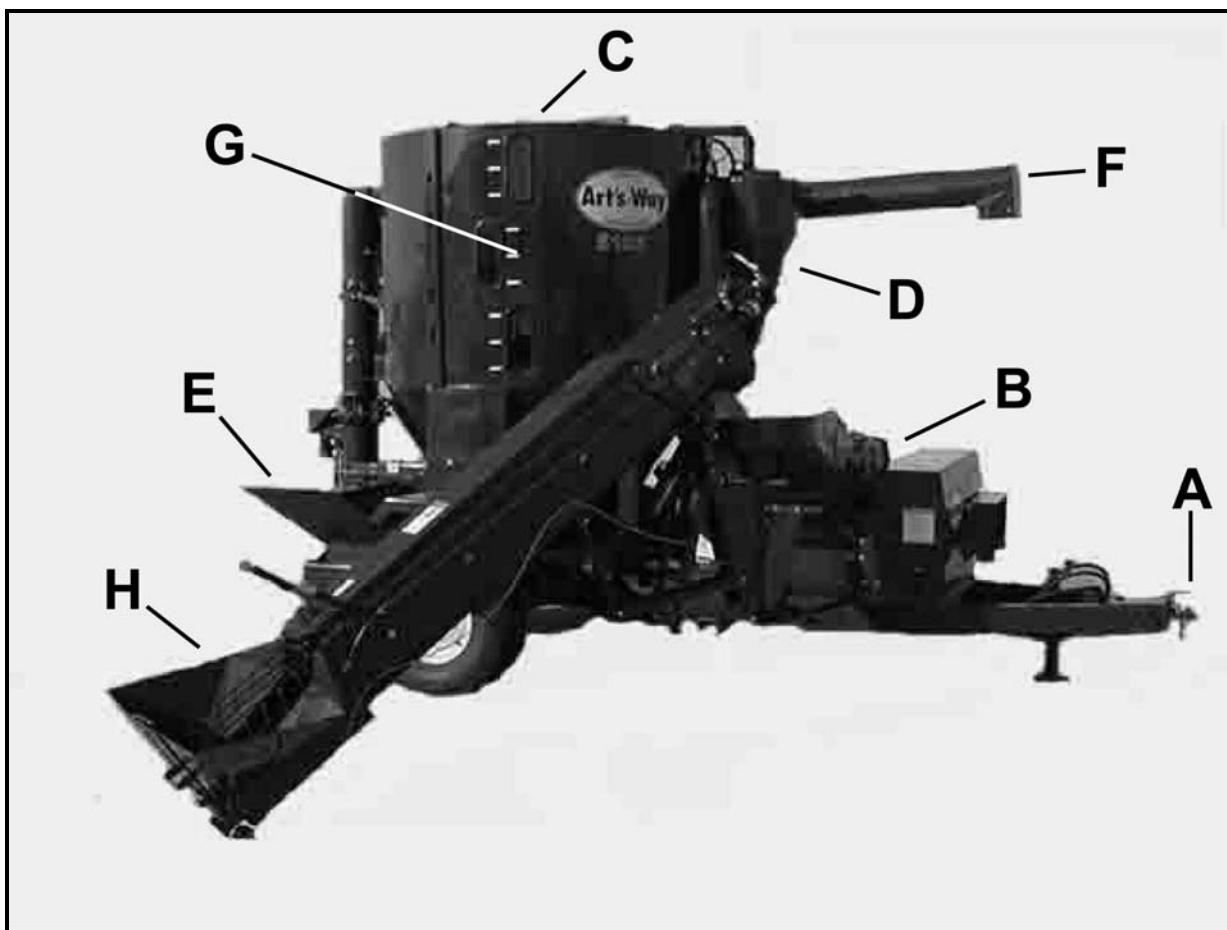


Figure 6 - Model 5105 With Auger Feeder (A – PTO Driveline; B – Hammermill; C – Mixing Tank; D – Dust Collector; E – Supplement Hopper; F – Unloading Auger; G – Viewing Windows; H – Auger Feeder).

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 5105 Grinder Mixer is driven by a PTO driveline of 40 hp to 150 hp tractors. (Figure 6, Detail A.) When using tractors over 150 hp, limit input. It is available only with a 540 RPM drive.

Hammermill respective speed should be maintained as the hammermill cylinder operates best at 2800 to 3000 RPM. (Figure 6, Detail B.) Hammermill cylinder must not exceed 3000 PRM.



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

Before operating your grinder mixer, select and install the screen size desired. Sizes are available from 1/8 to 2 inch openings. For screen selection guidelines, refer to OPERATION OF GRINDER MIXER - Hammermill Screens.

All types of grain can be ground with the hammermill. Hay can be ground with a minimum of 1/3 mixer of grain. Material is fed into the hammermill where it is ground until it can pass through the screen size selected. From the hammermill, the material is augered into the mixing tank. (Figure 6, Detail C.) A suction fan takes air pressure out of the hammermill housing and delivers feed fines into the dust collector. (Figure 6, Detail D.) The fines are separated and then dropped into the mill to mixer auger.

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. (Figure 6, Detail E (Not Shown) – Supplement Auger.) The best mixing will result if the supplement is added before grinding.

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

The unloading auger pivots at the rear center of the mixing tank and can swing 316 degrees on the grinder mixer in a horizontal arc. (Figure 6, Detail F.) It can also swing in a vertical arc to the limit of the lift cylinder. The unloading auger tube can be positioned either to the right or to the left side of the tank for transport. For procedure instructions, refer to GRINDER MIXER ADJUSTMENTS - Positioning The Unloading Auger To The Opposite Side Of The Machine. Unloading rates up to 30 bushels per minute can be obtained depending upon position of the discharge and the type of material processed.

Three viewing windows are located at the front right corner of the mixing tank to observe the feed level during grinding and mixing. (Figure 6, Detail G.) A ladder 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 5105 grinder mixer including:

105 bu. – 5105

1. 10.00 x 15 tires.
2. Magnet in the hammermill throat.
3. Hydraulic or mechanical positioning of discharge auger. This includes a hydraulic cylinder or mechanical crank for lift and hydraulic motor or mechanical crank for swing.
4. Positioner to enable the hopper on the auger feeder to be moved in or out 6 inches to properly position in front of the augers. (Figure 6, Detail H.)
5. Fenders.
6. Screen rack.
7. Tongue jack.
8. Discharge auger hood with spring loaded relief door.
9. 540 RPM PTO

Below is a list of optional attachments available:

1. Auger feeder (hydraulic). (See Figure 7.)



Figure 7 - Model 5105 With Auger Feeder.

2. Electronic scale, with digital readout.
3. Positioning arm for electronic scale box.
4. Horn, light, or horn and light for electronic scale.
5. Unloading auger extensions; 3 ft. or 6 ft. folding or bolt-ons.
6. Hydraulic roll feed in mill throat hammermills.
7. Highway transport light kit.
8. Electric activated discharge.

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. Place the screen hook in the hammermill door pin. (See Figure 8.)

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 9.) Maintain tension with the lock nut to allow movement with 15 lbs. pull.

If equipped with auger feeder, remove the transport locking plate. Refer to OPERATION OF GRINDER MIXER - Auger Feed Operation and Figure 34.

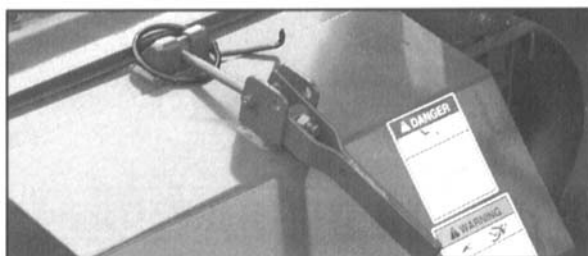


Figure 8 - Screen Hook Storage.



Figure 9 - 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. The 5105 is supplied with 540 RPM only.



CAUTION: NEVER OPERATE A 540 RPM GRINDER MIXER WITH A 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 tractor hydraulic auger feeder or roll feed, refer to OPERATION OF GRINDER MIXER - Folding Auger Extension, 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:

10.00 x 15 8 – PR tires – 40 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 10.)




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

Figure 10 - 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 A 540 RPM GRINDER MIXER WITH A 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 11.) 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 drives.

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.

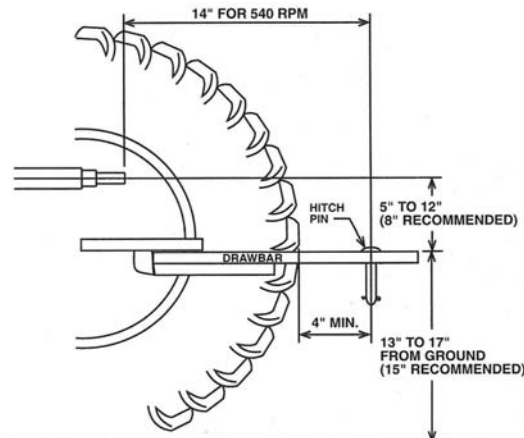


Figure 11 - Hitch Point Locations

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 can not bounce out. Raise the jack and lock into the transport position. (See Figure 12.) Attach the safety chain from the grinder mixer to the tractor. (See Figure 13.)



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

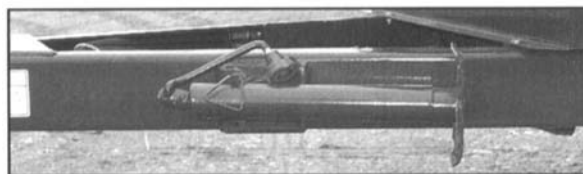


Figure 12 - Jack In Transport Position



Figure 13 - Grinder Attached To The Tractor With Safety Chain.

If the grinder mixer 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 mixer 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.

If the grinder mixer is equipped with a tractor hydraulic function, install the proper male ends on the hoses and plug the hydraulic line hoses into the tractor outlets. (Refer to GRINDER MIXER ADJUSTMENTS - Open And Closed Hydraulics.)

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 1-3/8-6 splines for 540 RPM operation.

HAMMERMILL

Make sure the grinder mixer is equipped with a 540 RPM drive when operating with a tractor equipped with a 540 RPM PTO drive. The diameter of the pulley on the jackshaft must be 22-5/8 inches for 540 RPM operation in a hammermill application. (See Figure 14.)



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

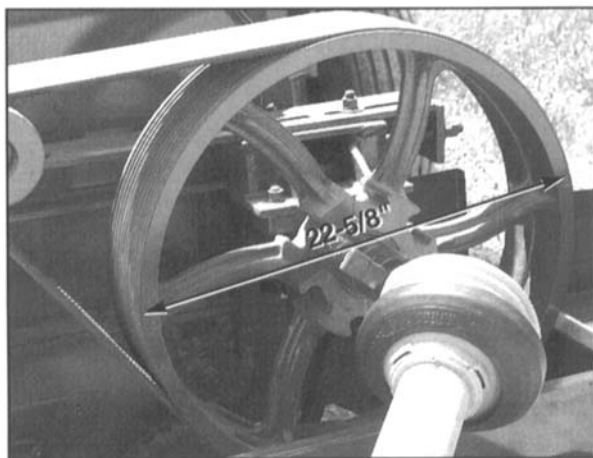


Figure 14 - Large Pulley - 540 RPM (Shields Removed For Clarity).

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

BEFORE GRINDING

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: MAKE SURE THE TRACTOR IS SHUT OFF, REMOVE THE KEY AND PLACE THE KEY IN YOUR POCKET.

Disconnect the PTO driveline and front shield anchor chain from the tractor and place it on the PTO driveline support bracket. (See Figure 15.) 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.

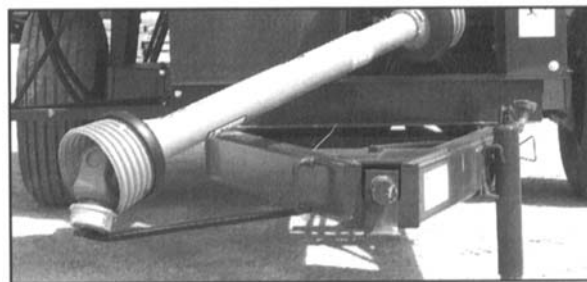


Figure 15 - PTO Support.

OPERATION OF GRINDER MIXER

TRACTOR PTO ENGAGEMENT

The mixer 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.

For smooth PTO operation and to help increase the life of the PTO driveline, make sure the tractor is aligned straight with the frame of the grinder mixer whenever possible.

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

HAMMERMILL CLUTCH PIN



CAUTION: BEFORE ENGAGING OR DISENGAGING THE CLUTCH PIN, MAKE SURE THE HAMMERMILL HAS COME TO A COMPLETE STOP AND SHUT OFF THE TRACTOR BEFORE PROCEEDING WITH THE NEXT STEP. PLACE THE KEY IN YOUR POCKET.

The hammermill clutch pin is located on the front of the fly-wheel. (See Figure 16.) ***Make sure the grinder mixer has come to a complete stop and shut off the tractor before proceeding with the next step.*** To engage the hammermill, turn the fly-wheel by hand to align one of the six slots in the fly-wheel with the pin. Push in the pin and turn 1/4 turn in either direction to lock it in place. To disengage the hammermill, push in the pin, turn 1/4 turn, and release.



CAUTION: ALWAYS OPERATE PTO AT THE SAME SPEED FOR WHICH THE GRINDER MIXER IS EQUIPPED; 540 RPM. NOTE THE SPEED DECAL ON THE FRONT SHIELD OF GRINDER MIXER.

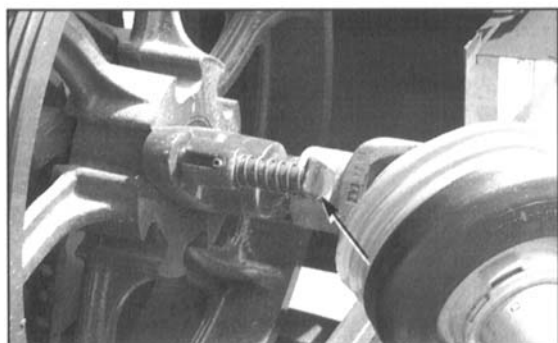


Figure 16 - Hammermill Clutch Pin (Pin Disengaged In Photo And Shields Removed For Clarity).

FEED GATE

A feed gate is provided in the mill throat with a rubber baffle (removed for roll feed installation) behind it. (See Figure 17.) The feed gate should be set to the lowest possible position to allow material to flow into the hammermill evenly.

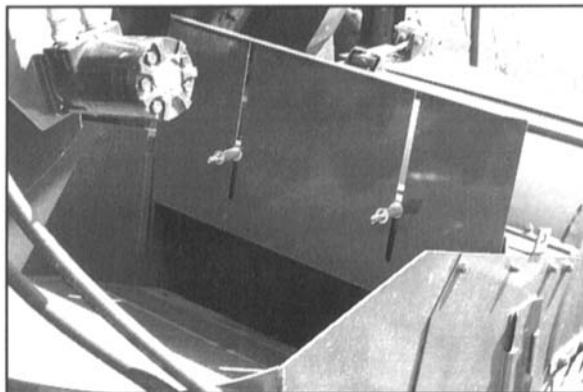


Figure 17 - Feed Gate At Throat Of The Hammermill.

HAY RETARD BOLTS

The hay retard bolts will help maintain uniform feeding while grinding hay. (See Figure 18.) The degree of the retard is adjusted by loosening the lock nuts on each of the retard bolts and turning the bolts in (increase) or out (decrease) to the desired position. Secure the bolts by tightening the lock nuts.

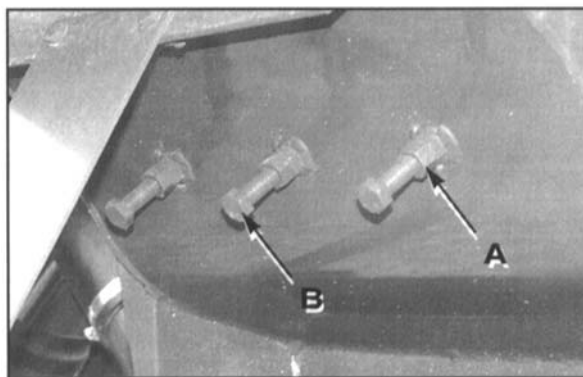


Figure 18 - Hay Retard Bolts (A - Lock Nut; B - Adjustable Retard Bolt).

HAMMERMILL SCREENS

Hammermill screens are available in sizes ranging from 1/8 inch up to 2 inch openings. The screen size needed will be determined by the material and degree of fineness desired.

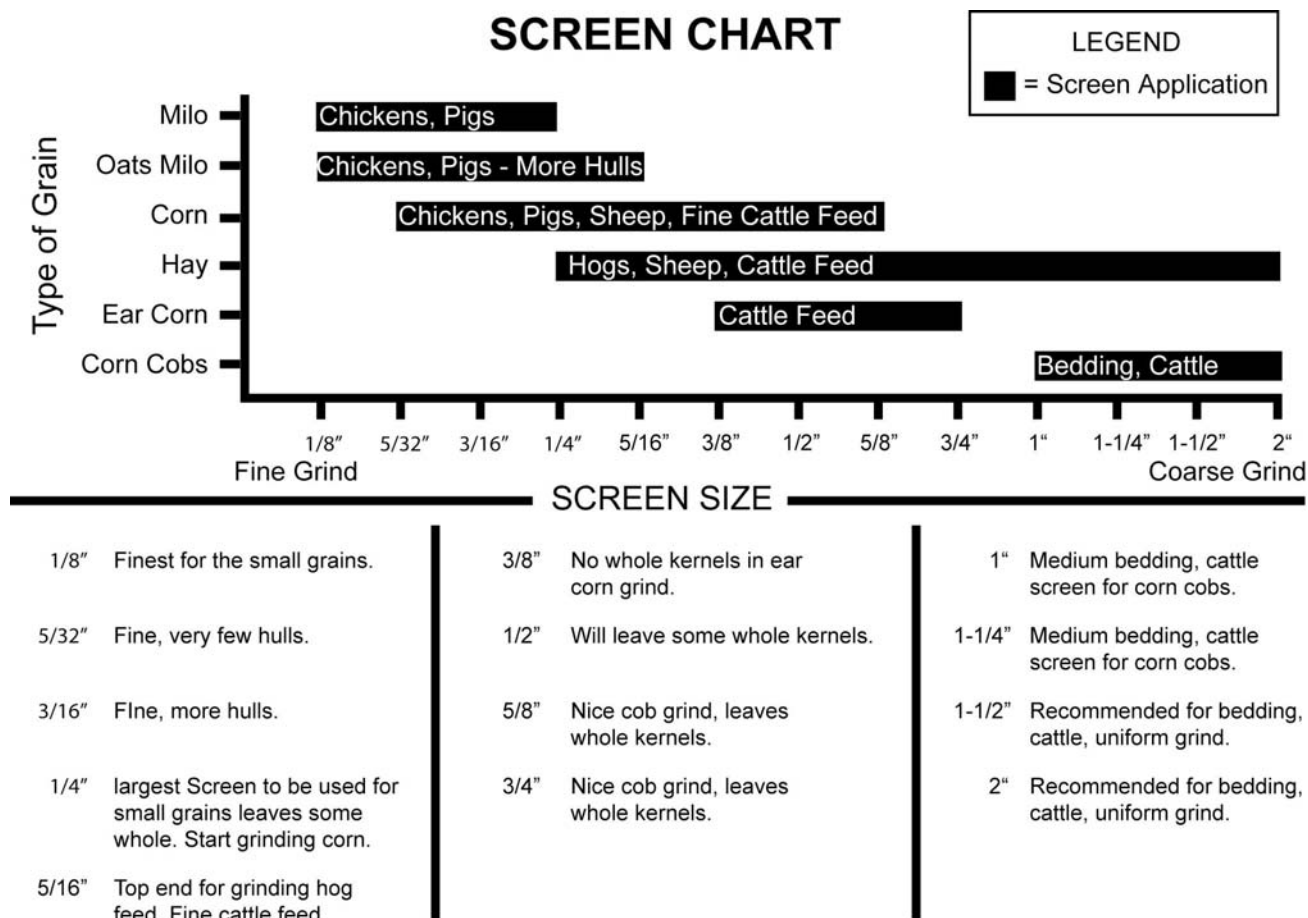


Table 2 - Screen Chart.

The Table showing the screen sizes may be used as a guide for grinding different types of feed. (See Table 2.)

Do not use a finer screen than needed as this will require more power and reduce mill capacity. Never grind wet corn or hay. This can cause auger problems during loading and unloading

CHANGING SCREENS



CAUTION: DISENGAGE ALL THE DRIVES. SHUT OFF THE TRACTOR ENGINE AND PLACE THE KEY IN YOUR POCKET BEFORE INSTALLING OR CHANGING HAMMERMILL SCREENS. NEVER OPEN THE HAMMERMILL COVER UNTIL THE HAMMERMILL HAS COME TO A COMPLETE STOP.

Extra screens are carried in the screen rack located over the left fender.

To install or change the screen, open the hammermill door and remove the screen with the hook provided. (See Figure 19.)



Figure 19 - Changing screens

The screen support rack will drop down to make the screen removal easier. Install the new screen. Close the hammermill door and then replace the screen hook and locking pins. (See Figure 20.)

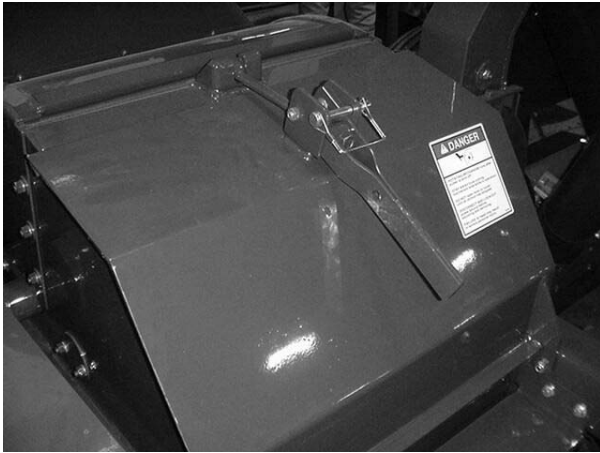


Figure 20 - Locking Pin And Latch On Hammermill Door (26 Inch Hammermill Shown).

PROCESSING HAY

If hay is to be ground, grind the grain first. Do not grind more than five bales of hay per tank until you are familiar with the results. Large amounts of hay or coarse ground hay can cause *bridging* in the tank and make it difficult to unload. If large quantities of hay are to be ground, run the hay straight through the machine without filling the tank.

PROCESSING WITHOUT MIXING

To grind any material without mixing, engage the unloading auger lever, open the tank unloading auger door and start the grinding 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 21.) 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. MAKE SURE GRATE IS ALWAYS IN PLACE.

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 21 - Supplement hopper located on right hand side of machine

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. 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 22.)



CAUTION: MAKE SURE THE PTO IS DISENGAGED AND THE TRACTOR IS SHUT OFF. PLACE THE KEY IN YOUR POCKET BEFORE OPENING OR CLOSING THE CLEAN-OUT DOOR.

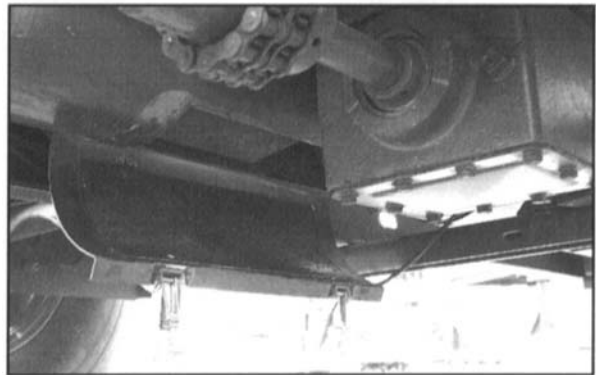


Figure 22 - Cleanout Door Located Under Right Hand Side Of Tank Assembly.

Located under the right hand side frame and tank assembly is a hinged door on the bottom of the auger trough. 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.

105 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	2346	3754	5839	5213	3962	5839
9	2219	3549	5521	4930	3747	5521
8	2046	3274	5092	4547	3456	5092
7	1874	2998	4664	4164	3165	4664
6	1659	2654	4129	3687	2802	4129
5	1487	2379	3701	3304	2511	3701
4	1315	2103	3272	2921	2220	3272
3	1100	1760	2737	2444	1857	2737
2	928	1484	2038	2061	1566	2038
1	756	1208	1880	1678	1276	1880

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.

FILLING THE MIXER TANK

Make sure the mixing tank unloading door is closed. As the mixing tank is filling, watch the ground 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 23.) 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.

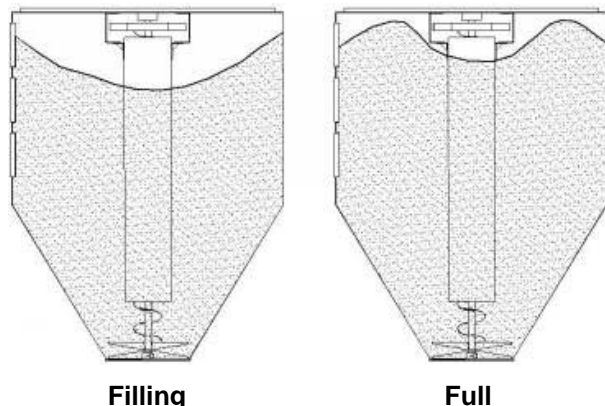


Figure 23 - Filling pattern

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 THE DRIVES. SHUT OFF THE TRACTOR ENGINE AND PLACE THE KEY IN YOUR POCKET BEFORE OPENING THE MIXING TANK LID.

If the mixing tank is accidentally overfilled, it is equipped with a spring loaded tank lid. (See Figure 24.) The lid also allows access to the inside of the mixing tank. Keep the lid closed and latched at all times.



CAUTION: IF ENTERING THE TANK, MAKE SURE THE TRACTOR ENGINE IS SHUT OFF. PLACE THE KEY IN YOUR POCKET AND DISCONNECT THE PTO DRIVELINE.

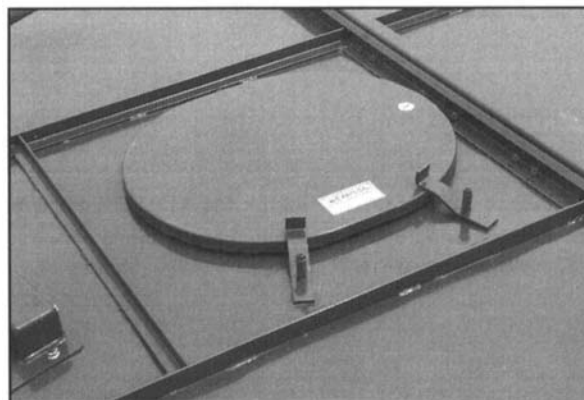


Figure 24 - Spring Loaded Tank Lid.

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.

UNLOADING AUGER POSITIONING

After mixing, the finished feed may be unloaded into storage bins, wagons, or feeders. Positioning (Lift and Swing) of the unloading auger and drive for the unloading auger may be controlled in two ways.

A) Manual Crank

(See Figure 26 and Figure 27)

Insert crank on the shaft next to channel to lift and on the shaft at the rear of lower auger housing to swing the unloading auger. A brake is provided to prevent movement after positioned (See Figure 28.)

B) Tractor Hydraulic Lift And Swing

Hydraulic lift and swing is accomplished by using the hydraulic system valves. If a hydraulic auger feeder is present, a double selector valve is required to direct flow of the hydraulic fluid. Either the swing motor or the auger feeder may be operated independently but not at the same time. (See Figure 25.) Position the selector valve control "in" to direct fluid to discharge the swing function. Make sure spool goes fully against the snap ring when moving lever in.



Figure 25 - Hydraulic Selector Valve (Lever In The In Position - Hydraulic Swing).

Connect four hydraulic hoses with the appropriate male connectors to the tractor. Make sure the proper hoses are connected to the same tractor hydraulic circuit. Activate the appropriate tractor valve to lift the unloading auger, then use the other hydraulic valve to

swing the unloading auger to the desired position.

UNLOADING AUGER ENGAGEMENT

Operate the tractor at a minimum of 2/3 throttle for unloading.

UNLOADING CLUTCH DRIVE

Starting at an idle, move the clutch handle ahead and down to engage the augers. (See Figure 26.) Gradually increase speed to at least 2/3 throttle. Open the unloading door. The eccentric may be used to hold the door open. (See Figure 27.) When the tank is unloaded, reverse the procedure.

If equipped with optional electronic actuators, engage the appropriate function. Make sure clutch is fully engaged at the idle speed.

NOTE: If unloading in more than one location, close the discharge door and empty the auger before transporting the mixer.

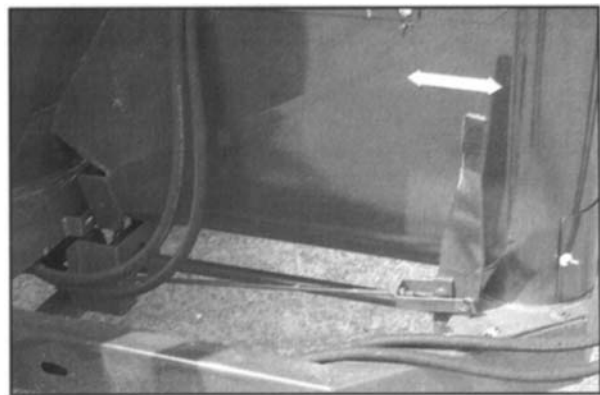


Figure 26 - Unloading Clutch Operation.

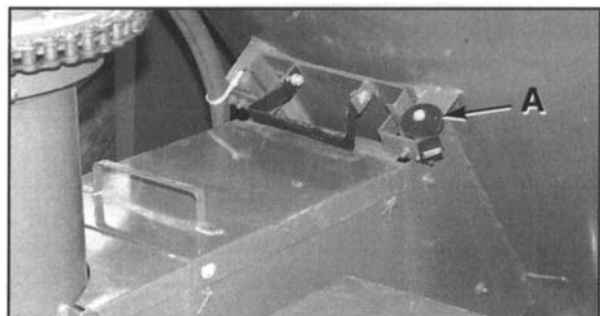


Figure 27 - Unloading Door (A - Eccentric Lock).

FOLDING AUGER EXTENSION

Optional extensions for the unloading auger include a 3 to 6 feet folding or bolt-on extension. (See Figure 28.) For discharge heights of the optional extensions. (See Figure 29 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 unloading clutch.

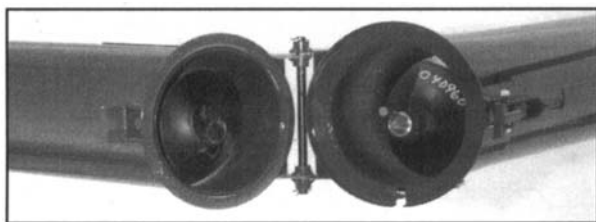


Figure 28 - Folding Auger Extension.

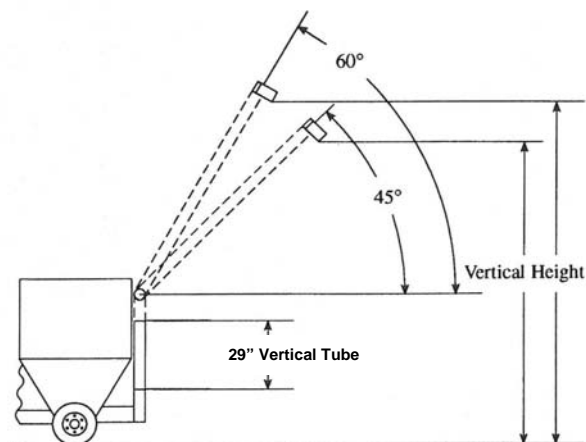


Figure 29 - Unloading Auger Heights (Refer To Table 4 For Detailed Heights.)

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 30.)

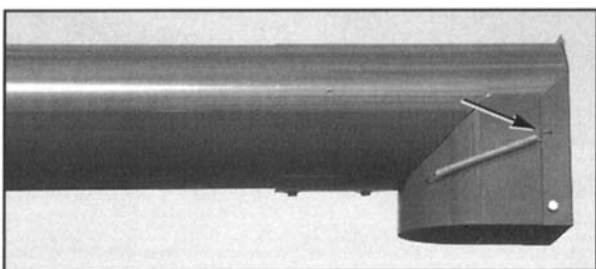


Figure 30 - Unloading Auger Hood.

AUGER FEED OPERATION

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

To position the auger feeder, remove the clip pin from the fender bracket and lift the bottom of the auger feeder slightly so the brackets can clear the fender. 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 ratchet bar. Raise or lower to the desired height and release the rope. Remove the clip pin holding the auger feeder folding hopper up and then swing the hopper down. (See Figure 36.)



Figure 31 - Auger Feeder Operation.

When processing material such as ear corn, the grate must be left in the up position.



CAUTION: IF YOU MUST GRIND WITH THE GRATE UP, USE EXTREME CARE AND MAKE SURE TO STAY CLEAR OF THE AUGER.

UNLOADING HEIGHT OBTAINED ON LEVEL SURFACE. 105 Bu. (See Figure 29.)			
Unloading Auger Configuration	Tube & Elbow Combined Length	Discharge 45° 29 Inch Tube	Discharge 60° 29 Inch Tube
Standard – No Extensions	125 Inches	14 ft. 9 in.	16 ft. 8 in.
3 ft. Fold Around Auger Extension	161 Inches	17 ft. 0 in.	19 ft. 3 in.
6 ft. Fold Around Auger Extension	197 Inches	19 ft. 3 in.	22 ft. 0 in.

Table 4 - Unloading Auger Heights.



DANGER: TO PREVENT PERSONAL INJURY:

1. **USE THE GRATE OVER THE AUGER WHENEVER POSSIBLE**
2. **KEEP HANDS AND FEET OUT OF THE HOPPER AREA AND DO NOT CLIMB ON OR OVER THE HOPPER AT ANY TIME.**
3. **KEEP CHILDREN AND BYSTANDERS AWAY FROM THE MACHINE WHILE THE MACHINE IS IN OPERATION**

Make sure the auger feeder clutch handle will stop the auger feeder. Loosen the cable clamps to re-adjust.

The auger feeder swing brake prevents the auger from swinging. Tighten or loosen as desired. (See Figure 32.)

NOTE: If a more accurate reading is desired and the machine is equipped with an electronic scale, **DO NOT** rest the auger feeder on the ground. Place it in the desired position and set the swing brake.



Figure 32 - Auger Feeder Swing Brake.

The auger feeder is counter balanced by a spring. (See Figure 33.) If the spring needs to be adjusted; loosen the nut on the lower bolt, turn the bolt in to increase the spring tension, tighten the nut.

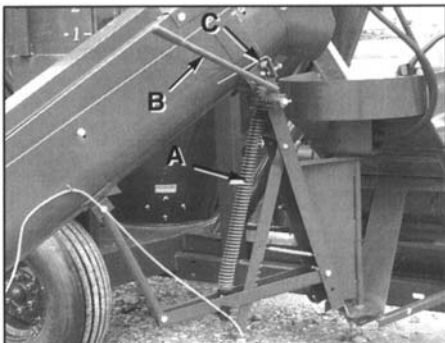


Figure 33 - Auger Feeder Positioner And Spring Adjustment (A - Spring; B - Positioner Handle; C - Positioner Lock).

The auger feeder is shipped with a transport locking plate (See Figure 34.) that locks the positioner (See Figure 37.) in one position. If the positioner is to be used, this plate is to be removed. But if the positioner is not needed, this plate can be kept in place to keep positioner from moving during transport of the grinder mixer.

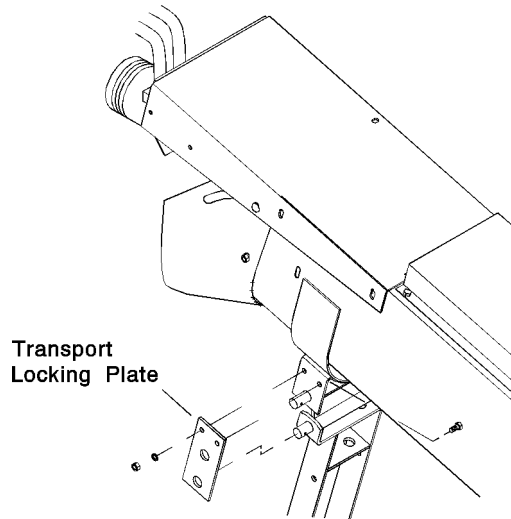


Figure 34 - Transport Locking Plate.

The auger feeder is equipped with a unique patented feature called a positioner. (See Figure 33.) This positioner allows the hopper to be re-positioned approximately 6 inches in or out without having to move the tractor. To operate the positioner; hold the long handle securely, release the short handle, re-position the auger feeder hopper under a spout or against a building, and then release the handles.

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 valve to off. (See Figure 35 and Figure 36.)



Figure 35 - Hydraulic auger feeder controls (See arrows.)

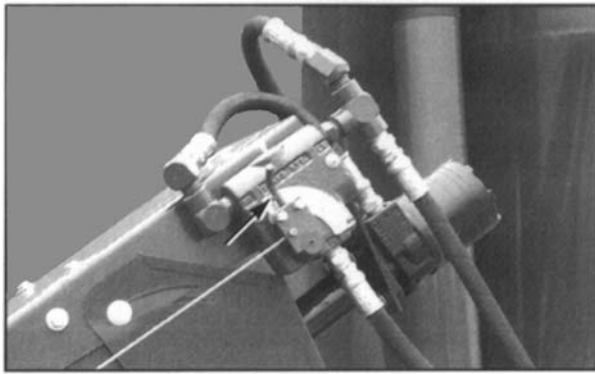


Figure 36 - Hydraulic Auger Feeder Control (See Arrow).

For the tractor hydraulic auger feeder (when equipped with a hydraulic lift and swing unloading auger), a selector valve will be located to the left rear side of the processor. The handle on this valve must be out to divert the oil to the auger feeder.

If the handle for the selector valve is in, oil flows to the swing function of the unloading auger. (See Figure 37.)

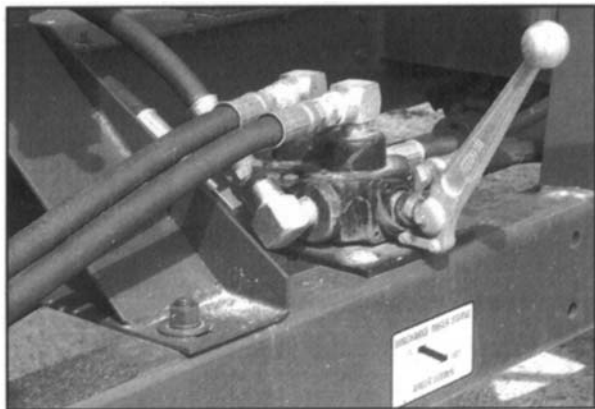


Figure 37 - Hydraulic Auger Feeder Selector Valve Lever Is In The *Out* Position - Auger Feeder).

To start the auger feeder, the flow control handle is moved forward (clockwise) until the desired speed is reached.

If the hydraulic auger feeder is operated by tractor hydraulics, there must be a minimum of 8 GPM flow and 1500 psi pressure available.

GRINDER MIXER ADJUSTMENTS



CAUTION: DO NOT MAKE ANY ADJUSTMENTS WHILE THE MACHINE IS IN OPERATION.

DRIVE CHAIN ADJUSTMENTS

The mill to mixer auger/supplement hopper drive chain and the discharge auger drive chain are tensioned with a wood block idler. (See Figure 38 and Figure 39.) Adjust the chain tension to 1/2 inch total deflection by positioning the wood block idler.



Figure 38 - Mill To Mixer Auger Drive Chain.

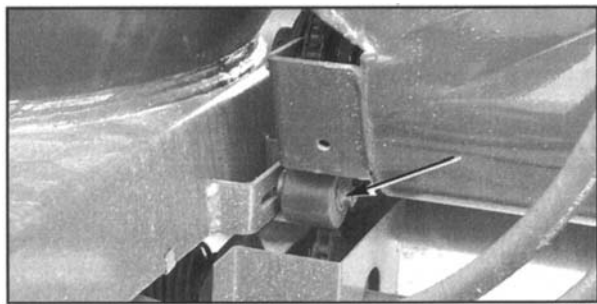


Figure 39 - Discharger Auger Drive Chain.

MAIN DRIVE CHAIN

Adjust the tension of the main drive chain by loosening the idler roller and bolt, and then sliding the idler sprocket toward the chain. (See Figure 40.) Re-tighten the idler roller bolt and make sure the chain deflection is 1/2 inch total at the longest span.

NOTE: The chain should be checked and oiled daily.

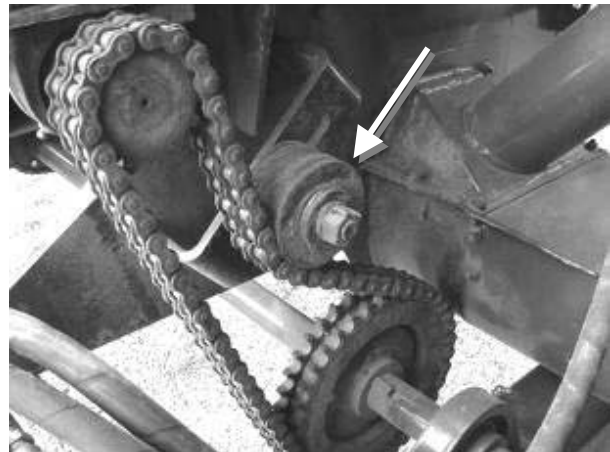


Figure 40 - Drive Chain Adjustment (Shields Removed For Clarity).

MAIN DRIVE BELTS

Belts on new machines have been properly tensioned at the factory. To re-tension the belts on a machine which has been in operation.

- Loosen bolts "B" and "C". (See Figure 41.)

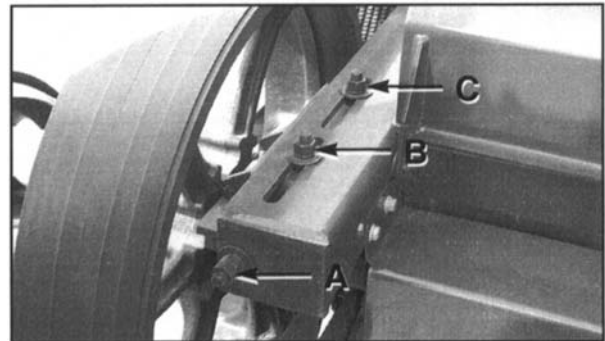


Figure 41 - Belt Tension Adjustment (Shields Removed For Clarity).

- Place a scale at the midway point of the double V-belts on the pulleys.
- Adjust bolt "A" (Figure 41., Detail A) until 15 pounds of pull on the scale raises the top of one double V-belt approximately 1/4 inch above the top of the remaining belts. (See Figure 44.)
- All six pairs of belts should have the average of 1/4 inch deflection at 15 pounds.
- Loosen bolts "E" and "F" (See Figure 42.)

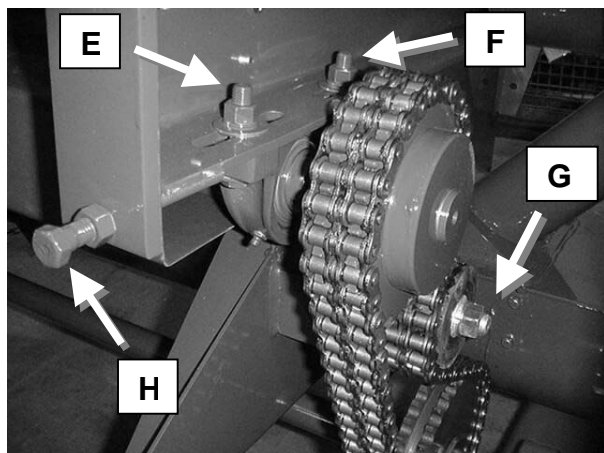


Figure 42 - Belt Tension Adjustment

- Loosen idler bolt "G"
- Adjust bolt "H" (See Figure 42) until Hammermill Jack Shaft "D" (See Figure 43) is parallel to Hammermill Housing. Measure both sides.

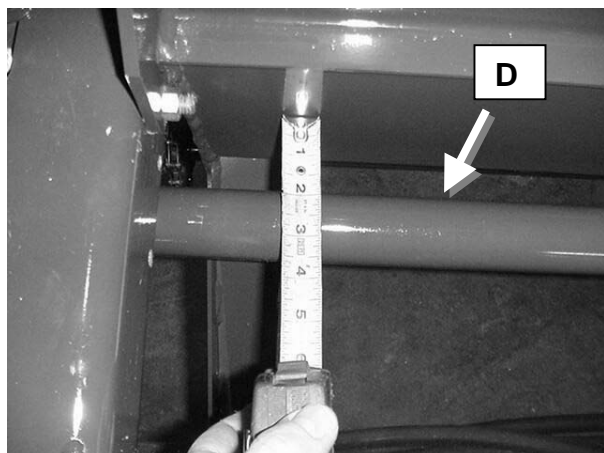


Figure 43 - Belt Tension Adjustment

- Tighten bolts "B", "C", "E", and "F". Lock adjusting bolts "A" in place with nut.
- Adjust tension in Main Drive Chain (See page 24).
- Reattach all shields removed or opened in previous steps.

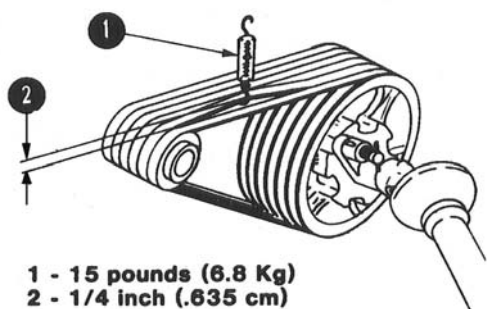


Figure 44 - Checking Belt Tension.

IMPORTANT: Proper alignment of the pulleys must be maintained when adjusting belt tension.

Belts should be checked periodically for proper tension and alignment, especially when the machine is new or when a new set of belts are installed. (See Figure 45.) During operation, if the drive belts are very hot or are smoking due to being loose, do not shut off the machine, but stop grinding and allow the mill to continue to run for several minutes until the belts have cooled. After the belts have cooled, stop the machine to re-tension the belts.

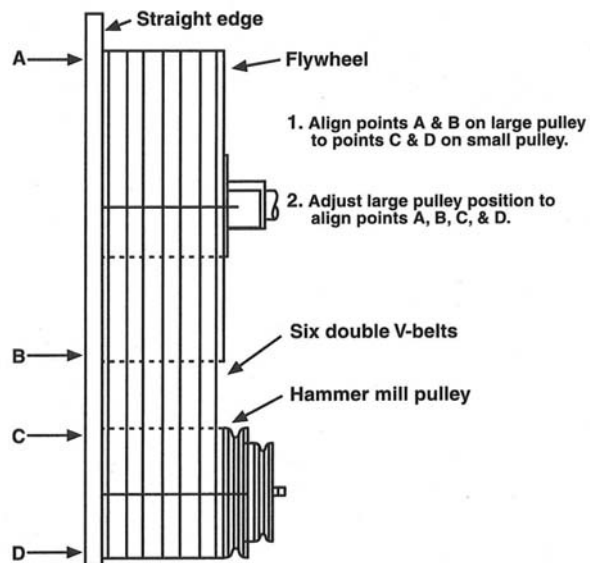


Figure 45 - Belt Pulley Alignment.

HAMMERMILL DOOR

To increase the hammermill door pressure on the screen, adjust the length of the T-handle threaded end. Check the adjustment and tighten the locking nuts in place against the pivot block. (See Figure 46.)



Figure 46 - Hammermill Door Pressure.

MANUAL UNLOADING AUGER SWING CRANK ADJUSTMENT FOR SPROCKET ENGAGEMENT

Adjust by loosening the three bolts shown (Figure 47) and moving the assembly up to engage the teeth of the sprocket with the disk.

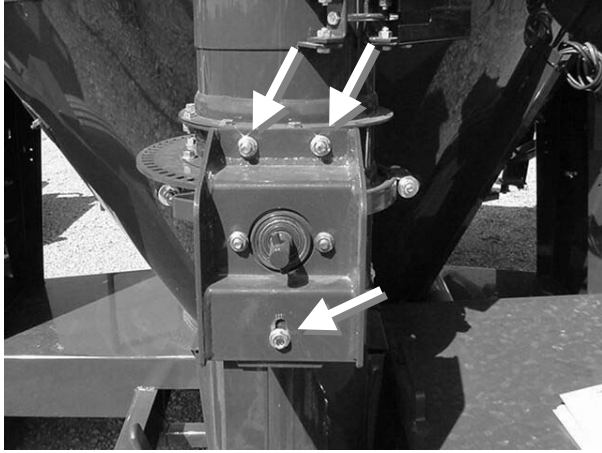


Figure 47 - Manual Unloading Auger Swing Crank Adjustment

MANUAL UNLOADING AUGER SWING BRAKE ADJUSTMENT

Tighten or loosen nut and bolt, to maintain tension to hold unloading auger (See Figure 48).

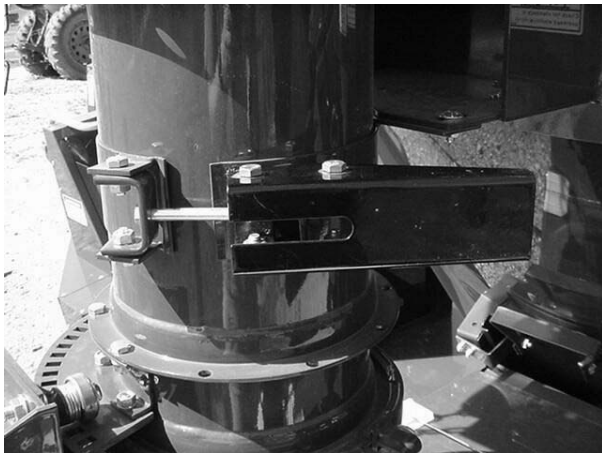


Figure 48 – Manual Brake Adjustment

MANUAL LIFT ADJUSTMENT

If the chain becomes loose, loosen bolts on the crank shaft and position chain to the proper tension (See Figure 49).

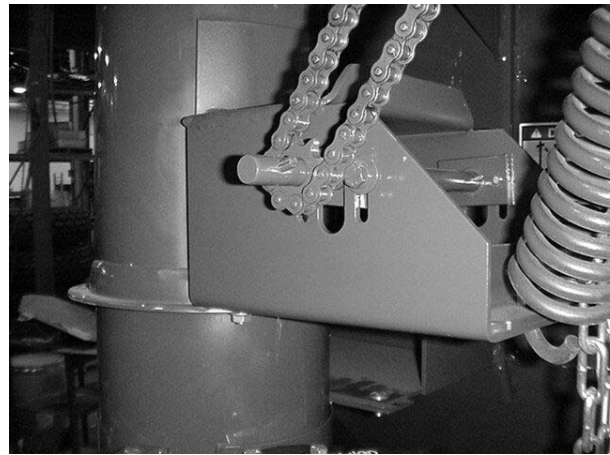


Figure 49 - Crank Shaft Chain Adjustment Bolts

LIFT ASSIST SPRING ADJUSTMENT

The lift assist spring may loose tension after excessive usage. It is important to keep proper tension on the spring, this spring helps ease raising and lowering the discharge auger. Adjust the spring tension by removing bolt in hole and moving to the hole shown (Figure 50).



Figure 50 - Lift Assist Spring Adjustment Bolts

DISCHARGE AUGER LIFT CYLINDER ADJUSTMENT

Turn the needle valve adjustment knob to control the speed at which the lift cylinder raises or lowers the discharge auger. This will be a slow speed to eliminate jump and bounce when activated. (See Figure 52.)

NOTE: Needle valves control flow one direction only.



Figure 51 - Discharge Auger Lift Cylinder Adjustment.

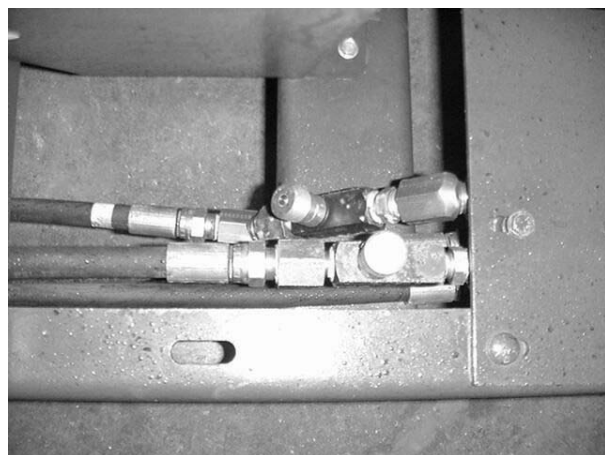


Figure 52 - Discharge Auger Lift Cylinder Needle Valves Adjustment (Located By Ladder)

HYDRAULIC SWING ADJUSTMENT

If any problem is encountered with the hydraulic swing adjustment drive, adjust and/or check as follows: (See Figure 53.)

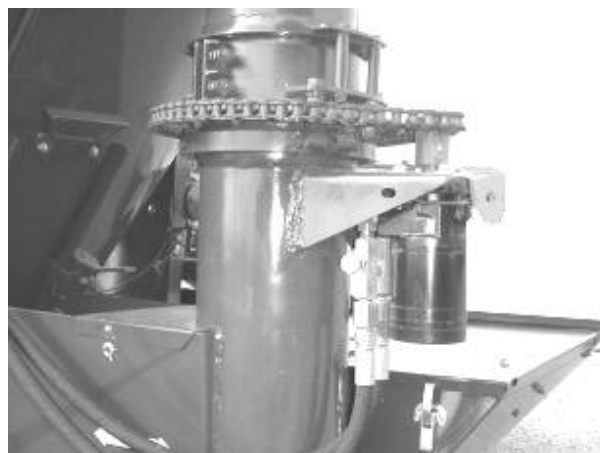


Figure 53 - Hydraulic Swing Adjustment (Shields Removed For Clarity).

1. Loosen the four hydraulic motor bolts and remove the #60 chain.
2. Wrap the #60 chain completely around the 55 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 10 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. Re-tighten the hydraulic motor bolts 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.
4. Adjust the spring tension to make sure the auger will slip if it hits something solid. (See Figure 53.) If you fail to check the auger and the auger does not slip, damage to the discharge could occur.

SWIVEL STOP

An unloading auger swivel stop prevents the unloading auger from contacting the mixing tank when moved 180 degrees from the storage position. (See Figure 54.) Relocate the swivel stop so it makes contact with the bracket before the unloading auger contacts the tank.

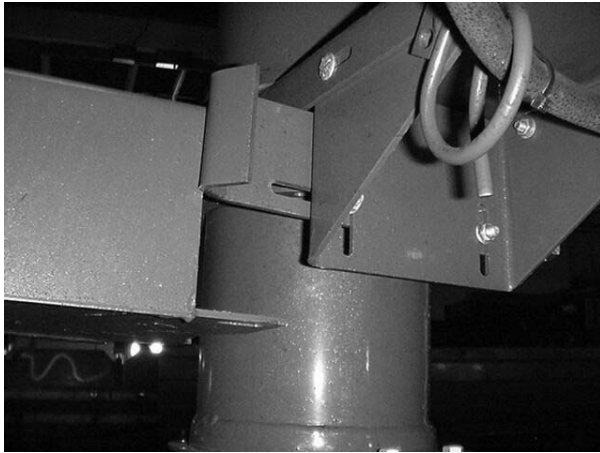


Figure 54 - Swivel Stop.

SWIVEL STOP ADJUSTMENT

Adjust the bracket so it makes contact before the unloading auger contacts the tank.

OPEN AND CLOSED HYDRAULICS

As the standard, this machine is equipped for tractor "Open Center" hydraulic operation.

If the operation of the auger feeder is to be with a tractor that is equipped with a "Closed Center" hydraulic system, revision to the plumbing at the 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. (See Figure 55.)

To convert to "Closed Center" hydraulic system, revise as shown. (See Figure 55.) If the system has two control valves for auger feeder and roll feed, change only the roll feed flow control valve.

When revised for "Closed Center" operation, do not use on a tractor with "Open Center".

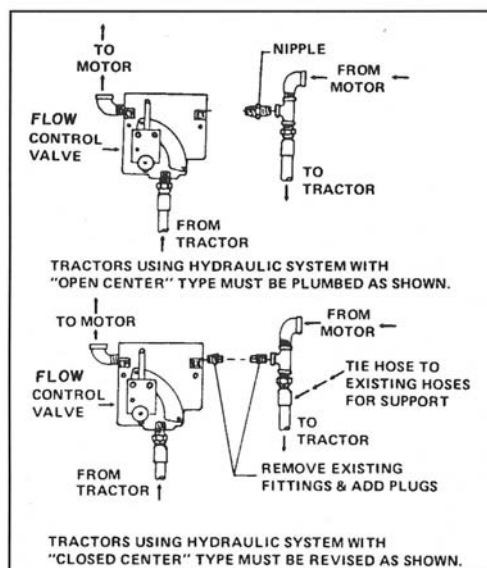


Figure 55 - Open And Closed Hydraulic Systems.

CONVERTING TO CLOSED CENTER HYDRAULICS

To convert the hydraulic system to "Closed Center" perform the following: (See Figure 55.)

1. At the control valve upper right corner, disconnect the hydraulic hose from the motor.
2. Disconnect the hydraulic hose to tractor from the tee and elbow then remove the nipple.
3. Install the plugs in the valve and tee where the nipple was removed.
4. Connect the hydraulic hoses to the tee and elbow.
5. Tie the hoses together for additional support.
6. If equipped with hydraulic roll feed, do not change the control valve for auger feed, change it for the roll feed.

POSITIONING THE UNLOADING AUGER TO THE OPPOSITE SIDE OF THE MACHINE



CAUTION: BEFORE REPOSITIONING THE UNLOADING AUGER TO OPPOSITE SIDE OF THE MACHINE, MAKE SURE THERE IS ENOUGH CLEARANCE FROM ALL OBSTRUCTIONS STRAIGHT UP AND TO THE REAR AND SIDES OF MIXER TANK THE SAME LENGTH AS THE UNLOADING AUGER.

STEP 1 – (See Figure 56.) Lift the unloading auger until the 5/8 inch hole in the lift lever is aligned with the 5/8 inch x 1 inch slot in the vertical cylinder mount arm. Lock the unloading auger into position with either a 5/8 inch bolt and nut or a 5/8 inch clevis pin.

STEP 2 – (See Figure 56.) Detach the rod end of the cylinder from the ball joint on the lift lever. Retract the cylinder until it is aligned with the cylinder re-positioning hole and re-attach. Remove the locking bolt and/or pin from the 5/8 inch hole.

STEP 3 – (See Figure 57.) Extend the cylinder until the 5/8 inch hole is aligned with the other 5/8 inch x 1 inch slot. Lock the cylinder into position with a 5/8 inch bolt and nut or a 5/8 inch clevis pin.

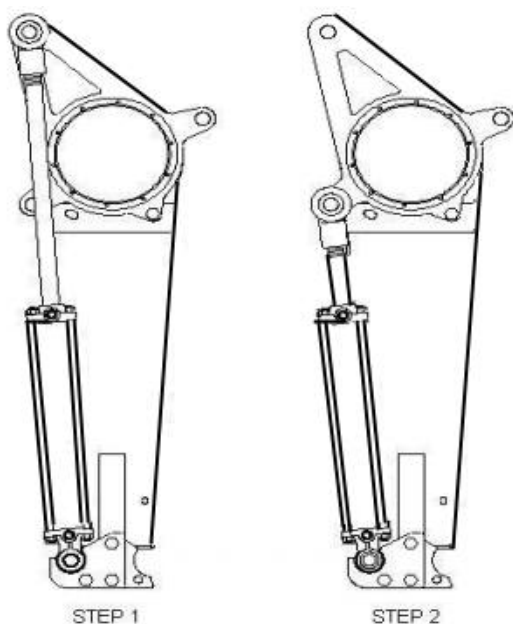


Figure 56 - Repositioning Unloading Auger.

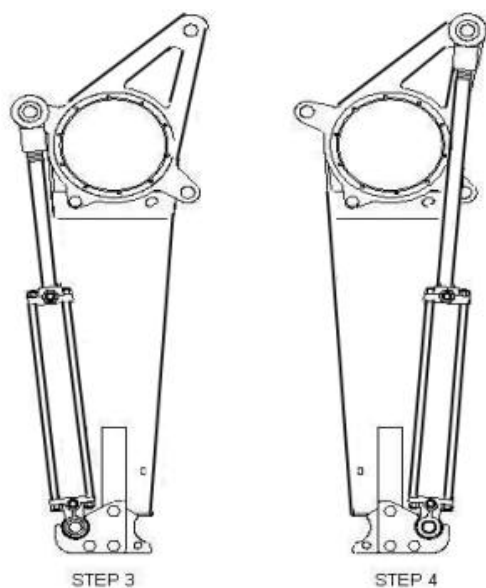


Figure 57 - Repositioning Unloading Auger.

STEP 4 – (See Figure 57.) Disconnect the hydraulic hoses from the cylinder. Remove the cylinder and lower the cylinder mount from the lift lever and vertical cylinder mount arm.

Re-attach the cylinder on the other side as shown. (See Figure 57.) Re-route the hydraulic hoses and connect to the cylinder. Move the saddle to the opposite side of the mixing tank. Lower the unloading auger and rotate the hood so it faces downward.

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: BEFORE LUBRICATING THE MACHINE, MAKE SURE THE ENGINE IS SHUT OFF, PLACE THE KEY IN YOUR POCKET AND DISCONNECT THE IMPLEMENT INPUT DRIVELINE

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 the bearing crosses, telescoping, and plastic shield rotation every 20 hours. The zerk is located on the sliding shaft. (See Figure 59 and Figure 60.)

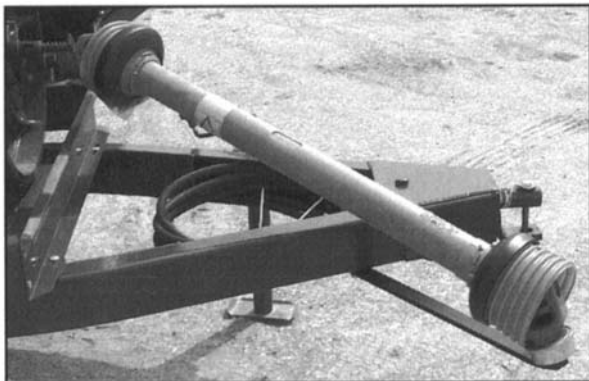


Figure 59 - PTO Driveline (Shield Removed For Clarity).

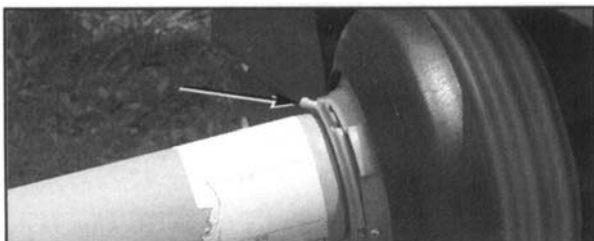


Figure 60 - Plastic Shaft Bearings (See Arrow).

HAMMERMILL SHAFT BEARINGS

Grease the front and rear pillow block bearings on the hammermill cylinder shaft every week or every 10 hours of operation. Do not overgrease. (See Figure 61 and Figure 62.) Use SAE multi-purpose type grease for this lubrication.

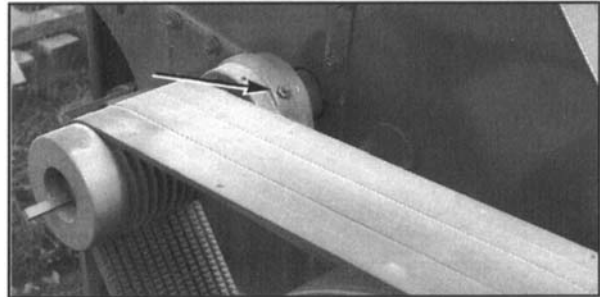


Figure 61 - Cylinder Shaft Bearing (See Arrow) (Shields Removed For Clarity).

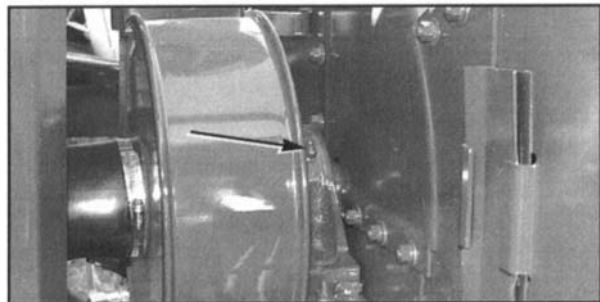


Figure 62 - Cylinder Shaft Bearing (See Arrow) (Shields Removed For Clarity).

HAMMERMILL ENGAGING PIN

Periodically oil the sliding pin that engages the large hammermill drive pulley. Use a light engine oil for lubrication. (See Figure 63.)

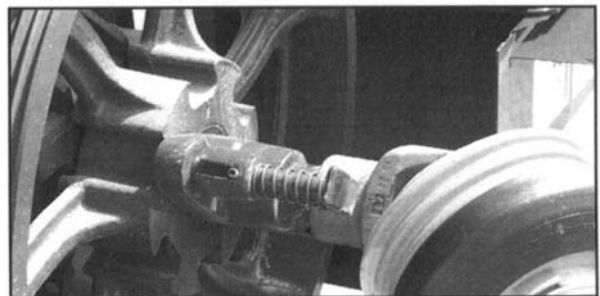


Figure 63 - Hammermill engaging pin (shields removed for clarity).

DRIVE SHAFT BEARINGS

Every month or every 25 hours of operation.

Grease the pillow block bearings on the front and rear bearings on the hammermill jack shaft. (See Figure 64 and Figure 65.) Grease pillow block bearings on the lower line shaft. (See Figure 66 and Figure 67.) Use SAE multi-purpose type grease for these lubrications.

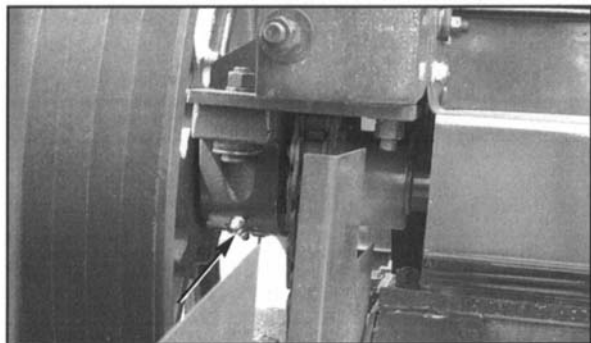


Figure 64 - Jack Shaft Front Bearing, Front (Shields Removed For Clarity).



Figure 65 - Jack Shaft Front Bearing, Rear (Shields Removed For Clarity).

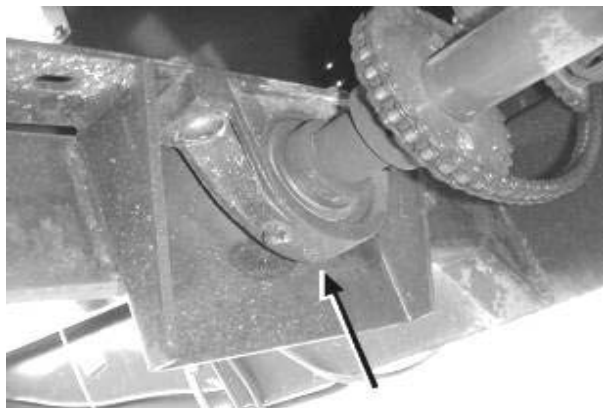


Figure 66 - Mixer Drive Shaft Bearing, Front.

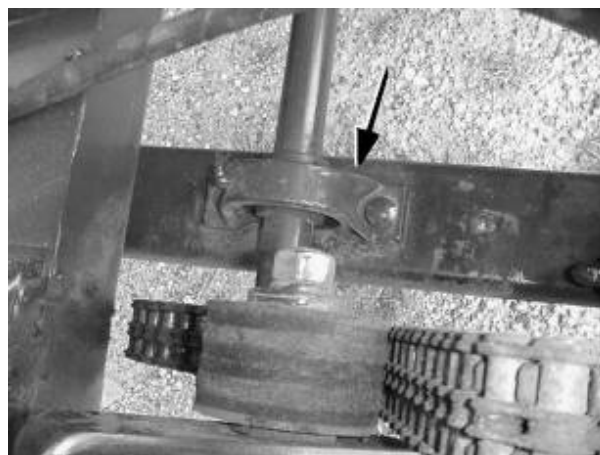


Figure 67 - Mixer Drive Shaft Bearing, Rear.

CHAINS

Chains should be lubricated at frequent intervals. Apply a light engine oil to the chain. Oil the chain on the inside located in the upper side of lower the strand. (See Figure 68.)

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**

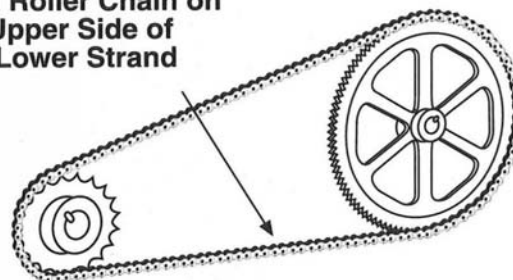


Figure 68 - Oiling Roller Chains.

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 69.)

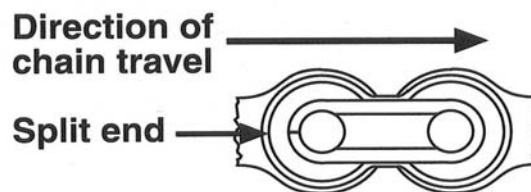


Figure 69 - Chain Spring Clip.

GEARBOX

Make sure to check the oil level on the gearbox at the base of the mixing tank every 6 months by removing the check plug at the front of the gearbox. Add SAE 90 weight gear oil if necessary and until oil runs out of the check hole. (See Figure 70.)

IMPORTANT: Do not overfill.

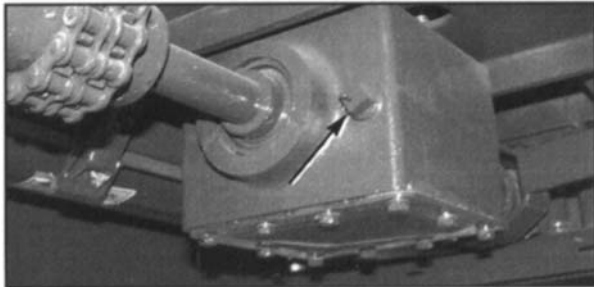


Figure 70 - Gearbox Lubrication.

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. 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.)

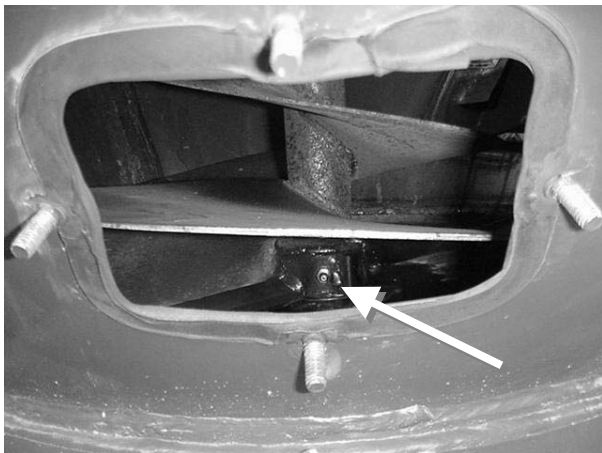


Figure 71 - Clean-Out Door in Mixing Tank Cone And Grease Zerk For Seal At Bottom Of Vertical Mixing Auger.

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.)

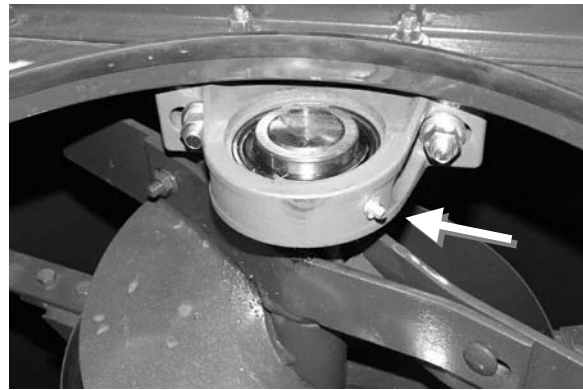


Figure 72 - Upper Vertical Mixing Auger Bearing.

UNLOADING AUGER CLUTCH

Apply SAE multi-purpose grease to the shaft and groove in the under sliding (driven) unloading auger clutch half. This should be done periodically to ensure proper lubrication. (See Figure 73.)

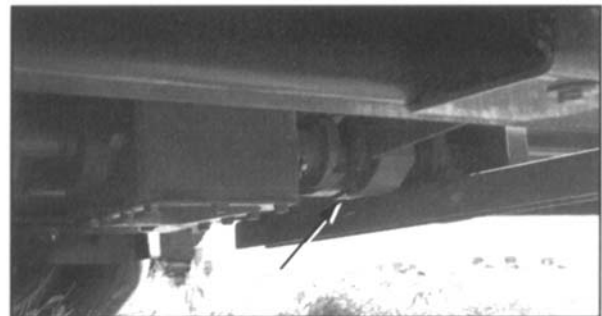


Figure 73 - Unloading Clutch Operation.

SWIVEL CLAMP

Grease the lower swivel clamp every week to ensure the swivel clamp is properly lubricated. (See Figure 74.)

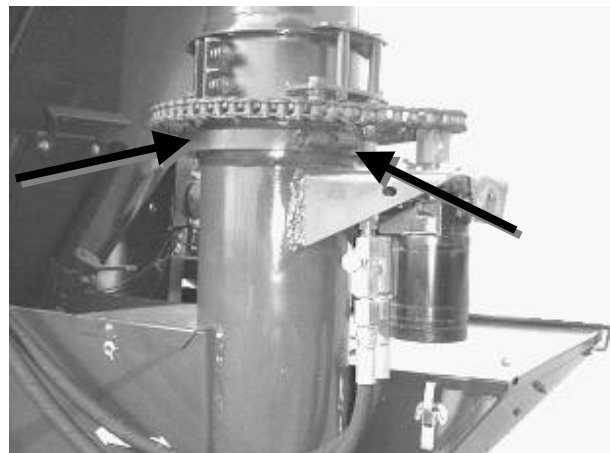


Figure 74 - Swivel Clamp Area, Discharge Auger (Shield Removed For Clarity).

ELBOW

Periodically grease the gear sets at each unloading auger transfer point using SAE multi-purpose grease. The lower gears (Figure 77) have a zerk and are enclosed to keep more grease in contact with the gears. (See Figure 75, Figure 76 and Figure 77.)



Figure 75 - Discharge Auger Bevel Gears, Inner Elbow (Shields Removed For Clarity).

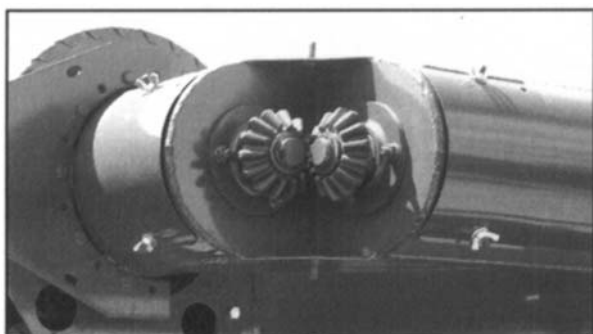


Figure 76 - Discharge Auger Bevel Gears, Outer Elbow (Shields Removed For Clarity).

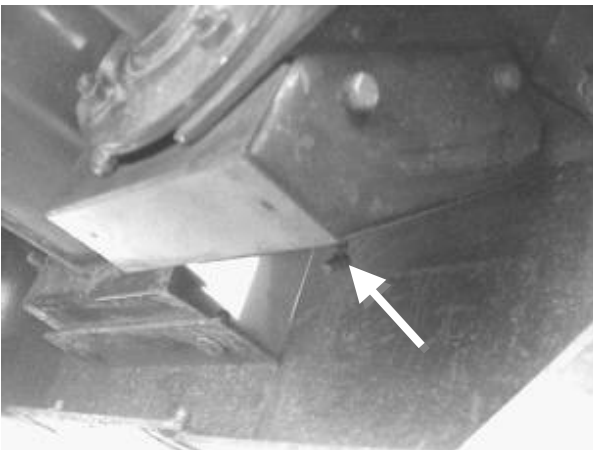


Figure 77 - Vertical Auger Bevel Gears.

HYDRAULIC LIFT

Periodically grease the two locations on the hydraulic lift lever arm using SAE multi-purpose grease. (See Figure 78.)

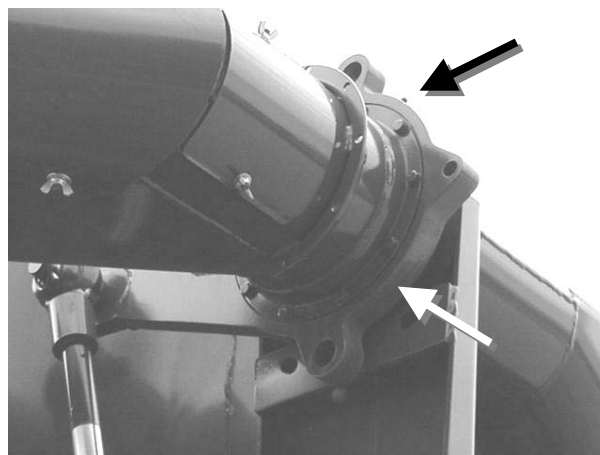


Figure 78 - Hydraulic Lift Grease Locations.

RING AND WORM GEAR (MECHANICAL)

Grease at two locations on large ring gear on unloading auger and apply grease at ring gear and worm gear periodically. Use SAE multi-purpose type grease. Also every six months repack 3/4 inch dia. bearings on worm shaft (See Figure 79). Grease lubrication fittings and outside diameter of ring gear with multi-purpose grease every ten hours of operation (See Figure 80.)



Figure 79 - Ring And Worm Gear Bearings



Figure 80 - Ring And Worm Gear Fittings

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 81.)



Figure 81 - Wheel Bearing Lubrication.

SERVICE

TORQUE SPECIFICATIONS



CAUTION: DISENGAGE ALL DRIVES AND MAKE SURE THE TRACTOR ENGINE IS SHUT OFF. PLACE THE KEY IN YOUR POCKET AND DISCONNECT THE PTO DRIVELINE PRIOR TO SERVICEING THE 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 A LOUD NOISE WHEN SHEARED. IMMEDIATELY SHUT THE TRACTOR IGNITION OFF AND DETERMINE THE CAUSE OF SHEARING.

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.

When replacing sheared bolts, always tighten them securely using lock nuts. The shear bolts must be the correct harness to ensure safety. (See Figure 82.)

IDENTIFICATION OF SAE BOLT GRADES; HEAD MAKINGS

Grades 0, 1, and 2 no markings



Grades 5: 3 radial dashes 120° apart



Grades 8: 6 radial dashes 60° apart



Figure 82 - SAE Bolt Identification.

SPROCKET AND CHAIN ALIGNMENT

Make sure the sprockets are in line with each other. (See Figure 83 and Figure 84.) 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 85.) This faulty alignment will result on excessive wear on both the chain and sprockets.



Figure 83 – Discharge And Mixer Sprocket (Shields Removed For Clarity).

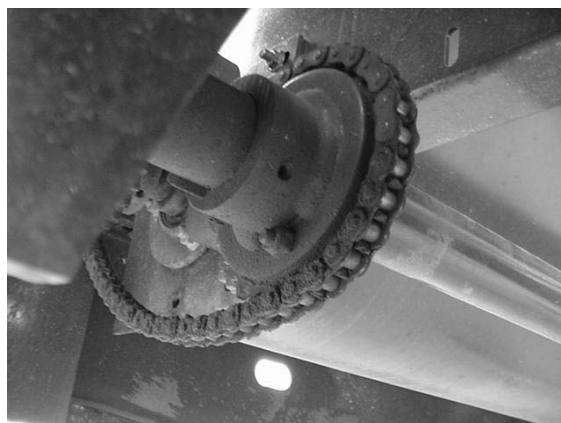


Figure 84 – Mill To Mixer Sprocket (Shields Removed For Clarity).

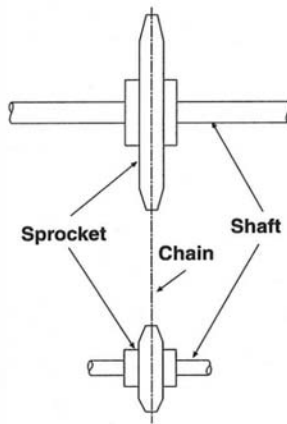


Figure 85 - Sprocket Alignment.

REPLACEMENT OF WORN OR DAMAGED HAMMERS

Hammers must be replaced in pairs to maintain proper balance. This is accomplished by replacing the hammers opposite of each other (180 degrees apart) using a matched pair.

REVERSING THE HAMMERS



CAUTION: MAKE SURE THE HAMMERMILL HAS STOPPED ROTATING BEFORE THE HAMMERMILL DOOR IS OPENED. SHUT THE TRACTOR IGNITION OFF AND PLACE THE KEY IN YOUR POCKET. SAFELY DISENGAGE ALL DRIVES.

There are four rows of hammers in the rotor assembly with a total of 36 hammers on a 20 inch hammermill. (See Figure 86.) The hammers are reversible, but make sure to always replace the hammers and spacers in the exact sequence in which they were removed. This will preserve the balance of these specially matched units. All four corners can be used on each hammer.

SPACING FOR 36 HAMMERS

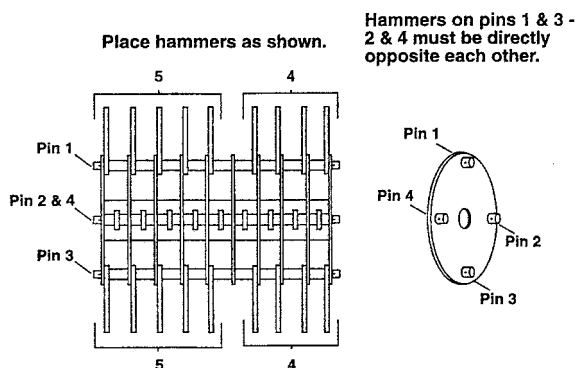


Figure 81: Proper hammer spacing (20" hammermill).

Figure 86 - Proper Hammer Spacing (20 Inch Hammermill).

To remove the hammers, remove the bolts from the side of the mill and round plate. (See Figure 87 and Figure 88.) Remove the pins from each end of the rod and pull the rods outward making sure the hammers are put back in the same place from which they were removed.

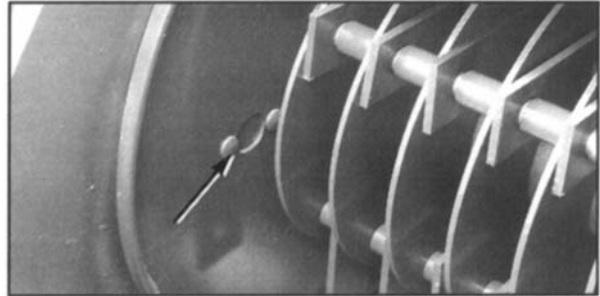


Figure 87 - Hammer Removal Inside Hammermill, Hole To Remove Hammermill Rods (Shields Removed For Clarity).

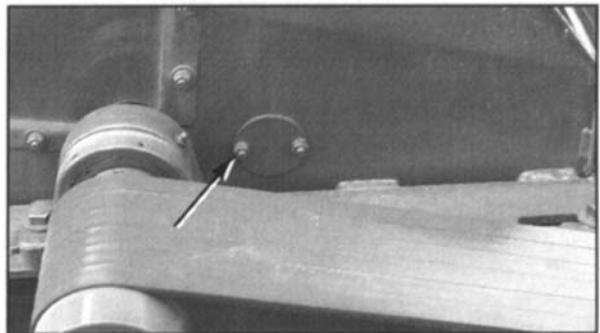


Figure 88 - Hammermill Removal Hole, Plate To Be Removed (Shields Removed For Clarity).

MAIN DRIVE BELT REPLACEMENT

To remove the drive belts, loosen the bolts. (See Figure 89, Detail B and C.) To relieve the belt tension, loosen the bolts. (See Figure 82, Detail A.)

After the belts are no longer tensioned, remove the belts and replace them with the new set and continue as described in GRINDER MIXER ADJUSTMENTS - Main Drive Belts. Make sure to align the pulley and the sheave.

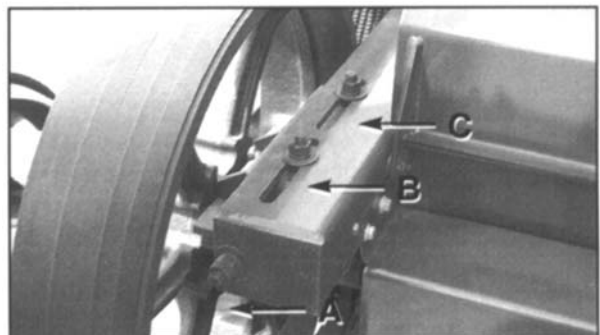


Figure 89 - Belt Removal (Shields Removed For Clarity).

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, load uniformly, and adjust belts to prevent slipping (1000 rpm recommended over 100 hp)
	Lack of grease on the sliding halves	Lubricate as necessary
Mill vibrates excessively while in operation	PTO driveline is not properly aligned	Front of grinder main shield must be parallel to tractor axle
	PTO driveline is bent	Replace the PTO driveline
	Missing and/or broken hammers	Replace the hammers (in pairs)
	Tractor drawbar is not adjusted properly	Adjust the tractor drawbar (Refer to Figure 13.)
Excessive noise when turning the mixer while it is in operation	Turning the mixer too sharply	Avoid sharp turns
Low volume from hammermill	Hammermill is not operating at optimum speed	Before grinding, set tractor throttle to rated PTO speed (540 or 1000 rpm)
	Hammermill screens and/or hammers are worn	Reverse and/or replace the screens and hammers if necessary
	Hammermill is not level	Find level surface if at all possible
	Mill drive belts are slipping	Adjust the drive belts
Tractor engine RPM falls below the rated PTO speed while grinding	Adding too much feed to the mixer	Reduce flow of material to the mill
	Screen size is too small	Increase the screen size
	Feed gate is too high	Lower the feed gate
	Drive belts are too loose	Adjust the drive belts
Drive belt squeals when the mill is engaged	Drive belts are too loose	Tighten the drive belts
Drive belts show excessive wear	Belts are out of alignment	Align the pulleys
	Belts are slipping	Adjust the belts
Material bridges in the tank	High moisture content ear corn or too much hay is being ground	Grind high moisture ear corn last or run straight through tank
		Use a smaller screen or add more grain with hay
Feed roll will not draw hay slice into the mill	Feed roll is too low	Raise the feed roll
		Adjust the hay retard bolts

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Mill will run but the unloading auger and the mixing auger do not run	Pin(s) sheared in the drive	Repair the cause of the sheared pin(s) and replace
Unloading auger run, but the feed is not unloading	Mixer tank door is closed	Open the mixer tank door
Unloading auger will not engage	Unloading auger clutch linkage needs adjusted	Adjust the clutch linkage
	Clutch sticking	Engage the clutch
Auger feeder stops when the mill is engaged	Hydraulic flow control valve is disengaged	Engage the flow control valve
	Selector valve is not positioned correctly	Change the position of the selector valve (out for auger feeder)
Discharge auger jerks when it is raised or lowered	Excessive hydraulic flow rate to lift cylinder	Adjust the flow rate with the needle valves (See Note)
	Lift lever is binding on holder	Grease the zerks on the lift lever
Discharge auger raises and lowers too slowly	Incorrect hydraulic flow rate to the lift cylinder	Adjust the flow rate with the needle valves (See Note)

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

ATTACHMENTS

ELECTRIC ACTUATOR OPTION

Preparing The Tractor

Install the control box in the cab of the tractor using the mounting bracket provided. Connect the power cord to a suitable 12 VDC power supply. The tractor must be able to provide 12 to 15 VDC and 20 ampere to operate the electrical activated control valve. For the direct connection to the battery, see Figure 90.

NOTE: The electrical system of the tractor must be in good working order. If a voltage of less than 12 VDC is provided to the actuator, the system will not operate properly. There is a 20 amp fuse mounted on the tractor control box for electrical overload protection.

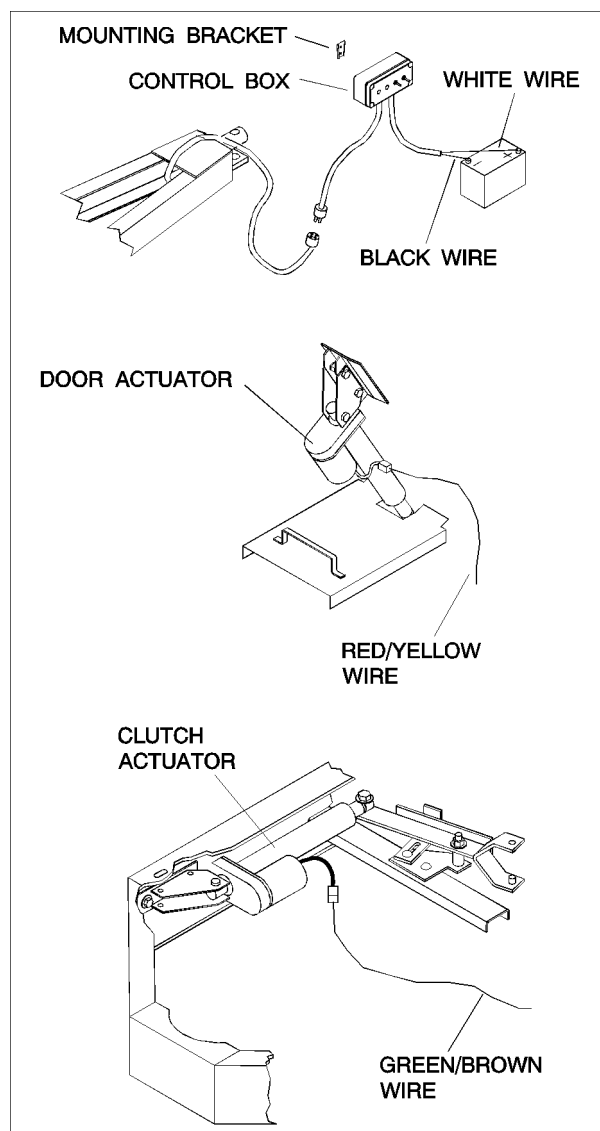


Figure 90 - Control Box Installation.

Preparing The Grinder Mixer

Electrical Components:

Connect the tractor control box to the machine with the plug that has been provided.

Activate the electric linear actuator to engage the clutch. It will ratchet when the actuator is fully retracted. From this point, the clutch should be fully engaged. The clutch arm should be loosely riding in the groove of the clutch.

Adjustments can be made by loosening the rear mounting bracket bolts and sliding the actuator assembly to the desired setting.

To engage the discharge auger, activate the electrical linear actuator until a "ratchet" sound is heard. This will indicate that the clutch is fully engaged. Excessive wear of the clutch teeth will result if the clutch is not fully engaged. (See Figure 91.)

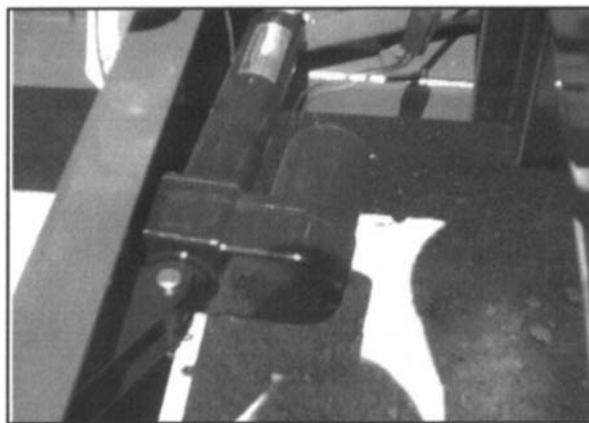


Figure 91 - Discharge Clutch Actuator.

To operate the discharge door, activate the electrical linear actuator. The actuator will "ratchet" when the door is fully opened or closed. (See Figure 92.)

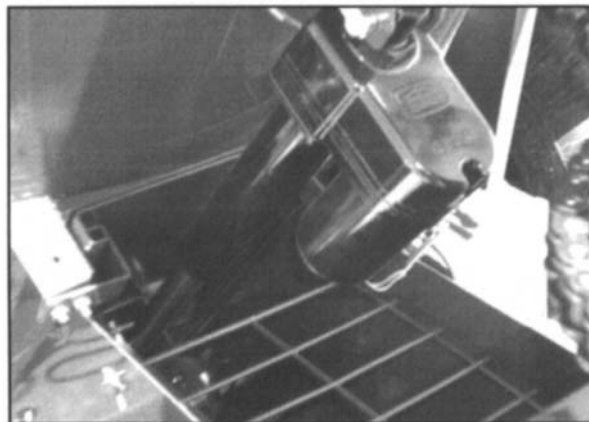


Figure 92 - Discharge Door Actuator.

ELECTRONIC SCALE ATTACHMENT

A solid state electronic scale attachment, digital type, is available for your grinder mixer. The scale attachment consists of waybar 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 1percent 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 93.) 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.

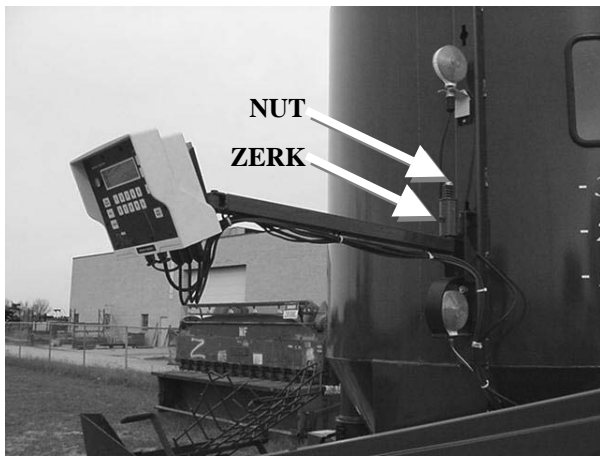


Figure 93 – Adjustable Scale Arm Attachment

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 94.) 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 GRINDER MIXER section.

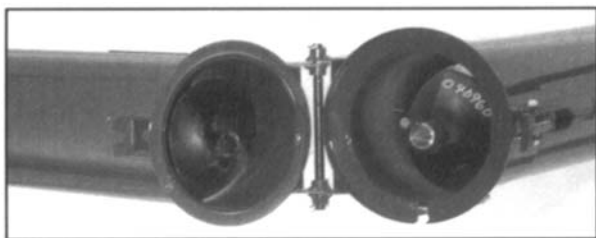


Figure 94 - Folding Auger Extensions.

SCREENS

Screens for hammermills are available in 12 sizes ranging from 1/8 inch to 2 inch. Refer to OPERATION OF GRINDER MIXER - Hammermill Screens.

HYDRAULIC ROLL FEED

The hydraulic roll feed provides easier feeding of exceptionally coarse material such as ear corn, corn cobs or hay. Additional protection is provided for the operator and more even particle size will be obtained. (See Figure 95.)

To maintain even feeding, the roll feed may be set at a desired height by using the roll feed crank. Roll feed settings will vary with the material being fed. Brief experience will indicate the best settings. Set the roll feed just high enough so that the material is being pulled smoothly.

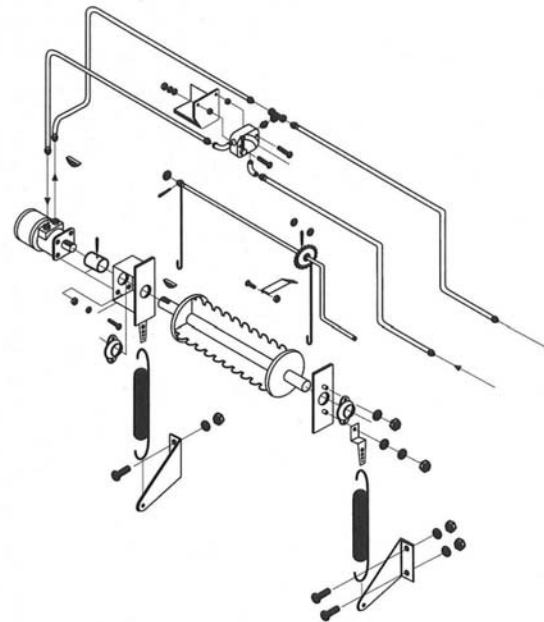


Figure 95 - Roll Feed With Auger Feeder Shown.



CAUTION: NEVER FORCE MATERIAL INTO THE ROLL FEED WITH A STICK OR WITH HANDS. BE ESPECIALLY CAREFUL WHEN FEEDING SLICES OF HAY, ALWAYS ALLOWING THE ROLL FEED TO PULL THE HAY INTO THE MILL.

The hydraulic roll feed is connected in series with the hydraulic auger feeder. A separate flow control valve allows separate speed control for the roll feed. If equipped with the hydraulic roll feed only, the flow control is on top of the hammermill. The crank for lowering the roll feed is toward the front of the hammermill housing. (See Figure 96).

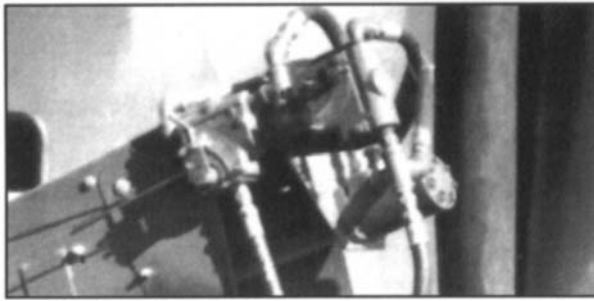


Figure 96 - Roll Feed And Auger Feeder Flow Control Valves.

ROLL FEED ADJUSTMENT

Five holes are provided at the upper end of the roll feed spring. The roll feed tension can be changed as desired. Generally, the top hole is used for hay. (See Figure 97.)

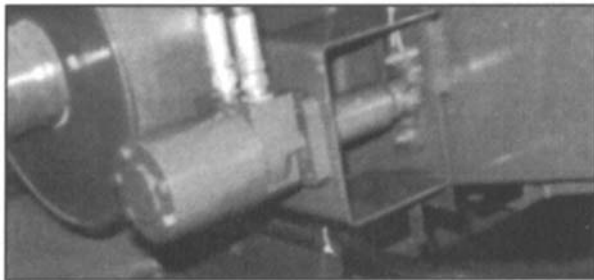


Figure 97 – Hydraulic Roll Feed Motor.

If the roll feed does not crank up straight, check the cables at each side of the roll feed to see if they are both uniform on the roll feed crank shaft. (See Figure 98.)



Figure 98 – Roll Feed Crank.

Cable lengths can be adjusted by loosening the nut with the special cable washer and retightened after the cables have been equalized.

SPECIFICATIONS

TANK AND FRAME

- Capacity of mixing tank: 105 bu. 129 cu. ft.
- Height (variable with tire size): 106 inches.
- Width without auger feeder: 95 inches.
- Overall length: 170 inches.
- Weight: 3,540 lbs.

DISCHARGE AUGER

- Auger diameter: 7 inches.
- Auger tube diameter: 8 inches.
- Horizontal operating arc: 324°
- Vertical operating arc: Infinite

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: 51 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 34 inches

HAMMERMILLS

- Tank and frame 20 inches
- Width of mill Full 20 inches
- Screen area 600 sq. in.
- Operating speed 540 RPM
- Operating speed of mill 2,800 to 3,000 RPM
- Screen sizes available 1/8, 5/32, 3/16, 1/4, 3/8, 1/2, 5/8,
3/4, 1, 1-1/4, 1-1/2, and 2 inch
- Type drive Six double banded 3V belts for 540 RPM

POWER REQUIRED 40 to 100 hp



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