Art's Way

Since 1956

OPERATOR'S MANUAL

Art's-Way Manufacturing Co., Inc.

JR SERIES

Grinder Mixer

Operator's Manual

642560

Issued 07-2020

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 JR Series 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 JR Series 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 JR Series Grinder Mixer.

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

PARTS & SERVICE

As the purchaser of your new JR Series 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 JR Series 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.: _____

JR Series Grinder Mixer Serial Number Location

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

Figure 1 - Serial Number Placard

Figure 2 - Serial Number Placard

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SAFETY FIRST

"A careful operator is the best insurance against an accident"

(National Safety Council)

Most accidents can be prevented if the operator:

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

THIS SYMBOL MEANS ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

Figure 3 - Universal Safety Alert Symbol

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

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as possible. The Art's-Way JR Series 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 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 crimpled hoses.
- Do not make any temporary repairs to the hydraulic lines, fittings or hoses using tape, clamps, or cement. The hydraulic system operates under extremely high pressure and temporary repairs may fail suddenly and create a hazardous and or dangerous situation.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to identify and isolate a leak. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop if hydraulic fluid penetrates the surface of the skin.
- Before applying pressure to the system, make sure all components are tight and that the hydraulic lines, hoses, and couplings are not damaged.

TRANSPORTATION SAFETY

- Make sure the grinder mixer complies with all local regulations regarding the transportation of equipment on public roads and highways.
- Make sure the Slow Moving Vehicle (SMV) emblem and all lights and reflectors required by local highway and transportation authorities are properly in place, clean, and clearly visible to traffic.
- Do not allow riders on any machinery during transport.
- Make sure the grinder mixer is securely attached to the tractor and install a safety chain to the grinder mixer.
- Make sure the tractor brake pedals are latched together.
- Do not exceed 20 mph (32 km/h) when transporting the grinder mixer. Always reduce speed on rough roads and surfaces, or when going down inclines.
- Use caution when turning and always use the turn signals on the tractor to indicate your turning intentions to the other traffic.
- The weight of the trailed machine should NEVER exceed the weight of the towing vehicle.
- Check all clearances carefully whenever the machine is towed.
- Lower the elevator into the transport position before transporting the harvester on the highway.
- Stay away from overhead obstructions and power lines during transport. Electrocution can occur even without direct contact.

STORAGE SAFETY

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

TIRE SAFETY

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

CAUTION: FAILURE TO FOLLOW PROPER PROCEDURES WHEN INSTALLING 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"

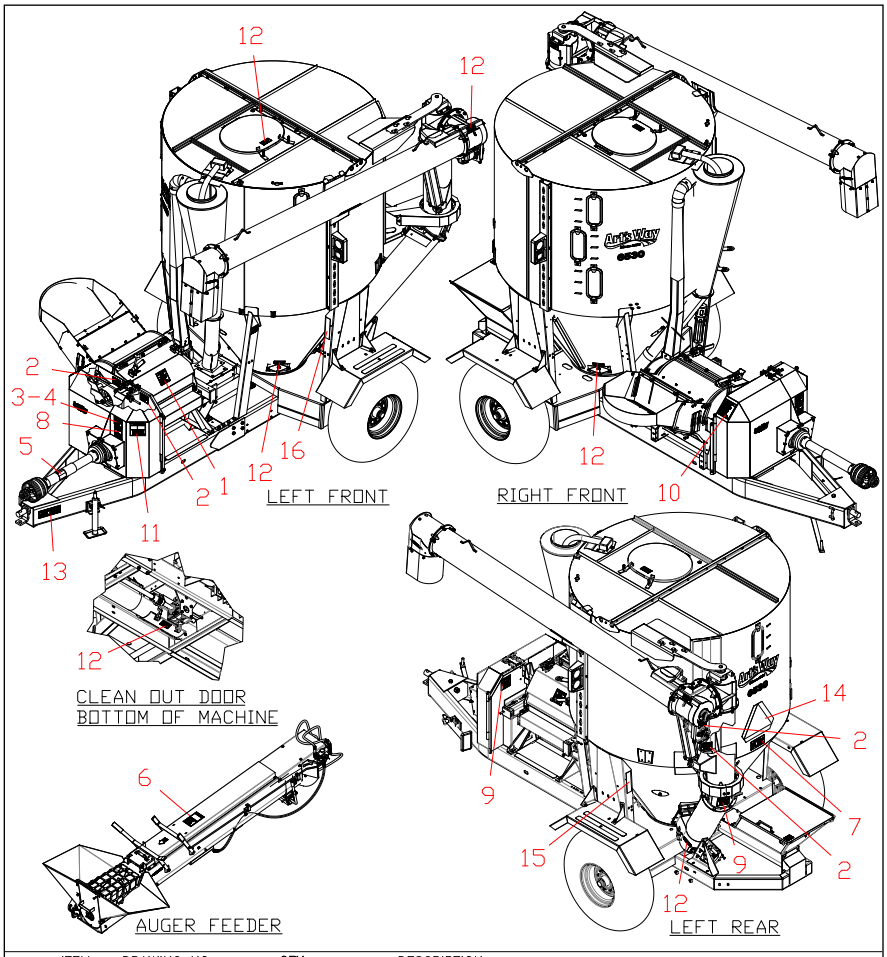
SAFETY DECALS

DECAL LOCATIONS & IDENTIFICATION

The different types of safety decals for your JR Series Grinder Mixer are illustrated on the following pages. Please familiarize yourself with the appearance of each decal, the warning it describes, and the area where it is located on the grinder mixer (See Figure 4, Figure 5 - Safety Decals and Figure 6).

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.



ITEM	DRAWING NO.	QTY.	DESCRIPTION
1	363000	1	DECAL, DANGER ROTATING MECHANISM
2	467430	4	DECAL, DANGER SHIELD MISSING
3	384030	1	DECAL, DANGER 540 RPM PTO
4	384020	1	DECAL, DANGER 1000 RPM PTO
5	268860	1	DECAL, DANGER ROTATING DRIVELINE
6	383990	1	DECAL, DANGER AUGER FEEDER HAZARD
7	384000	1	DECAL, DANGER ELECTROCUTION HAZARD
8	368350	1	DECAL, WARNING MOVING FLYWHEEL HAZARD
9	467450	2	DECAL, WARNING MOVING PART HAZARD
10	368040	1	DECAL, CAUTION SAFETY INSTRUCTIONS
11	346310	1	DECAL, WARNING HIGH PRESSURE FLUID HAZARD
12	377280	6	DECAL, CAUTION DO NOT OPEN
13	383970	1	DECAL, CAUTION HITCH INSTRUCTIONS
14	E224038	1	DECAL, CAUTION SMV
15	476450	2	TAPE, RED RETRO-REFLECTIVE
16	476460	1	TAPE, YELLOW RETRO-REFLECTIVE

Figure 4 – Generic GM 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 (363000)

3. DANGER - 540 RPM PTO (384030)

5. DANGER – Rotating Driveline (268860)

2. DANGER - Shield Missing (467430)

4. DANGER – Auger Feeder Hazard (383990)

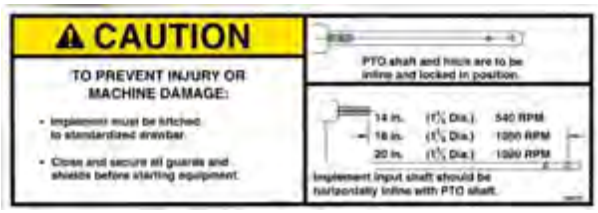
6. DANGER – Electrocution Hazard (384000)

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.

7. WARNING – Moving Part Hazard (467450)

9. WARNING –High Pressure Fluid Hazard (346310)



11. CAUTION – Hitch Instructions (383970)

8. WARNING – Moving Flywheel Hazard (368350)

10. CAUTION – Safety Instructions (368040)

12. CAUTION – Do Not Open (377280

Figure 6 - Safety Decals

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

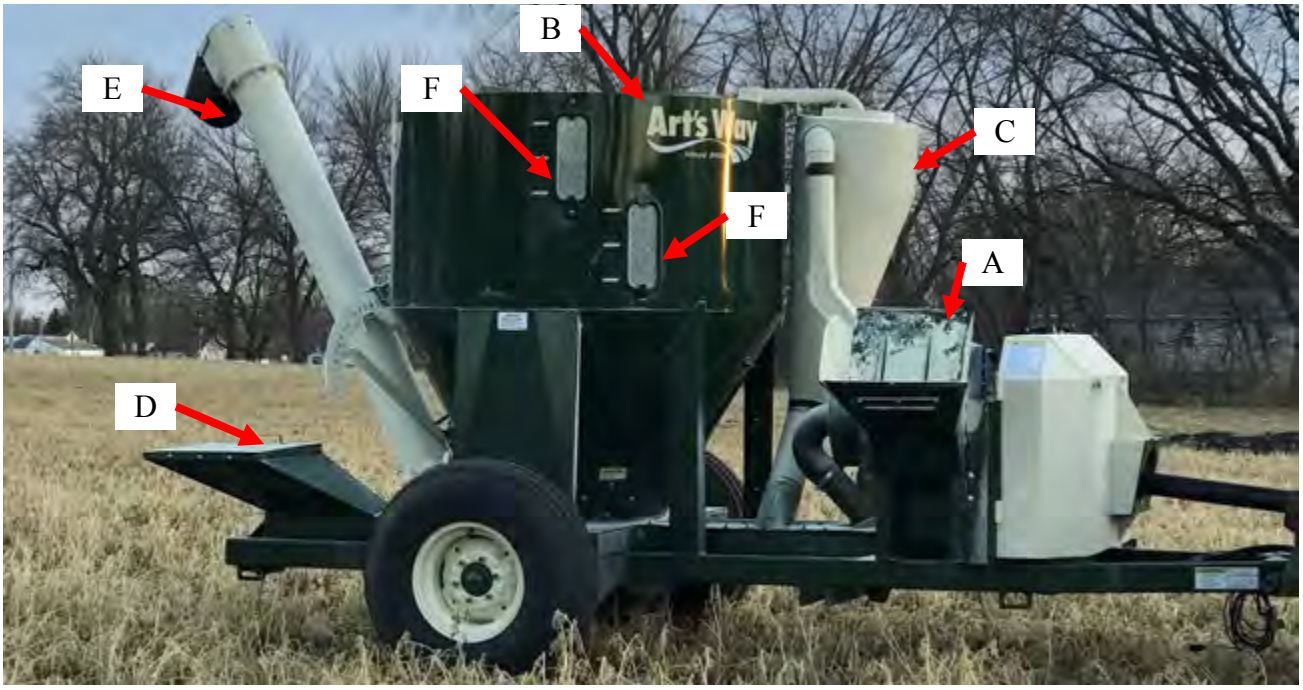


Figure 7 - Model JR50/75 With Auger Feeder (A – Hammer mill; B – Mixing Tank; C – Dust Collector; D – Supplemental Hopper; E – Unloading Auger; F – Viewing Windows; No Auger Feeder shown).

INTRODUCTION

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

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

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

The Art's-Way JR Series Grinder Mixer is driven by a PTO driveline of 30 HP to 100 HP tractors. (Figure 7, Detail A.) Using a tractor over 100 HP is not recommended. It is factory available with a 540 RPM drive.

Hammer mill respective speed should be maintained as the hammer mill cylinder operates best at 2800 to 3000 RPM. (Figure 7, Detail B.) Hammer mill 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 – Hammer mill Screens.

All types of grain can be ground with the hammer mill. Hay can be ground with a minimum of 1/3 mixer of grain. Material is fed into the hammer mill where it is ground until it can pass through the screen size selected. From the hammer mill, the material is augered into the mixing tank. (Figure 7, Detail C.) A suction fan takes air pressure out of the hammer mill housing and delivers feed fines into the dust collector. (Figure 7, 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 7, Detail E – 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 left rear of the mixing tank and can swing 180 degrees on the grinder mixer in a horizontal arc. (Figure 7, Detail F.) It can also swing in a vertical arc to the limit of the lift cylinder. Unloading rates up to 30 bushels per minute can be obtained depending upon position of the discharge and the type of material processed.

Viewing windows (4-JR50 and 6-JR75) are located on the sides of the mixing tank to observe the feed

level during grinding and mixing. (Figure 7, Detail G.) A spring-loaded mixing tank lid is located on the top of the mixing tank.

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 JR Series Grinder Mixer including:

JR50/75

1. 9.5L x 15 8 ply tires.
2. Magnet in the hammer mill throat.
3. Tongue jack.
4. Discharge auger hood with spring loaded relief door.
5. Tractor run hydraulics to power the unloading auger.

Below is a list of optional attachments available:

1. Auger feeder (hydraulic).

Figure 8 - Model JR50 Without Auger Feeder.

2. Electronic scale, with digital readout.
3. Unloading auger extensions; 3 ft. or 6 ft. Bolt-on.

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 hammer mill door pin (See Figure 9).

Figure 9 - Screen Hook Storage.

Install the PTO driveline storage bracket under the front hitch with 1/2 inch x 1-1/2 inch bolt and lock nut (See Figure 10). Maintain tension with the lock nut to allow movement with 15 lbs. pull.

Figure 10 - PTO Driveline Storage Bracket.

Refer to OPERATION OF GRINDER MIXER – Auger Feeder Operation.

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

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

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

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

If equipped with a bolt-on extension, hydraulic auger feeder, or roll feed, refer to OPERATION OF GRINDER MIXER –Unloading Auger Hood and Auger Feed Operation sections as well as the ATTACHMENTS section for instructions.

TIRES

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

Recommended tire inflation pressure is as follows:

9.5L x 15	8 – ply tires – 44 psi

GUARDS, DOORS, AND SHIELDS

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

BOLTS AND NUTS

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

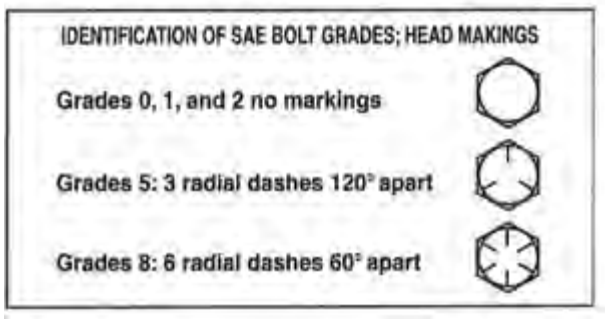


Figure 11 - SAE Bolt Identification.

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

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

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

Table 1 - Torque Specification Guide for Grade 5 Bolts.

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

PREPARING THE TRACTOR

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

CAUTION: NEVER OPERATE 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 12). Extend or shorten the tractor drawbar so the horizontal distance from the end of the tractor PTO shaft to the center of the hitch pin hole is 14 inches for 540 RPM.

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

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

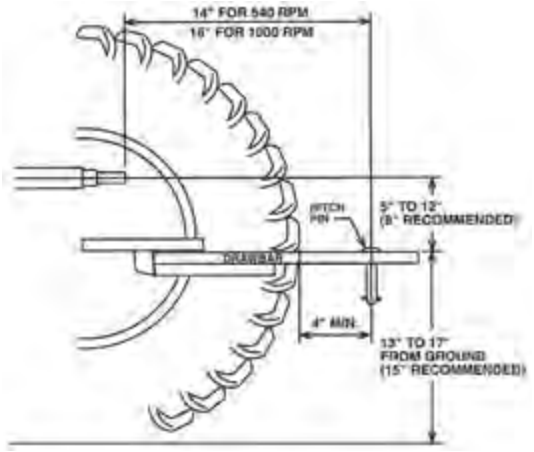


Figure 12 - Hitch Point Locations

ATTACHING TO THE TRACTOR

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

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

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

Figure 13 – Tongue Jack.

Figure 14 - Grinder Attached To The Tractor With Safety Chain.

For Electronic Scale Indicator, plug the scale power supply cord into the electrical outlet on the tractor or to the battery on the mixer frame. (Wire power cord to the battery as shown in **Error! Reference s ource not found.**)

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

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

HAMMER MILL

Make sure the grinder mixer is equipped with a 540 RPM drive when operating with a tractor equipped with a 5400 RPM PTO drive. The diameter of the pulley on the jackshaft must be 23-5/8 inches for 540 RPM operation in a hammer mill application (See Figure 15).

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

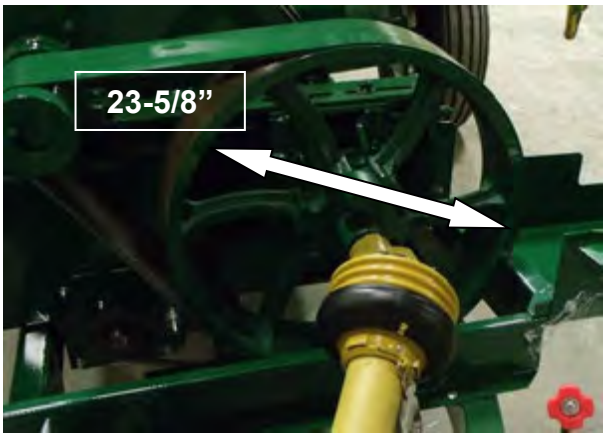


Figure 15 – Large Pulley - 540 RPM (Shields Removed For Clarity).

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.

IMPORTANT: *Make sure the auger feeder are in the saddle before disconnecting.*

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

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

Disconnect the hydraulic hoses from the tractor outlets.

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

Figure 16 - PTO Support.

OPERATION OF 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 advertised operating PTO 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.

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 hammer mill evenly.

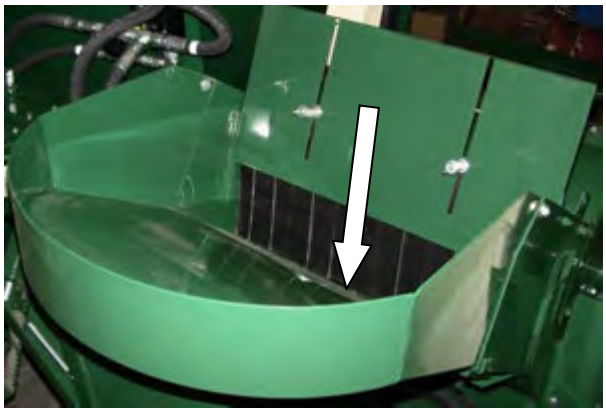


Figure 17 - Feed Gate at Throat of the Hammer mill.

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, turning the bolts in (increase) or out (decrease) to the desired position. Secure the bolts by tightening the lock nuts.

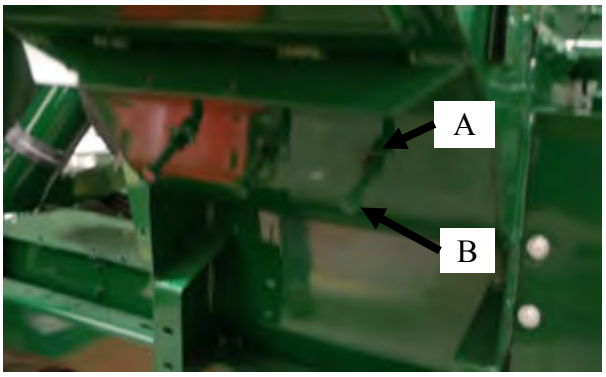
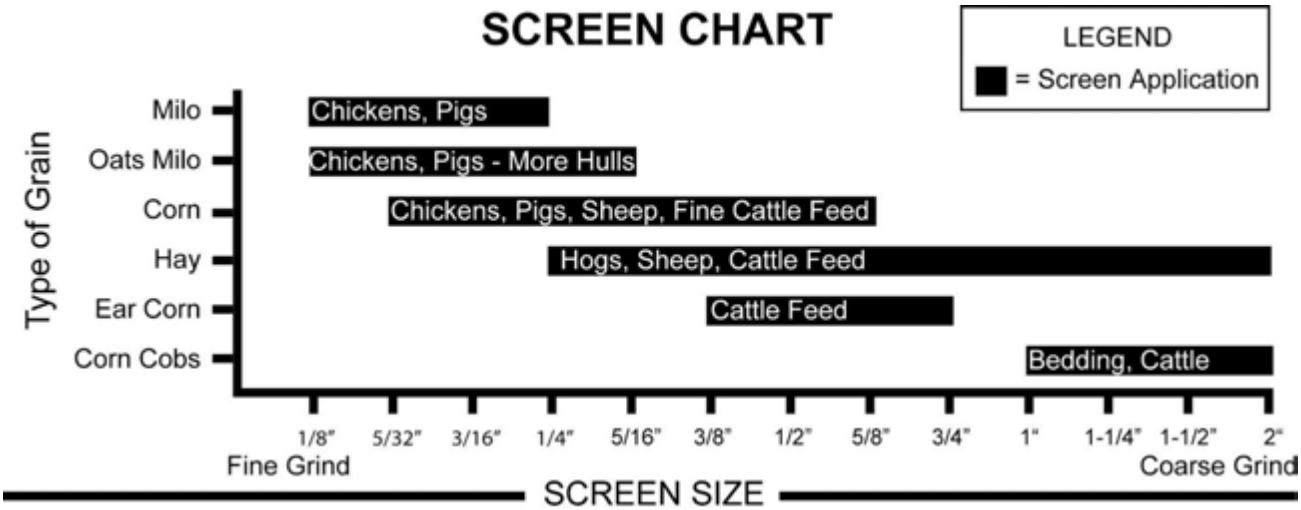


Figure 18 - Hay Retard Bolts (A - Lock Nut; B - Adjustable Retard Bolt, 20 Inch Hammer mill Shown).

HAMMER MILL SCREENS

Hammer mill 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.



1/8"	Finest for the small grains.	3/8"	No whole kernels in ear corn grind.	1"	Medium bedding, cattle screen for corn cobs.
5/32"	Fine, very few hulls.	1/2"	Will leave some whole kernels.	1-1/4"	Medium bedding, cattle screen for corn cobs.
3/16"	FIne, more hulls.	5/8"	Nice cob grind, leaves whole kernels.	1-1/2"	Recommended for bedding, cattle, uniform grind.
1/4"	largest Screen to be used for small grains leaves some whole. Start grinding corn.	3/4"	Nice cob grind, leaves whole kernels.	2"	Recommended for bedding, cattle, uniform grind.
5/16"	Top end for grinding hog feed. Fine cattle feed.				

Table 2 - Screen Chart.

The Table showing the screen sizes may be used as a guide for grinding different types of food (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.

To install or change the screen, open the hammer mill 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 hammer mill door and then replace the screen hook and locking pins (See Figure 20).

Figure 20 - Locking Pin and Latch on Hammer mill Door.

PROCESSING HAY

If hay is to be ground, grind the grain first. Do not grind more than two 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.

***Note:* Be careful when running hay/fibrous material through the mill, as product can become lodged in the dust collection cyclone. Be sure to inspect cyclone when processing loads that contain hay/fibrous material.**

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 grate is positioned in hopper to keep large objects from falling into the auger.

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

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

Figure 21 - Supplement Hopper Located on Center Rear 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 (A) 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.

50-75 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(JR75)	**1688**	**2700**	**4200**	**3750**	**2850**	**4200**
9(JR75)	**1575**	**2520**	**3920**	**3500**	**2660**	**3920**
8(JR75)	**1463**	**2340**	**3640**	**3250**	**2470**	**3640**
7(JR75)	**1350**	**2160**	**3360**	**3000**	**2280**	**3360**
6	**1125**	**1800**	**2800**	**2500**	**1900**	**2800**
5	**1013**	**1620**	**2520**	**2250**	**1710**	**2520**
4	**900**	**1440**	**2240**	**2000**	**1520**	**2240**
3	**788**	**1260**	**1960**	**1750**	**1330**	**1960**
2	**675**	**1080**	**1680**	**1500**	**1140**	**1680**
1	**563**	**900**	**1400**	**1250**	**950**	**1400**

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.

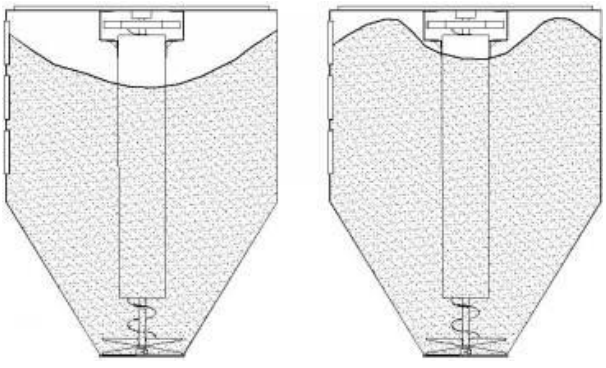


Figure 23 - Filling Pattern.

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.

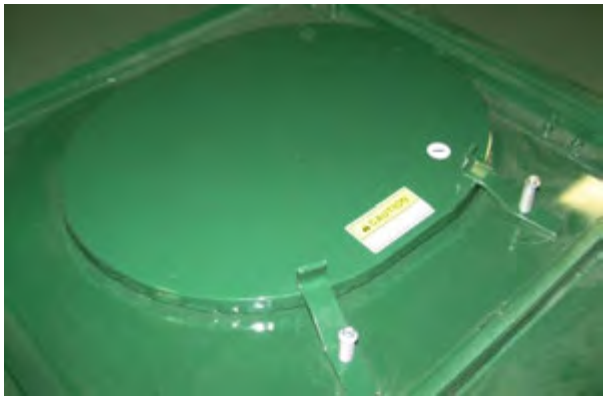


Figure 24 - Spring Loaded Tank Lid.

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.**

DISCHARGE AUGER POSITIONING

After mixing, the finished feed may be unloaded into storage bins, wagons, or feeders. Positioning of the auger is done manually and the drive of the unloading auger is controlled hydraulically.

Figure 25 - Unloading Auger.

DISCHARGE GATE FUNCTION

When the discharge auger is in position to unload the tank, the gate is opened and closed manually. Once the desired opening is achieved with the discharge gate, use the aluminum wing nut to lock the door at the desired height.

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

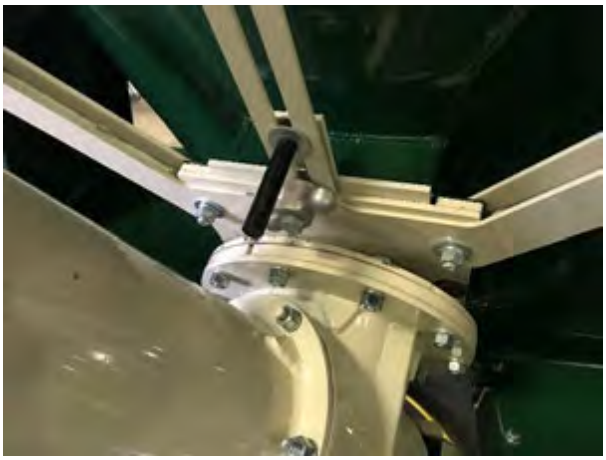


Figure 26 - Discharge Gate in closed position.

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 27).

Figure 27 - Unloading Auger Hood.

AUGER FEED OPERATION

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

Figure 28 - Auger Feeder Latch Handle (Shown in Locked Position).

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.

Figure 29 - Auger Feeder Installed on JR75.

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 emergency shutoff handle (See Figure 32) will stop the auger feeder. Loosen the cable clamps to re-adjust if it does not.

The auger feeder swing brake prevents the auger from swinging. Tighten or loosen as desired (See Figure 30).

NOTE: *If a more accurate reading is desired and the machine is equipped with an electronic scale,* ***DO NOT*** *allow the auger feeder to rest on the ground. Place it in the desired position and set the swing brake (See Figure 30).*

Figure 30 - Auger Feeder Swing Brake.

The auger feeder is counter balanced by a spring (See Figure 36). If the spring needs adjusted;

loosen the nut on the lower bolt, turn the bolt in to increase the spring tension, tighten the nut.

AUGER FEED POSITIONER

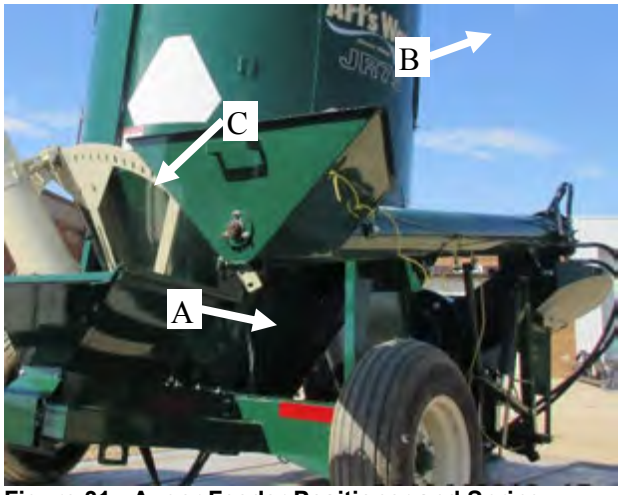


Figure 31 - Auger Feeder Positioner and Spring Adjustment (A - Spring; B - Positioner Long Handle; C – Positioner Short Locking Handle).

AUGER FEED CONTROLS

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 32 and Figure 33).

Figure 32 - Hydraulic Auger Feeder Controls (Shown in Off and Transport Position): Throttle Controls (White Arrow) and Emergency Shutoff (Red Arrow).

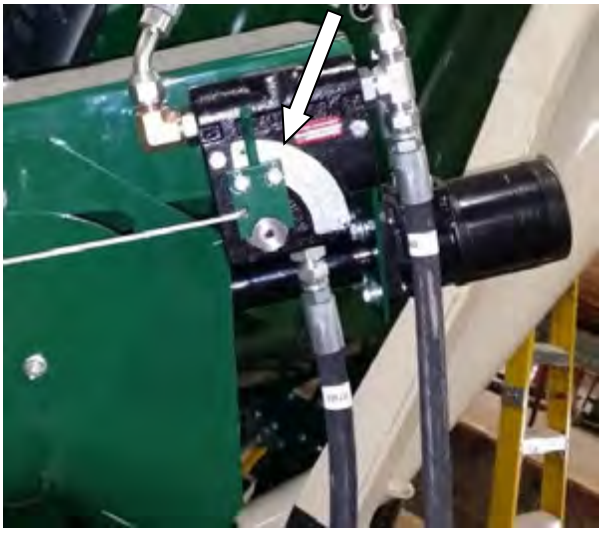


Figure 33 - Hydraulic Auger Feeder Control (Shown in Full Off Position) (See Arrow).

To start the auger feeder, the flow control handle is moved forward (clockwise, See Figure 33). 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 AUGER/SUPPLEMENT.

DRIVE CHAIN ADJUSTMENTS

The mill to mixer auger/supplement hopper drive chain and the discharge auger drive chain are tensioned with an idler sprocket (See Figure 34). Adjust the chain tension to 1/2 inch total deflection by positioning the idler sprocket.

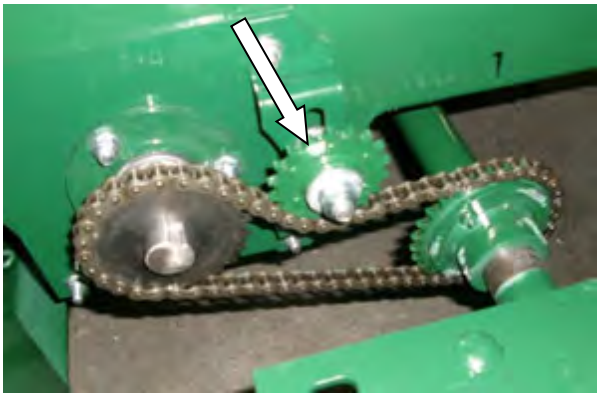


Figure 34 - Mill to Mixer Auger Drive Chain.

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 35) Re-tighten the idler roller bolt and make sure the chain deflection is ½ inch total at the longest span

NOTE: *The chain should be checked and oiled daily.*

Figure 35 - Drive Chain Adjustment (Shields Removed for Clarity).

MAIN DRIVE BELTS

Belts on the 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 36)
- Place a scale at the midway point of the double v-belts on the pulleys.
- Adjust bolt “A” (See Figure 36) until 15 pounds of pull on the scale raises the top of one double v-belt approximately ¼ inch above the top of the remaining belts. (See Figure 38)

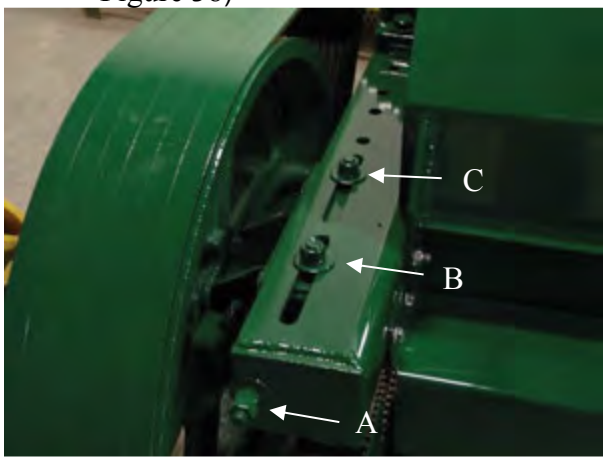


Figure 36 - Belt Tension Adjustment (Shields Removed for Clarity).

- All 4 belts should have the average of ¼ inch deflection at 15-18 pounds.
- Loosen bolts “E” and “F”. (See Figure 37)
- Loosen idler bolt “G”
- Adjust bolt “H” until Hammer mill Jack Shaft “D” is parallel to Hammer mill Housing. Measure both sides
- Tighten bolts “B”, “C”, “E”, and “F”. Lock adjusting bolts “A” in place with nut.
- Adjust tension in Main Drive Chain. (See Previous Section)

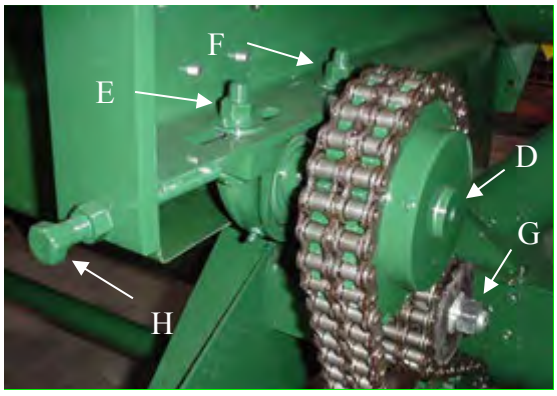


Figure 37 - Belt Tension Adjustment Bearing Mount.

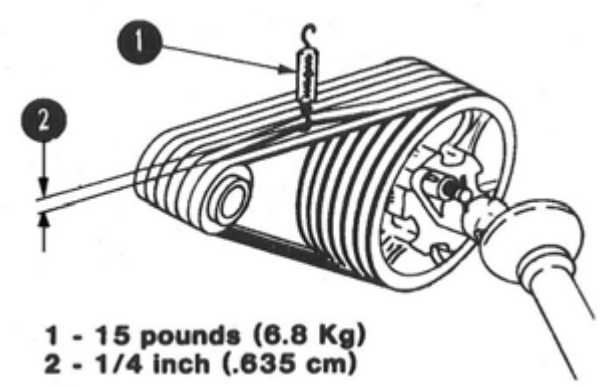


Figure 38 - Checking Belt Tension

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 39). 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.

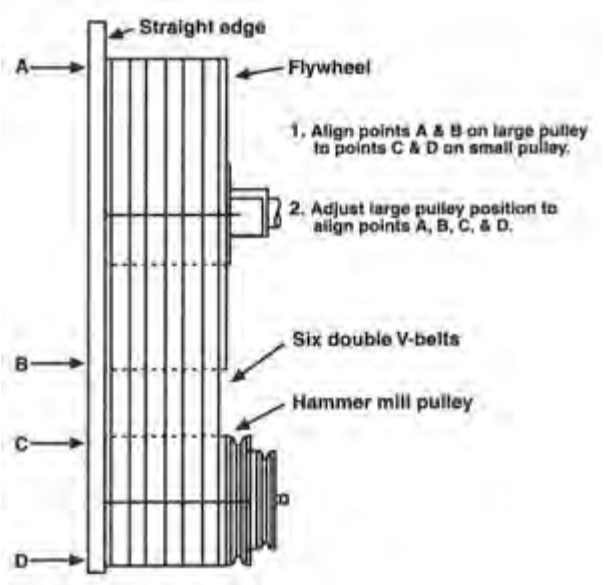


Figure 39 - Belt Pulley Alignment.

HAMMER MILL DOOR

To increase the hammer mill 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 40).

Figure 40 - Hammer Mill Door Pressure.

DISCHARGE AUGER DRIVE ADJUSTMENT

There is only one location for the Discharge Auger Drive chains (See Figure 41). The Discharge Auger Drive is located at the bottom of the Unloading Auger at the rear of the machine.

Figure 41 - Discharge Auger Drive Chain (See Arrows).

If chain drive “A” (See Figure 42) for the Discharge Auger Drive becomes loose. Loosen the Hydraulic Motor bolts “B” holding the Hydraulic Motor. Then loosen nuts “C”. Screw in bolts “D” equally until chain is tight. Retighten nuts to lock bolts in place. Retighten Hydraulic Motor bolts “B”.

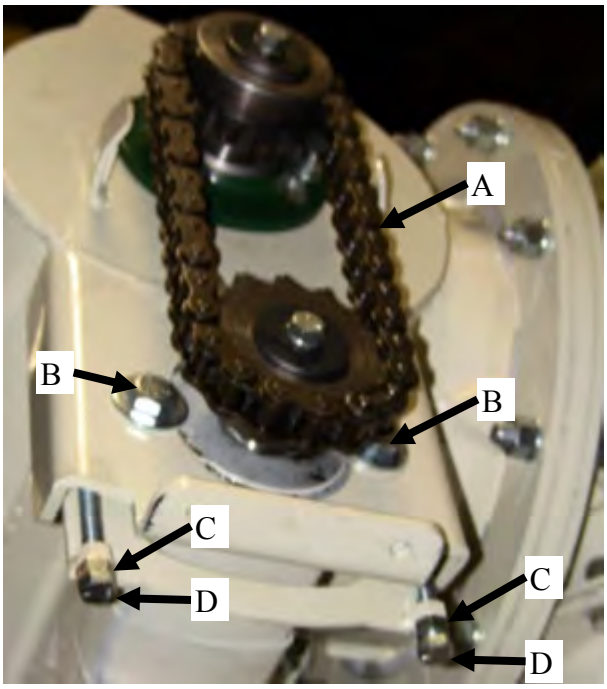


Figure 42 - Discharge Auger Drive Chain (Shield Removed for Clarity).

OPEN AND CLOSED CENTER TRACTOR HYDRAULICS

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

To convert to "Closed Center" hydraulic system, revise by removing the Tee that goes into the Flow Control Valve and replace it with a Plug (SAE -10 ORB) in the Flow Control Valve and connecting the two hose together with a Union (SAE -8 JIC) fitting (See Figure 43 and Figure 44).

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

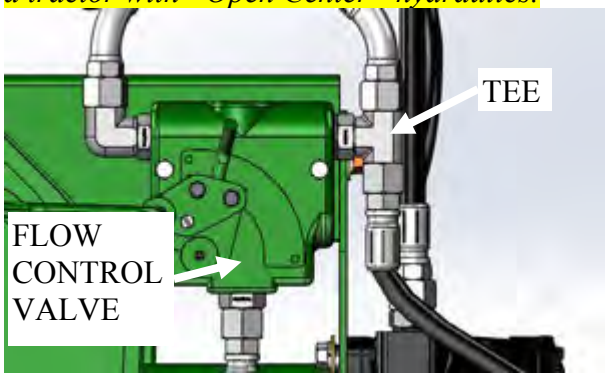


Figure 43 - Open Center Hydraulic System.

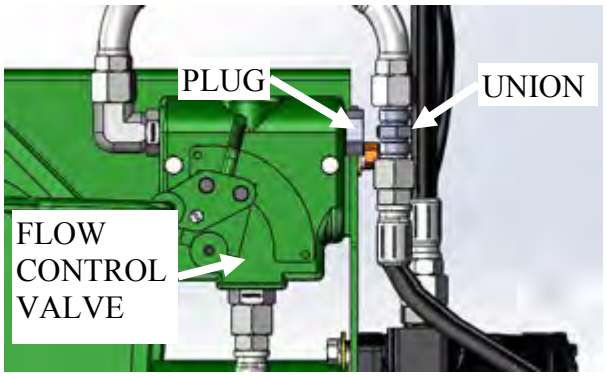


Figure 44 - Closed Center Hydraulic System.

WHEEL BEARINGS

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

There should be a slight drag on the bearing following the adjustment. Replace the hub cap (See Figure 45).

Figure 45 - 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 PTO sliding shafts every 20 hours. Zerk is located on the outer shaft and is accessible through cutout slots in spin shields (See Figure 46).

Figure 46 - PTO Driveline Shaft (See Arrow).

Grease the bearing crosses and plastic shaft bearings every 20 hours. The bearing cross zerk can be accessed through round hole in PTO spin shield (See Figure 47).

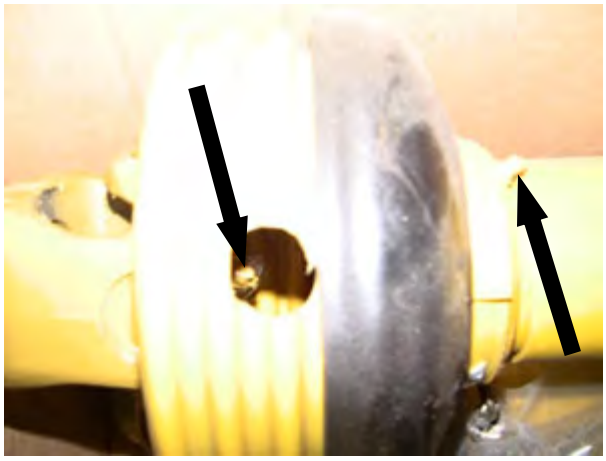


Figure 47 - PTO Driveline Cross Bearing (Left Arrow) and Plastic Shaft Bearings (Right Arrow).

HAMMER MILL SHAFT BEARINGS

Grease the front and rear pillow block bearings on the hammer mill cylinder shaft:

Light Use (1-14 loads/week):

1 pump every 30-40 hours of use or once a month.

Heavy Use (15-up loads/week):

1 pump every 20-30 hours of use or twice a month.

Grease with SAE Multi-Purpose type grease (NLGI 2 Grade Rating with minimum viscosity of 500 SUS at 100°F. (High Speed/Temp also acceptable)

IMPORTANT: *Over greasing of the Hammer Mill Shaft Bearings can cause pre-mature failures.*

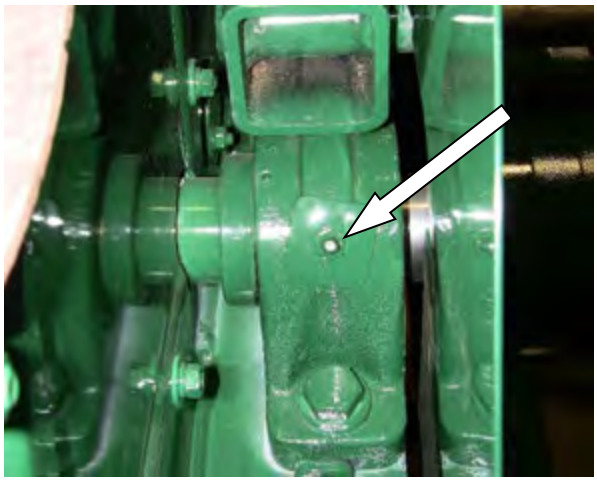


Figure 48 - Front Cylinder Shaft Bearing (See Arrow) (Shields Removed for Clarity).

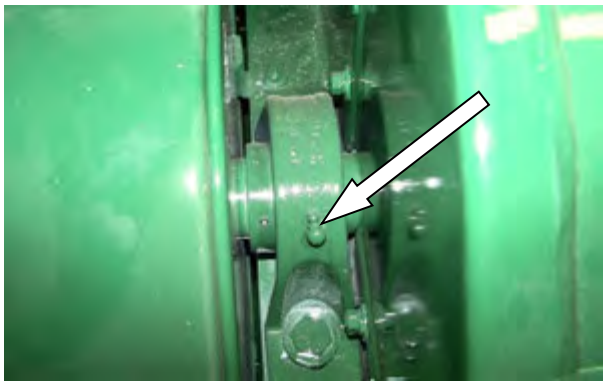


Figure 49 – Rear Cylinder Shaft Bearing (See Arrow) (Shields Removed For Clarity).

DRIVE SHAFT BEARINGS

Grease the pillow block bearings on the front and rear bearings on the hammer mill jack shaft (See Figure 50 and Figure 51). Grease pillow block bearings on the lower line shaft once a month or every 30-40 hours of operation (See Figure 52 and Figure 53). Use SAE multi-purpose type grease for these lubrications.

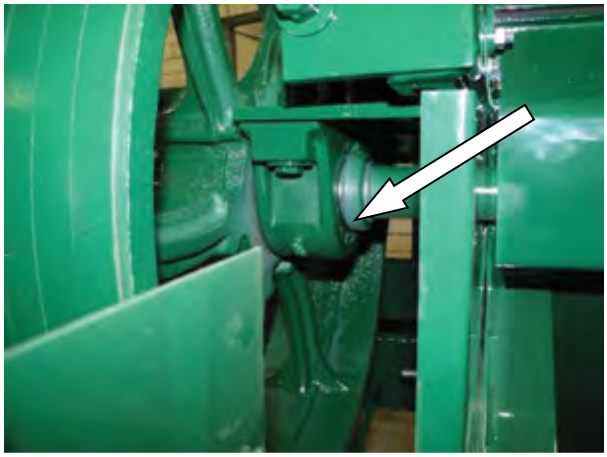


Figure 50 - Jack Shaft Front Bearing, Front (Shield Removed For Clarity).

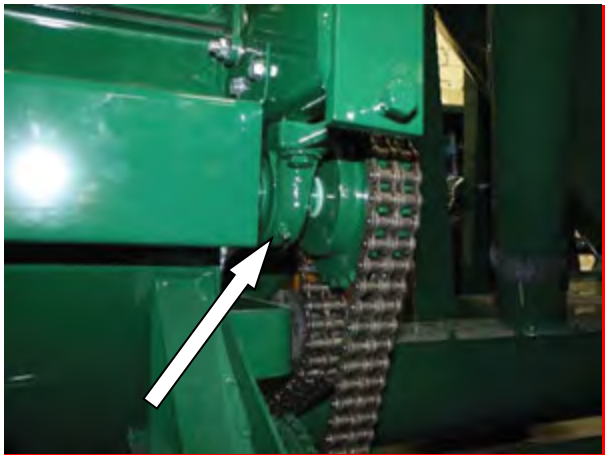


Figure 51 - Jack Shaft Rear Bearing (Shield Removed For Clarity).

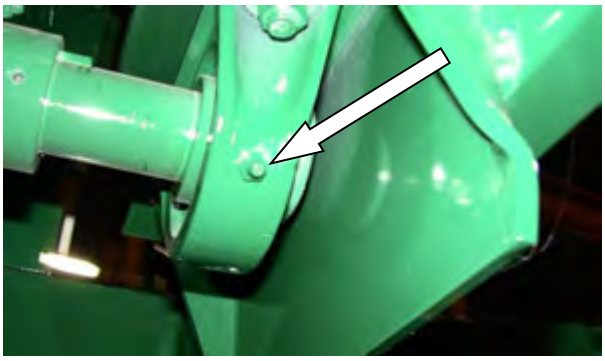


Figure 52 - Mixer Drive Shaft Bearing, Front.

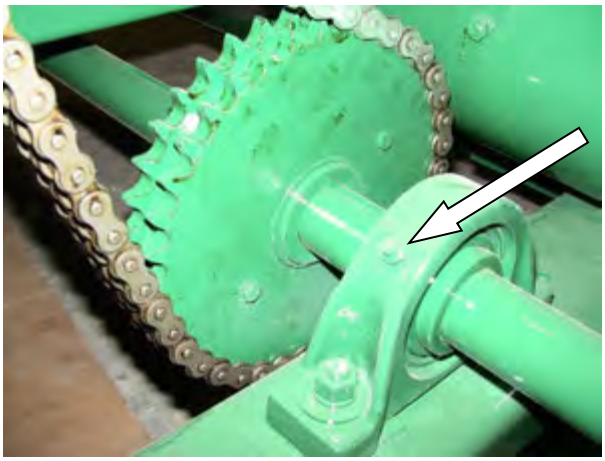


Figure 53 - Mixer Drive Shaft Bearing, Rear (Shield Removed For Clarity).

CHAINS

Chains should be lubricated at frequent intervals. Apply light engine oil (10wt) to the chain or aerosol chain lube. Oil the chain on the inside located in the upper side of lower the strand (See Figure 54).

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

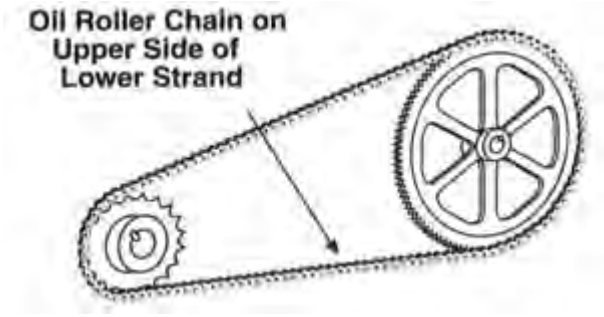


Figure 54 - Oiling Roller Chains.

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 55).

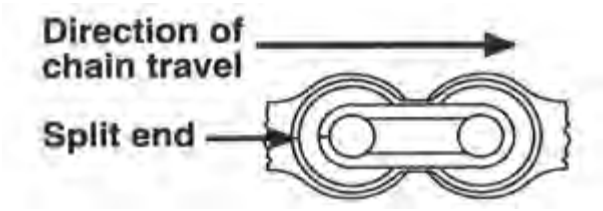


Figure 55 - Chain Spring Clip.

GEARBOX

Make sure to check the oil level of the gearbox at the base of the mixing tank every 24 hours of operation by removing the check plug on the side of the gearbox. Add SAE 90 weight gear oil if necessary and until oil runs out of the check hole (See Figure 56). Change the oil after the first 50 hours of operation. Routine oil change intervals will vary depending on the severity of the environment. Normal changes should occur between 250 and 1000 hours of operation. The longest life at continuous service will be realized when the oil temperature does not exceed 200° F.

IMPORTANT: Do not overfill.

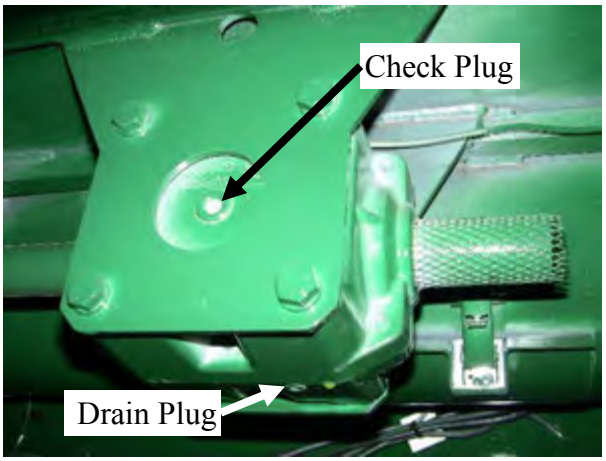


Figure 56 - Gearbox Lubrication.

Grease upper gearbox bearing weekly or every 10-20 hours of operation with SAE multi-purpose type grease, through remote grease zerk located on rear base housing of mixer (See Figure 57).

Figure 57 - Gearbox Lubrication Upper Bearing Remote Location.

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 58).

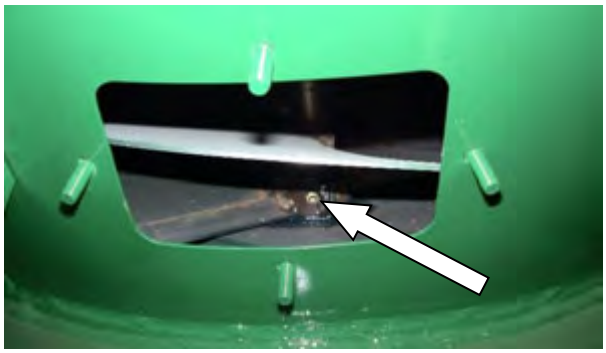


Figure 58 - Clean-Out Door in Mixing Tank Cone And Grease Zerk For Seal At Bottom Of Vertical Mixing Auger (Door Removed for Clarity).

UPPER VERTICAL MIXING AUGER

Grease the upper vertical mixing auger bearing weekly or every 10-20 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 59).

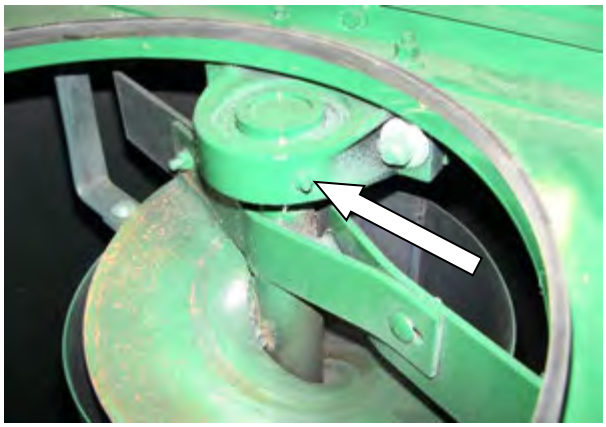


Figure 59 – Upper Vertical Mixing Auger Bearing (Door Open for Clarity).

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 60).

Figure 60 - 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 SERVICING 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 4.)

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 4 - 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 hardness to ensure safety (See Figure 61). ***Warning:*** ***using a harder bolt in a shear bolt location can cause damage to vital and more expensive drive components.***

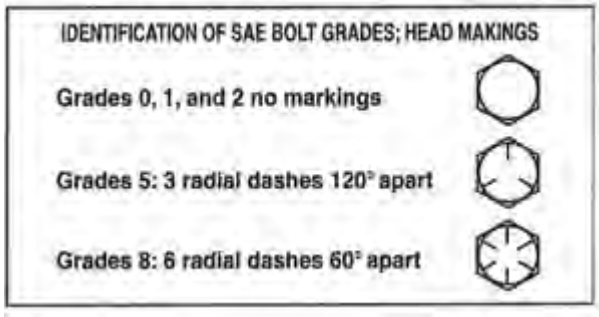


Figure 61 - SAE Bolt Identification.

SPROCKET AND CHAIN ALIGNMENT

Make sure the sprockets are in line with the shafts (See Figure 62 and Figure 63). 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 64). This faulty alignment will result on excessive wear on both the chain and sprockets.

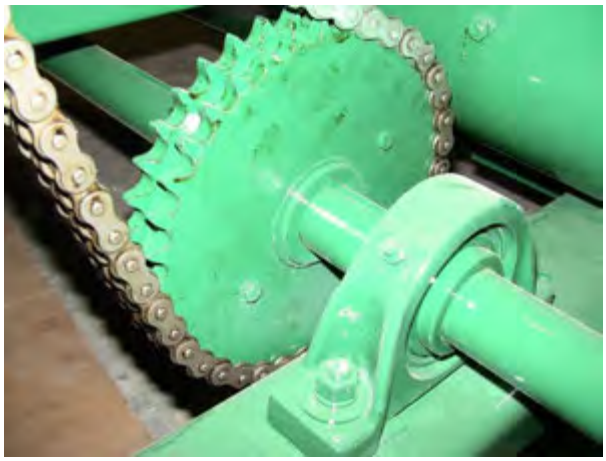


Figure 62 - Mixer Sprocket (Shields Removed For Clarity).

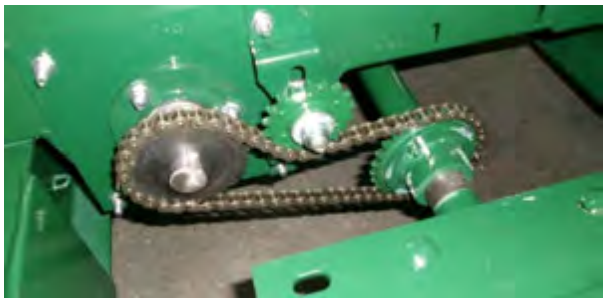


Figure 63 – Mill To Mixer Sprocket (Shields Removed For Clarity).

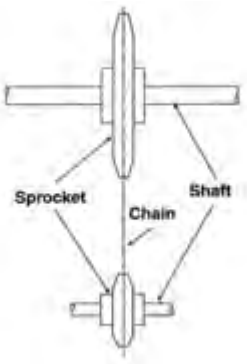


Figure 64 - Sprocket Alignment.

Adjust mounting of main drive bearings (See Figure 65) so that the sprocket on the mixing auger shaft and sprocket on the gearbox are running on center. Tighten bearing bolts. Run grinder mixer slowly and observe the mixing auger shaft. If shaft is in need of further adjustment to better align sprockets; for position of the sprockets (See Figure 65). Excessive wear of chain and sprockets will result if sprockets are not centered properly.

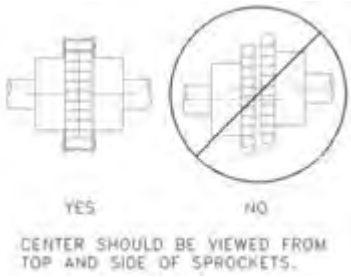


Figure 65 - Chain Coupler Alignment.

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 HAMMER-MILL HAS STOPPED ROTATING BEFORE THE HAMMER MILL DOOR IS OPENED. SHUT THE TRACTOR 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 40 hammers on a 12 inch hammer mill (See Figure 79). 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.

STANDARD SPACING FOR 40 HAMMERS

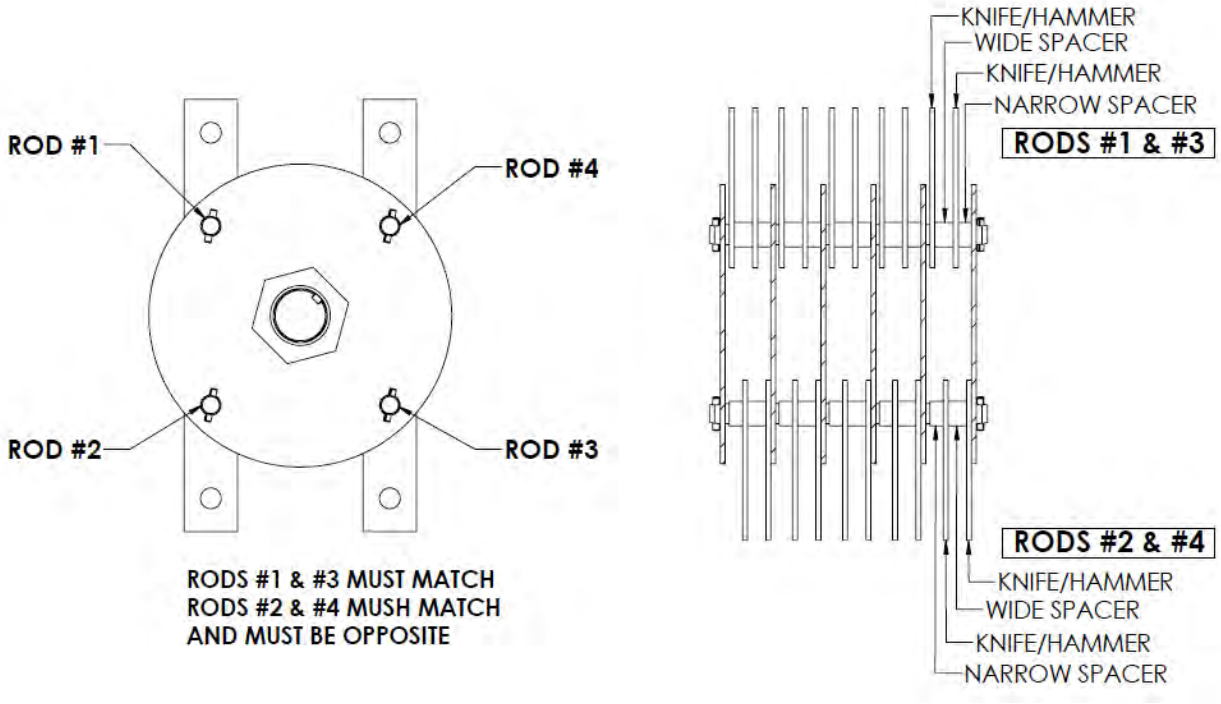


Figure 66 - Proper Hammer Spacing for 40 Hammers (12 Inch Hammer mill).

To remove the hammers, remove the bolts from the side of the mill and round plate (See Figure 67 and Figure 68) 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 67 - Hammer Removal Hole To Remove Hammer Mill Rods (Shields Removed For Clarity).

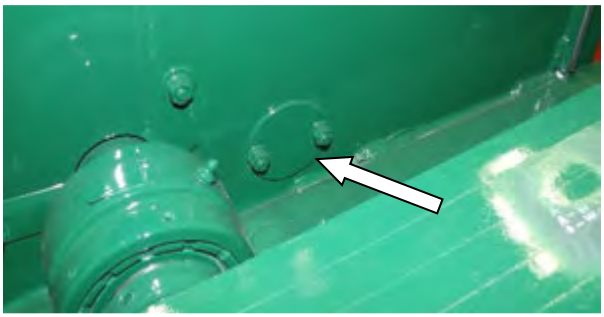


Figure 68 – Hammer mill Removal Hole, Plate To Be Removed (Shields Removed For Clarity).

MAIN DRIVE BELT REPLACEMENT

To remove the drive belts, loosen the bolts “B”. (See Figure 82) To relieve the belt tension, loosen the tension bolt “A”.

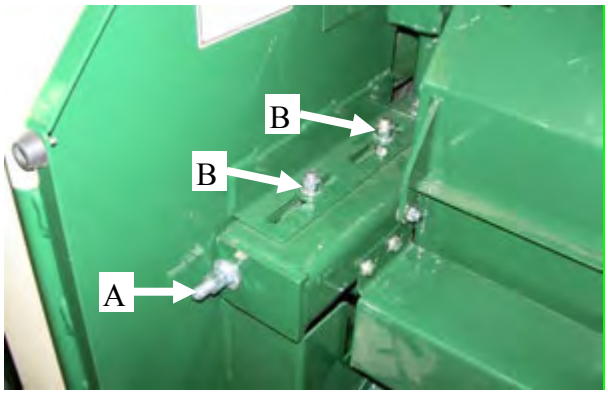


Figure 69 - Belt Replacement – Drive Sheave and Bearing Mount.

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

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
	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 12.)
Excessive noise when turning the mixer while it is in operation	Turning the mixer too sharply	Avoid sharp turns
Low volume from hammer mill	Hammer mill is not operating at optimum speed	Before grinding, set tractor throttle to rated PTO speed (540 rpm)
	Hammer mill screens and/or hammers are worn	Reverse and/or replace the screens and hammers if necessary
	Hammer mill is not level	Find level surface if at all possible
	Mill drive belts are slipping	Adjust the drive belts (Refer to Grinder Mixer Adjustment Section)
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 (Refer to Grinder Mixer Adjustment Section)
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 drive belts (Refer to Grinder Mixer Adjustment Section)
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

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Mill will run but the mixing auger does not run	Bolt(s) sheared in the drive	Repair the cause of the bolt(s) shearing and replace bolt(s)
Discharge auger running, but the feed is not unloading	Mixer tank gate is closed	Open the mixer tank gate
	Mixing auger not turning	Engage PTO and/or check shear bolts
Discharge auger will not engage	Discharge auger drive chain(s) broken or slipping	Replace and/or retighten chain(s)
	Discharge auger drive hydraulic motor not working	Check hydraulic system
Discharge auger slows down or stalls	Feed overloading discharge auger	Lower gate to reduce feed flow to rate discharge auger can handle
	Reduced hydraulic fluid flow to motors	Increase hydraulic fluid flow (GPM) to motors
Auger feeder stops when the mill is engaged	No hydraulic flow to auger feeder	Check hydraulic connections

ATTACHMENTS

ELECTRONIC SCALE ATTACHMENT

A solid state electronic scale attachment, digital type, is available for your grinder mixer (See Figure 70). The scale attachment consists of load cell sensors mounted on the grinder mixers axle spindles and hitch. They are electronically connected to the indicator bars. The indicator alarm system is integrated into the scale head. Scale accuracies of 1 percent or less are obtained. Complete installation and operating instructions are included with the attachment.

Figure 70 - Scale Head Attachment (640 Shown).

DISCHARGE UNLOADING AUGER EXTENSIONS

3 foot and 6 foot bolt-on discharge auger extensions are available. For unloading height obtainable with various extensions added to the unloading auger system, refer to **Error! Reference source not found.**. For unloading auger instructions, refer to OPERATION OF GRINDER MIXER section.

SCREENS

Screens for hammer mills are available in 12 sizes ranging from 1/8 inch to 2 inch (See **Error! Reference source not found.**). Refer to OPERATION OF GRINDER MIXER – Hammer mill Screens.

SPECIFICATIONS

TANK AND FRAME

- Capacity of mixing tank: .....50bu/62.23cu ft. or 75bu/93.34cu ft.
- Height (variable with tire size): ..... 95” (JR50) - 110” (JR75)
- Width without auger feeder:..... 90”
- Overall length:..... 122”
- Weight:.....2750lbs (JR50) - 3000lbs (JR75)

DISCHARGE AUGER

- Auger diameter: ..... 7”
- Auger tube diameter: ..... 8”
- Vertical operating arc:.....75° Left and 75° Right (from vertical)

AUGER FEEDER

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

MIXING AUGER

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

SUPPLEMENT HOPPER

- Auger diameter .....7 inches.
- Hopper size..... 21 inches X 24 inches
- Height from ground ..... 41 inches

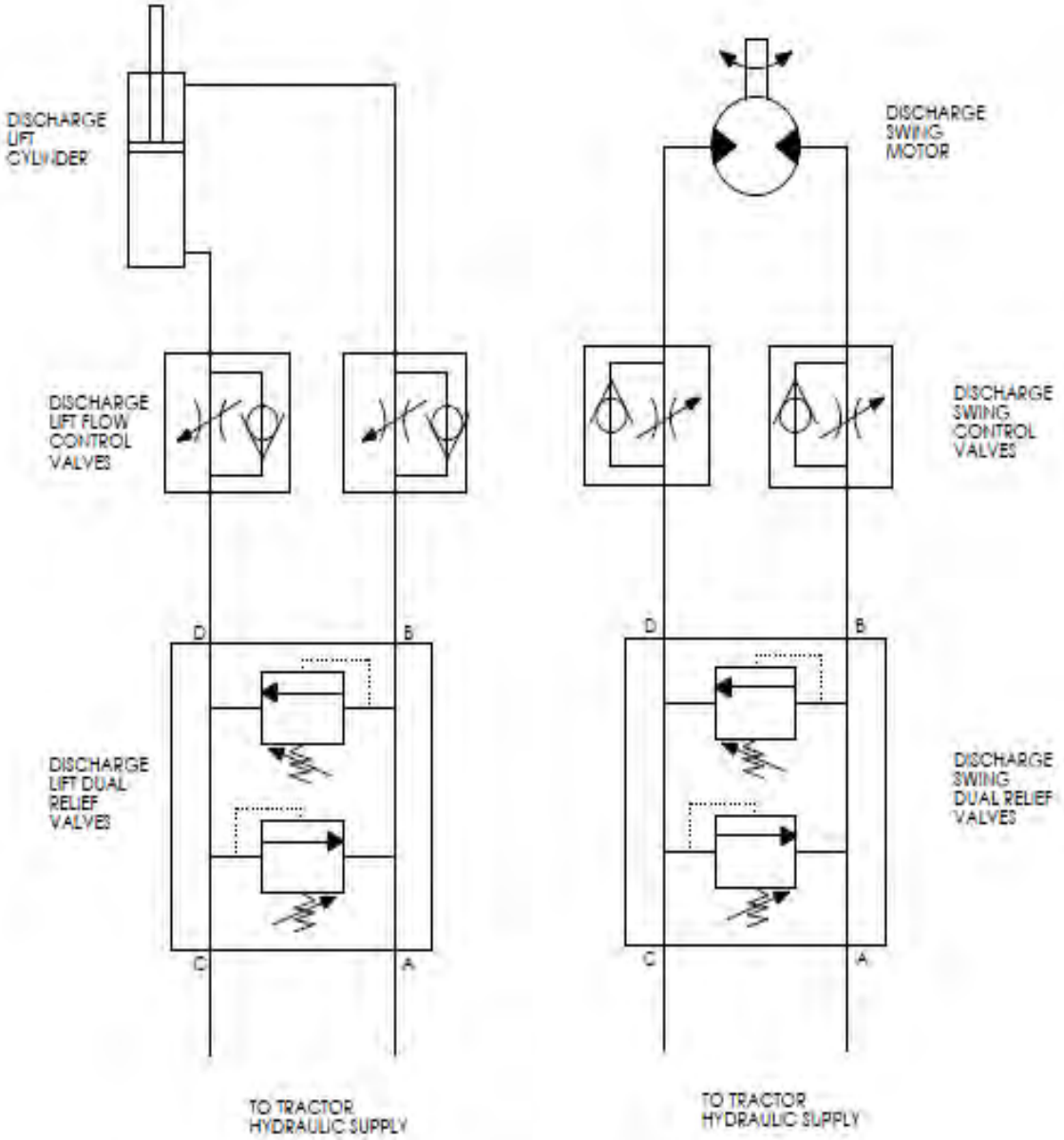
HAMMERMILL

- 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

- Tractor ..... 30-100 HP

SCHEMATICS: TRACTOR HYDRAULICS



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

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

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

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

Art's-Way Manufacturing Co., Inc. reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

ART'S-WAY MANUFACTURING CO., INC.

HWY 9 WEST - PO Box 288

Armstrong, IA. 50514 U.S.A

Art's-Way Manufacturing Co., Inc.
Hwy 9 West – PO Box 288
Armstrong, IA. 50514 U.S.A