



# ***KNIGHT***

## ***VERTI-MAXX MIXER***

### ***5000 SERIES***

**TRAILER TYPE OPERATORS INSTRUCTION MANUAL**

**READ ALL WARNINGS AND INSTRUCTIONS IN THIS MANUAL BEFORE  
INSTALLING OR OPERATING THE VERTI-MAXX MIXER !**

Failure to heed this may result in personal injury or death.

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# INTRODUCTION

**THANK YOU** for purchasing a Kuhn Knight VERTI-MAXX MIXER. We appreciate your business. You have purchased one of the best built, most reliable mixers available. We strive to provide you with a rugged, durable unit which is simple to maintain. If you have suggestions for any of our products, please let us know.

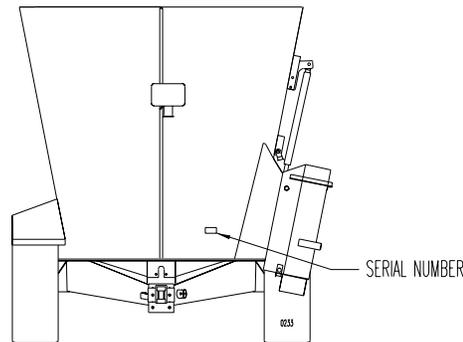
Kuhn Knight INC.

## USING THIS MANUAL

**This manual should be considered a permanent part of your machine, and should remain with the machine if you sell it.**

This manual has been designed to help you become familiar with your unit. A separate service parts listing is available for a detailed parts breakdown of the unit. Before you operate your unit, be sure you understand and follow all the operation, lubrication, and safety instructions on the following pages in this manual. These have been written for your safety and convenience, and to keep your unit running trouble-free for many years.

**MODEL AND SERIAL NUMBER INFORMATION** is located on the front lower panel. This number must be given to service personnel for parts and service questions.



**ADDITIONAL MANUALS** and safety decals may be obtained through your dealer,  
or by writing to the address below.

Order operators manual # 005893 all trailer type models

Order service parts manual # 005894 for 5032 & 5042 & 5055

Order service parts manual # 005907 for 5073, 5085 & 50100



## UNDERSTAND SAFETY WORDS AND SYMBOLS



THIS SAFETY ALERT SYMBOL is used in this manual whenever personal safety is involved and means **ATTENTION! BECOME ALERT!** It stresses an attitude of “HEADS UP” for safety. Read and understand all pages in this manual that bear this safety symbol and . . . **TAKE TIME TO BE CAREFUL!**

The Signal Word or Message areas of all safety decals are color coded to indicate the level of hazard.

**CAUTION** is used to direct attention to **unsafe practices**, and uses the color **yellow**.

**WARNING** denotes a **specific potential hazard**, and uses the color yellow or **orange**.

**DANGER** denotes a **most serious specific potential hazard**, and uses the color **red**.

## READ THE OPERATORS MANUAL

Any person who will be operating or maintaining this mixer should first read and understand this manual and all safety warnings on the unit.

This instruction manual should always be available to those responsible for the operation and maintenance of this mixer. It is the owner's responsibility to provide this safety information to his operators and employees.

Any person who does not understand the safety and operation instructions contained in this manual should not be considered qualified to operate this mixer.

## FOLLOW SAFETY INSTRUCTIONS

Specialized procedures and instructions are required and must be adhered to when working on this equipment. Failure to follow the instructions contained in this manual could result in severe personal injury, death, and/or product or property damage. All applicable safety procedures such as OSHA requirements, regional and local safety codes and requirements, safe working practices, and good judgement must be used by personnel when operating or maintaining this equipment.



## OPERATING SAFETY PRECAUTIONS



When the mixer is in operation it has many moving parts which could cause severe injury or death to persons coming in contact with these parts. To help avoid serious accidents, the following guidelines should always be followed:

1. **BE SURE ALL SAFETY SHIELDS are in place before operating, including tractor PTO driveline shields.**
2. **NEVER PUT ARMS OR FEET INSIDE unit, power chute, or discharge door opening, nor climb on or in the mixer while it is running. NEVER allow anyone to position themselves over or near the top of the mixer while it is running.** Augers, shafts, and material can grab clothing or create pinch points which can cause severe injury or death to the operator or bystanders. Always stop engine and remove the PTO driveline so that the mixer cannot be accidentally turned on while inspecting, servicing, repairing, or cleaning mixer.
3. **NEVER HAND FEED MATERIALS into mixer while it is running.** Augers inside mixer may not be visible from the loading point, and may cut or grab hands, clothing, or material being loaded, causing severe injury. Always stop engine before hand loading materials.
4. **NEVER ATTEMPT TO RELEASE JAMMED MATERIALS OR CLEAN MATERIALS from any area of the mixer or discharge chute without stopping engine and removing driveline first.** Moving parts can be hidden by materials, and stopped parts can start unexpectedly, causing severe injury. Always stop engine and remove PTO driveline before attempting to remove jammed material or to clean.
5. **DO NOT ALLOW OPERATION of this unit by inexperienced and unqualified people.** Keep all unqualified people away from mixer during loading and operation. Operators of this unit must be alert and use good judgement at all times.  
**OPERATOR SHOULD NOT CLIMB ON LADDER OR ANY PART OF THE MIXER WHEN LOADING, MIXING OR DISCHARGING MATERIAL.**
6. **DO NOT wear loose or floppy clothing while operating this unit.** Loose clothing may become entangled in moving parts.
7. **BE SURE the inside of the mixer is clear of any obstructions and that all shields are in place before operating.** Repair or replace any damaged or missing shielding. Exposed shafting due to missing shielding can grab hands and clothing and cause severe injury or death.
8. **SHOULD A PROBLEM OCCUR during operation of mixer, always stop engine and remove PTO driveline before investigating problem.** If power source has not been disconnected, the mixer may start unexpectedly, causing severe injury or death.
9. **USE CAUTION WHEN WORKING AROUND THE DISCHARGE AREA.** The slide tray and/or power discharge chutes are controlled from the tractor and could operate without warning creating pinch points which could cause severe injury or death. Always turn off tractor engine and remove PTO driveline before working close to the discharge area.

# SAFETY

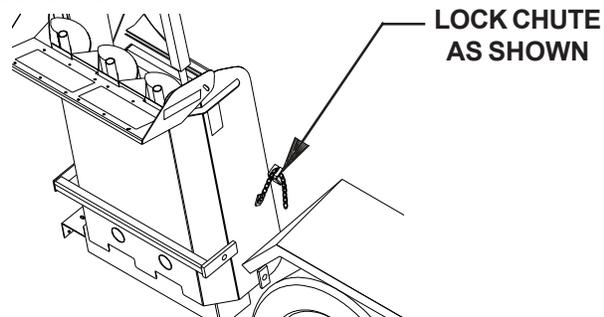
## TRANSPORTING SAFETY PRECAUTIONS



WHEN TRANSPORTING A LOADED MIXER, USE REDUCED SPEED AND BE SURE THE TRACTOR HAS ADEQUATE WEIGHT AND BRAKES TO TOW AND STOP THE MIXER

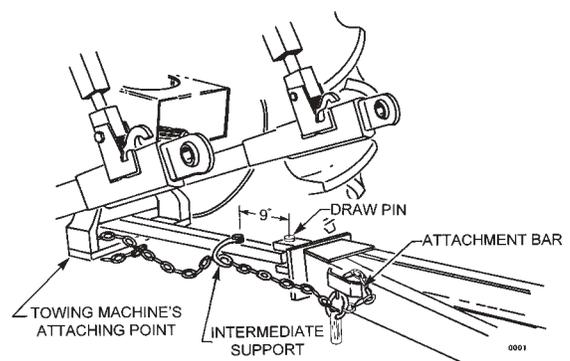
- **The weight of the tractor should be as follows:** The tractor weight should be 2/3 or more of the loaded mixer weight.
- The implement should never be towed over 20 M.P.H.. See tractor setup section for more information.
- **Do not** allow anyone to ride on or in the VERTI-MAXX mixer.
- **Do not** exceed 20 M.P.H. when traveling over smooth dry areas, and reduce speed when traveling loaded and/or over rough, soft, or wet terrain. Exercise caution on side slopes and when turning corners.
- **Avoid operating** the mixer when making sharp turns or crossing gullies or ditches.
- **When working on slopes** or inclines, travel uphill or downhill. Keep the tractor transmission in gear when going uphill or downhill. **Avoid driving** on loose fill, rocks, severe inclines, ditches, and holes.
- **Always park** the VERTI-MAXX on level ground and block the tires.

- **When transporting** the VERTI-MAXX, always keep the power discharge chute or slide tray in the upright (retracted) position. For long transport distances the power chute must be locked in place using the chain provided.



- **When towing the Mixer** with a tractor on a public road, always use the tractor's **FLASHING AMBER LIGHTS**. If the tractor's flashing lights or taillights are obscured from the rear by the mixer, then the Lights included with the mixer must be used.
- **Whenever towing the Mixer**, and especially when towing on public roads, a **SAFETY TOW CHAIN** with an ultimate tensile strength equal or greater than the gross weight of the mixer should be used. See Specifications and Tractor Setup sections for gross weights.

To attach the Safety Tow Chain to the implement, pass the end link through the attachment bar on the side of the tongue, then pass the hook end through the end link. The hook end should then be pulled forward through the intermediate support (if required) on the towing machine's drawbar, and around the towing machine's attaching point, hooking back to the Safety Tow Chain itself. If the towing machine's attaching point is more than 9" from the draw pin, an intermediate support, capable of withstanding one half the required chain capacity, is required. The Safety Tow Chain should have no more slack, when in use, than necessary to permit proper articulation of the implement. Do not use the intermediate support as the attaching point. When not in use, the Safety Tow Chain should be stored to prevent damage from weather or improper use. The Safety Tow Chain must be replaced if any one link is broken, stretched, or otherwise damaged or deformed.





## SAFETY DECALS

**SAFETY DECALS ARE PLACED ON THIS UNIT FOR THE PROTECTION OF THE OPERATOR OR ANY PERSON NEAR THE UNIT.**

**Be Sure everyone who operates the mixer understands all the information, warning, caution and danger decals.**

**Keep The Decals Clean** so they are readable. This applies to all caution, warning, and danger decals.

It is the **OWNER'S RESPONSIBILITY** to provide information for safe operation of this machine.

**Replace any damaged or worn decal.** Once any part of a decal becomes non-readable, it should be replaced. The part numbers for the decals are located in the lower RH corner of the decal, and listed in this manual on the following pages. Replacement decals may be ordered through your dealer or the address below.

**When replacing decals,** be sure the surface area is clean and dry, peel the backing off the decal, and apply to the Mixer. Be sure to wipe with a clean cloth to rub out all air bubbles to assure a good seal. For best adhesion decals should be applied in temperatures of 50° (f) or warmer.

Complete sets of decals (including information decals) can be ordered by using the following part numbers:

UNIT	PART NO.
5032	175-223
5042	174-778
5055	174-912
5073	174-945
5085	174-946
50100	174-947

# SAFETY

## SAFETY DECALS

Immediately replace all worn or damaged Safety Decals (listed on these pages). Please supply the unit's serial number with the order.



Figure A  
WARNING, STAY CLEAR OF POWER DRIVEN PARTS  
Part Number 170-849  
2 Required: ALL MODELS

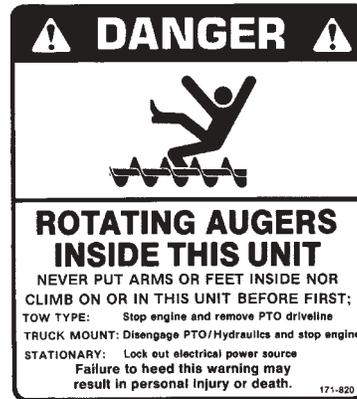


Figure B  
DANGER, ROTATING AUGERS INSIDE  
Part Number 171-820  
2 Required ALL MODELS

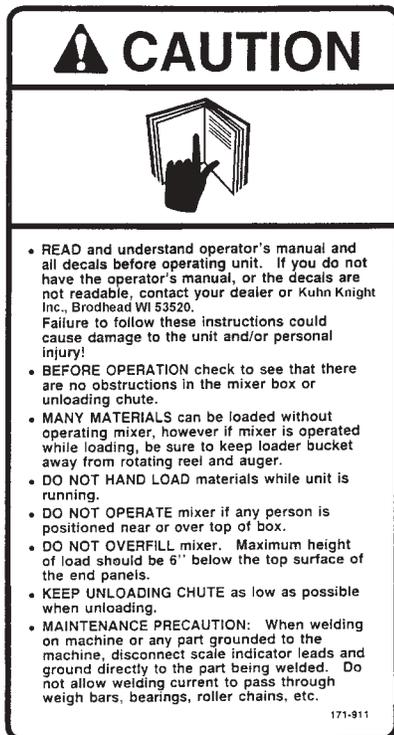


Figure C  
SAFETY INSTRUCTIONS  
Part Number 171-911  
1 Required ALL MODELS



Figure D  
WARNING, DO NOT OPERATE UNLESS SHIELDS ARE IN PLACE  
Part Number 171-913  
1 Required ALL MODELS

# SAFETY

## SAFETY DECALS

Immediately replace all worn or damaged Safety Decals (listed on these pages). Please supply the unit's serial number with the order.



Figure E  
WARNING, STAY CLEAR OF CHUTE AREA  
Part Number 171-914  
2 Required ALL MODELS



Figure F  
DANGER, DO NOT HAND LOAD  
Part Number 171-947  
2 Required ALL MODELS

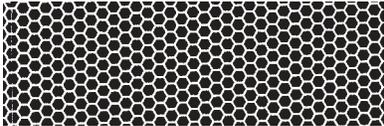


Figure G  
RED REFLECTOR  
Part Number 174-686  
5 Required ALL MODELS

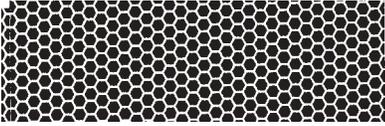


Figure H  
AMBER REFLECTOR  
Part Number 174-687  
3 Required ALL MODELS



Figure I  
DANGER, KEEP AWAY, ROTATING DRIVE LINE  
Part Number 172-786  
1 Required ALL MODELS

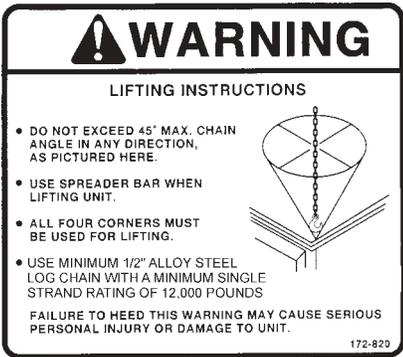
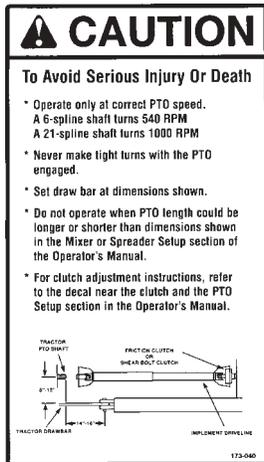


Figure J  
WARNING, LIFTING INSTRUCTIONS  
Part Number 172-820  
1 Required ALL MODELS

# SAFETY

## SAFETY DECALS

Immediately replace all worn or damaged Safety Decals (listed on these pages). Please supply the unit's serial number with the order.



*Figure K*  
CAUTION, TO AVOID SERIOUS INJURY OR DEATH  
Part Number 173-040  
1 Required ALL MODELS



*Figure L*  
DANGER, SHIELD MISSING  
Part Number 171-799  
1 Required ALL DRIVELINES



*Figure M*  
DANGER, ROTATING DRIVE LINE  
Part Number 171-550  
1 Required (All Drivelines)



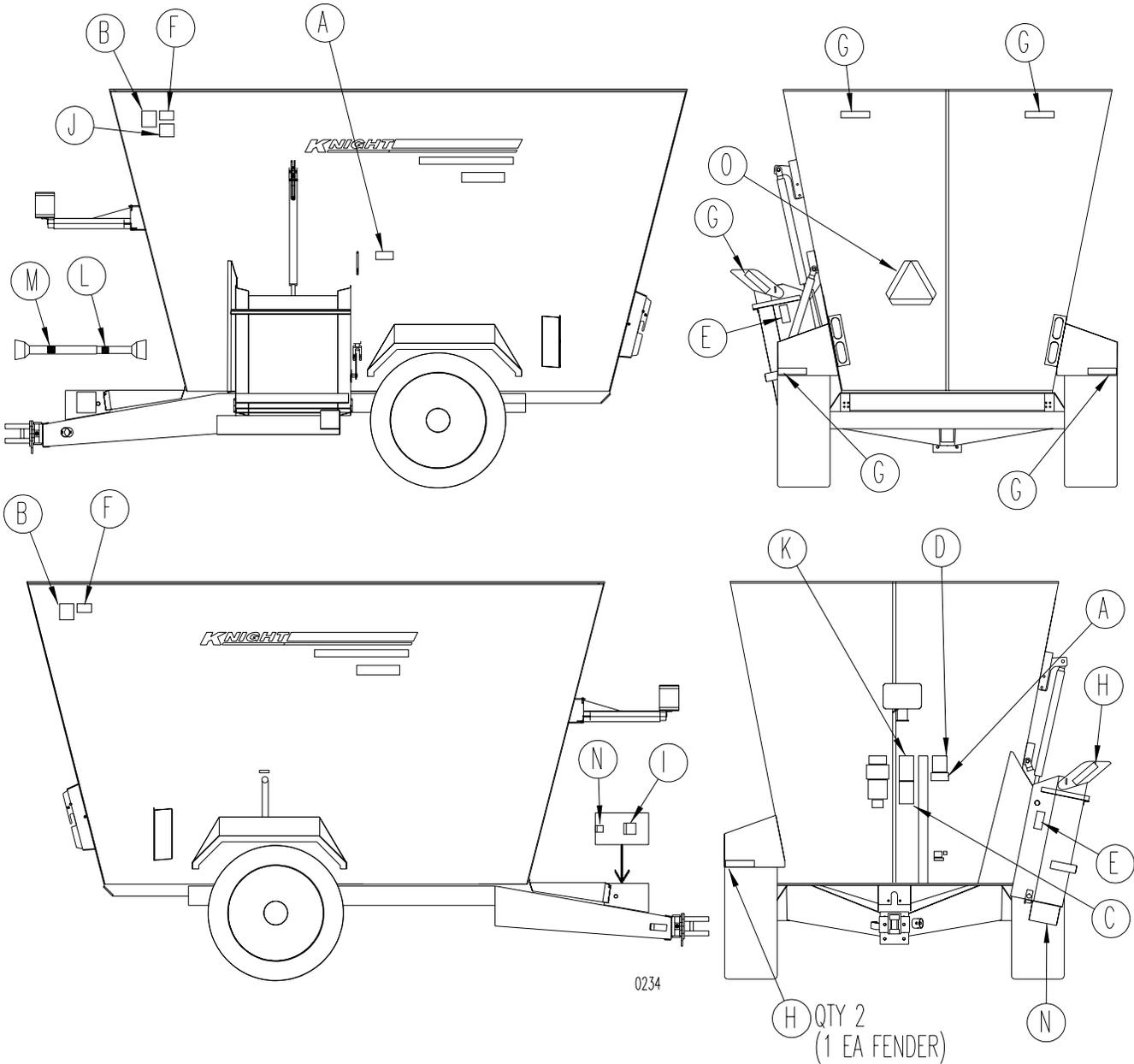
*Figure N*  
DANGER, SHIELD MISSING  
Part Number 173-078  
2 Required ALL MODELS



*Figure O*  
SLOW MOVING VEHICLE SIGN  
Part Number 170-893  
1 Required ALL MODELS

# SAFETY

## SAFETY DECAL PLACEMENT ILLUSTRATIONS ALL MODELS



# MIXER SETUP



**IMPORTANT! READ BEFORE OPERATING MIXER.**  
IT IS THE RESPONSIBILITY OF THE OWNER TO MAKE SURE THE MIXER IS SET UP PROPERLY. THE FOLLOWING RECOMMENDATIONS SHOULD BE HELPFUL

UNIT	EMPTY UNIT WT. + LOAD WT. = GROSS WT.	TRACTOR WEIGHT AT UP TO 20 MPH
5032	8,200 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.
5042	9,650 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.
5055	10,800 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.
5073	17,000 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.
5085	21,500 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.
50100	22,000 + _____ = _____	2/3 OF GROSS WT. = TRACTOR WT.

A tractor with the above recommended weight for your unit is normally adequate for towing the loaded mixer under average conditions. Unit weights include tires & power chute.

## TRACTOR PTO HORSEPOWER REQUIREMENTS

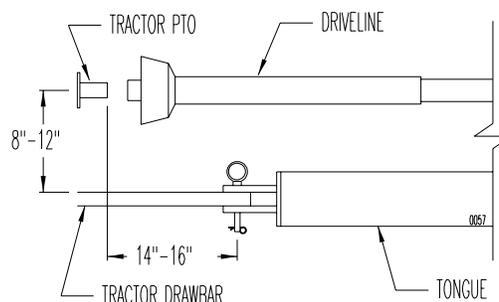
PTO horsepower requirements are based on most normal dairy or beef rations. **Horsepower requirements may vary depending on the ration or material to be mixed.**

MODEL	PTO HORSEPOWER
5032/42	65 - 90 AT 540RPM
5055	85 - 120 AT 1000RPM
5073	130 AT 1000 RPM
5085	140 AT 1000 RPM
50100	150 AT 1000 RPM

The PTO horsepower requirements shown may not reflect adequate tractor size for towing the mixer, refer to tractor weight requirements for these recommendations and transporting safety precautions for additional tractor and towing requirements.

## DRAWBAR ATTACHING SYSTEM

**Adjust tractor drawbar** and/or the mixer clevis hitch so that the mixer is approximately level. The top of the drawbar should be 8 - 12" below the tractor PTO shaft. Adjust the drawbar horizontally so that the hitch pin hole is (14" - 16") 14" for 540 RPM 1-3/8" DIA., 16" for 1000 RPM 1-3/8" DIA. 21 spline and 16" for 1000 RPM 1-3/4" DIA. 20 spline behind the tractor PTO and drawbar is centered and locked into place. Knight Manufacturing does not recommend or authorize PTO adapters.



## HYDRAULIC REQUIREMENTS

**Dual hydraulic outlets** are required for operating the door and the slide tray or power chute. If your tractor has only a single set of ports, then the manual diverter or electric selector valve option should be ordered. If the power chute is used, the tractor hydraulic system must supply a minimum of 15 GPM at 2000 PSI. On units with power chute option, the chute hoses may be difficult to connect due to the chute weight on the lift cylinder. Lift weight off chute cylinder to connect hoses.

# MIXER SETUP



**IMPORTANT! READ BEFORE OPERATING MIXER.**  
IT IS THE RESPONSIBILITY OF THE OWNER TO MAKE SURE THE MIXER IS SET UP PROPERLY. THE FOLLOWING RECOMMENDATIONS SHOULD BE HELPFUL

## SAFETY SHIELDING

Be sure all shielding is in place and functioning properly. Replace all damaged or missing shielding immediately - see parts pages or call your dealer for replacement safety shielding part numbers.

## SAFETY LIGHTING

The lighting system provided is intended for agricultural tractor transport only. If the mixer will be transported on a public roadway, be sure the lights are in good working order. When attaching to a towing vehicle other than a tractor, always check for proper operation, as wiring may vary.

## LUBRICATION

Check to be sure that all gearcases and oil bath contain oil, and that bearings and joints have been greased (see maintenance section)

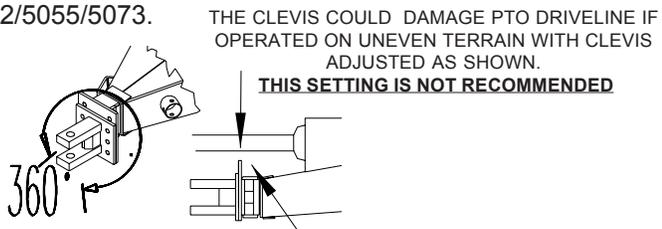
## CLEVIS SETUP

The clevis (and the clevis mount) on the front of the mixer can be adjusted for height. Mount the clevis so that the mixer is as level as possible when connected to the tractor. Be sure that the PTO driveline does not contact the clevis (or clevis mount) during normal operation or transport.

The clevis is adjustable vertically on all models and can be rotated 360° to allow for maximum adjustment only on 5032/5042/5055/5073.

Care should be taken in rotating for low tongue height due to potential PTO shaft interference.

A hitch pin with a minimum of 1 1/4" diameter with a retainer pin is recommended.

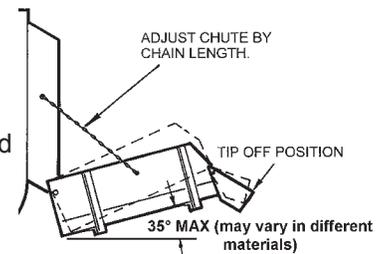


## SCALE SETUP

Connect the power cord to the mixer battery or 12V tractor connection and check the scale for proper operation (see scale manual).

## POWER CHUTE (option) ADJUSTMENT

To adjust the height of the power chute, change the length of the link chains on the sides of the chute. For best performance, the unloading height should be set at the lowest height possible. The discharge tip-off on the power chute should be adjusted for correct magnet and discharge angle. Loosen the adjusting bolts and tighten at desired tip-off angle.



## MIXER RUN-IN

1. Check for proper assembly, adjustment, and lubrication. Check to see that there is adequate oil in the gearboxes and bull gear oil bath. If unit is equipped with a discharge chute, oil the roller chains and check to be sure all bolts and set screws are tight. Review Operating Safety Precautions and Lubrication Instructions before operating the mixer.
2. Be sure all shields are properly in place.
3. Check for and remove any foreign objects in the mixer hopper and discharge opening.
4. Check to see that the door is closed.
5. Be sure no one is inside the mixer.
6. Test run the mixer.
  - a. Make sure mixer is empty, then start the mixer.
  - b. Run mixer for at least five minutes at 3/4 of rated PTO RPM.
  - c. If unit is equipped with power chute, run discharge for 1 hour with no load for proper motor break in.
  - d. Raise and lower the door and the chute or slide tray several times.
  - e. Disengage the mixer, turn off the tractor engine, and remove driveline.
  - f. Check the mixer drive components to be sure they are not abnormally hot.

**If any of these items are not running as indicated, immediately repair or contact your local dealer. Always refer to Operating Safety Precautions before operating or servicing the mixer.**

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## SAFETY



When the mixer is in operation, it has moving parts which could cause severe injury or death to persons coming in contact with these parts. To help avoid serious accidents, the following precautions should always be followed:



**DANGER: NEVER HAND FEED MATERIALS** into mixer while it is running, always stop engine and remove ignition key before hand loading materials. Rotating augers inside mixer may not be visible from the loading point, and may cut or grab hands, clothing, or material being loaded, causing severe injury.



**DANGER: NEVER PUT HANDS, ARMS OR FEET INSIDE unit, nor climb on or in the mixer while it is running. Never allow anyone to position themselves near the mixer or over or near the top of the mixer while it is running.** Rotating augers can grab clothing or create pinch points which can cause severe injury or death to the operator or bystanders. Always stop engine and remove the ignition key so that the mixer cannot be accidentally turned on while inspecting, servicing, repairing, or cleaning.



**DANGER: NEVER ATTEMPT TO RELEASE JAMMED MATERIALS OR CLEAN MATERIALS from any area of the mixer or discharge chute without stopping engine and removing driveline first.** Moving parts and knives can be hidden by materials, and stopped parts can start unexpectedly, causing severe injury. Always stop engine and remove ignition key before attempting to remove jammed material or clean.



**DANGER: DO NOT ALLOW OPERATION of this unit by inexperienced and unqualified people.** Keep all unqualified people away from mixer during loading and operation. Operators of this unit must be alert and use good judgement at all times.

**OPERATOR SHOULD NOT CLIMB ON LADDER OR ANY PART OF THE MIXER WHEN LOADING, MIXING OR DISCHARGING MATERIAL.**

**Keep in mind the overall size of the mixer** to allow clearance through doorways, make sure the chute is in the up position and there is adequate side and top clearance through doorway.

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## OPERATION OF YOUR VERTI-MAXX MIXER

There are some basic concepts that must be understood to achieve top mixing performance with the Verti-Maxx.

A new machine will need an initial run-in period to polish the augers and mixer sides to achieve correct material movement inside the mixer. Until the unit is polished inside, one may experience material spillage, dead spots, or increased horsepower requirements. The load size may need to be reduced until the unit is polished inside.

Mixing a ration in a vertical mixer generally involves three steps; processing, mixing, and unloading. The sequence and timing of these steps is very important, and is different for every operator because of variations in materials and conditions. There is some experimentation that must be done to work out the best equipment, sequence, and timing for your particular operation. Following are some general suggestions to achieve good results.

### Step #1 - Processing

#### Materials

Some feed materials will first need to be processed alone in the Verti-Maxx before they can be efficiently mixed with other feedstuffs in the Verti-Maxx mixer. These materials include;

- A. Large square or round bales of alfalfa\*
- B. Large square or round bales of high moisture "Baleage"\*
- C. Large square or round bales of long mixed grasses, wheat or oat hay and crop residue bales (straw or soybean stubble)\*
- D. Very light and bulky feedstuffs\*

\* Always remove twine from bales before loading into the mixer.

#### Mixer Setup

- A. Be sure that mixer is sitting level front to back and side to side.  
This will ensure a level and even mix of feed.
- B. Be sure tractor is sitting straight in line with the mixer.  
This will prevent premature wear to the driveline and gearboxes.
- C. Completely close mixer door.
- D. Set Hay Stops according to instructions in Maintenance section.

#### Loading

- A. With the tractor running at approximately 3/4 of rated PTO speed, load baled hay into center of mixer.
- B. Allow mixer enough time to process bale before adding other ingredients (4 to 10 minutes) If you need to inspect progress of the processing /mixing, always shut off mixer and tractor before climbing the ladder to inspect the load.
- C. Processing of long stem forages will continue as other materials are added and mixed. Be careful not to over process these materials before adding other ingredients.

#### Adjustments

- A. When processing materials, there may be spillage over the side of the mixer. Following are some steps to reduce this;
  1. Reduce load size
  2. Reduce tractor/mixer RPM
  3. Be sure mixer is level
  4. Be sure augers and hoppers are polished so feed moves well inside mixer.
  5. Back off "Hay Stops" to a less aggressive or neutral position.
  6. Reset knives to a less aggressive setting.
  7. If spillage still occurs, the optional side extensions for the mixer may be needed.

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## Step #2 - Mixing

### Materials

The Verti-Maxx is designed to mix a wide variety of feedstuffs efficiently and quickly. After the long stem forages are coarsely cut in the processing step, other materials such as silage, grains, haylage, and commodities can be added and mixed.

### Loading Sequence

With mixer running at approximately 3/4 of rated PTO RPM, and the long stem material processed to a desirable length, the loading of remaining ingredients can begin. The sequence of loading materials will depend on the loading methods and their location relative to the mixer, but a typical loading sequence would be;

1. Load haylage and corn silage
2. Load minerals, proteins, and other small quantity ingredients.  
(Note- in some cases it may be preferable to load these between the silage's if possible)
3. Load grains, wet and dry commodities, etc.
4. Load all liquid fats, water, and other liquids. Always load liquids at the center of the mixing chamber.

Note: Never load long stem bales last. They will not be processed or mixed into the ration, and may cause unloading or spillage difficulties. Processing of long stem forages will continue as other materials are added and mixed. Be careful not to over process these materials before adding other ingredients.

Load all ingredients as quickly as possible, and allow a final mix time of 3 to 7 minutes, or whenever the load looks consistently mixed.

### Adjustments

A few loads will need to be tried to establish the best loading sequence, PTO RPM, mix time, and hay stop position for your particular situation. Adjustments may need to be made if you see the following;

1. Spillage - refer to the adjustments listed in the processing steps.
2. High horsepower
  - a. Reduce load size
  - b. Be sure mixer sides and augers are "polished" to insure correct feed movement inside mixer.
  - c. Back off "Hay Stops" to a less aggressive or neutral position see Hay Stop Adjustment section
  - d. Modify the knife setting quantity or placement, see Inspection and Adjustment section
  - e. Add optional short knives if available
3. Forage is cut too short
  - a. Reduce the initial processing time
  - b. Reduce the aggressiveness of the hay stops, see Hay Stop Adjustment section
  - c. Reduce the total loading time
  - d. Reduce the mixer RPM to limit aggressiveness in processing
  - e. Modify the knife quantity or placement, see Knife Adjustment section

## Step #3 - Unloading

Try to unload the mixed ration within a short time after mixing. A fully loaded mixer which is bounced over rough terrain or allowed to settle will require more horsepower during start-up.

1. Position the mixer in a straight line with the tractor, to reduce the stress on the PTO shaft.
2. Lower slide tray or lower and start the discharge chute.
3. Start the mixer and partially open the door.
4. Adjust the door height for the desired flow of feed, while moving forward along the discharge path.
5. After load begins to discharge, increase tractor RPM to full PTO to insure fast and thorough cleanout.

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## Step #4 - Other Mixing Recommendations

Run tractor at 3/4 of rated tractor RPM (no more) while processing to help reduce HP and/or spillage of hay. Set hay stops to #4 or #5 low positions (see Hay Stop Adjustment). This will reduce spillage due to hay “piling” up near the hay stops.

- A) If HP required to process and mix high percent amounts of balage/grassy hay is too high, the following can be done:
  - 1). The remaining knives can be “laid-back” to a less aggressive “in” position.  
(see Knife Adjustment section below)
  - 2). Remove the optional extra knives.
  - 3). Add optional short knives if available in lieu of the long knives to help reduce HP
  
- B) If spillage in balage or grassy material is excessive:
  - 1). Move Hay Stops to the “neutral” positions.
  - 2). Lower PTO RPM while processing.
  - 3). Move knives into the “laid-back” or “in” positions.
  - 4). Remove optional extra knives from augers If HP requirement is still high. Starting from the top of auger, leave knife at very top of auger and remove knives below it.
  - 5). Add optional side extensions.
  
- C) Small knives can be removed if final cut-length of material is too short and fine, but long knives may need to be left intact for initial processing of materials.

## Knife Adjustment - Large Knives

The Verti-Maxx Mixer is designed and intended for processing and mixing rations that include long stem forages. In most cases, the knives that come standard on the mixer are placed to work well in most rations. However, some rations may require adding or removing knives to obtain the desired result.

### Removing Knives

Individual knives may be removed from the auger if the ration does not include hay, or includes very small amounts of small square bale hay or tub ground hay. **Removing knives will decrease the aggressive cutting action on the stem length of the ration and may also reduce horse power requirements.**

### Adding Knives

If the hay in your ration is not being processed enough or fast enough, extra knives and backers may be ordered through your dealer. **Adding extra knives will help break down and process materials faster, but may increase the horsepower required to process and mix.**

The placement of knives towards the bottom of the auger will process the forage faster and shorter, but may require more horsepower. Placement of knives higher on the auger will assist in breaking up bales faster after initial loading.

# MIXER OPERATION

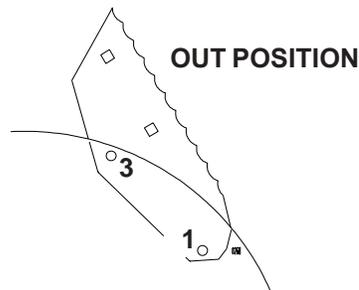


Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## Moving Knives - “In” or “Out” - Large Knives

### “Out” Position

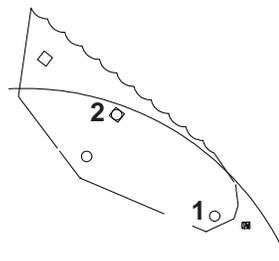
The “out” position on the knives (hole 1 & 3) will tend to move the long stem hay and lighter bulky materials best in the early stages of processing and mixing. This setting may result in more feed “boiling” inside the mixer and may increase feed spillage in certain materials. Knives placed in the out positions are very aggressive in processing feed it will also increase the HP requirement.



### “In” Position

The “in” position on the knives (hole 1 & 2) will slow down the early feed movement of long stem hay and lighter bulky materials, resulting in less spillage due to clearance between the knives. This setting is more desirable for heavy rations with long run time and where over processing can occur. Knives placed in the “in” position are less aggressive in processing feed and will also reduce the HP requirement.

### IN POSITION



## Small Knives

The smaller knives are provided to assist the mixer in processing the roughage materials into smaller particle lengths required in many rations. These knives are not adjustable “in” or “out”, however some or all may be removed if the stem and cut length of the ration is too fine. If the stem and cut length of the ration is too fine, some or all of the smaller knives can be removed. (Note: These knives are more effective after the feed roughage has been torn apart and is beginning to be processed.)

## Replacement of Knives

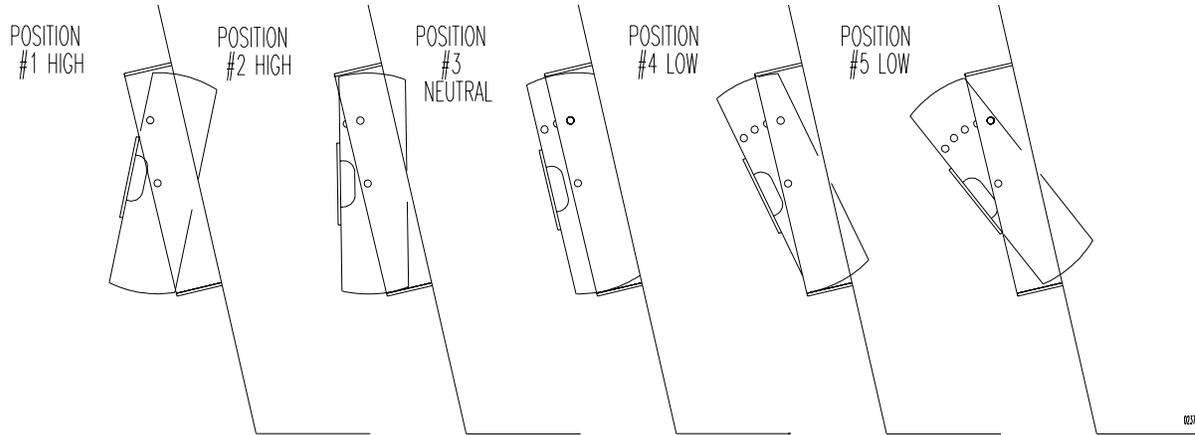
When knives become worn and rounded on the leading edge, their efficiency is greatly reduced, resulting in longer processing times and increased HP requirements. Refer to your service parts manual and contact your Kuhn Knight Dealer for replacement part ordering.

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## Hay Stop Adjustment



### Do not adjust Hay Stops while the unit is running.

The Verti-Maxx is equipped with two adjustable “Hay Stops”, one located at the right front and the other at the left rear of the mixer. The purpose of the “Hay Stops” is to provide better control of the processing and mixing of long stem forages into the ration. There are a total of 5 positions for the hay stops, and by doing some experimenting with the settings, you will be able to determine the proper settings for your ration. **The most common setting for normal forage rations that include some alfalfa hay is the #2 high position (see illustration).**

### High Positions

The high positions on the hay stops (#1 & #2) will tend to slow the movement of the long stem hay and lighter, bulkier materials early in the processing and mixing sequence. This allows the auger/knives to “cut” the hay more aggressively. The feed flow will be slowed down, when the #1 setting is used, and may result in more feed “boiling” inside the mixer, and may increase feed spillage in certain materials. When using very light, bulky materials like dry grasses, the #1 setting is recommended. When processing and mixing most alfalfa bales and other forages, the #2 setting is recommended. If the ration forage length becomes too short, then move one or both stops to the #3 neutral setting.

### Low Position

The low positions (#4 & #5) will give a more aggressive cutting action later in the load sequence. Because the low position hay stops are located closer to the bottom knives and auger flighting, they interact more aggressively with feed that moves through the lower half of the augers. These positions are more desirable if heavier rations are mixed, or if fine, short stem lengths are required. These low positions could also be used in breaking up frozen chunks of feed, getting a fine cut on hay already torn apart when loaded, or to aid breakup of feed by-products.

Note: The low positions (#4 & #5) generally increase the horsepower requirements, and should be used with care for most high forage/hay rations that use dry bulky forages, or that need to maintain a longer stem length.

### Neutral Position

If your ration does not include significant amounts of long stem hay, or if you experience significant hay “boiling” and spillage, then the hay stops can be set in a neutral position. This allows the feed to travel more freely end to end, and reduces the amount of stem length reduction while mixing.

# MIXER OPERATION



Always refer to Operating Safety Precautions and Safety Decal sections of this manual before operating this mixer.

## **OPTIONS available as original equipment or field installation:**

### **POWER CHUTES -**

This can be an auger or chain and slat chute that is used to deliver feed to an area higher than the door height. One valve controls the door (up and down), and the other valve controls the chute functions, lowering chute and powering the chute. When the flow is reversed, the chute raises and a check valve prevents the chute from turning backwards.

**Note: Always start the power chute before opening the door to prevent overloading the chute.**

### **ELECTRONIC SCALES HEADS -**

Knight manufacturing offers a range of scale heads with the most popular features to display accurate ration weight while loading.

Refer to the scale manufactures operator manual for operation and maintenance.

### **ELECTRIC SELECTOR VALVE -**

Plugs directly into existing hydraulic ports and creates two switchable circuits. A flip of the electric remote and the operator can select either set of hoses. Once activated, the operator uses the existing hydraulic lever to control remote functions.

### **MANUAL SELECTOR VALVE - (single hydraulics)**

One set of ports controls both the door and the chute functions. After lowering the chute, shift the diverter valve from the neutral position as desired to open or close the door, then engage the chute for unloading.

### **WHEELS AND TIRES -**

Factory supplied wheel and tire options are sized to support the gross weight of the loaded mixer and the weight of a 30 pound per cubic foot ration.

### **SAFETY CHAIN -**

This chain is designed to retain the connection between towing and towed machines in the event of separation of the primary attaching system and is recommended whenever the unit will be transported on the highway.

### **EXTRA KNIVES -**

Extra short and long knives are available for certain models. See Mixer Operation section for more information.

### **SIDE EXTENSIONS -**

8" Side Extensions are available to minimize spillage of light materials during processing and mixing. The purpose of the side extension option is to help contain long stem material while processing, with the convenience of loading from either side.

# MAINTENANCE



ALWAYS STOP MIXER, SHUT OFF TRACTOR ENGINE AND REMOVE DRIVELINE BEFORE SERVICING, REPAIRING, OR CLEANING. IF WORK MUST BE PERFORMED INSIDE THE MIXER, PUT A PROTECTIVE COVER OVER THE AUGER KNIVES TO AVOID INJURY. THE HOPPER FLOOR AND FLIGHTING MAY BE SLIPPERY. USE CAUTION WHEN STEPPING OR STANDING INSIDE THE UNIT. USE SAFE SHOP PROCEDURES AND EXERCISE CAUTION WHEN WORKING ON THIS MIXER!

## INSPECT AND ADJUST:

**Safety Decals** for readability. If any safety decals are removed, obstructed, or otherwise not understandable, they should be replaced immediately. Keep all decals clean - see Safety Decal section for more information.

**Safety Shielding** to be sure all shielding is in place and functioning properly. Replace all damaged or missing shielding immediately - see parts pages for more information.

**Bolts and Set Screws** after a few hours of use and each month thereafter. Tighten if necessary.

**Auger Knives** should be replaced when the long stem material is no longer sufficiently broke up, and there is a noticeable increase in HP requirement.  
Inspect knife fasteners to be sure they are tight.

**Discharge Chute Augers** to keep from rubbing on the chute body: There are shims behind each chute auger bearing for alignment. Periodically check chute liners for wear, replace as necessary.

**Discharge Chute Roller Chains** to make sure the chains are not excessively loose.  
Adjust drive motor to tighten chain, and/or remove half-links.

**IMPORTANT: WHEN WELDING ON THIS UNIT:** Do Not allow the current to flow through the bearings, roller chains, or scale weigh bars. Ground directly to the item being welded. ALWAYS disconnect the power cord from scale indicator before welding.

**Tires must be** inflated to proper pressure as indicated below.

18 x 22.5 Recap Truck (not for use on 5073)	. 65 PSI
315-80R x 22.5 Recap Truck	..... 65 PSI
385-65R X 22.5 Recap Truck	..... 65 PSI
385-80R X 22.5 Recap Truck	..... 65 PSI
34 X 1000 R16 Aircraft (only used on 5032)	. . 85 PSI
40 x 14.5 Aircraft	..... 85 PSI
44 x 16 Aircraft	..... 85 PSI
46 x 18 Aircraft	..... 85 PSI
33 x 15.5 x 16.5 NHS	..... 65 PSI



**CAUTION:** When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and not in front of tire

**Clevis Hitch** for proper location, alignment and tightness of attaching bolts. If the upper clevis bar becomes excessively worn, the hitch assembly should be unbolted and turned over so the unworn hitch bar is on top, or replaced if both bars are worn. Frequently check the clevis attaching bolts for tightness, and that the clevis is secure. Tighten bolts to 275 ft lbs. Worn or damaged bolts must be replaced.

**Wheel Bolts** must be kept properly torqued. Damage to rim may occur if wheel bolts are not checked frequently.  
8-bolt rim: 170 ft lbs- Grade 8 Lug  
10-bolt rim: 300 ft lbs-Grade 8 Lug

**Rain can accumulate** in mixer if stored outside, always leave the door partially open to allow unit to drain.

**In Freezing Weather** the PTO shield requires extra grease to prevent freezing. **Snow** can accumulate in mixer if stored outside, always leave the door partially open to allow unit to drain melted snow and check hopper for snow or ice buildup before operating unit. Remove any ice build up before use.

# MAINTENANCE



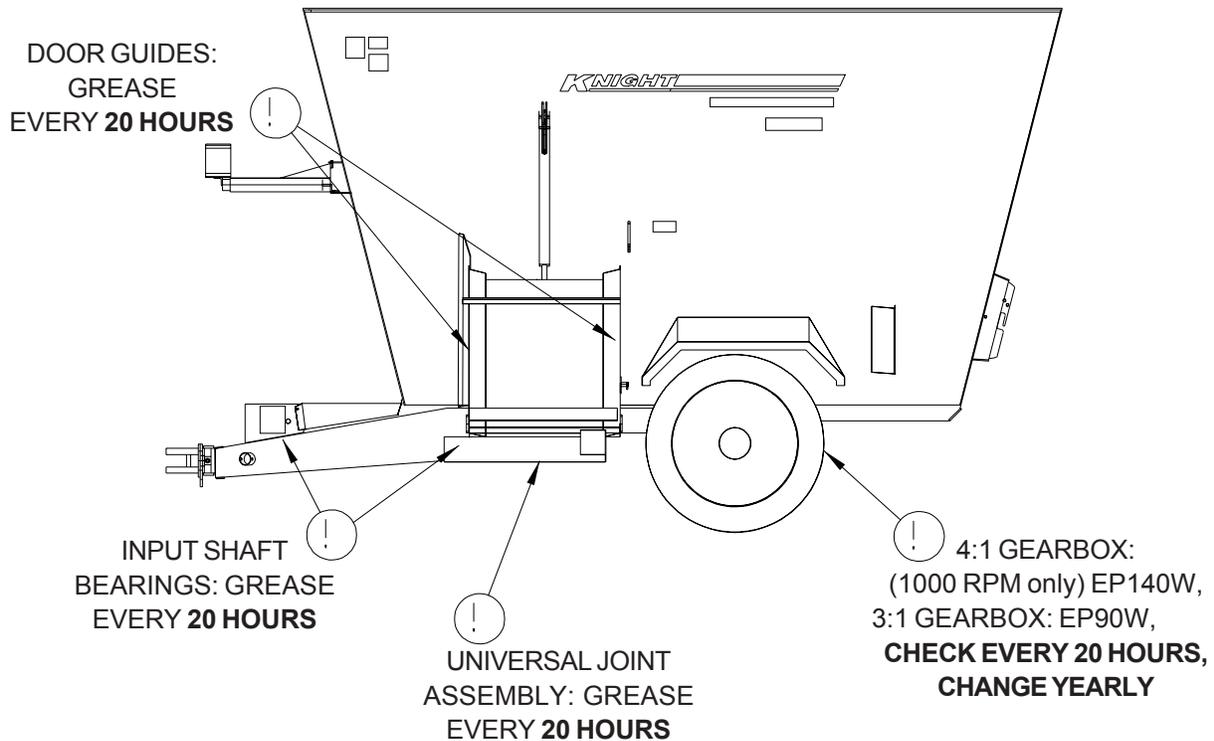
ALWAYS STOP MIXER, SHUT OFF TRACTOR ENGINE AND REMOVE DRIVELINE BEFORE SERVICING, REPAIRING, OR CLEANING. IF WORK MUST BE PERFORMED INSIDE THE MIXER, PUT A PROTECTIVE COVER OVER THE AUGER KNIVES TO AVOID INJURY. THE HOPPER FLOOR AND FLIGHTING MAY BE SLIPPERY. USE CAUTION WHEN STEPPING OR STANDING INSIDE THE UNIT. USE SAFE SHOP PROCEDURES AND EXERCISE CAUTION WHEN WORKING ON THIS MIXER!

## LUBRICATION:

**It is extremely important that the following lubrication guide be followed:**

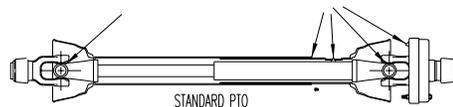
**For lubricating bearings**, use a good quality multipurpose grease. Replace all damaged or missing grease zerks immediately. Always clean zerks before using grease gun. Pump the grease in slowly until a slight bead forms around the bearing seals. Once a month check lines and connections on grease banks for leaks.

**The gear drive enclosure** is designed to be used as an oil bath. With the unit level, fill oil bath through dipstick until the oil level reaches the notch on the dipstick. 5032, 5042 & 5055 require 25 approximately gallons, 5073, 5085 & 50100 require approximately 30 gallons of 30wt detergent oil.



PTO IMPLEMENT DRIVELINE JOINTS & SLIDE: GREASE, 8-10 HOURS

8 HOURS - GREASE DRIVELINE JOINTS  
3 MONTHS - GREASE DRIVELINE SHIELDS



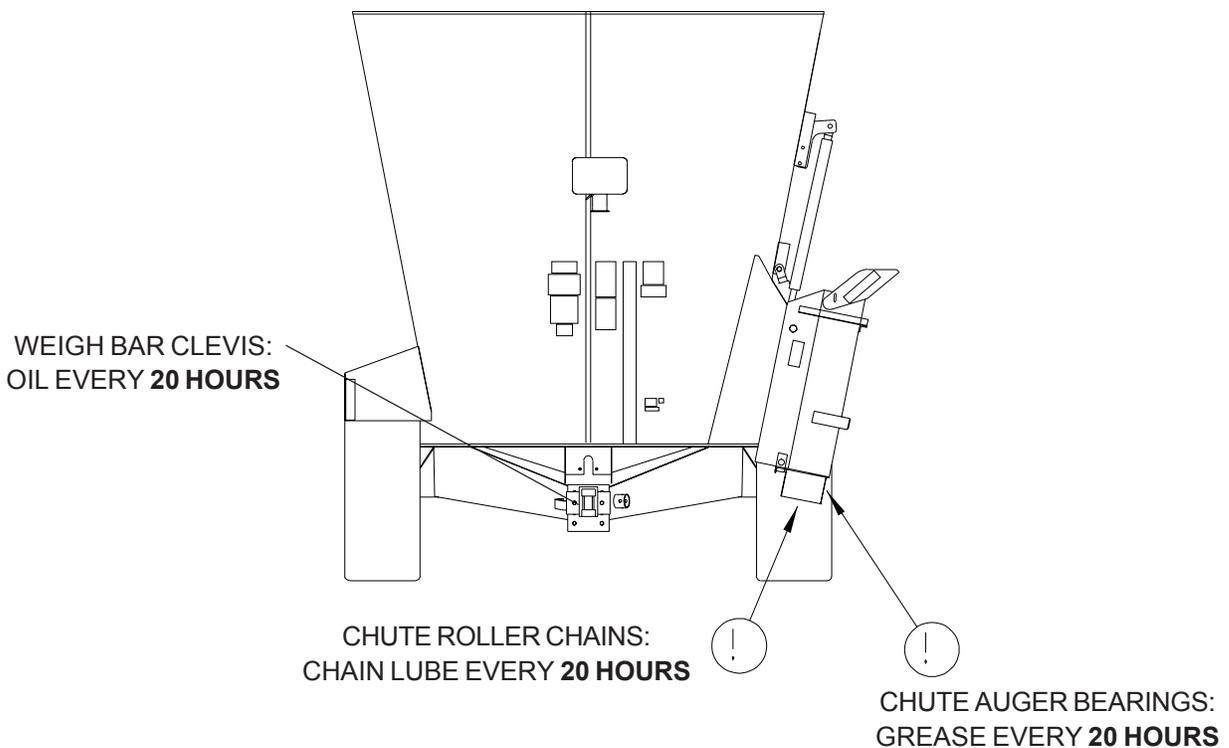
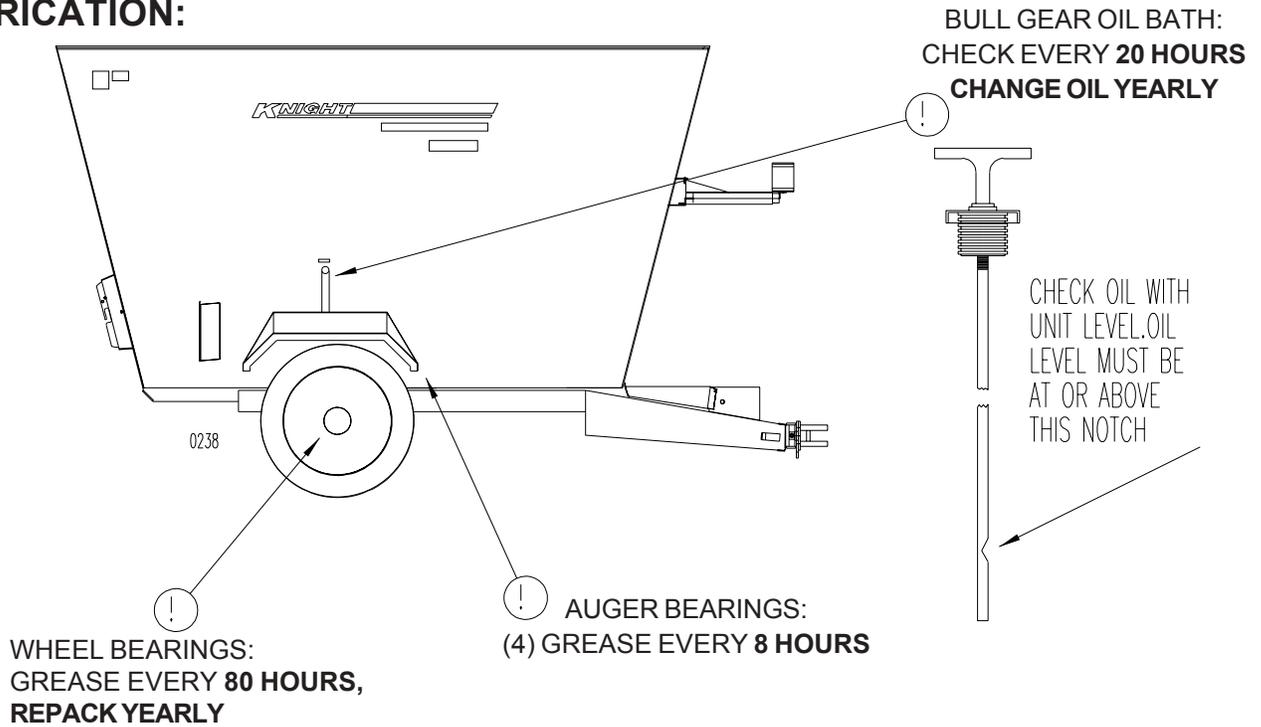
PTO IMPLEMENT DRIVELINE SHIELD: GREASE, EVERY 3 MONTHS

# MAINTENANCE



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## LUBRICATION:



# MAINTENANCE



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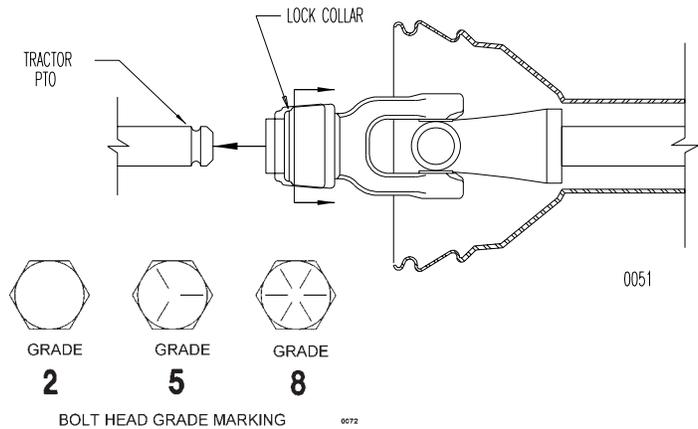
## PTO DRIVELINE SETUP AND ADJUSTMENT

### 5032/5042/5055 Shear Bolt PTO:

The PTO driveline has a shearbolt assembly for overload protection. This shear bolt type PTO needs very little maintenance. If the PTO free spins during operation, the bolt has sheared. Replace the sheared bolt with a new one of the same diameter, length and grade. Bolt should shear on non-threaded portion. Any bolt of different specifications than listed below will prevent the shearbolt assembly from operating properly and can cause damage to the mixer.

NOTE: Shearbolt assembly must always be installed on mixer input shaft. It is important to have the PTO shaft completely secure on the tractor PTO with the lock collar fully engaged. The use of adapters on the PTO is **not** recommended.

MODEL	SHEAR BOLT SIZE	PTO RPM
5032/42	3/8" X 2 1/2" GRADE 5	540
5055	5/16" X 2 1/2" GRADE 5	1000



### 5073/5085/50100 Torque Disconnect PTO:

The torque disconnect type of driveline protection is an automatic, no maintenance form of protection when compared to shear bolt or friction type clutches. It uses pawls spring loaded into a ratchet to transmit torque. When the torque overcomes the spring force the pawls pull away from the ratchet preventing driveline damage. To reset, simply throttle the tractor down and the pawls will reengage. If an obstruction must be removed to get it to reengage, always shut the tractor off and remove the PTO before removing the obstruction.

NOTE: Torque lock bolt to tractor to 75ft. lbs. (17mm 6pt socket suggested).

# MAINTENANCE



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## MISCELLANEOUS:

### Electronic Scale Indicator (optional)

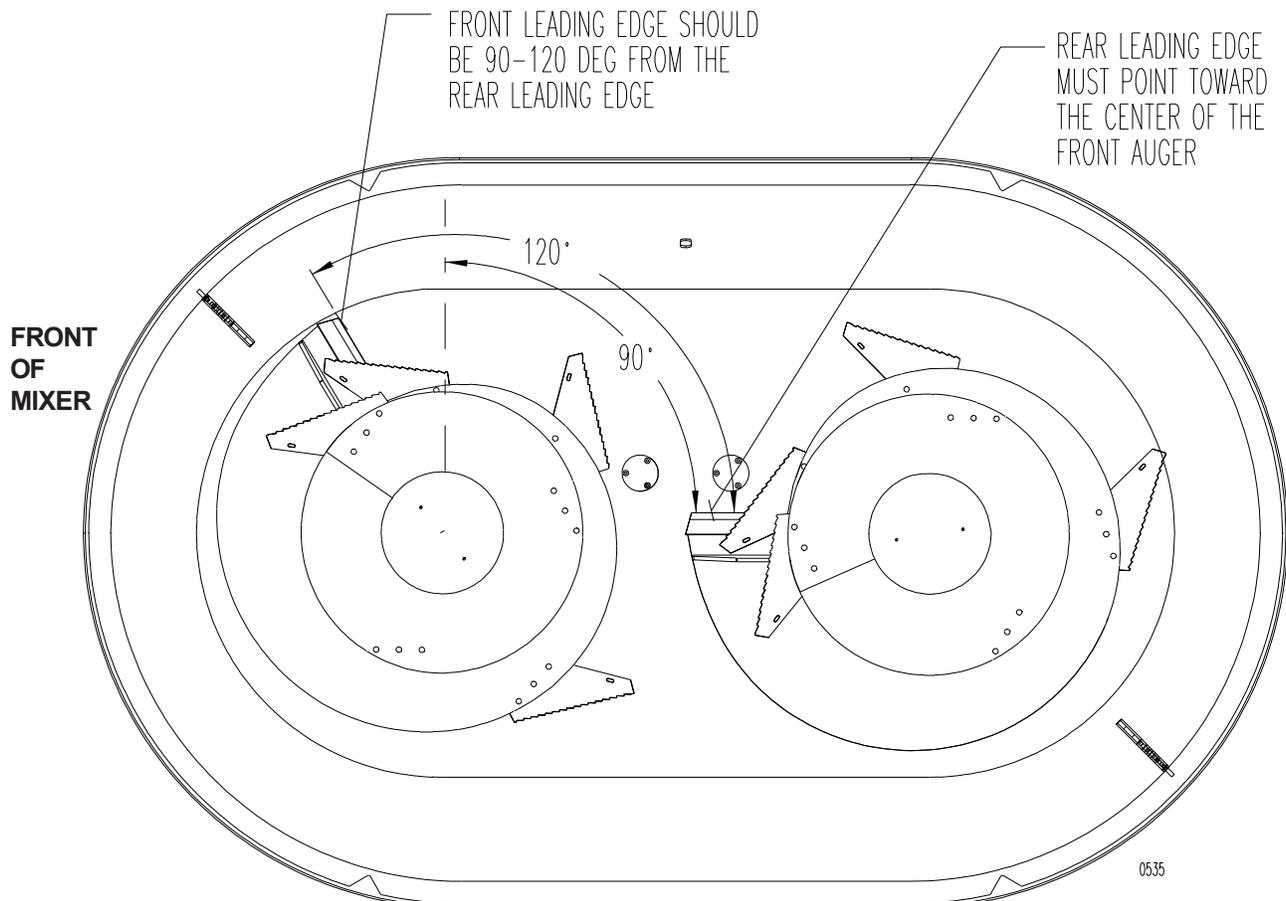
Refer to the electronic scale operators manual for adjustment information. The operator's manual for the Electronic Scales should be kept with this manual. Additional scale manuals may be obtained through Kuhn Knight INC.

**Normal scale activity:** Some warm up scale drift may occur after the scale is turned on but should zero balance within 10-15 minutes. Scale may zero shift over night due to temperature changes. Weight may change slightly due to terrain changes when mixer is moved.

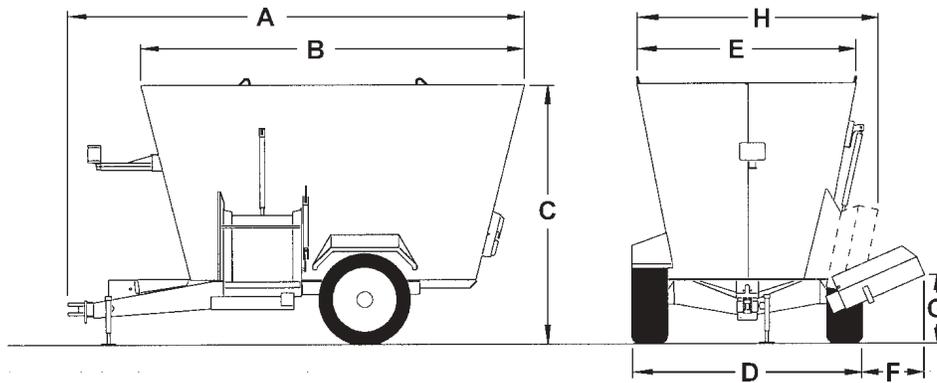
**Oil Quality in bull gear oil bath** - it is normal for the oil in the oil bath to have some water present, due to condensation. This will cause the oil to have a milky appearance, and a moderate amount of water does not effect the lubricating characteristics of the oil. See lubrication section for oil change intervals.

**Timing of Augers** - if the machine has had augers removed for any reason, it is important to get the augers properly re-timed to each other. Be sure augers are installed as shown;

**Gears and Gearbox** - if excessive gear noise is noticed or backlash of each individual auger exceeds 3/4 inch at the tip of the leading edge, contact dealer for proper adjustment or maintenance.



# SPECIFICATIONS



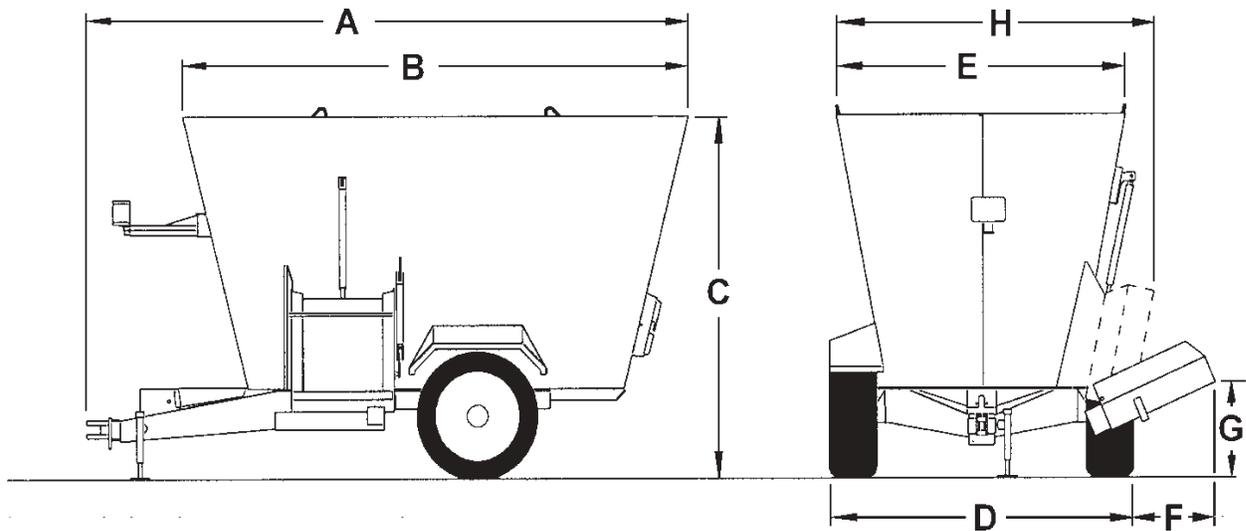
MODEL - Trailer	5032	5042	5055
<b>Dimensions (inches)</b>	<b>TR</b>	<b>TR</b>	<b>TR</b>
A - Overall Length	201"	206"	212"
B - Mixing Chamber Length	157"	164"	176"
C - Overall Height (less extensions)	93"	101"	103"
D - Tread Width	79"	106"	106"
E - Overall Width (mixer only)	84"	101"	101"
F - Power Discharge - max reach - 2' chute	24"	24"	24"
Power Discharge - max reach - 3' chute	32"	29"	29"
Slide Tray - max reach	12"	4"	4"
G - Power Discharge - max height - 2' chute	29"	25"	26"
Power Discharge - max height - 3' chute	34"	30"	31"
Slide Tray - max height	16"	12"	14"
H - Power Discharge - transport width - 2' chute	93"	110"	110"
Power Discharge - transport width - 3' chute	95"	112"	112"
Slide Tray - transport width	93"	110"	110"
<b>Specifications</b>			
Cubic Foot Mixing Capacity	320	424	546
Unit Weight <sup>1</sup> - trailer (pounds)	8,370	9,650	10,800
Number of Augers	2	2	2
Auger Diameter	65"	65"	65"
Auger RPM	38	31	41
Auger Shaft Diameter	4"	4"	4"
Upper Auger Flighting Thickness	1/2"	1/2"	1/2"
Lower Auger Flighting Thickness	1/2"	5/8"	5/8"
Floor Thickness	1/2"	5/8"	5/8"
Sidewall Thickness	3/16"	1/4"	1/4"
Pinion Gear Thickness	2"	2"	2"
Bull Gear Thickness	1-3/4"	1-3/4"	1-3/4"
Oil Bath	YES	YES	YES
Door Opening	35" x 39"	28" x 36"	30" x 36"
PTO Drive	540 RPM	540 RPM	1000 RPM
Shear Bolt PTO	YES	YES	YES
Scale System	3-Point	3-Point	3-Point
Weigh Spindle Diameter	2 7/8"	2-7/8"	3-3/4"
Tongue Weight	620	1,192	1,320
Tractor Requirement - PTO HP <sup>2</sup>	75	90	120

<sup>1</sup> Unit equipped with most common options.

<sup>2</sup> PTO Horsepower requirement may vary with different materials. Consult operator's manual for proper tractor sizing.

Mixer design and specifications subject to change without notice.  
 These machines are designed for mixing dairy and feedlot rations.  
 If you have questions regarding your feed ration or have other applications, consult the factory.

# SPECIFICATIONS



MODEL - Trailer	5073	5085	50100
Dimensions (inches)	TR	TR	TR
A - Overall Length	263"	281"	284"
B - Mixing Chamber Length	220"	231"	237"
C - Overall Height	106"	115"	127"
D - Tread Width	119"	124 <sup>1</sup> / <sub>2</sub> "	124 <sup>1</sup> / <sub>2</sub> "
E - Overall Width (mixer only)	120"	120"	120"
F - Slide Tray - max reach	15 <sup>1</sup> / <sub>2</sub> "	13"	13"
G - Slide Tray - max height	20"	21"	21"
H - Slide Tray - transport width	123"	122"	122"
<b>Specifications</b>			
Cubic Foot Mixing Capacity	738	858	1009
Bushel Mixing Capacity	593	689	810
Unit Weight <sup>1</sup> (pounds)	17,000	21,500	22,000
Number of Augers	2	2	2
Auger Diameter	90"	90"	90"
Auger RPM	28	28	28
Auger Shaft Diameter	5"	5"	5"
Upper Auger Flighting Thickness	<sup>5</sup> / <sub>8</sub> "	<sup>5</sup> / <sub>8</sub> "	<sup>5</sup> / <sub>8</sub> "
Lower Auger Flighting Thickness	<sup>3</sup> / <sub>4</sub> "	<sup>3</sup> / <sub>4</sub> "	<sup>3</sup> / <sub>4</sub> "
Floor Thickness	Replaceable <sup>3</sup> / <sub>4</sub> "	Replaceable <sup>3</sup> / <sub>4</sub> "	Replaceable <sup>3</sup> / <sub>4</sub> "
Sidewall Thickness	<sup>1</sup> / <sub>4</sub> "	<sup>1</sup> / <sub>4</sub> "	<sup>1</sup> / <sub>4</sub> "
Pinion Gear Thickness	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "
Bull Gear Thickness	3"	3"	3"
Oil Bath	YES	YES	YES
Door Opening	30" x 42"	30" x 42"	30" x 42"
PTO Drive	1000 RPM	1000 RPM	1000 RPM
Shear Bolt PTO	YES	YES	YES
Scale System	3-Point	4-Point	4-Point
Tongue Weight	1,700	2,100	2,200
Tractor Requirement - PTO HP <sup>2</sup>	130	140	150

<sup>1</sup> Unit equipped with most common options.

<sup>2</sup> PTO Horsepower requirement may vary with different materials. Consult operator's manual for proper tractor sizing.

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