Reel Auggie
and
Commercial Reel Mixers

3100 Series

StationaryType
Operator's Instruction Manual

Read this manual before operating the Reel Auggie or Commercial Reel Mixers. Failure to follow instructions and safety precautions in this manual and in the safety decals could result in severe injury or death.

Catalog #006046 01/05/07 supersedes 05/12/05
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INTRODUCTION

THANK YOU for purchasing a Kuhn Knight Reel Auggie or Commercial Reel. 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.

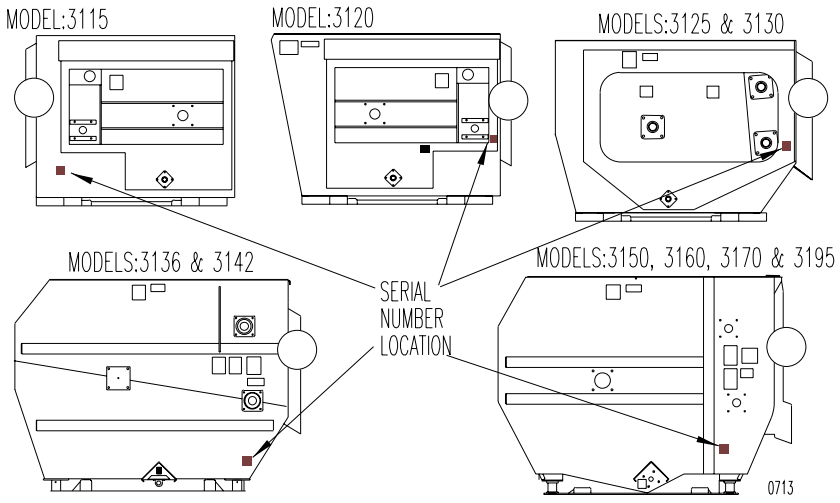
Kuhn Knight, Inc.

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 Parts Manual has been provided for a detailed parts breakdown of the unit. Before you operate your unit, be sure you understand and follow all the safety, operation and lubrication 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 drive input end panel. This is the number to give 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 Operator's Manual # 006046 all stationary models
Order Parts Manual # 006049 for 3115 S/N A0028 and before
Order Parts Manual # 006050 for 3115 S/N A0029 and after
Order Parts Manual # 006051 for 3120
Order Parts Manual # 006054 for 3125 & 3130
Order Parts Manual # 006057 for 3136 & 3142
Order Parts Manual # 006060 for 3150, 3160, & 3170
Order Parts Manual # 006063 for 3195

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701 Cherry Ave., Greeley, CO 80632

SAFETY

UNDERSTANDING 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!

Each safety decal utilizes one of the signal words defined below and the color associated with each word.

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. It is denoted by the word DANGER, colored in white, on a red background.

WARNING: Indicates a potentially hazardous situation that, if not avoided, will result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices. It is denoted by the word WARNING, colored in black, on an orange background.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. It is denoted by the word CAUTION, colored in black, on a yellow background.

READ THE OPERATOR'S 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 or her 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 AND PRECAUTIONS

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.

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SAFETY

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 driveline shields. Exposed machinery due to missing shields can grab hands and clothing and cause severe injury or death. Repair or replace any damaged or missing shields.**

2. **NEVER PUT ARMS OR FEET INSIDE unit 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.** Rotating reel, augers, and sprockets can grab clothing or create pinch points which can cause severe injury or death to the operator or bystanders. Always lock out the power 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.** Rotating reel and augers inside the 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 mixer and lock out the power 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 mixer and locking out the power first.** Moving parts can be hidden by materials, and stopped parts can start unexpectedly, causing severe injury. Always stop mixer and lock out the power before attempting to remove jammed material or to clean. Be aware that the spring loaded reel arms can spring back unexpectedly, causing injury.

5. **DO NOT ALLOW OPERATION of this unit by inexperienced and unqualified people.** Keep all unqualified people away from mixer during 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 machinery.

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 sprockets and chains 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 mixer and lock out the power before investigating problem.** If mixer power has not been locked out, the mixer may start unexpectedly, causing severe injury or death.

9. **USE CAUTION WHEN WORKING AROUND THE DISCHARGE AND HAY PAN AREA.** Never reach into discharge or hay pan area without first locking out power. Moving parts can be hidden by material, and stopped parts can start unexpectedly, causing severe injury.

SAFETY

SAFETY DECALS

Safety decals are placed on this unit for the protection of the operator or any person working on or standing nearby the unit.

Everyone who operates or maintains the mixer must first read this manual and understand the meaning of all safety decals. Contact your dealer if foreign language decals are required.

Keep safety decals clean and legible. If any are missing or illegible, contact your Kuhn Knight dealer or Kuhn Knight to obtain replacements. The part numbers for the decals are located in the lower right 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.

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

UNIT	PART NO.
3115	70175433 S/N A0028 and before
3115	70175871 S/N A0029 and after
3120	70175436
3125	70175439
3130	70175442
3136	70175445
3142	70175448
3150	70175451
3160	70175454
3170	70175457
3195	70175460

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 / 10°C or warmer.

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SAFETY

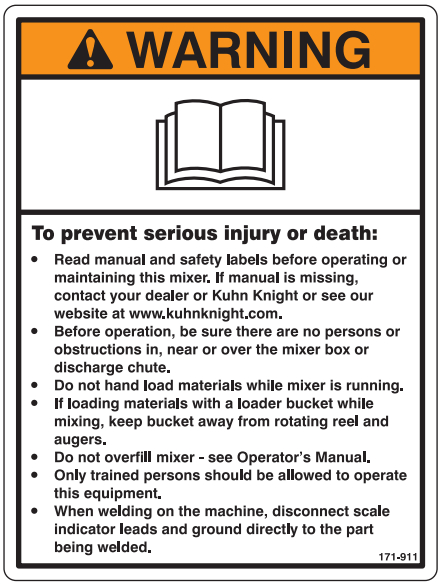
SAFETY DECALS

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, To prevent serious injury
Part Number 70170849
2 Required: 3115 & 3120 MODELS
2 Required: 3125 & 3130 MODELS
3 Required: 3136 & 3142 MODELS
3 Required: 3150, 3160, 3170 & 3195 MODELS

Figure B
DANGER, ROTATING AUGER HAZARD
Part Number 70171820
4 Required ALL MODELS

Figure C
WARNING, To prevent serious injury or death
Part Number 70171911
1 Required ALL MODELS



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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 D
WARNING, To prevent serious injury or death
SHIELDS ARE IN PLACE
Part Number 70171913
1 Required ALL MODELS

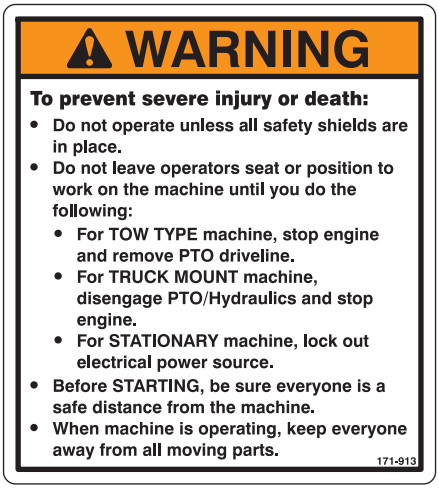

Figure E
WARNING, LIFTING HAZARD
Part Number 70172820
1 Required ALL MODELS

Figure F
WARNING, ROTATING PARTS HAZARD
Part Number 70171915
2 Required 3115 & 3120 MODELS
3 Required 3125 & 3130 MODELS
1 Required 3136, 3142, 3150, 3160, 3170 & 3195 MODELS

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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 G
DANGER, ROTATING AUGER HAZARD
Part Number 70171947
4 Required ALL MODELS

Figure H
WARNING, Rotating drivelines and components
Part Number 70175519
1 Required ALL MODELS

Figure I
WARNING, ROTATING PARTS HAZARD
Part Number 70172786
1 Required: 3136 & 3142 MODELS
1 Required: 3150, 3160, 3170 & 3195 MODELS

Figure J
WARNING, ROTATING PARTS HAZARD
Part Number 70173078
1 Required: 3136 & 3142 MODELS
1 Required: 3150, 3160, 3170 & 3195 MODELS

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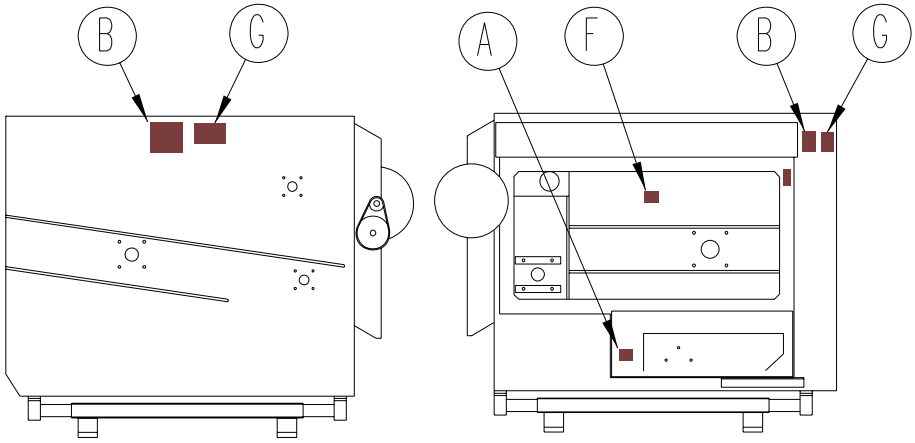
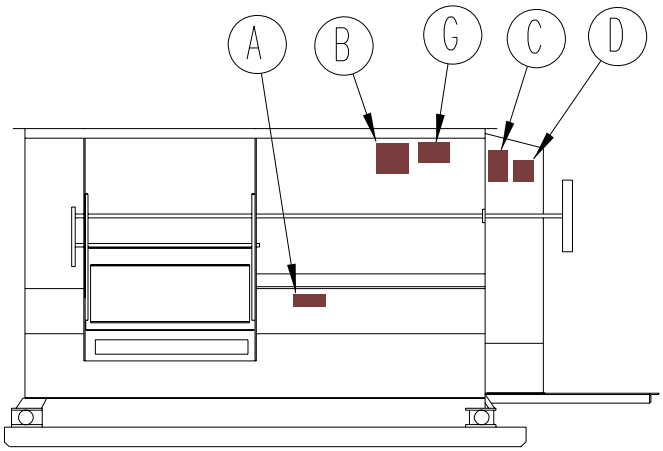
SAFETY

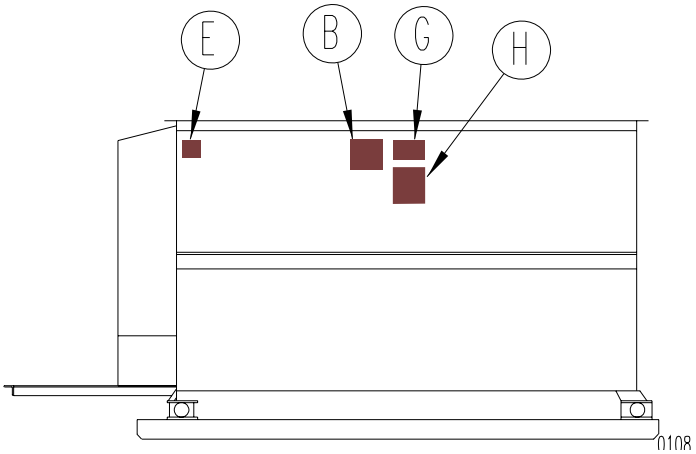
SAFETY DECAL PLACEMENT
MODEL 3115 S/N A0028 AND BEFORE



FRONT VIEW REAR VIEW



LEFT SIDE VIEW



Shields removed for illustrative purposes

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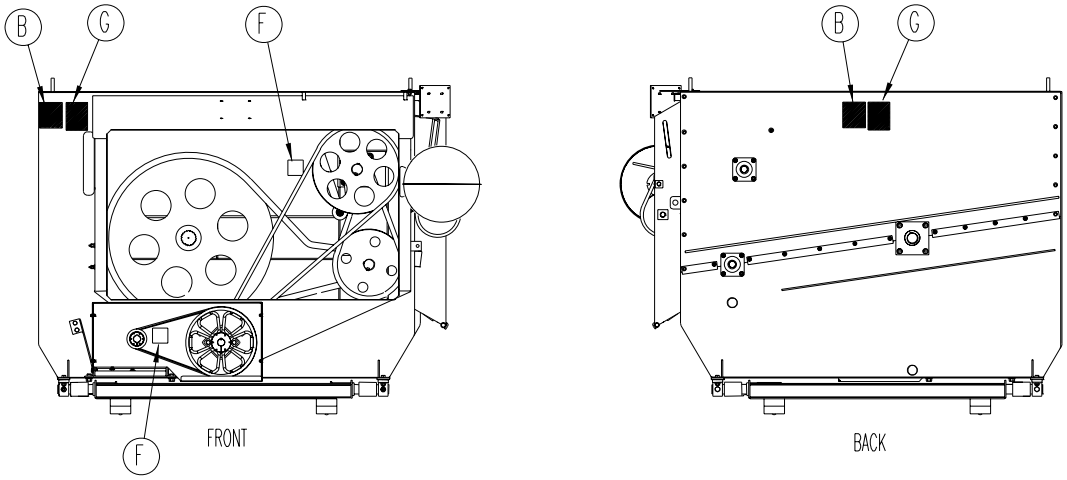
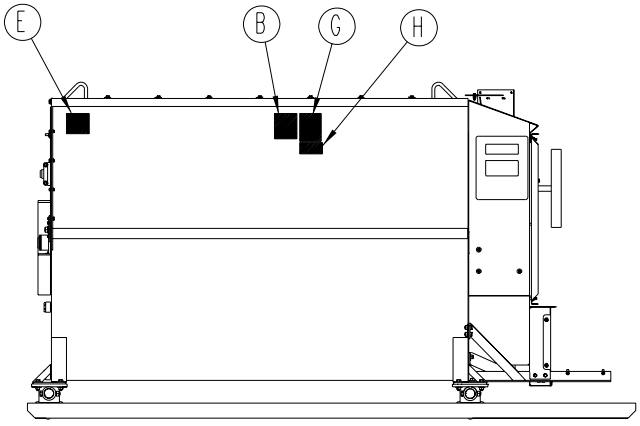
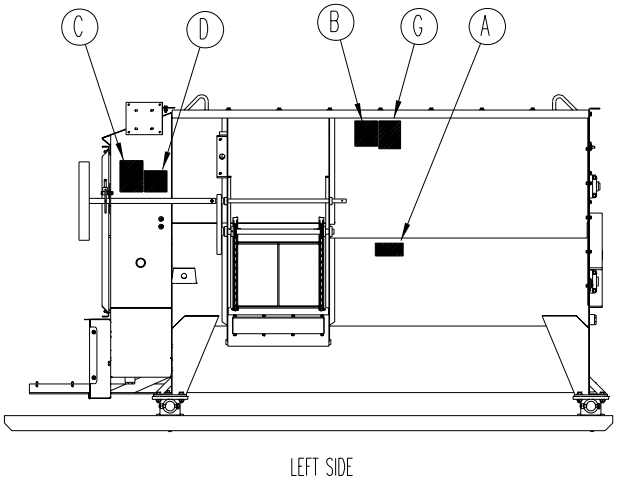
SAFETY

SAFETY DECAL PLACEMENT
MODEL 3115 S/N A0029 AND AFTER







Shields removed for illustrative purposes

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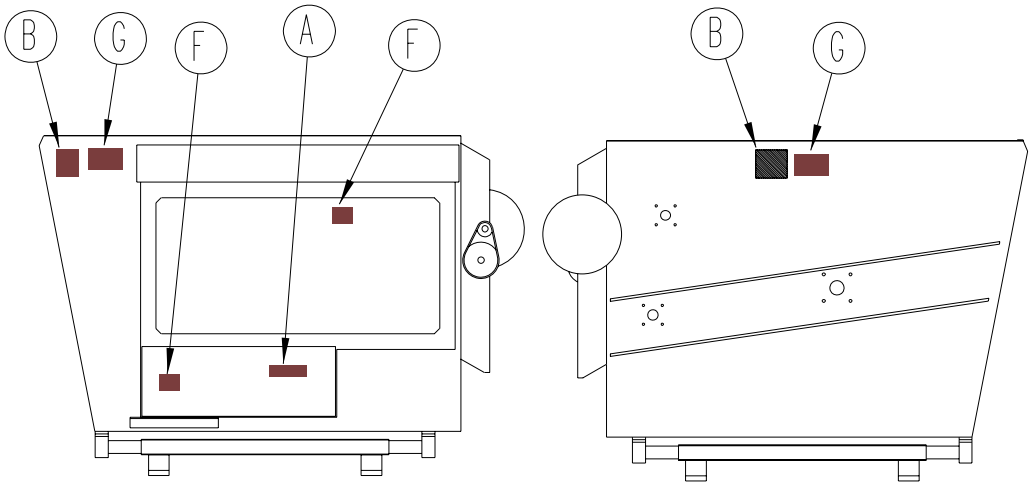
SAFETY

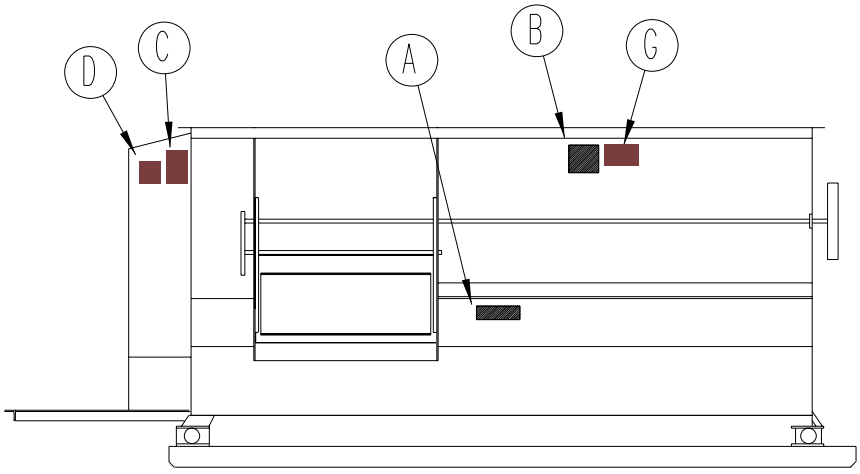
SAFETY DECAL PLACEMENT

MODEL 3120

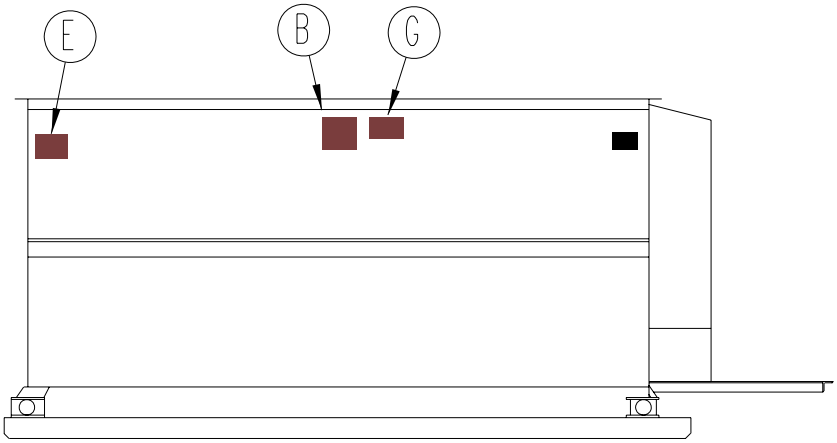


FRONT VIEW

REAR VIEW



LEFT SIDE VIEW



Shields removed for illustrative purposes

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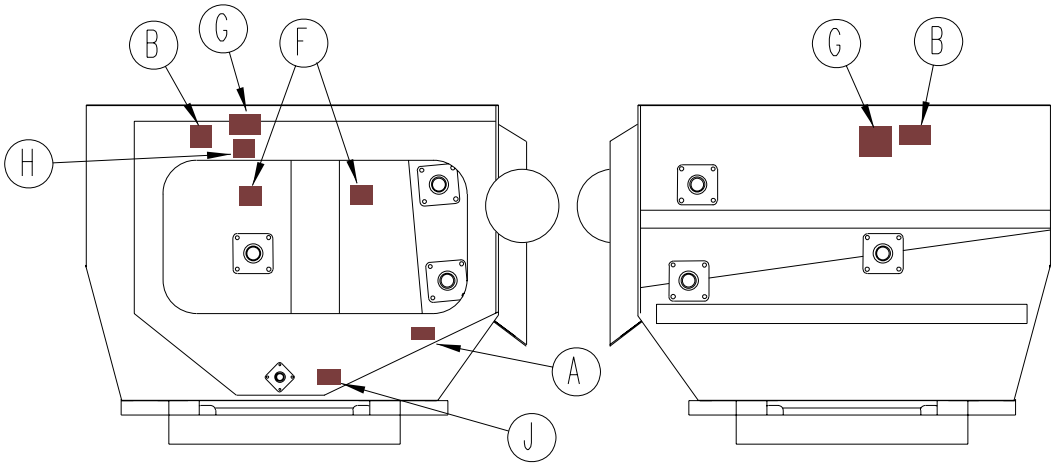
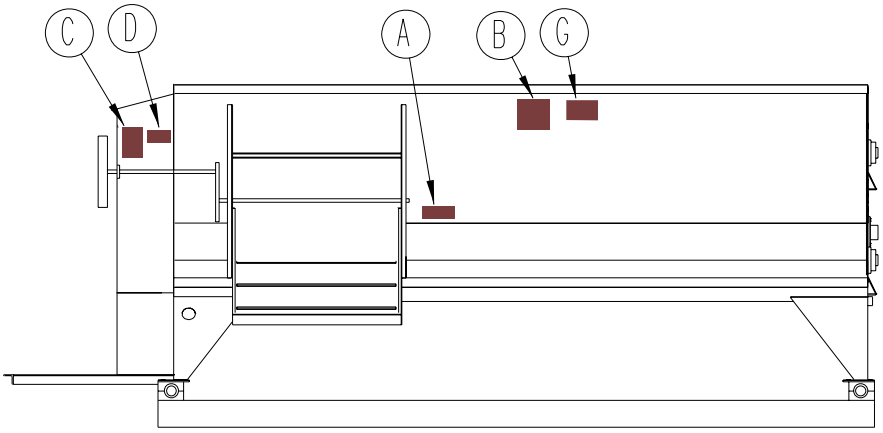
SAFETY

SAFETY DECAL PLACEMENT

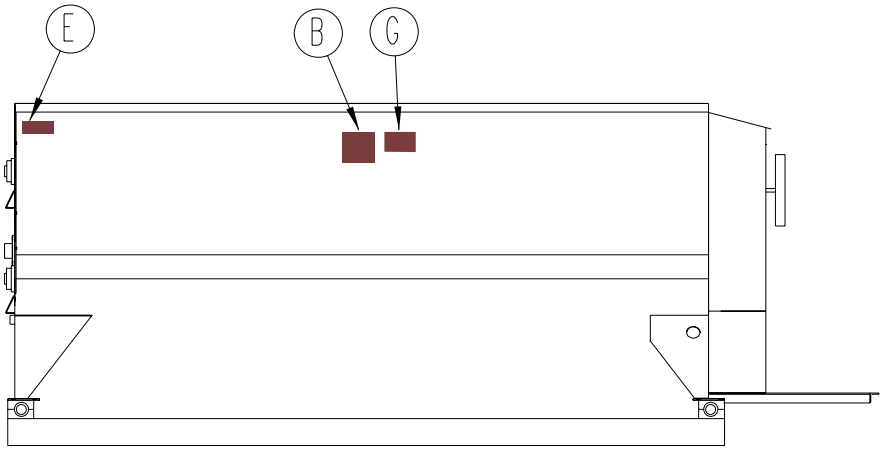
MODELS 3125 AND 3130



FRONT VIEW REAR VIEW



LEFT SIDE VIEW



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RIGHT SIDE VIEW

Shields removed for illustrative purposes

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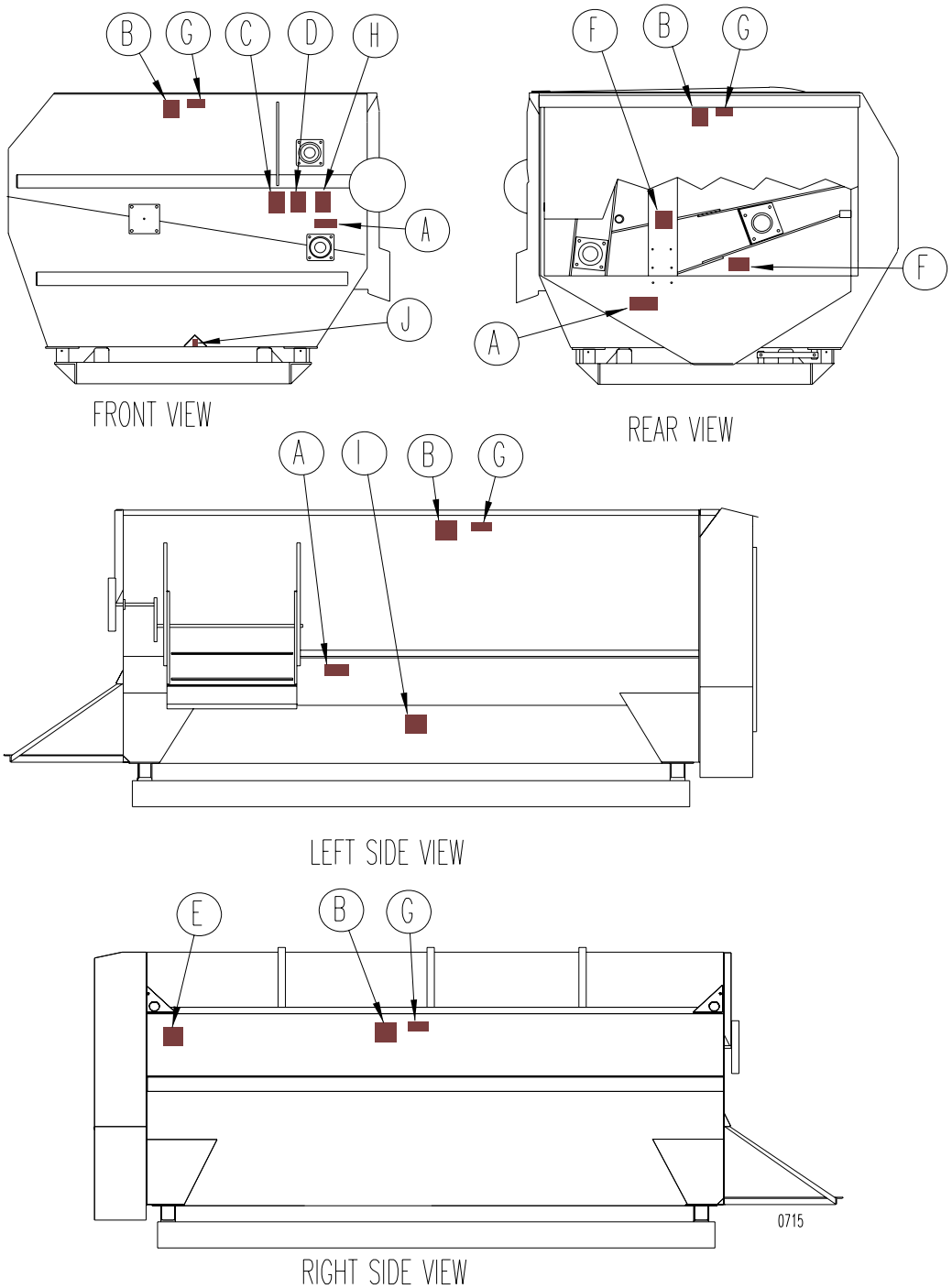
SAFETY

SAFETY DECAL PLACEMENT
MODELS 3136 & 3142



Shields removed for illustrative purposes

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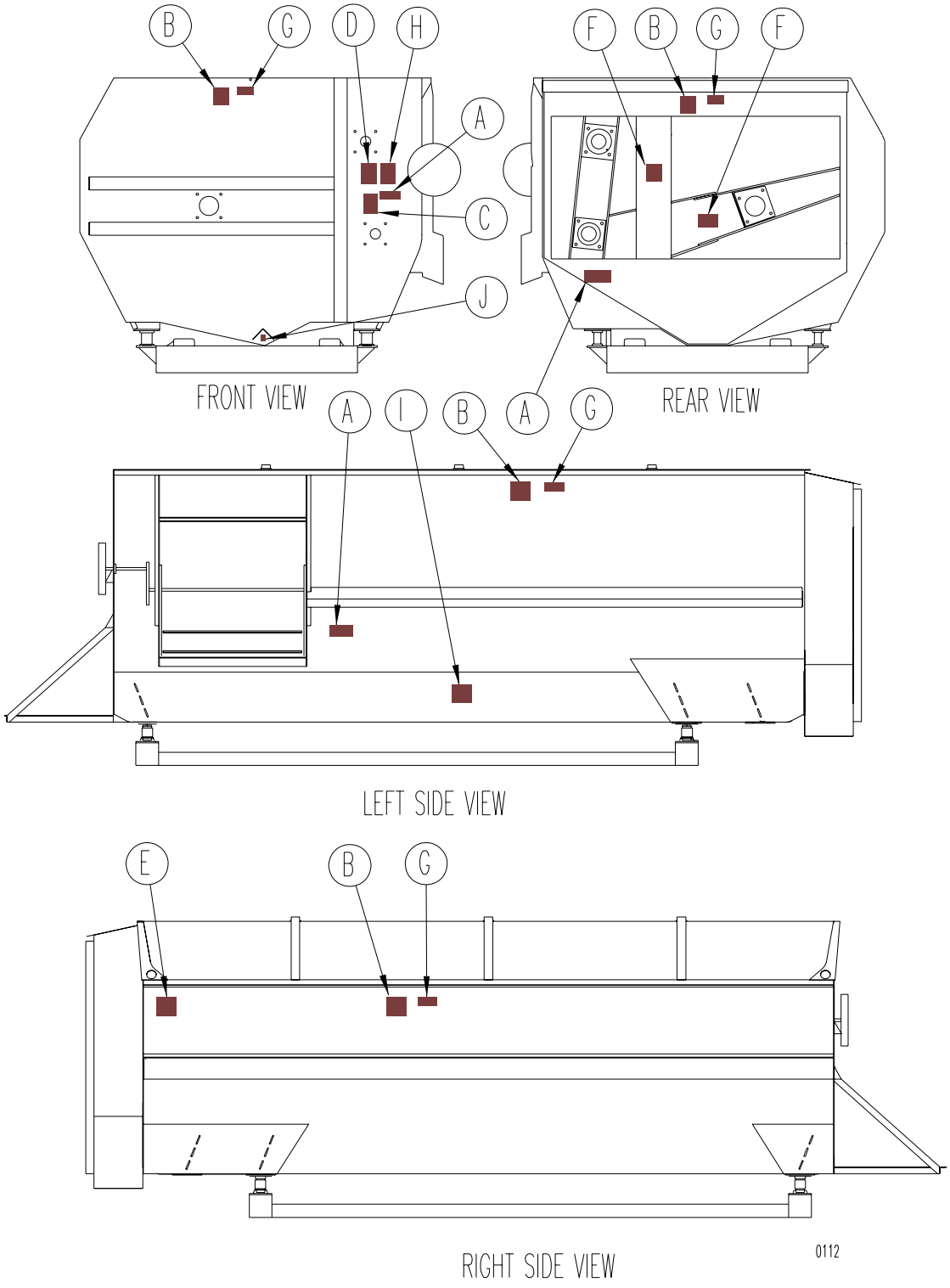
SAFETY

SAFETY DECAL PLACEMENT
MODELS 3150, 3160, 3170 AND 3195



Shields removed for illustrative purposes

MIXER SETUP

READ AND FOLLOW THESE INSTRUCTIONS WHEN SETTING UP THE MIXER.

To avoid personal injury: The hopper floor may be slippery and the augers or reel can spin unexpectedly when stepped on. Use caution when stepping or standing inside the unit; put a protective cover over the auger knives.

INSTALLATION TIPS

1. Be sure there is adequate clearance around the mixer for maintenance, repair and loading the mixer.

2. If the electronic weighing system is used, be sure that the weigh bars are kept clean and dry. Also be sure items such as loading conveyors are not attached to or leaning on the mixer. Refer to scale manual for more specific information.

3. Mixer should be mounted on a structure of adequate strength to support a fully loaded mixer. Machine must be level and stable at the desired height. Weigh bar mounts should be fastened to this structure.

4. Manual door opener for the 3115 & 3120 can be mounted at either the front or the rear of the mixer. The following instructions will help to modify the door opener for operation from the opposite end:
   - **A.** Remove latch and mounting bolt and install to opposite end of mixer in corresponding hole.
   - **B.** Remove door wheel assembly.
   - **C.** With door in fully closed position, cut door wheel shaft to proper length, drill mount hole, slide into position and replace bolt.

5. The 3125, 3130, 3136, 3142, 3150, 3160 and 3170 manual door opener is in a fixed position on the drive end of the mixer.

6. An optional remote electric door actuator is also available for the 3115 and 3120 models. An electric/hydraulic power pack is available for the 3125 through 3170 models. The power pack is standard on the 3195.

   NOTE: When wiring the electric/hydraulic power pack, make sure to wire it to a switched source and ensure it only runs when the door is activated.

Electric Motor Recommendations

Following is a listing of suggested motor and frame sizes. Ratings are based on “normal dairy feed rations”. Contact the factory if intending to mix heavier loads such as feedmill use, heavy/sticky beef rations or industrial use. A smaller motor may be adequate for easy-mixing materials and a larger motor may be required for difficult materials. Wiring and overload protection should be sized according to the motor size installed. The motor mount will fit the recommended motor size. Other motor sizes may require additional holes to be drilled in the mount or a different mount assembly. Dual motor mount, frame and shield are standard on 3125, 3130, 3136 & 3142 models. **All models are designed to be used with a motor operating at 1725-1750 RPM.**

MODEL	*HORSEPOWER	MOTOR FRAME SIZE	STANDARD MOTOR BUSHING	OPTIONAL MOTOR BUSHING
3115	7.5 - 10	213T - 215T	1-3/8”	1-1/8”
3120	10	215T - 254T	1-3/8”	1-5/8”
3125	10	254T - 256T	1-5/8”	1-3/8”
3130	10 - 15	254T - 256T	1-5/8”	1-3/8”
3136	15 - 20	256T - 284T	1-5/8”	1-7/8”
3142	15 - 25	284T - 286T	1-7/8”	2-1/8”
3150	50	326T	2-1/8”	2-1/8”
3160	60	364T	2-3/8”	2-3/8”
3170	70	365T	2-3/8”	2-3/8”
3195	100	N/A	2-7/8”	- -

A smaller motor may be adequate for easy-mixing materials and a larger motor may be required for difficult materials

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MIXER SETUP

READ AND FOLLOW THESE INSTRUCTIONS WHEN SETTING UP THE MIXER.

To avoid personal injury: The hopper floor may be slippery and the augers or reel can spin unexpectedly when stepped on. Use caution when stepping or standing inside the unit; put a protective cover over the auger knives.

SAFETY SHIELDS

Be sure all shields are in place and functioning properly. Replace all damaged or missing shields immediately; see Parts Manual for replacement shield part numbers.

BE AWARE that your installation may require additional safety shields and/or warnings. Because each installation is different, Kuhn Knight Inc. cannot design standard shields for all conceivable situations without limiting the use of the mixer. The top of the mixer and the door opening are the two areas that should be given particular attention in regard to safety. The top of the mixer has a grid type safety shield to help prevent a person from falling into the mixer. However, because there are many different feeds and ways of loading them, the top openings must be large enough to avoid obstructing the loading operation. Likewise, the door opening area must be unobstructed to allow the discharge of feed.

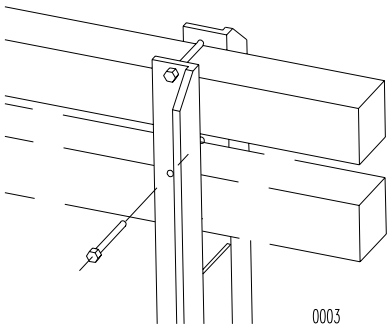
Kuhn Knight Inc. warns operators using decals on the mixer and specific instructions in this manual to stay clear of these areas during operation. If safety decals are blocked from view due to the installation, then additional decals should be ordered and placed so they are readable. If your particular installation is such that a person may inadvertently put an arm or leg in these areas during operation, then additional safety shielding must be installed to prevent such an occurrence. Drives, u-joints, sprockets and pulleys underneath the unit may become exposed if the equipment is mounted at an elevated height. Additional shielding of these areas may be necessary depending on exact installation.

AUGER KNIVES

The upper auger knives are installed to help handle long materials such as long stem hay. If you do not intend to handle this type of material, the knives can be removed. Commercial Reel models ordered with the Grain Series package do not include knives unless a Hay Maxx System was installed.

REEL CROSS TUBES

The cross tubes have two settings which can be utilized depending on the material being mixed. The tubes are factory set in the outer position. In general, the inner setting is used for a high hay ration. To change to the inner position, compress and secure the tube into the spring, and relocate the capture bolt to the inner holes. The square wiper tubes should not be moved. Repeat for all non-wiper tubes.



MIXER SETUP

READ AND FOLLOW THESE INSTRUCTIONS WHEN SETTING UP THE MIXER.

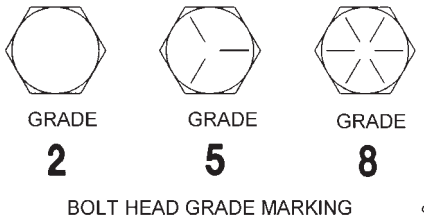
To avoid personal injury: The hopper floor may be slippery and the augers or reel can spin unexpectedly when stepped on. Use caution when stepping or standing inside the unit; put a protective cover over the auger knives.

DRIVELINE SHEAR BOLTS

3136, 3142, 3150, 3160, 3170 & 3195 ONLY

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

MODEL	SHEAR BOLT SIZE
3136	1/4" X 2" GRADE 5
3142	1/4" X 2" GRADE 5
3150	1/4" X 2" GRADE 5
3160	1/4" X 2" GRADE 5
3170	5/16" X 2" GRADE 5
3195	5/16" X 2" GRADE 5



BOLT HEAD GRADE MARKING

MIXER TEST RUN

1. Check for proper assembly, adjustment, and lubrication. Check to see that there is adequate oil in the oil bath. Check to be sure all bolts and set screws are tight and the drive belts are at the proper tension. Review *OPERATING SAFETY PRECAUTIONS* in the *SAFETY* section and the *LUBRICATION* section 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 drain plugs are installed and that the discharge 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 for at least five minutes.
    c. Raise and lower the door several times.
    d. Turn off mixer and lock out power.
    e. Check the mixer drive components to be sure they are not abnormally hot. Refer to Inspection and Adjustment section for proper alignment and tension settings.

If any of these items are not running as indicated, immediately repair or contact your service representative. Always refer to *OPERATING SAFETY PRECAUTIONS* in the *SAFETY* section before operating or servicing the mixer.

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MIXER OPERATION

Always refer to *OPERATING SAFETY PRECAUTIONS* and *SAFETY DECALS* in *SAFETY* section of this manual before operating this mixer.

GENERAL

The Reel Auggie and Commercial Reel Mixer were designed for blending dairy and beef rations. Most commonly used ingredients, including limited amounts of dry stem hay, can be mixed quickly and uniformly in this mixer. If you have questions regarding your feed ration or have other applications, please contact Kuhn Knight Inc. The Reel Auggie and Commercial Reel mixer's mixing performance can vary greatly according to the differences in materials, loading sequence, mixing speed, and unloading methods. The following guidelines should be understood before operating the Mixer.

The **Hay Maxx System** is designed to start processing hay before it enters the mixing chamber. This is an efficient way to add long stem hay to the ration. The hay pan holds the hay in position, while the auger begins to process the hay with the aid of hard edge knives and shear angles. The hay pan, backstop, aggressive auger knives, and shear angles, work in combination to tear hay apart faster for more even mixing.

When you see this **Hay Maxx System** logo HAY MAXX SYSTEM, there are special and specific Hay Maxx System operation instructions.

The **Roughage Maxx System** is designed to complete hay processing once it reaches the mixer's lower auger.

When you see this Roughage Maxx System logo ROUGHAGE MAXX™, there are specific and special Roughage Maxx System operating instructions.

SAFETY

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, please read and understand the *OPERATING SAFETY PRECAUTIONS* in the *SAFETY* section, located in the front of this manual.

MIXER OPERATION

Always refer to *OPERATING SAFETY PRECAUTIONS* and *SAFETY DECALS* in *SAFETY* section of this manual before operating this mixer.

LIMITATIONS

Do not load hay without other dry commodities in the mixer first to act as a carrier or “lubricant”.

Do not overload hay content. Kuhn Knight Inc. recommends a maximum of 15% to 20% of unprocessed hay by weight in the load. Exceeding this percentage can decrease mixing performance or could potentially damage mixer and cause premature wear on driveline components.

WARNINGS

Do not use tough hay (20% to 60% moisture) Always use cured, dry hay. Wet hay, foreign objects or overloading may cause binding and damage to the mixer and hay pan.

Kuhn Knight Inc. will not be responsible for damage caused by overloading, wet hay or foreign objects.

Do not force hay into auger with loader or any other device. The area over the auger does not have bucket guards, avoid bucket contact with the auger to prevent potential damage to knives and auger.

Do not overload Hay Maxx System with too much hay. This can cause bridging over the auger. Never attempt to release jammed materials or clean out materials from the Hay Maxx System area without stopping tractor engine and removing driveline.

Do not lower Hay Maxx System pan to force hay into the top auger. This will cause damage to the Hay Maxx System and or the mixer.

MIXING TIME

The Mixer can mix an average load in 3 to 4 minutes. Due to this short mixing time, there is normally no reason to run the mixer during loading except to level the materials or to break up hay.

With Hay Maxx System option: If the hay goes through too fast, try loading more commodities in the mixer before loading the hay. Adjust the position of the Hay Maxx System pan to allow more processing *(see HAY MAXX SYSTEM ADJUSTMENTS* in the *INSPECTION & ADJUSTMENTS* section.*)*

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MIXER OPERATION

Always refer to *OPERATING SAFETY PRECAUTIONS* and *SAFETY DECALS* in *SAFETY* section of this manual before operating this mixer.

MATERIAL THAT CAN BE LOADED DIRECTLY INTO THE MIXER

Many different kinds of materials can be mixed with the Reel Auggie or Commercial Reel Mixer, but each type has its own unique characteristics.

FORAGES: Chopped hay, corn silage, and finely chopped crop residue can be mixed in the mixer. Wet and heavy forages added in large volumes may require more power to mix.

GRAINS: Ground, rolled, flaked, and whole cereal grains, minerals, and concentrates, are all very easily mixed, and can improve the mixing performance of the other materials.

LIQUIDS: Supplements and liquid fat can be blended in the mixer. Some operators prefer adding liquids into the empty mixer, and others add liquids on top of grains or roughage. Sticky liquids such as molasses tend to increase the power requirements.

MATERIALS REQUIRING PREPARATION

The following feed materials require some preparation or processing to be mixed in the Reel Auggie or Commercial Reel Mixer:

- SMALL SQUARE BALES
- LARGE SQUARE BALES
- ROUND BALES
- ALL LONG AND UNCURED GRASSES
- STACKED FEEDS

The mixer can be used to mix rations with up to 15% to 20% dry alfalfa by using the Hay Maxx System. For rations with a higher percentage of hay, mixing may be improved by pulling the non-wiper cross tubes to the inner setting (see *MIXER SETUP, REEL CROSS TUBES*). This will allow the reel to more aggressively charge the lower auger with hay.

Preparing Small Square Bales: Remove twine or wires while on the ground. Put bales into loader bucket lengthwise so that they will fall onto the Hay Maxx System or, if the hay is dry cured alfalfa, load directly into mixer equipped with Roughage Maxx option.

Preparing Large Square Bales (3' x 3' x 8'), (3' x 4' x 8'), (4' x 4' x 8'): Remove twine while on the ground. Put slabs of the bale into the loader bucket (10" to 12" total thickness suggested maximum size). The hay should lay flat against the Hay Maxx System pan to properly feed into the Hay Maxx System.

Preparing Round Bales: Remove the twine and break apart with loader, round bale slicer, round bale unroller or other round bale processing equipment and load separated portions of hay into the Hay Maxx System.

Processing Long and Uncured Grasses: Pre-process in a tub grinder or a vertical mixer.

Processing Stacked Feeds: Break material apart with the loader or pre-process in a tub grinder.

HAY QUALITY

Always use cured, dry hay. Tough hay can cause wrapping or binding and may damage the mixer or adversely affect the mixing performance. Some factors that contribute to tough hay are high moisture content, high grass content, high density bales, outdoor storage, use of hay preservatives and excessive stem length.

MIXER OPERATION

Always refer to *OPERATING SAFETY PRECAUTIONS* and *SAFETY DECALS* in *SAFETY* section of this manual before operating this mixer.

LOADING AND MIXING

Prior to loading, check mixer for foreign objects and be sure door is fully closed.

1) LOAD COMMODITIES

Adding ingredients like corn, soybean meal, cottonseed, etc. will act as a carrier or “lubricant” if hay is included in the ration.

If there are few commodities in the ration, substituting corn silage or haylage is preferred.

Fill mixer between 1/3 to 1/2 full by volume in commodities and forage before adding the hay to the ration. This will allow enough room for hay to expand and bring feed level up so the top auger can assist in processing.

2) LOAD HAY

A) LOAD PROCESSED HAY

With the mixer running, proceed loading the small square bale pieces or tub-ground hay into the mixer. Do not exceed 15% to 20% of hay by weight.

The hay can be loaded after the previously added grains. Grains help to move the hay into the augers. It often helps to have the mixer running while adding the hay and to load the hay on the auger side.

B) LOAD UNPROCESSED HAY HAY MAXX SYSTEM

With the mixer running and the Hay Maxx System pan bolted in the “up” position, proceed using the loader to begin placing the hay on the Hay Maxx System pan. Load the slabs toward the front end of the Hay Maxx System pan, so the hay is not resting against the rear backstop.

For best results, do not overload the Hay Maxx System pan and allow time to process the hay in the Hay Maxx System before adding more. Repeat until proper percentage of hay for ration is met. (not to exceed 15% to 20% hay by weight)

ROUGHAGE MAXX™

Note: Hay processing time with the Roughage Maxx option may be reduced due to the aggressive knives. Hay particle length may be reduced much faster when using the Roughage Maxx option, processing time should be adjusted accordingly to avoid over processing.

3) Finish Loading Commodities

Finish loading any other ingredients to complete the ration in order of least binding ingredient to most binding. Example: dry commodities first, corn silage second, haylage last.

4) Finish Loading Wet Commodities

Any other wet feeds may be added at this time.

5) Add Water

If ration includes water, add it last. Adding water at the beginning will cause the hay to bind.

NOTE: Do not overload mixer! Overloading causes excessive horsepower requirements, increased strain on driveline and poor mixer performance.

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MIXER OPERATION

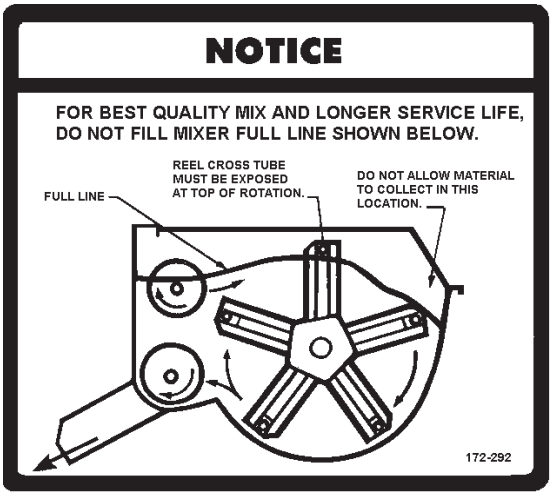
Always refer to *OPERATING SAFETY PRECAUTIONS* and *SAFETY DECALS* in *SAFETY* section of this manual before operating this mixer.

FILL LEVEL

Do not overload mixer! Overloading causes excessive horsepower requirements, increased strain on mixer driveline and poor mixer performance.

The design of the Reel Auggie and Commercial Reel Mixer requires that there be adequate space to allow the feed to move in and around the reel chamber. If the reel is completely covered, it cannot efficiently mix the materials. The reel cross tubes should always be visible at the top of their rotation to allow this mixing space.

Do not exceed full line as shown in diagram.



UNLOADING

After the ration has been thoroughly mixed, open the mixer door to begin unloading. The discharge door opening determines the flow of feed from the mixer. The door must be opened far enough to prevent separation of materials. Optional door flow control plates are available to help prevent separation.

To stop the flow of feed, close the door, then shut off the mixer.

OPTIONS

All Options are available as original equipment or field installation.

DOOR FLOW CONTROL PLATES

Longer feedstuffs will unload smoother and more evenly through a “tall and narrow” opening versus a “short and wide” opening. Flow control plates have been developed, which allow the operator to use a smaller or existing conveyor to carry feed from the mixer while keeping the discharge flow of feed (especially long stem hay/haylage mix) even and smooth. See “Door Parts” section of the corresponding Parts Manual for flow control plate part numbers.
NOTE: Feed separation may occur if the door is not opened far enough.

ELECTRIC DOOR CONTROL

This option allows the discharge door to be operated from a location away from the mixer, or when an installation location requires remote door operation.

ELECTRONIC SCALES

Allows accurate ration weight while loading, also scale indicator can be located away from mixer if a more convenient location is preferred. Refer to the manufacturer’s operator’s manual for your specific scale option operation and maintenance.

HAY MAXX SYSTEM

A bolt-in option designed for the user who wants to more effectively add long stem hay to the ration.
The Hay Maxx System handles small and large square bales, broken-up round bales, frozen bunker silage and other bulky materials, without over-processing.

ROUGHAGE MAXX SYSTEM

A system of additional lower auger scallop knives that enhance hay processing performance of the reel mixer, with or without the optional Hay Maxx System. It is designed to allow the lower auger to do more cutting of long stem hay and roughages, even after hay has been introduced to the ration through the Hay Maxx System.

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INSPECTIONS AND ADJUSTMENTS

Always stop mixer and lock out the power before servicing, repairing or cleaning the machine.

If work must be done inside the mixer, put a protective cover over the auger knives to avoid injury. The hopper floor and fighting may be slippery. Use caution when stepping on or standing inside the machine.

Use safe shop procedures and exercise caution when working on the mixer!

INSPECT AND ADJUST...

...Roller Chain Tighteners so they will apply sufficient spring tension to keep roller chains running smoothly. As a general rule the thickness of a nickel should fit between the spring coils. The chain will form grooves in the tightener blocks. These grooves help to keep the chains in proper alignment and the blocks need not be turned unless the roller portion of the chain has worn into the block.

...Roller Chains for wear, proper alignment and tension. Adjust or replace if necessary. Roller chain connector links, which pass over polyethylene tightener blocks, must be installed with legs of the cotter pins trailing to the direction of rotation.

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

...Safety Shields to be sure all shields are in place and functioning properly. Replace all damaged or missing shields immediately - see Parts Manual for shield part numbers.

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

...Reel Cross Tubes so that they slide in freely when compressed against the spring; the spring pockets may need occasional cleaning. This sliding action helps prevent jamming and avoids overloading of the driveline.

...Reel Wiper Tubes for the condition of the plastic wiper strips, which help material clean out of the reel hopper. If the strips become bent backward, they can be unbolted and be reinstalled backward or replaced to improve clean out.

...Knives for damage or wear.

Upper Auger Knives can be turned over for use of a new cutting edge and should be periodically sharpened or replaced if they no longer sufficiently break up material.
Round Lower Auger Knives can be rotated several times before sharpening or replacement is required.
Bolt-on Scallop Knives are to be replaced when they are worn.
Small Knives on the flighting perimeter are to be welded in when replacement is necessary.

...Motor Fan Guard. The fan guard must be kept clean to allow sufficient air flow for proper motor cooling.

...Drive Belts for wear and hardness. Old belts will be brittle or hard and must be replaced. Pulley misalignment often causes belt wear and this alignment should be checked when replacing any worn belt. Inspect pulleys for wear or damage both on the grooves and on the shaft diameter. Clean and dry belts thoroughly before reassembly. Tighten belts to a tension that will allow the belt to deflect 1/2” when a 10lb. force is applied in the middle of the belt span. Belts should be kept clean, dry and oil free.

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 weigh bar cords from scale indicator before welding.

INSPECTION AND ADJUSTMENTS

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.

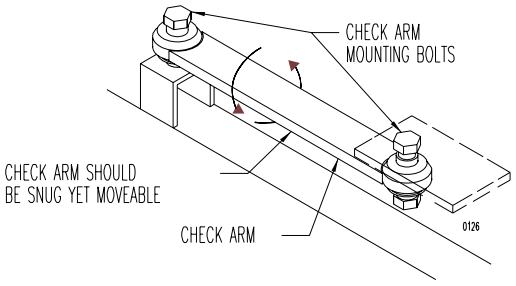
ELECTRONIC SCALES

Scale Indicator: Refer to the electronic scale operator's manual for adjustment information. The operator's manual for the Electronic Scales should be kept with this manual. Additional copies of scale manuals may be obtained through Kuhn Knight, Inc.

Load cells and weigh bars should be kept clean, dry and lubricated to ensure dependability.

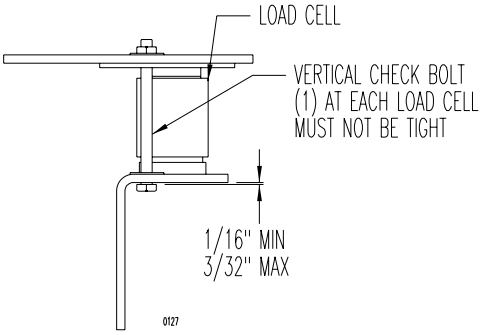
3150 - 3195 AND
3136 BEFORE S/N B0001,
3142 BEFORE S/N B0001

Check arm assembly must be free to rotate slightly by hand when mixer is on level ground with mounting bolts tight.



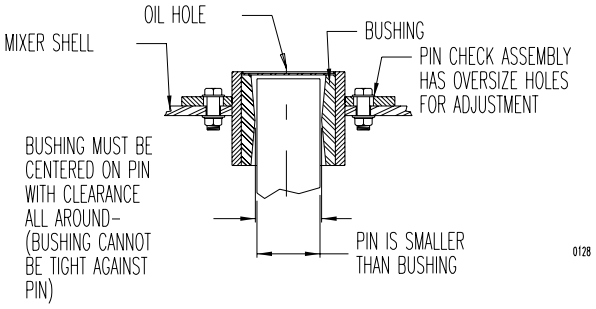
3150 TO 3195 AND
3136 BEFORE S/N B0001,
3142 BEFORE S/N B0001

Vertical check bolts must not be tight and should be free to rotate by hand. There should be 1/16" to 3/32" free play when properly adjusted on level ground.



3136 BEFORE S/N B0001,
3142 BEFORE S/N B0001

PIN CHECK BEARING should be centered on the pin when mixer is on level ground. Adjustment can be made by loosening the mounting bolts, centering pin check assembly on the pin and tightening the mounting bolts. If bushing cannot be centered load cells may require adjustment.



NORMAL SCALE ACTIVITY

Some warm up scale drift may occur after the scale is turned on but should zero balance within 10 to 15 minutes. Scale may zero shift over night due to temperature changes.

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INSPECTION AND ADJUSTMENTS

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.

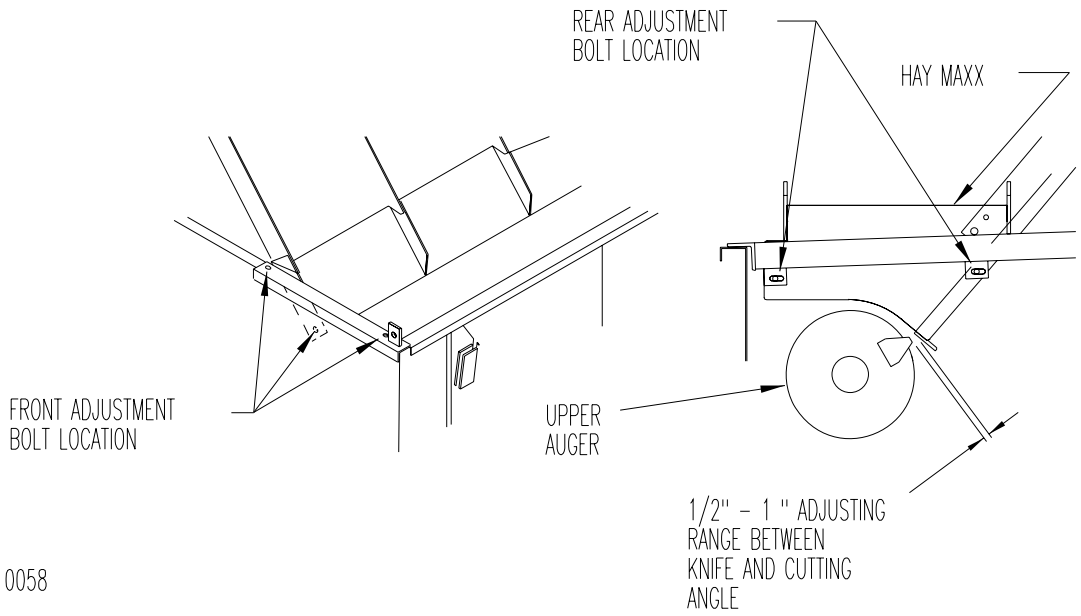
HAY MAXX SYSTEM ADJUSTMENTS

To avoid personal injury: The hopper floor may be slippery and the reel and augers can spin unexpectedly when stepped on. Use caution when stepping or standing inside the unit, put a protective cover over the auger knives, and be prepared to handle the unbalanced weight of the hay pan as it is moved into its fixed position. Care should be taken to avoid pinch points and the knives on the upper auger as the pan is moved into place.

The Hay Maxx pan must be bolted in the fully extended upright position.

Adjusting the knife-to-pan tolerance may be necessary for different types of feedstuffs. Hay may vary in quality, moisture and material; all affecting how the hay goes through the Hay Maxx System. Knife-to-pan tolerance should never be adjusted to less than 1/2" or greater than 1". The factory setting is 1/2" - 5/8"; field testing shows this tolerance is best for most materials.

TO ADJUST HAY PAN POSITION: Loosen bolts (3 in front & 2 at rear) at the locations shown, make adjustment, then securely retighten all five bolts.



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701 Cherry Ave., Greeley, CO 80632

LUBRICATION

ALWAYS STOP MIXER AND DISCONNECT POWER BEFORE SERVICING, REPAIRING OR CLEANING. USE SAFE SHOP PROCEDURES AND EXERCISE CAUTION WHEN WORKING ON THIS MIXER!

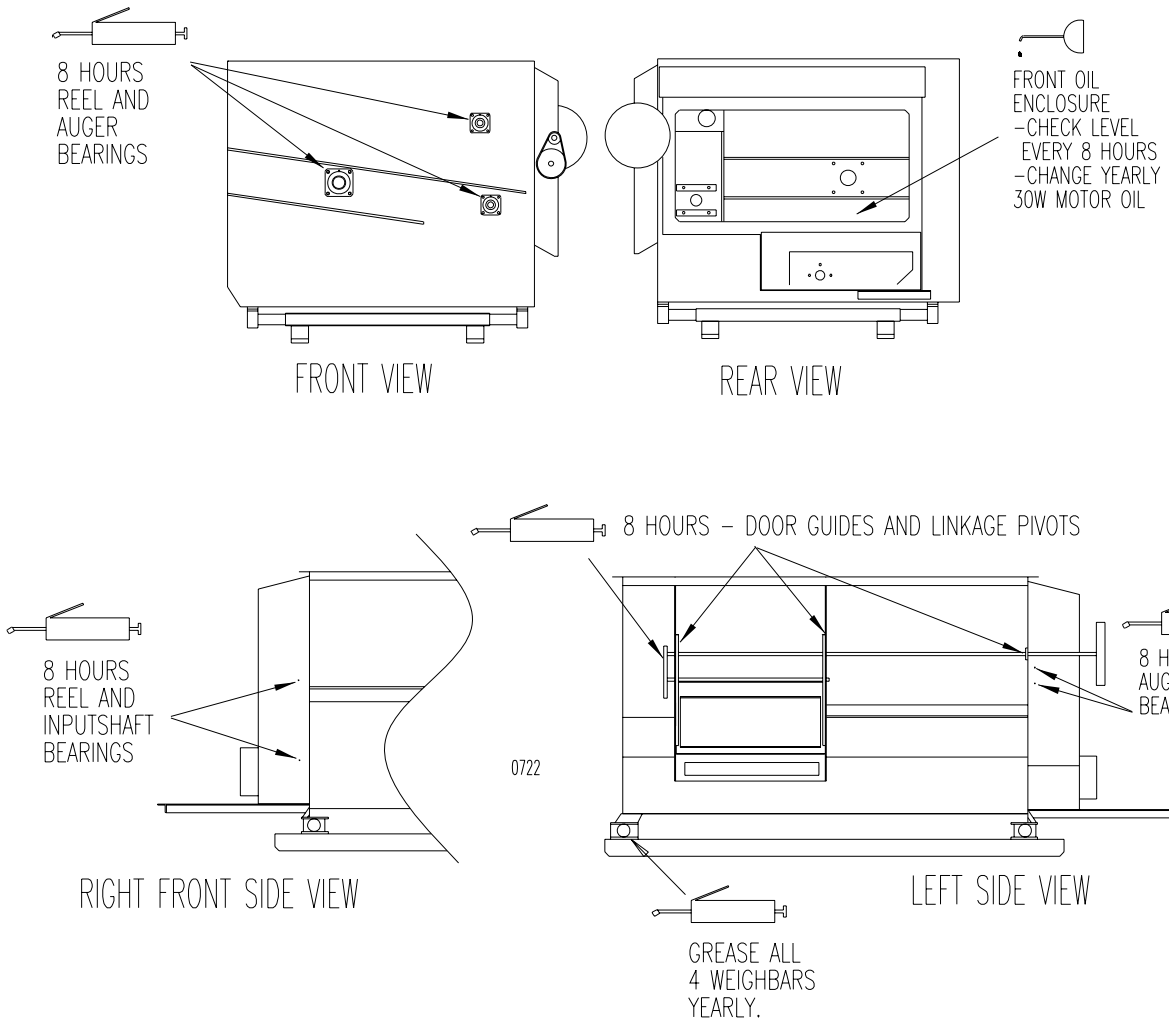
It is extremely important that the following lubrication guide be followed:
For lubricating bearings, use a good quality multipurpose grease. Replace all damaged or missing grease zerks immediately. Always clean zerks before using grease gun. Pump the grease in slowly until a slight bead forms around the bearing seals. Once a month check lines and connections on grease banks for leaks.

Before operating a new mixer, the roller chains should be liberally lubricated and then the unit operated under a no-load condition. This break-in period will allow the roller chains to be thoroughly lubricated and thus minimize heat-up during operation.

The large drive enclosure is designed to be used as an oil bath. Fill front enclosure until the oil level reaches the plug labeled “oil level ”on the enclosure.

LUBRICATION LOCATIONS

3115



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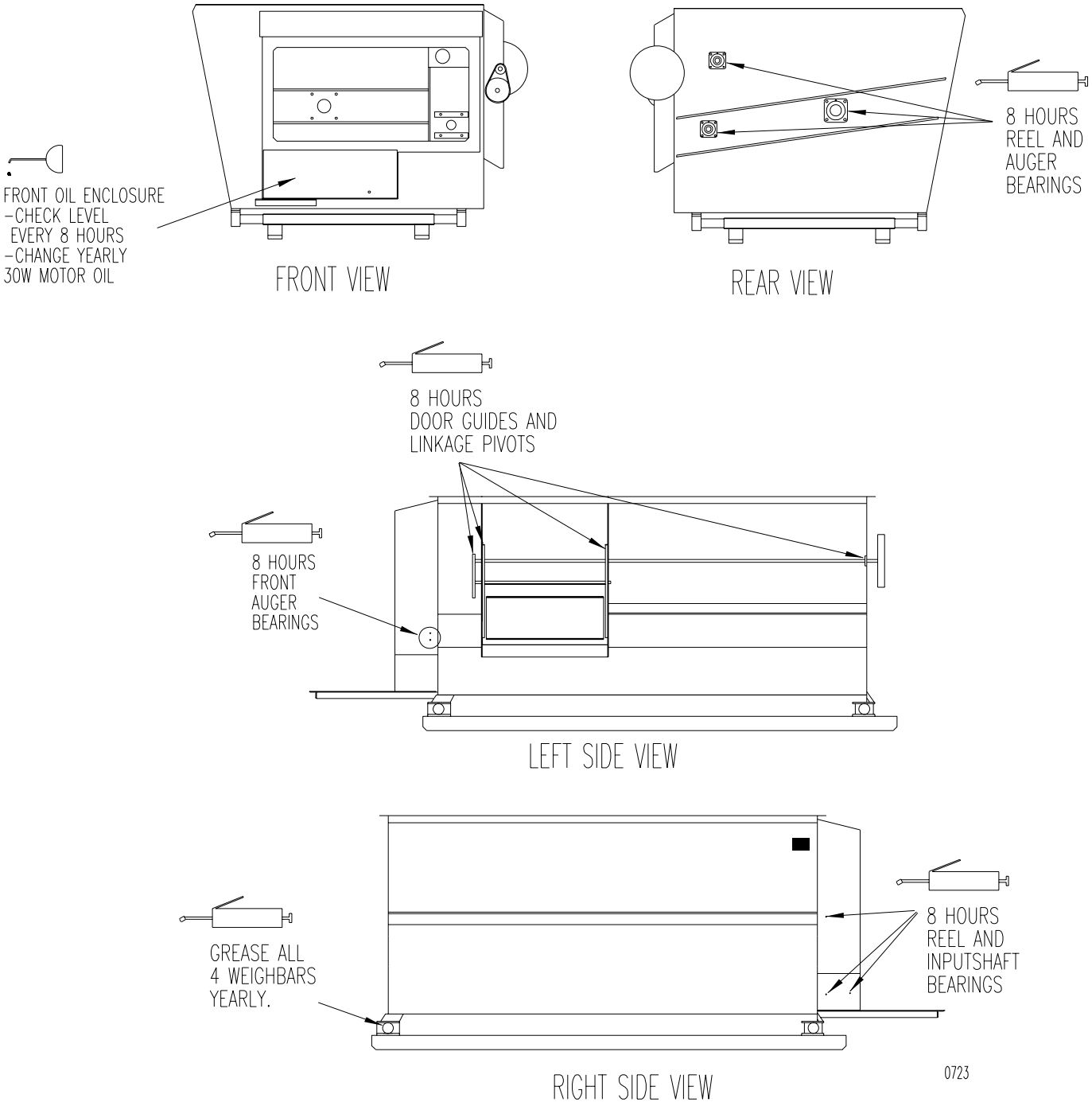
LUBRICATION

LUBRICATION LOCATIONS

3120



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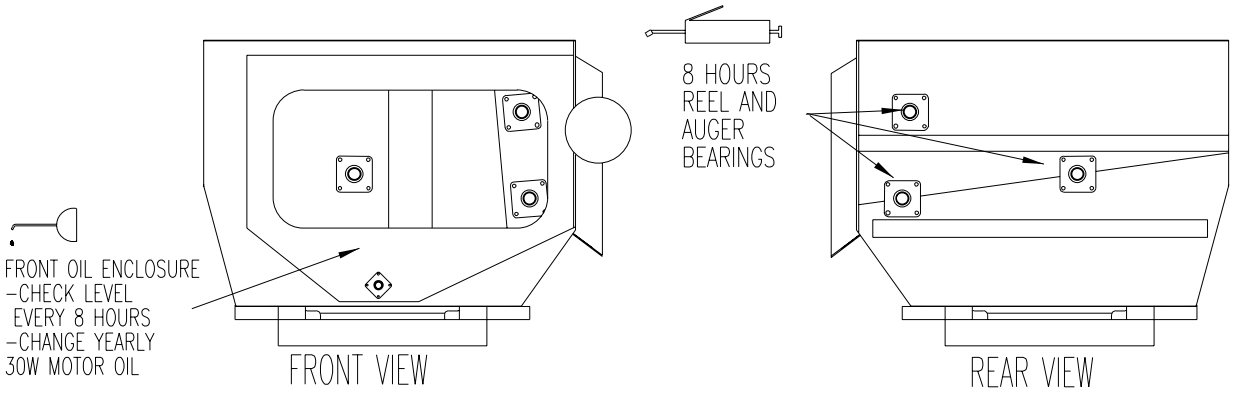
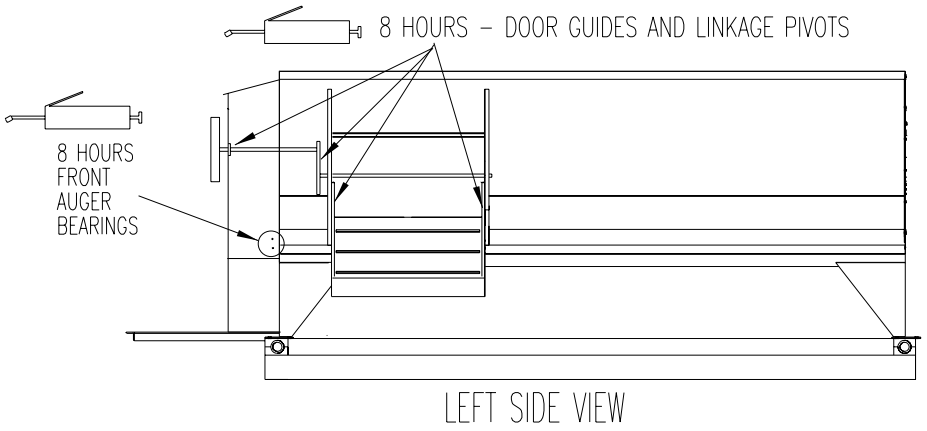
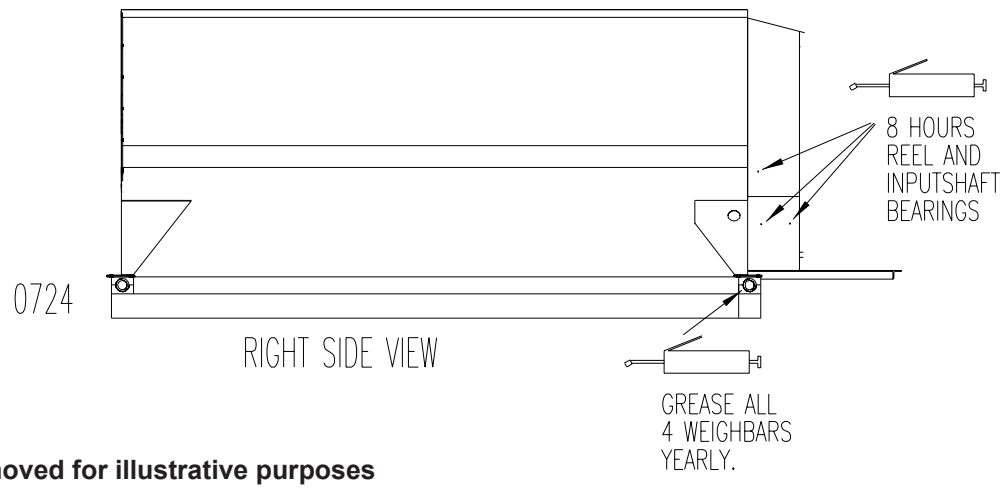
LUBRICATION

LUBRICATION LOCATIONS

3125 AND 3130







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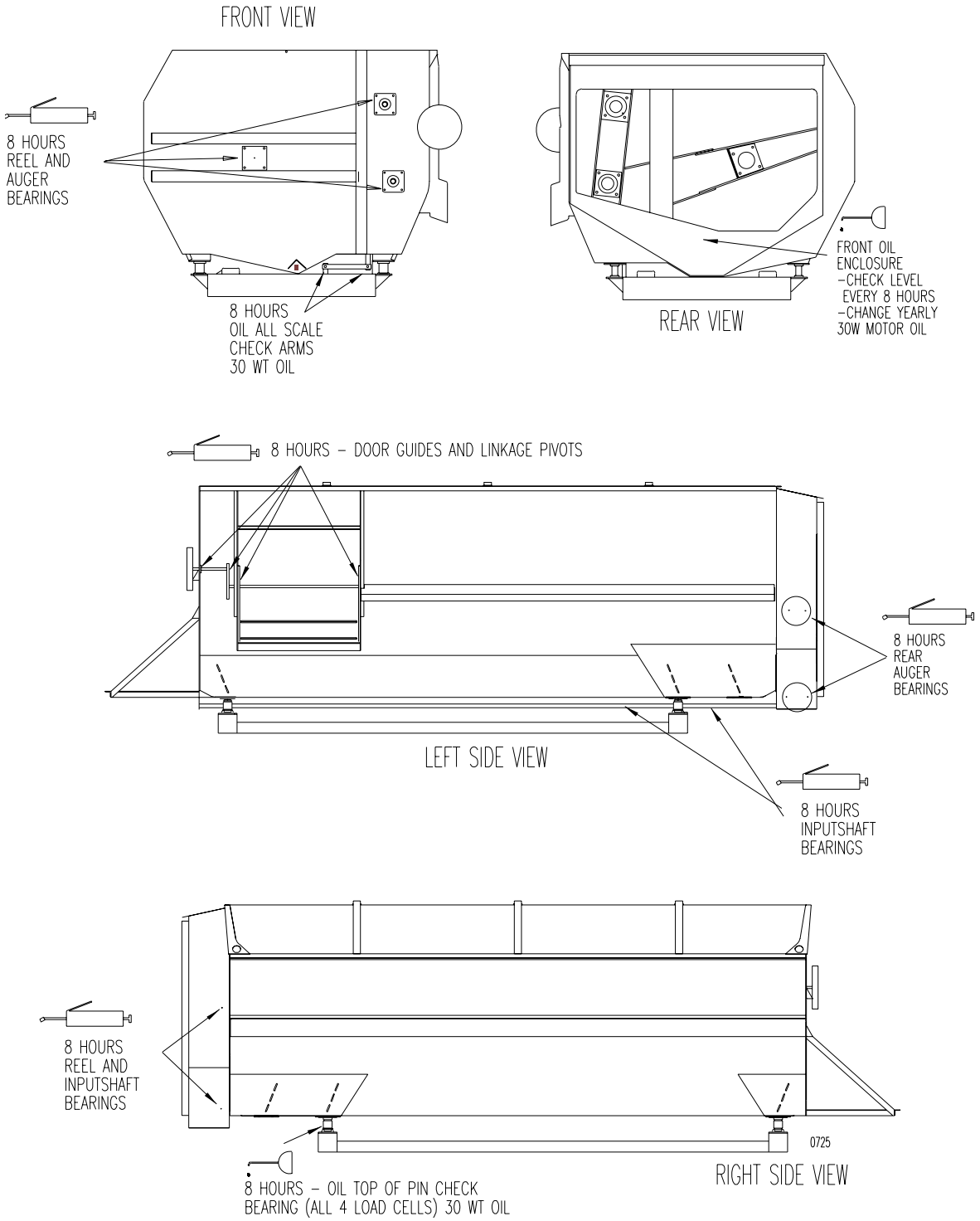
LUBRICATION

LUBRICATION LOCATIONS

3136, 3142, 3150, 3160, 3170 AND 3195



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TROUBLE SHOOTING

This section is a condensed chart to help you if unsatisfactory operation occurs.
To use this chart : 1) Identify the "PROBLEM" (in bold) that best applies to you situation.
2) Find the "CAUSE" that seems most likely.
3) Perform the recommended "SOLUTION".
If you are unable to identify and correct the problem, consult your authorized dealer.

PROBLEM:
- POOR MIXING PERFORMANCE, HAY IS WRAPPING ON AUGERS
- CROSS PIPES ON THE REEL ASSEMBLY ARE BENT
- BELTS SLIPPING
- SHEAR BOLT FAILS
- EXCESSIVE POWER REQUIREMENTS WHEN RUNNING MIXER

CAUSE	SOLUTION
MIXER IS OVERLOADED	Reduce load size, feed must be able to tumble from the reel cross pipes. If reel is over full, mixing action will be greatly reduced. Feed must not pile up between the reel and the side of the mixer. This causes a buildup of pressure, increases the power requirements of the mixer, and can cause pipes to bend.
HAY IS LOADED ON THE REEL SIDE OF THE MIXER	Load hay on the auger side of the mixer. This keeps hay from being caught between the reel pipes and side of mixer during initial loading.
BIG CHUNKS OF HAY	Break up bales before loading.
CROSS PIPES SET IN THE OUTER POSITION	Move reel cross pipes to the inner setting by compressing the springs and adding bolts and lock nuts in the reel arms. Do not move wiper arms in. See *REEL CROSS TUBES* in the *MIXER SETUP* section.
HAY IS NOT FULLY CURED	Freshly baled hay tends to be green and does not tear apart easily. Allow hay to dry or cure longer before using in the mixer.
AUGER KNIVES ARE NOT SHARP	Sharpen or replace knives when they become dull.
HAY IS TOO LONG	Round baled and stacked hay cannot be used in the mixer unless it has been processed first, Some grassy types of hay must also be processed before it can be used. See *MATERIALS REQUIRING PREPARATION* in the *MIXER OPERATION* section.
HAY PERCENTAGE IS TOO HIGH	Mix a lower percentage of hay or change loading sequence. When mixing the hay, run the mixer at full rated speed. See *MIXER SETUP* section.
FOREIGN OBJECT IN MIXER	Inspect mixer and remove object.
IMPROPER LOADING SEQUENCE	See *LOADING AND MIXING* in the *MIXER OPERATION* section for recommended loading sequence.
FORAGE IS PILED ABOVE REEL AND WEDGED AGAINST MIXER WALL	Mixer is overloaded or operator must load forage after the mixer is started.

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TROUBLE SHOOTING

PROBLEM: MOTOR RUNS, BUT REEL AND AUGERS DO NOT TURN	
CAUSE	SOLUTION
SHEAR BOLT ON PTO DRIVELINE HAS SHEARED	Replace with the same grade and size shear bolt. Do not use any bolt other than the grade specified in the *MIXER SETUP, DRIVELINE SHEAR BOLTS* section. If problem persists, call your local dealer.
BELTS ARE SLIPPING	Adjust or replace belts ad outlined in the I*NSPECTION AND ADJUSTS* section. If problem persists, call your authorized Kuhn Knight service dealer.
BROKEN CHAIN	Make sure that mixer is not overloaded. Replace broken chain. A spliced chain will not be as strong as a new chain and may break in another place. Be sure to inspect bearings, bearing mounts, and shafts for any damage caused by excessive pressure.

PROBLEM: SEAL LEAKING ON UPPER AUGER	
CAUSE	SOLUTION
BOLTS MAY HAVE WORKED LOOSE ON SEAL RETAINER	Tighten or replace bolts
SEAL IS DAMAGED	Replace Seal

PROBLEM: SEAL LEAKING ON INPUT SHAFT	
CAUSE	SOLUTION
OIL BATH IS OVERFILLED	The oil level in the sealed drive compartment should be maintained at the “oil level” plug on the drive compartment housing. This allows the oil to be thrown onto all the other chains inside the drive compartment.
SEAL IS DAMAGED	Replace Seal

PROBLEM: EXCESSIVE CHAIN NOISE	
CAUSE	SOLUTION
MISALIGNED SPROCKETS	Check sprockets for worn edges of teeth. Use a straight edge to verify the alignment of the sprockets.
WORN SPROCKET AND OR CHAIN	Inspect sprockets and chains. Replace if excessively worn.

PROBLEM: FEED IS SEPARATING AS IT DISCHARGES FROM THE MIXER DOOR	
CAUSE	SOLUTION
DOOR IS OPEN LESS THAN HALF WAY	Hay mixed in the load will separate from the grain if the discharge door is not open at least half way. Additional flow control plates may be required.

TROUBLE SHOOTING

PROBLEM: OIL LEAKING AROUND THE EDGES OF THE OIL BATH	
CAUSE	SOLUTION
INSPECT SHIELD FOR LOOSENESS	Check for foreign material between the foam gasket and shield. Carefully tighten wing nuts or adjust locking fasteners that hold shield in place; hand tighten only.
DAMAGED OR LOOSE GASKET MATERIAL AROUND ENCLOSURE SHIELD	Remove shield and check gasket material for proper adhesion to the mating panel of the mixer. If gasket adhesive has come loose fro the front panel, replace the gasket.

PROBLEM: HYDRAULIC DOOR SYSTEM OPERATES ERRATICALLY	
CAUSE	SOLUTION
COMPONENTS STICKING OR BINDING	Check for hydraulic oil for contamination, dirt, or gummy deposits; find and repair the source of contamination. Check for worn or bent parts and replace. Check oil level in hydraulic system.
INADEQUATE FLOW OR PRESSURE FROM HYDRAULIC SYSTEM.	Check fluid and fill to proper level.
OIL IS LEAKING PAST SEALS IN CYLINDERS OR VALVES	Install seal kits to repair worn seals. See Parts Manual for part numbers.

PROBLEM: SCALE HANGS UP, LOAD CELL ONLY	
CAUSE	SOLUTION
LOAD CELL NOT VERTICAL	With the mixer empty, adjust the load cell by loosening top load cell mount, move the load cell to a vertical position and retighten the load cell mount's fasteners.
PIN CHECK OUT OF ADJUSTMENT	Remove pin check assembly, test scale, if scale operates properly clean or repair pin check assembly. See *INSPECTIONS AND ADJUSTMENTS, ELECTRONIC SCALES* section.
CHECK ARM NOT LUBRICATED	Lubricate check arm until it easily rotates on sockets. See *INSPECTIONS AND ADJUSTMENTS, ELECTRONIC SCALES* section.

PROBLEM: SCALE WEIGHS VERY HEAVY OR VERY LIGHT, WEIGH BAR ONLY	
CAUSE	SOLUTION
IMPROPER CALIBRATION	Use the scale's operator's manual and re-calibrate the scale.
DAMAGED CABLE ON ONE OR MORE LOAD CELLS OR WEIGH BARS	Inspect cables and repair or replace as necessary.

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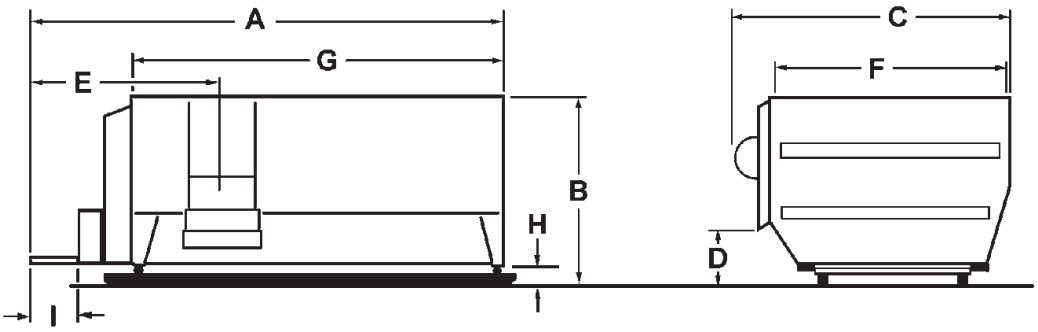
SPECIFICATIONS 3115 TO 3142



MODEL - STATIONARY	3115	3120	3125	3130	3136	3142
DIMENSIONS (INCHES)						
A - Overall Length - with motor mount	113	159	160	184	181	205
B - Overall Height - with rails and scales	64	64	69	69	83	83
C - Overall Width - with magnet tray	89	95	97	97	105	105
D - Height of Discharge - with rails and scales	17	18	19	19	28	28
E - Motor Mount to Center of Discharge Door	50	65	66	66	60	60
F - Overall Width Top Opening	71	78	81-1/2	81/1/2	87	87
G - Overall Length Top Opening	82	120	120	144	132	156
H - Height Reduction - less rails and scales	7	7	6-1/2	6-1/2	10	10
I - Length Reduction - less motor mount	12	36	36	NA		
SPECIFICATIONS						
Unit Weight [1] - pounds	2,850	4,809	6,489	7,021	8,480	8.762
Mixing Capacity - cubic foot/bushels	147/118	216/174	250/200	300/240	360/288	420/340
Reel Diameter	52”	52”	60”	60”	68”	68”
Reel Drive Shaft Diameter	3”	3-1/2”	3-1/2”	3-1/2”	4”	4”
Reel Arms	3	4	4	4	5	5
Reel Hopper Thickness	3/16”	3/16”	5/16”	5/16”	5/16”	5/16”
Reel Speed RPM	4.37	4.89	4.60	4.60	4.0	4.0
Lower Auger						
Flighting Diameter	16”	16”	18”	18”	20”	20”
Flighting Thickness - Sectional	3/8”	3/8”	3/8”	3/8”	1/2”	1/2”
Tube-Outside Diameter	4”	4”	5-9/16”	5-9/16”	5-9/16”	5-9/16”
Drive Shaft Diameter	2”	2-1/2”	2-1/2”	2-1/2”	3”	3”
Upper Auger						
Flighting Diameter	14”	14”	18”	18”	20”	20”
Flighting Thickness - Sectional	3/8” - H	3/8” - H	3/8” - H	3/8” - H	1/4” - S	1/4” - S
Tube-Outside Diameter	4”	4”	5-9/16”	5-9/16”	5-9/16”	5-9/16”
Drive Shaft Diameter	2”	2”	2-1/2”	2-1/2”	3”	3”
Auger Hopper Thickness	1/4”	1/4”	5/16”	5/16”	5/16”	5/16”
Side Sheets Thickness	10 ga.	10 ga.	10 ga.	10 ga.	10 ga.	10 ga.
End Sheets Thickness	10 ga.	10 ga.	3/16”	3/16”	3/16”	3/16”
Door Opening Size	20” x 16”	36"x20"	36"x20"	36"x20"	36"x20"	36"x20"
Oil Bath	Front	Front	Front	Front	Rear	Rear
Roller Chain Drive	50-60-80	60H-80-100H	60H-80H-100H	60H-80H-100H	80-100-120	80-100-120
Electric Drive (HP) [2]	7-1/2-10	10	10	10-15	15-20	15-25

[1] Unit is equipped with most common options.
[2] Horsepower requirements vary greatly with different materials. Consult operator’s manual for proper motor sizing.

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SAFETY FIRST

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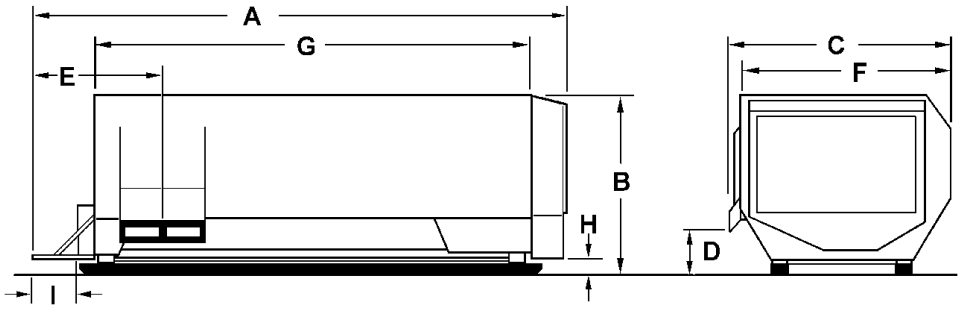
SPECIFICATIONS 3150 TO 3195



MODEL - STATIONARY	3150	3160	3170	3195
DIMENSIONS (INCHES)				
A - Overall Length - with motor mount[1]	224	254	284	307
B - Overall Height - with rails and scales	84	84	84	95
C - Overall Width - with magnet tray	114	114	114	125
D - Height of Discharge - with rails and scales	26	26	26	30
E - Motor Mount to Center of Discharge Door	70	70	70	NA
F - Overall Width Top Opening	93	93	93	108
G - Overall Length Top Opening	168	198	228	216
H - Height Reduction - less rails and scales	51/2	51/2	51/2	NA
I - Length Reduction - less motor mount	36	36	36	NA
SPECIFICATIONS				
Unit Weight [2] - pounds	11,788	13,599	17,295	20,500
Mixing Capacity - cubic foot/bushels	500/415	600/490	700/562	950/763
Reel Diameter	70	70	70	84
Reel Drive Shaft Diameter	5"	5"	5"	8" tube
Reel Arms	5	5	5	5
Reel Hopper Thickness	3/8"	3/8"	3/8"	3/8"
Reel Speed RPM	5.7	5.7	5.7	5.2
Lower Auger				
Flighting Diameter	24	24	24	28
Flighting Thickness [3] - Sectional	5/8"	5/8"	5/8"	5/8"
Tube-Outside Diameter	65/8"	65/8"	85/8"	85/8"
Drive Shaft Diameter	31/2"	31/2"	31/2"	5"
Upper Auger				
Flighting Diameter	22	22	24	28
Flighting Thickness - Sectional	1/2"	1/2"	1/2"	1/2"
Tube-Outside Diameter	65/8"	65/8"	85/8"	85/8"
Drive Shaft Diameter	31/2"	31/2"	31/2"	4"
Auger Hopper Thickness	3/8"	3/8"	3/8"	3/8"
Side Sheets Thickness	3/16"	3/16"	3/16"	1/4"
End Sheets Thickness	1/4"	1/4"	1/4"	1/4"
Door Opening Size	42"x22"	42"x22"	42"x22"	48"x26"
Roller Chain Drive	80-100-120-140	80-100-120-140	80-100-120-140	80-120-140-Dbl 140
Electric Drive (HP) [4]	50	60	70	100

[1] 3195 motor mounts to the floor and dimension includes motor, 18 in. driveline and gearbox.
[2] Unit is equipped with most common options.
[3] 3/4 in. flighting at convergence is standard.
[4] HP requirements may vary with different materials. Consult operator's manual for proper motor sizing.

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