

Instruction Book



XLR Vertical Mixer Feeders



Manufactured By:
Helm Welding (1983) Limited
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Warranty Information

Helm Welding (1983) Limited warrants to the original user that goods & equipment of its manufacture are free from defects in material and workmanship under normal use and service from the date of shipment, or where applicable from the date of installation by the dealer for the periods of time indicated below:

- ◆ one year parts & labour for the mixer assembly
- ◆ two years parts & labour for the planetary and two speed gearboxes (if applicable)
- ◆ three years parts & labour for the scale system

Helm Welding (1983) Limited will, at its option, repair or replace parts (f.o.b. point of shipment) that are found to be defective.

This warranty is on these further terms and conditions:

1. The equipment must be installed (when applicable), operated and maintained in accordance with Helm Welding's instructions.
2. The equipment will fulfill the function it is designed to perform but due to wide variation in farm animals, management practices on farms and other conditions beyond the equipment manufacturer's control, no specific level of performance is guaranteed.
3. Excluded from the warranty are damages caused by late delivery, ordinary wear and tear, erosion or corrosion, lightning and other acts of God, accident or alteration, repair or attempted repair or adjustments made by persons not authorized by Helm Welding (1983) Limited, by misuse, abuse or improper handling or operation of the equipment by the purchaser or any third party or poor or no servicing of machine.
4. Helm Welding (1983) Limited shall in no event be responsible for any consequential damages of any nature whether special or general, direct or indirect.
5. Equipment, parts or accessories manufactured by others and not sold under Helm Welding (1983) Limited trademark(s) carry the warranty and remedy provided by their manufacturer only.
Any gearbox related component that has been opened or tampered with will void the warranty on that component. Do not attempt any repair on any of these items if seeking warranty coverage.
6. Any warranty or claim, which differs from that herein set out is unauthorized by Helm Welding (1983) Limited and is the warranty solely of the party making it. Helm Welding (1983) Limited makes no other warranty express or implied and the original user's sole remedy for breach thereof is as set forth above.

To properly qualify for warranty, **all maintenance criteria and service schedules must be followed (including oil changes and greasing).**

As well, the pre-delivery check list and warranty registration forms must also have been completed at the time of product delivery and returned to us the manufacturer for proper record keeping. In extreme warranty situations, the service record must be provided to Helm Welding upon request at any time.

Failure to follow and provide any of the above information will void warranty.

The warranty registration card must be completed and mailed within thirty (30) days of delivery or installation of the equipment to validate this warranty.

Note: Credits or replacements will not be issued unless documentation is complete and correct.

Date of installation _____ Serial Number _____

Your Luck//Now Dealer _____

Name _____

Address _____

Telephone Number _____



This Copy Must
Be Returned To
HELM WELDING (1983) LIMITED

Helm Welding (1983) Limited
P.O. Box 158
Lucknow, Ontario, Canada
N0G 2H0

Vertical Series Pre-Delivery Check List & Warranty Registration

- 1. Inspect machine for loosened bolts during transit (eg. wheel bolts, hitch).
- 2. Inspect machine for loose bearing locking collars.
- 3. Check all roller chains for alignment.
- 4. Check oil in all gearboxes and/or planetary drives.
- 5. Check lubrication of PTO drive line (grease).
- 6. Ensure that PTO drive line has been fitted properly and holding bolts tightened to proper tightness.
- 7. Grease all bearings and chains.
- 8. Run machine and make sure all functions work properly before delivery to user.
- 9. Check hydraulic system for leaks.
- 10. Check weigh bars of weighing system to ensure that bolts holding bars in place are tight and no damage has been done during transit.
- 11. Check all scale wires for any damage during transit.
- 12. Power the scale indicator and do a weight test by putting some weight on each corner of the mixer.
- 13. Ensure client has the scale manual.
- 14. Check to make sure all safety equipment is in place.

Dealer Signature: _____ Date: _____

Client Signature: _____ Date: _____

Client Address: _____

Model # _____ Serial # _____

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 N0G 2H0

ATTENTION:
 Technical Customer Service

Tel: (519) 529-7627 or (519) 529-7000
 Fax: (519) 529-3260

Number of pages _____
 including front-page _____

Reader's comments

Helm Welding (1983) Limited is committed to providing excellent documentation. Please, fax or write us your comments on this manual.

Your suggestions help us improve our technical information.

General

Please check appropriate square.

Agree Disagree

- | | | |
|--------------------------|--------------------------|---------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | * I can find the information I want |
| <input type="checkbox"/> | <input type="checkbox"/> | * The table of contents is thorough |
| <input type="checkbox"/> | <input type="checkbox"/> | * Instructions are complete |
| <input type="checkbox"/> | <input type="checkbox"/> | * There are enough illustrations |
| <input type="checkbox"/> | <input type="checkbox"/> | * Illustrations are clear and helpful |

Comments:

Name & Address

Important Information

This manual has been prepared to provide the owner and operator with the information required to properly operate and maintain his unit. It is important that you, the owner or operator, read this manual prior to operating or performing any maintenance work on the unit. This manual is for all mixer models.

Date of purchase: _____

Serial Number: _____

Information needed for ordering parts.

Model Number: _____

Indicator Model #: _____ Serial # Of Head: _____

Remote: _____ Serial # Of Head: _____

Bar Serial # _____

Planetary Gearbox (Single Screw): Type _____ Ratio _____

Serial # _____

Planetary Gearbox (Twin Screw): Type _____ Ratio _____

Serial # _____ Date _____ Code _____

Serial # _____ Date _____ Code _____

Two Speed Gearbox (if equipped) Type _____ Date _____

Serial # _____

Special Options: _____

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1. Safety

SAFETY TIPS!

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH!



THIS SYMBOL MEANS

ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. They are Limited typically to hazards, which cannot be guarded for functional purposes.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. Also used to alert against unsafe practices.

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.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or

Helm Welding (1983) Limited, PO Box 158 Lucknow, Ontario Canada, N0G 2H0.

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Equipment Safety Guidelines

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury, study the following precautions and insist that those working with you follow them.

In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. **Keep all shields in place.** If shield removal becomes necessary during repairs, replace the shield prior to use.

Replace any **CAUTION, WARNING, DANGER** or instruction safety decal that is not readable or is missing.

Do not attempt to use this equipment under the influence of alcohol or drugs.

Review the safety instructions with all users annually.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment's operations. **Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and how it works.**

To prevent injury or death, use a tractor equipped with Roll Over Protection System (ROPS). Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

- Never exceed the limits on a piece of machinery. If its ability to do a job, or to do so safely is in question - **DO NOT TRY IT!**



Safety Sign Care

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety signs are available from your Distributor or the factory.

How to install safety signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before removing the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with exposed sticky backing in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.



Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper experience to do the job.
- Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires.
- Always order and install tires and wheels with appropriate capacity to meet or exceed the anticipated weight to be placed on the equipment.



Before Operation

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing that may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- It is recommended that suitable protective hearing and eye protection be worn.
- **Keep wheel lug nuts or bolts tightened to specific torque.**
- **Assure that agricultural implement tires are inflated evenly.**
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow maintenance safety instructions included in this manual.
- Make sure there are no tools lying on or in the unit.
- Do not use the equipment until you are sure that the area is clear, especially of children and animals.
- Because it is possible that this equipment may be used in dry areas or in the presence of combustibles, special precautions should be taken to prevent fires and fire fighting equipment should be readily available.
- Don't hurry the learning process or take the unit for granted. Ease into it and familiarize yourself and other operators with its operation before use.
- Use a tractor equipped with Roll Over Protection System (ROPS) and fasten your seat belt prior to starting the engine.
- Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the equipment.



During Operation

- Install a safety chain by crossing the chains under the tongue and secure to the draw bar cage or hitch or bumper frame.
- Beware of bystanders, **particularly children!** Always look around to make sure that it is safe to start the engine of the towing vehicle or move the unit. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.
- **NO PASSENGERS ALLOWED** - Do not carry passengers anywhere on, or in, the tractor or equipment, except as required for operation.

- Keep hands and clothing clear of moving parts.
- When halting operation, even periodically, set the brakes, disengage PTO, shut off engine and **remove ignition key**.
- Pick the most level route when transporting. Avoid edges of ditches or gullies and steep hillsides or inclines.
- Allow for unit length when making turns.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside unit.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow procedures.



Transport Operation

- This unit is **NOT** designed to be towed behind a pick-up truck or any other highway vehicle. Always tow with a tractor of adequate size and weight capable of towing and stopping safely.
- ***All highway regulations and lighting requirements must be followed.***
- Comply with federal, state/provincial and local laws governing highway safety and movement of farm machinery on public roads.
- Plan your route to avoid heavy traffic.
- Watch for obstructions overhead and to the side while transporting.
- **Don't Drink and Drive!**
- Be observant of bridge load ratings. Do not cross bridges rated lower than the gross weight at which you are operating.
- Obey all general traffic laws.



Before operating the mixer, carefully read the instructions in the following chapters. Proper handling of the equipment is the basis of trouble-free use. The equipment must be used only for the intended application.



SW1: Proper handling of the equipment is the basis of trouble-free functioning. The equipment **MUST** be used **ONLY** for intended use.

	⚠ WARNING
	<p>To Prevent Serious Injury or Death</p> <ul style="list-style-type: none"> Avoid unsafe operation or maintenance. Do not operate or work on this machine without reading and understanding the operator's manual. If manual is lost, contact your nearest dealer for a new manual. <p style="text-align: right; font-size: small;">SW1</p>



WARNING!
Turning gears, chains and augers can cause serious injury. To avoid injury, keep hands, loose clothing and jewelry away from the mixer while operating.

⚠ DANGER
<p style="text-align: center;">ROTATING DRIVELINE HAZARD</p> <p>To prevent serious injury or death from rotating driveline:</p> <ul style="list-style-type: none"> Keep all guards in place when operating. Operate only at 540 RPM. Keep hands, feet, hair and clothing away from moving parts. <p style="text-align: right; font-size: small;">SW104</p>



SW104: Standard PTO speed of all single screw models and is 540 rpm and 1000 rpm for twin screw models. **DO NOT** exceed rated PTO speed.

⚠ DANGER
<p>To Prevent Serious Injury Or Death From Moving Parts:</p> <ul style="list-style-type: none"> KEEP AWAY, Moving parts can crush and dismember. Do not operate without guards and shields in place. Disconnect and lockout power source before adjusting and servicing. <p style="text-align: right; font-size: small;">SW108</p>



SW108: Keep chain drive guards closed when operating. **STOP** unit to lubricate.



SW103: Mixing Augers are very dangerous. Never climb at the top of the mixer or throw feed into the mixer from above by hand.



SW806: Discharge Conveyor **MUST** only be operated when the mixer is discharging and all personnel are clear.



SW205: Do not raise/lower discharge conveyor (if equipped with this option) unless unit is ready to discharge and all personnel are clear.



None of our current Vertical Mixer Feeders are designed to be towed behind a pick-up or highway vehicle. All units must be towed by a farm tractor of size and weight capable of towing and stopping safely when required.

All highway regulations and lighting requirements must be followed.

! DANGER

To Prevent Serious Injury Or Death:

- Keep hands, feet and clothing away from auger intake.

SW103

! DANGER

To prevent serious injury or death from pinching:

- Keep all persons and objects clear while any part of this machine is in motion.

SW205

! DANGER

NOT INTENDED

FOR HIGHWAY USE

2. Assembly

Vertical Mixer PTO

1. Connect pushpin end of PTO to mixer.
2. Connect Quick Disconnect Sleeve end to tractor.
3. Connect safety chain to hole on PTO shield.



Danger: PTO Spline Adaptors

It is dangerous to use a PTO spline adaptor to change your tractor PTO shaft spline to accommodate a different implement PTO spline. Match the right tractor PTO spline and speed with the PTO driveshaft provided with the implement. *Use of a PTO spline adaptor will void the warranty on your implement PTO shaft and driveline.*

Discharge Conveyor (Option)

The standard Vertical Mixer comes with a slide chute that requires no assembly on arrival. However, there are options such as the raise and lower conveyor that will require some assembly.

Raise & Lower Conveyor

1. Attach the fixed end of the 2" X 8" Raise & Lower Hydraulic Cylinder to the conveyor lug as shown.
2. Using a lifting device such as a loader or chain hoist make sure that the Raise & Lower Section is well supported before disconnecting the transport bolt which holds the section in an upright position. **This section is heavy and Helm Welding does not recommend manual lowering!**
3. Carefully lower the Raise & Lower Section until the holes on the travel end of the 2" X 8" Raise & Lower Hydraulic Cylinder line up with the lug on the extension. Put pin in place and securely clip.



Height Adjustment Bar

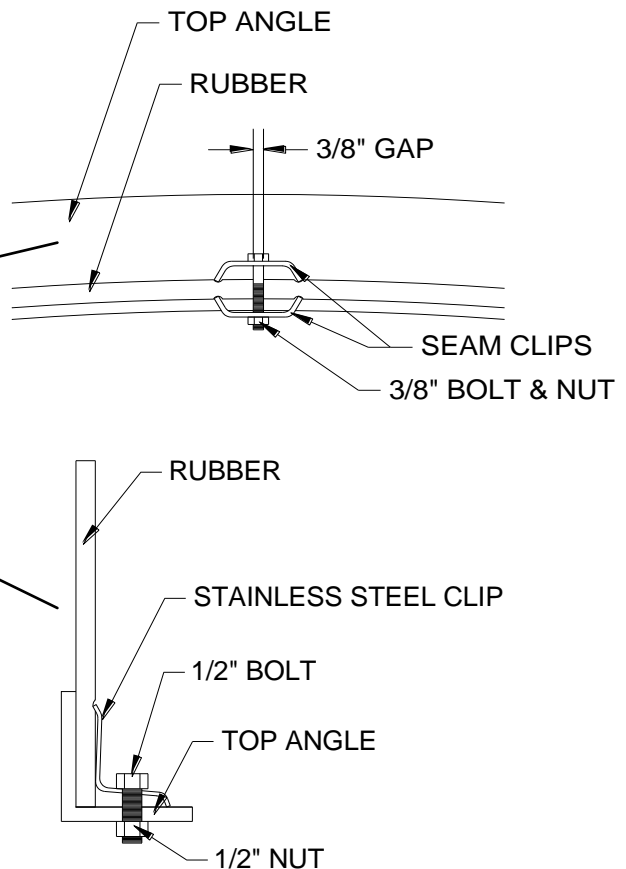
1. Install the L shaped end of the height adjustment bar on the extension lug as shown.
2. Install the moving lug on the height adjustment bar on the conveyor lug as shown.



Rubber Extension (Option)

The situation may arise that due to transportation height restrictions the rubber extension may have to be assembled after market sale.

1. Start at the centre of the back of the mixer and using the clips provided clip rubber securely into place.
2. Clip one at a time around the mixer, going in one direction, ensuring that it is pulled tight before each clip is put in place. Tighten with impact wrench if possible.
3. Belt must be trimmed to fit before final clip is put into place. Once hold down clips are in place and secure, the seam clips may be installed. There should be a gap large enough to accommodate the bolt width (3/8").



Chain Overflow (Option)

If the chain overflow option needs to be installed, follow the instructions below.

1. Mount the short chain lengths and hardware to the underside of the top ring of the mixer tub (mount the flat washers between the lock nuts and the chain). The short lengths get mounted to every other hole of the tub as shown below.

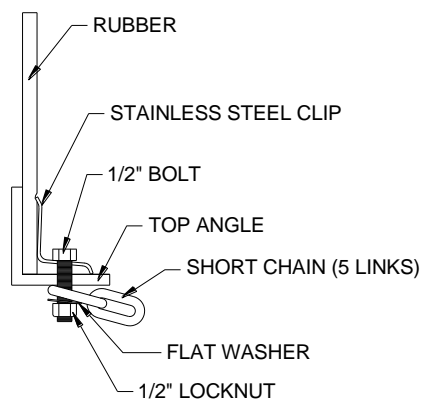


2. Using the included chain lap link connectors, mount the longer chain to the short lengths as shown in the above pictures.
3. Orient the short chains approximately perpendicular to the long chain at all points.

Rubber Extension and Chain Overflow (Options)

If both the rubber extension and the chain overflow option need to be installed on the machine, additional instructions beyond those described previously need to be followed.

There are two different assemblies used to attach the rubber and chain, the first assembly is bolting the stainless steel rubber hold down clips in place using 1/2" bolts and nuts (the same as the previous assembly). The second assembly is mounting the rubber and the chain overflow option with one bolt (shown below). This assembly involves longer 1/2" bolts, flat washers and locknuts.



These assemblies are alternated along the tub when mounting the rubber.

1. Start mounting the rubber at the centre back of the tub using the shorter 1/2" bolts and standard nuts. Mount a hold down clip *in every other hole* around the tub.
2. Pull the rubber tight before each clip is put in place. Tighten the bolts with an impact wrench if possible.
3. Mount the rubber on the opposite side of the mixer following the same procedure.
4. Mount the rubber and chain assembly (as shown above) into the remaining half of the rubber mount holes. Use the longer 1/2" bolts with the short chains (5 links long), a flat washer and a locknut. *Do not* tighten these nuts at this point.
5. Install the longer chain and lap links as described previously.
5. Once all lap links are in place and are tight you may now tighten the rubber hold down clips where the chain is connected.
6. The final step is to trim the rubber to length and install the seam clips as shown previously.

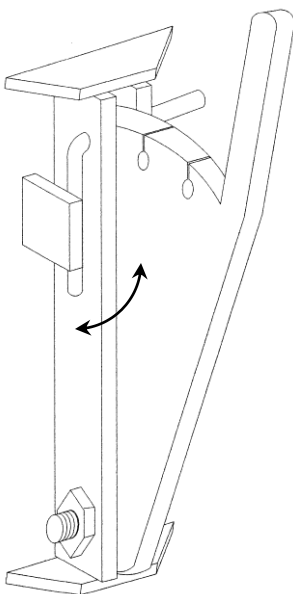
Restrictor Plates

If the desired mix requires shorter or longer cut hay length, then the specially designed restrictor plates must be adjusted. There are four settings on the adjustable restrictor plates. Set all the way out of the mixer is the least aggressive while all the way in is the most aggressive. Keep in mind that the more aggressive the restrictor plates are adjusted, the more horsepower is required to turn the augers. This increase in required horsepower will vary depending on the restrictor plate setting and the composition of the mix.

Only adjust the plates when the mixer is empty and not running or damage to the plates or the mixer may result.

To adjust the plates:

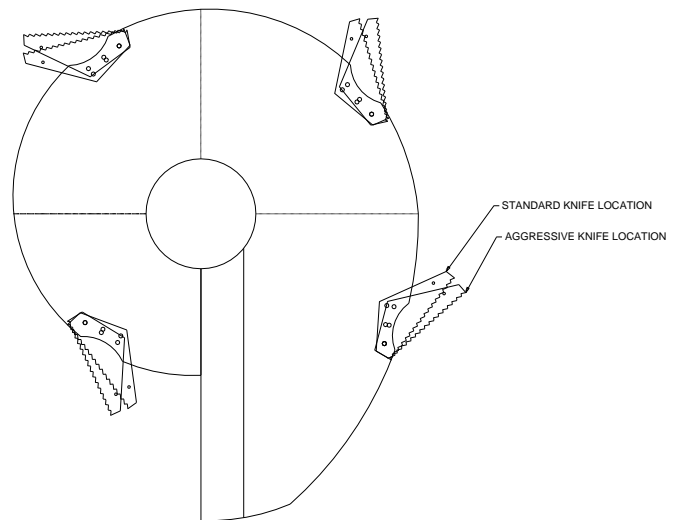
1. Rotate the pin upward and pull out of bracket.
2. Move plate to desired setting and line up holes of bracket and plate.
3. Re-insert pin and rotate down to locked position.



Aggressive Knife Position

The bottom 3 to 4 knives on vertical augers have had additional holes cut in the auger. This allows the cutting knives to be swung out for a more aggressive cutting action.

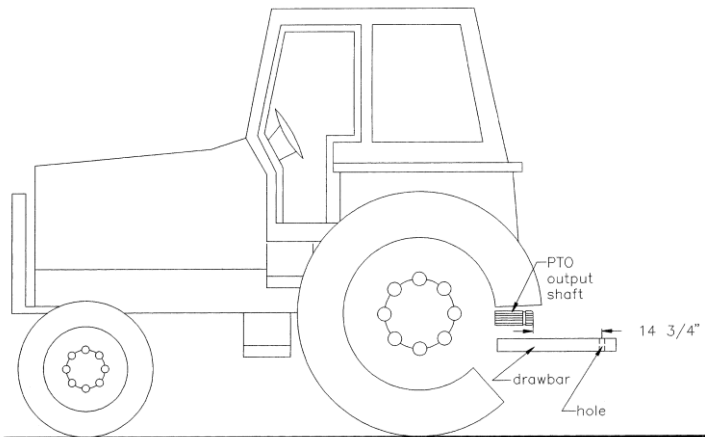
Note: Swinging the knives out will require more horsepower to drive the mixer. It is best to swing out one knife at a time and test to make sure the tractor has adequate power to drive the mixer. (ie. do not swing all of the knives out at once).



3. Start-up

Tractor Requirements

Use an adequately sized tractor that can handle the PTO, hydraulic, and maneuverability requirements of the unit. Ensure that the tractor drawbar is adjusted properly to meet the PTO properly.



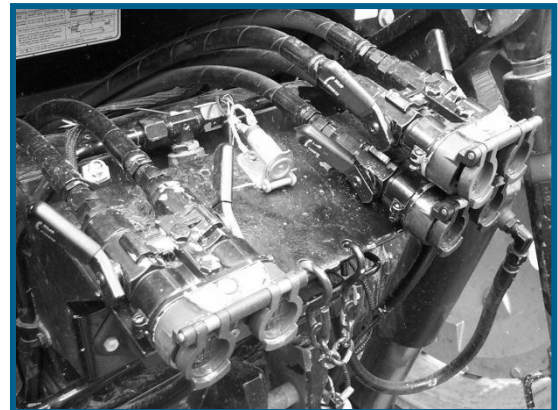
It should measure 14 3/4" from the end of the PTO output shaft to the drawbar hole for 540rpm models and 16" for 1000 rpm models.

The pto should be checked for proper minimum and maximum length to ensure adequate tube overlap and prevent the shafts from bottoming out.

The PTO speed requirement of the standard unit is 540 RPM on all single screw mixers 1000 RPM on twin screw models. The PTO horsepower required to operate the unit will vary according to the ration being mixed, volume of the load, and will be determined by actual use.

The tractor must have dual hydraulic outlets to meet the hydraulic requirements of the mixer unless an integral hydraulic system has been installed. One outlet is needed to operate the discharge door and a second outlet to operate the conveyor rotation (if included). The hydraulic discharge drive system requires a minimum of 7 gal/min for the hydraulic motor to maintain conveyor speed. A minimum of 1500 PSI is required to operate the door and conveyor under load.

The empty weight of the unit plus the weight of the ration must be added together to obtain the gross mixer weight. The size and weight of your tractor must be adequate to start, maneuver, and stop the total load under the ground conditions and environment that will be encountered during operation. Ensure you have a drawbar of sufficient strength which will accept a hitch pin of the same size as is provided in the mixer hitch. Use a drawbar pin that has a locking device on the tractor drawbar.



Loading a Mixer



Note: When loading the mixer, it **MUST** be coupled to a tractor of adequate size and weight to handle the total weight of the mixer plus the weight of the products to be loaded. **NEVER LOAD THE MIXER STANDING ON THE JACK ALONE!**

Position the unit on level ground and set the parking brake to prevent the unit from moving. Make sure the discharge door is closed before loading. Start the PTO with the engine at idle. Increase the engine speed to the rated PTO speed for loading. Although the machine is designed to operate at 540rpm it is not necessary to run at full rpm's during loading. Trial will determine what rpm best suits the ingredients being mixed. During loading, **DO NOT** strike the augers with the loading device. **Avoid hard frozen silage, chunky and foreign materials like dirt or rocks.**



The mixer is designed to provide maximum mixing efficiency when loaded from 40% to 90% of the total volume. If you are loading the unit slowly you may not want to start the mixing action until the lower portion of the auger is completely covered. Overloading the unit will decrease the efficiency of the processing action. One characteristic of an overloaded unit is that the feed is forced over the front, rear, or sides of the mixer.

The mixing time will depend on the ration being processed and will vary. When you are confident it is processed as desired, you should stop the mixing action until you begin the unloading process.



Note: When loading hay or other commodities manually, never climb above the side of the mixer. You could fall into the processing chamber while the unit is running causing serious injury or death.



Never use your hands to throw hay or any feed into the mixer. You could get entangled in hay or twine and pulled into the chamber.



Always use a fork or shovel when loading the unit manually.

Start-up

The hay can be loose, in square bales or even round bales. You should always make sure that all the twine or wire has been removed from the hay prior to loading which prevents the twine from wrapping the augers and flighting. Excessive amounts of twine can affect the torque requirements of the unit and cause component failure. Once the twine or wire has been removed carefully place the bales whole or in part into the mixing chamber. Use caution to make sure auger is not struck by loading implement. If more than one round bale is to be introduced it is up to the operator's mixing requirements as to how soon to add the second bale and other ingredients.

Before loading the mixer, position the unit on level ground and set the parking brake to prevent the unit from moving. Make sure that the discharge door is closed before loading. Engage the PTO with the engine at idle. Increase the engine speed to the recommended rpm for loading.

When beginning the loading process, load the coarser commodities first. This could include baled, dry hay or baleage, straw, cornstalks, etc. in either square or round bales. Allow this material to be processed somewhat before adding the next ingredients. This processing time will vary from one ingredient to another and will depend on the rpm that the machine is running at. The finer ingredients such as silage and commodities should be added last so these ingredients do not get over processed.

Once you introduce wet commodities such as silage, etc. into the mixer, the hay will begin to absorb the moisture immediately, become tough, and the breaking process stops.

After the dry commodities have been added you can begin to add the wet ingredients at a rate that allows the mixer to process them evenly. After all of the ingredients have been added and mixed you are ready to feed.

If the mixer stops running with the PTO still turning the shear bolt may have been broken indicating an excessive torque situation, which must be corrected. The shear bolt is located on the end yoke of the telescopic drive line, from the tractor to the mixer, on the mixer end.

Check the wheel lug bolts to make sure that they are tightened.

For Single Auger machines tighten the bolts to minimum 180 ft/lbs.

For Twin Auger machines tighten the bolts to minimum 280 ft/lbs.

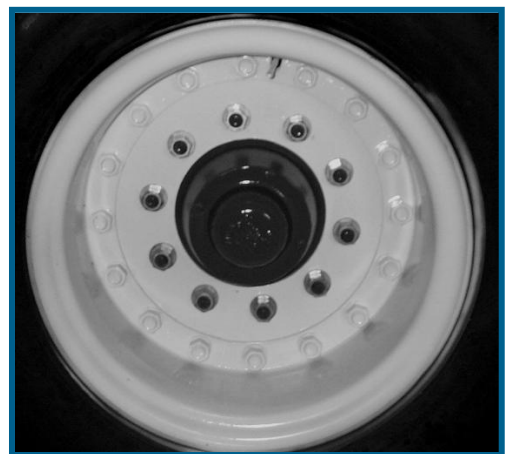
Maximum tire pressure is as shown on tire.



**DO NOT EXCEED MAX.
TIRE PRESSURE!**



Single Auger Rims



Twin Auger Rims

4. Operation

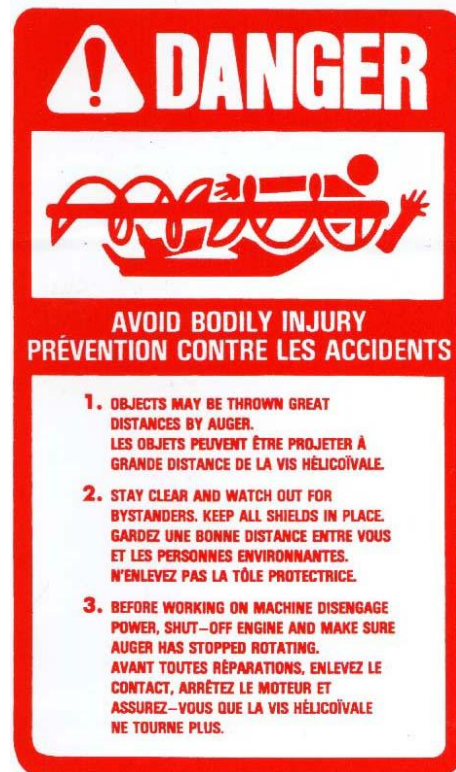
Vertical Mixer Feeder Operation

During the unloading procedure the mixing auger(s) must be in operation to move the feed to the discharge door. This is done by engaging the PTO of the tractor. If your model is equipped with the hydraulic raise and lower option, lower the discharge conveyor to the preferred set height, then the conveyor chain will rotate.

The raise & lower cylinder and the conveyor motor are connected to operate both with one hydraulic outlet. By operating this outlet one way will lower the conveyor extension and turn the unloading chain. By reversing this outlet the chain will stop and the extension will raise. This raise and lower section can be adjusted and set for desired bunk height by using simple hydraulic stroke control devices that snap onto the hydraulic cylinder piston rod.

If the machine is equipped with a straight cross conveyor this outlet allows the operator to discharge right or left. The remaining outlet operates the discharge door.

To begin feeding, engage the tractor PTO which will start the screws turning. Operate the hydraulic outlet to begin the conveyor turning which lowers the conveyor extension to the preset height or if it is a straight conveyor will simply start the conveyor chain. Operate the other hydraulic outlet and open the door. This allows the feed to flow to the conveyor. Put the tractor in gear and drive along the feed bunk. The tractor should be operated at the rated PTO speed and lower gears used for the proper ground speed. The operator will determine the proper speed of the tractor, distance to the feed bunk for the conveyor height, and how far to open the discharge door. To stop feeding one pen and go to the next, close the discharge door, while the machine is still operating, allow conveyor to empty, raise the conveyor and stop the PTO from running. To begin feeding the next pen, start the PTO, lower the conveyor, start the conveyor and open the discharge door. To stop the unloading process, close the discharge door, while the machine is still operating, lift the conveyor to the full upright position and shut off the PTO.



Overnight or Short Term Storage

Never allow feed ration or water to remain in the mixer or conveyor. If feed or water is allowed to remain in the unit, the metal will deteriorate due to the corrosive nature of the feed. Also, during freezing temperatures, moist hay may freeze causing serious damage. The unit should be completely emptied and cleaned prior to storage. To drain liquids from the mixer, park on level ground, block the tires, open the door slightly then lower the front end of the frame using the frame mounted jack.



Two Speed Gearbox

If your mixer is equipped with a two speed gearbox, the HIGH setting is recommended when unloading (this will aid in mixer clean out).

However, lower horsepower tractors may not be able to turn the mixer augers in the HIGH setting while the mixer tub is full. If that is the case, use the LOW setting for the mixing phase, and the first part of the unload phase (until the feed level is low enough that HIGH can be used). Stop the mixer, shift the two speed gearbox into HIGH and finish the unloading process.

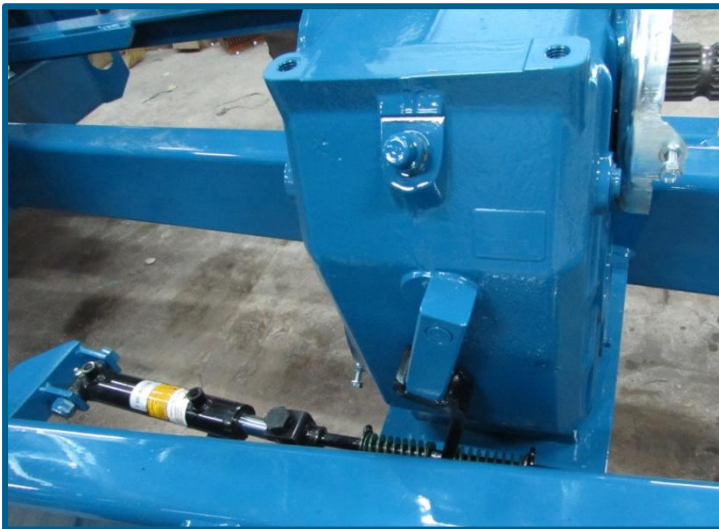
The HIGH setting is with the handle towards the tongue of the mixer, the LOW setting is with the handle towards the back of the mixer.

Do not leave the PTO engaged while trying to shift.



Hydraulic Shifter Option

If your mixer is equipped with the hydraulic shifter option to operate the two speed gearbox, please follow the instructions below:



- 1) Engage the hydraulics for the cylinder to shift the gearbox (extend the cylinder for low, retract the cylinder for high).
- 2) Engage the tractor PTO on then off again right away - this helps to engage the gears in the gearbox
- 3) Release the hydraulics on the cylinder.
- 4) Engage the tractor PTO and operate the mixer as normal.

Do not hold the hydraulics on to try to force the gears to engage.

Do not engage the PTO before engaging the hydraulic cylinder.

Do not leave the PTO on while trying to shift.

Scale Operation

The detailed operation instructions for your specific scale are supplied in another manual. Please review it prior to use.

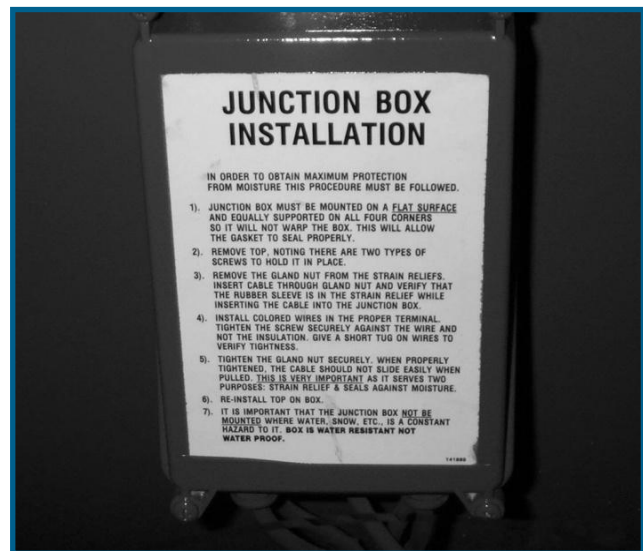
We recommend a yearly scale system check and recalibration by your local Mixer Electronics Dept. to catch problems before they become costly and cause downtime.

Note: Before performing any electrical work to the power source (eg. boosting the tractor battery) or mechanical repair involving welding repairs, be sure to remove the power cord to the scale indicator to prevent serious damage.



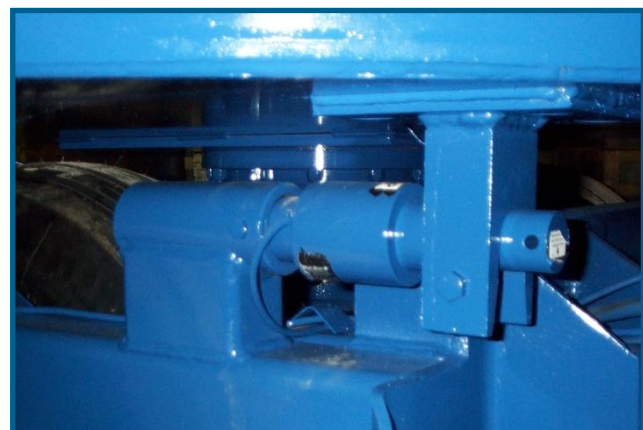
Checking Scale

- A. Weight Readings Are Unstable (fluctuating)
1. Make sure Indicator and Scale Bars are grounded.
 2. Make sure all screw terminals in the Junction Box and Indicator are tight.
 3. Check for mechanical binding in the mixer.
 4. Check for damaged Scale Bar cables.
 5. Check for moisture in Junction Box.
 6. If moisture is apparent, the Junction Box should be dried out using a fan, hairdryer, etc.



- B. Weight Readings Are Not Accurate

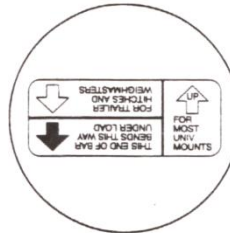
1. Check Scale Bar mountings for mechanical binding or interference.
2. Check mechanical binding for interference in the mixer.
3. Make sure all Scale Bars are properly mounted.



In the case of Digi-Star Scales, Scale Bars should be mounted as follows:

Trailer Applications

*the "Bar Bends This Way Under Load" arrow (black arrow) on the end of the bar points **DOWN**.



Trailer Applications
(Black arrow down)

- C. Scale can be checked to see if all bars are operating in a similar fashion by placing a known weight on each corner of the mixer. This should be done only when unit and tractor are placed on level ground with the parking brake set, the engine SHUT OFF, and the wheels blocked, both front and back.

IMPORTANT

If the Scale is required for a feeding program and cannot be corrected with this Scale Check, the mixer should be taken out of service immediately, until the Scale can be repaired by your Local Dealer.

5. Maintenance

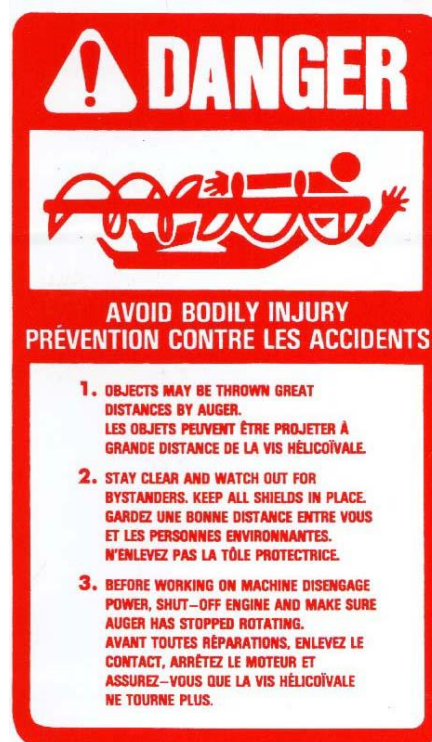


Warning: STOP the unit before making adjustments or service.

Vertical mixer feeders use the tractor's hydraulic pump and control valves to operate the discharge door and discharge. The discharge conveyor is powered by a hydraulic motor. The discharge door is controlled by two separate hoses, one to make the door open and the other to close the door.

Discharge Maintenance

The hydraulic motor drives the discharge conveyor with the use of drive chain. Be sure to oil the chain regularly to extend chain life. The bearings can be greased at the four corners of the discharge. Keep the bearing housings filled with grease. There are two bearings found on each shaft that must be kept adequately lubricated to force grease through the bearings until the grease is visible. Greasing extends the life of the bearings by forcing out water and contaminants.



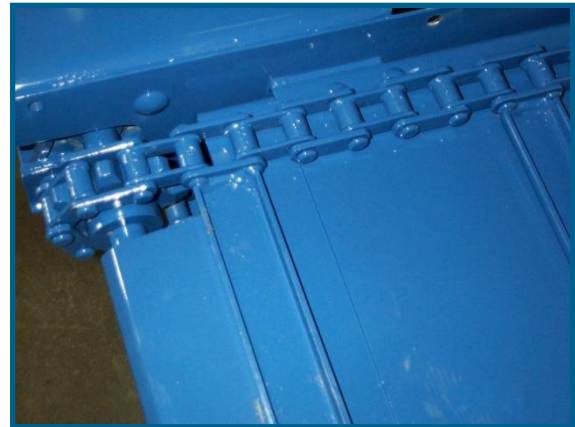
Installing New Chain

Before installing a new chain carefully check the teeth on the sprocket. If the teeth are worn to a hooked shape, the sprockets should be replaced to assure full performance and long life from the new chain. Proper tension is essential when installing new chain. Tight chain causes an additional load which increases wear on chain joints, sprockets and shaft bearings. Slack chain produces vibration that may result in excessive chain wear, noise, or shock loading.

Sprocket Inspection

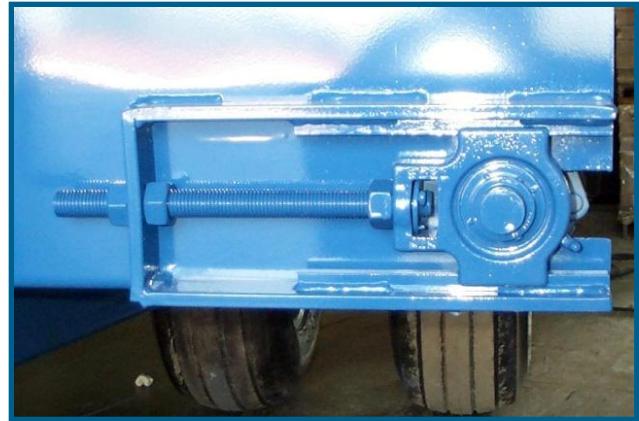
Check for these common sprocket problems which lead to replacement.

1. Wear on the sides is due to misalignment.
2. Tooth wear (indicated by hooking).
3. Broken teeth.
4. Cracks that might lead to failure.
5. Wobbling of sprockets on shaft.



Grease Bearings

For the best results, the grease should be pumped into the bearings slowly until a very slight bead of grease forms around the bearing seals on the shaft. This bead, in addition to acting as an indication of adequate lubrication, provides additional protection against the entry of foreign matter. To prevent premature bearing failure, always ensure that the grease nipple, grease gun end, and the grease itself, is clean and free of any dirt, grit, paint or foreign matter.



Planetary Gearbox

** See the following pages for oil changing instructions, trouble shooting and detailed plumbing diagrams*

To check the oil in the gearbox, use the reserve tank attached to the mixer tub.

Ideally the level should be half-way in the tank.

If the level is slightly low, remove the breather on the reserve tank and add (never fill above the max. level line). Keep in mind that it will take a while for the level in the tank and the level in the gearbox to even out.

This is best checked when the mixer has been running for a period of time and the oil is warm. As well, the mixer should be located on level ground.

To ensure that the correct oil is used consult the **Lubrication Spec's Chart**.

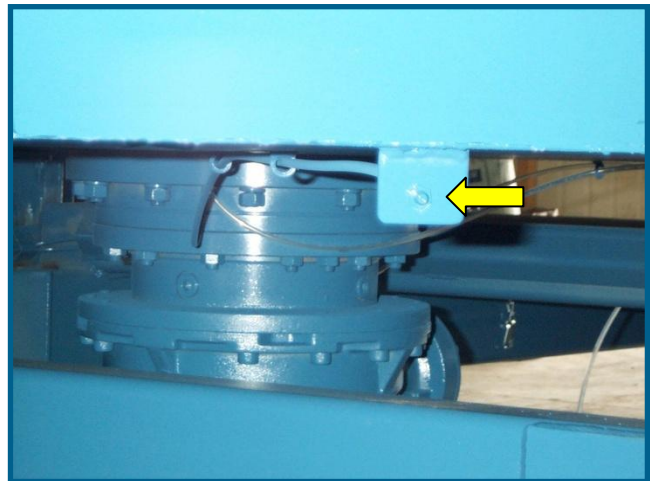
If the oil needs to be changed, follow the instructions on the next pages.



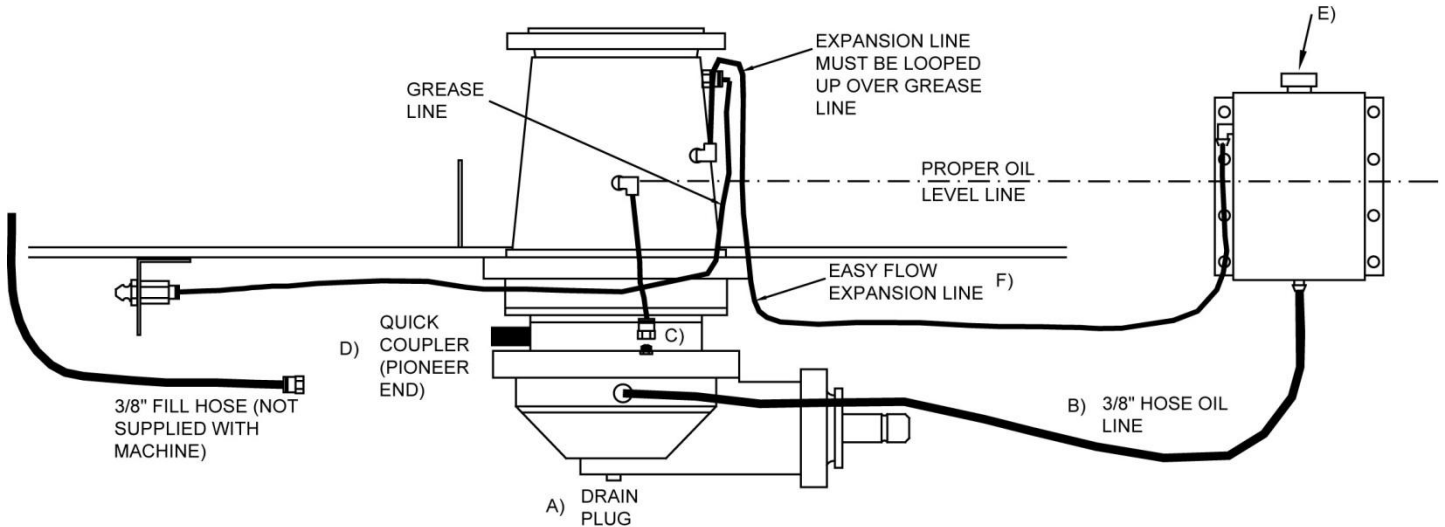
To grease the gear box there is a grease zerk at the rear of the mixer which runs to the planetary. Grease should be pumped into this grease zerk while the machine is running. Greasing can be done in two different methods.

1. Greasing the chamber completely (pump 0.5kg of grease into the line) 2 to 3 times a year.
2. Pump 100g of grease into the line every 2 weeks or month.

To ensure that the proper grease is used consult the **Lubrication Spec's Chart & the Service Schedule**.



PLANETARY OIL CHANGING PROCEDURE



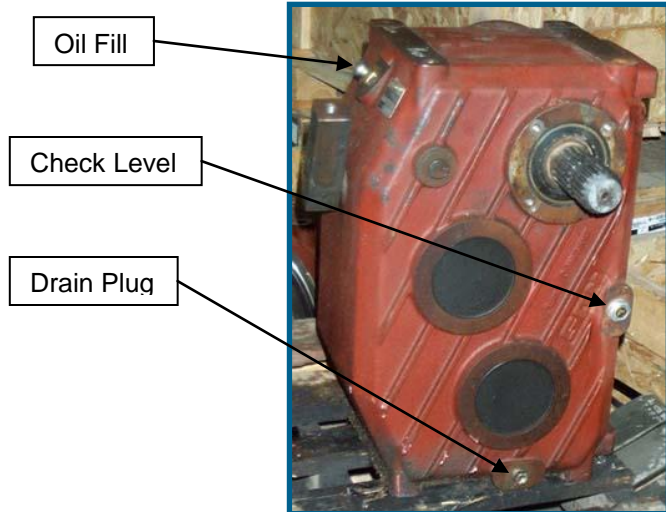
NOTE: * MACHINE SHOULD BE SITTING ON LEVEL GROUND
 * RUN MACHINE FOR A SHORT PERIOD OF TIME TO WARM THE OIL FOR EASY FLOW
 * OIL LEVEL SHOULD ALWAYS BE CHECKED WHEN OIL IS WARM
 * THERE IS APPROX. 20 L OF OIL IN THE PLANETARY, HAVE A SUITABLE SIZED CONTAINER AVAILABLE WHEN DRAINING THE OIL

- 1) REMOVE MAGNETIC DRAIN PLUG FROM PLANETARY (A)
- 2) REMOVE LINE FROM PLANETARY TO OIL RESERVOIR (B) AT THE PLANETARY END
- 3) DRAIN ALL OIL FROM PLANETARY AND RESERVOIR
- 4) RECONNECT OIL LINE FROM PLANETARY TO OIL RESERVOIR (B)
- 5) CLEAN THE MAGNETIC DRAIN PLUG (A) OF ANY METAL FILINGS OR DEBRIS (IF THERE ARE ANY LARGE FILINGS ON THE PLUG CONTACT YOUR DEALER).
 REINSTALL THE MAGNETIC DRAIN PLUG
- 6) REMOVE THE PLUG (C) - THIS WILL ALLOW AIR TO ESCAPE OUT OF THE PLANETARY WHEN FILLING THE PLANETARY WITH OIL AND WHEN OIL RUNS OUT OF THE LINE THIS WILL INDICATE WHEN THE PLANETARY IS FULL
- 7) THERE IS TWO DIFFERENT METHODS TO FILL THE PLANETARY WITH OIL
 - a) CONNECTING A SHORT FILL HOSE TO THE PIONEER QUICK COUPLER AT (D) (THE PREFERRED/FASTEST WAY)
 - b) FILLING THE OIL RESERVOIR (E) AND APPLYING 10 PSI AIR PRESSURE TO PUSH THE OIL INTO THE PLANETARY AND REPEATING UNTIL FULL (IF NO PUMP IS AVAILABLE)
- 8) THE PLANETARY IS FULL WHEN OIL RUNS OUT OF THE LINE (C) (CAPACITY APPROX. 20 L)
- 9) REATTACH THE PLUG AT (C)
- 10) FILL THE OIL RESERVOIR UP UNTIL IT IS HALF FULL
- 11) RUN THE MACHINE FOR APPROX. 5 MINUTES THEN RECHECK THE OIL LEVEL. TOP UP IF NECESSARY, DO NOT OVERFILL. IF OVERFILLED, REMOVE PLUG (C), DISCONNECT EXPANSION LINE (F) FROM RESERVOIR TANK. APPLY 10 PSI AIR PRESSURE TO EXPANSION LINE (F) UNTIL AIR COMES OUT OF PLUG (C) LINE, ONCE COMPLETE, REPLACE PLUG (C)
- 12) CHECK THE OIL LEVEL AGAIN AFTER THE MACHINE HAS SAT IDLE FOR 12 HOURS

Two Speed Gearbox

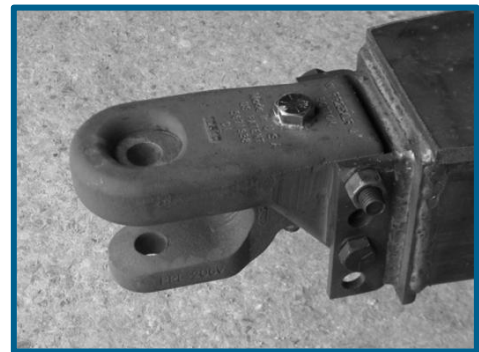
To check the oil level in the two speed gearbox fill the gearbox with oil in the oil fill plug (as shown) to the check level plug. To drain the oil, remove the drain plug located on the bottom of the gearbox.

To ensure the correct oil is used consult the *Lubrication Spec's Chart*.



Adjustable Hitch

The bolts holding the adjustable hitch must be kept tight at all times. Check bolts regularly. If bolts need to be replaced, they must be Grade 8 bolts. Use an adequate length of bolt to ensure the shoulder contacts the mounting plate at each side. The bolts holding the hitch to the frame should be alternating (one pointing one way, one the other).



PTO Drive Shaft (Trailer Models)

It is **important** that the owner/operator read this section and the information supplied by the PTO manufacturer. The trailer unit incorporates a PTO coupling shaft containing several important features and warnings:

--1. Safety Shields

These shields should be left in place at all times to prevent injury.

--2. Shear Bolt- The PTO shaft used on current model uses a shear bolt mechanism to protect the tractor and mixer from serious damage.

	Single Screw	2580/2690	2820/2950/21125
540 rpm	10m x 60 GR8.8 12-8260-00	n/a	n/a
1000 rpm	10m x 60 GR6.6 12-8260-10	10m x 60 GR6.6 12-8260-10	12m x 65 GR8.8 12-0507-00

- 3. Do not wear loose clothing when operating the PTO, or when near any rotating equipment.
- 4. When operating stationary PTO driven equipment, apply the tractor parking brake lock and block the rear wheels front and back.
- 5. To avoid injury, do not clean, adjust, unclog or service PTO driven equipment when tractor is running.
- 6. Never exceed the recommended operating speed for the particular equipment in use.
- 7. PTO shafts must only be used for their intended purpose and are designed for only that machine.
- 8. Ensure clamping collar bolts are securely tightened to fasten on to mixer input shaft. Tighten set screw on key.
- 9. Push locking pin and simultaneously push PTO drive shaft onto PTO shaft until the locking device engages. Ensure that the PTO shaft is securely connected before use.
- 10. The maximum joint angles must be observed or serious injury and damage could occur.

Continuous Operation-	25 deg.
Short duration-	45 deg.
Non-rotating-	80 deg.
- 11. Avoid contact between the PTO shaft and tractor or implement.
- 12. The chain is intended to prevent the shield from rotating against non-moving parts, preventing shield damage. A properly installed chain will increase the service life of the shield.
- 13. Chains must be fitted so as to allow sufficient rotation of the shaft in all positions. Be sure that chain does not become entangled with drawbar hitch or other restrictions during operation or transport.
- 14. The PTO drive shaft must not be suspended from the chain.
- 15. **Lubricate with quality grease before starting work and every 8 operating hours.** Clean and grease the PTO drive shaft before each period of prolonged non-use. The molded nipples on the shield near each bearing are intended as grease fittings and should be lubricated every 8 hours of operation. Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided. Those without fittings should be pulled apart, cleaned and re-greased manually. Check and grease the guard tubes in winter to prevent freezing.



6. Service Schedule

The following items are to be checked and, if necessary, corrective action taken. This schedule is designed for units operating under normal conditions. If the unit is operating in adverse or severe usage conditions it may be necessary for the items to be checked and serviced more frequently.

Note: a visual inspection of all planetary oil lines, hydraulic hoses and grease lines should be done regularly. Any yellowing of oil lines, or wet / dirty spots on hoses are possible signs that cracks are forming on hoses and repairs are necessary.

Check & Inspect the Following Every:	Daily or 8 HRS	Weekly or 50 HRS	Quarterly or 500 HRS
Auger Drive System			
PTO bearings, slides & crosses - lube	X		
Disassemble PTO shaft - wash and lube steel tubes		X	
Planetary oil level (sight glass on reserve tank) - check	*X		
2 speed gearbox oil level (plug on gearbox) - check	X		
Planetary(s) & 2 speed gearbox - drain & refill			**X
Planetary - grease (2 - 3 pumps)		***X	
Lift auger screw off planetary - clean around planetary and inspect oil and grease lines			X
Discharge System			
Bearings - grease	X		
Raise & lower hinge - lube	X		
Chain, sprockets & bearings - check for wear & adjustment		X	
Hydraulic System (if equipped)			
Hydraulic Fluid	X		
Hydraulic Fluid Drain & Refill			**X
Leaks in System	X		
Hydraulic Filter Change			**X
Tire, Hub & Spindle			
Tire pressure - check	X		
Hub & spindle (trailer axle style) - check oil	X		
Hub & spindle (trailer axle style) - change oil			X
Hub & spindle (standard hub style) - grease	X		
Hub & spindle - check wheel bolts		X	
Scale Operation			
Check weigh bars for loose bolts		X	
Check scale wires for damage		X	
Power up scale and do a weight test (put weight on each corner of machine)		X	

* When mixer is sitting level and oil is warm

** Drain & Refill after the first 100 Hours

*** Once a year use complete tube of grease (approximately 1 lb / 0.5 kg)

Service Schedule

Mixer Information *Please fill in the following:*

Model # _____ Serial # _____

Please circle one of the following:

	<i>Equipped with 2 Speed Gearbox:</i>	<i>PTO Speed:</i>
Single Vertical	Yes	540 rpm
Twin Vertical	No	1000 rpm

Date Machine Put Into Service _____

of Times Feeding / Day _____ Average Load Size _____ lbs or kg

Time per load _____ min

Farm / Operation Name: _____

Dealer: _____

Service Record*

Hours	Date	Signature	Service Performed / Comments
100			
600			
1100			
1600			
2100			
2600			
3100			
3600			
4100			
4600			
5100			
5600			
6100			
6600			
7100			
7600			
8100			
8600			
9100			

** Note: hours given are for planetary oil changes and major services, all regular service must be completed as per service schedule.*

7. Lubrication Specifications

Drive line Bearings
 Splined Drive Line Yokes
 Shear Bolt Yokes
 PTO Shaft
 Discharge Conveyor Bearings..... **NLGI #2 or #3 Lithium Base Grease**

Planetary Gearbox(s) & 2 Speed Gearbox..... **Mobil SHC 629**
Esso SHP 150
Shell Morlina S4 B 150
(synthetic oils listed)] *

Capacities - Planetary Gearbox - approx. 20 Litres (5.25 gallons)
 2 Speed Gearbox - Small approx. 6 Litres (1.5 gallons)
 Large approx. 12 Litres (3 gallons)

Hydraulic Oil..... **SAE-10 ISO 32 or Equivalent**
Indol #32
Dextron #32

** - Helm Welding recommends the use of synthetic oils in all planetary and 2 speed gearboxes. Gearboxes are filled with synthetic oils at time of manufacture.*

8. Appendix - Digi-Star Scale Setup (Pounds to Kilograms)

1. Press (ON) to turn on power
2. Press and hold (ZERO) button first and then press and hold (ON) button while (ZERO) button is still being pressed. Hold down both buttons for 3 seconds. (If (ON) button is pressed before (ZERO) button then scale head will go into TEST mode so shut off head and start again)
3. SETUP will appear and then a 6 digit number will display. This is the setup number telling the scale whether pounds or kilograms are being used along with the weighing increments. See the chart below for various setup numbers.
4. Using the (TARE) key, move the cursor (the flashing number) from the right side to the left.
5. Using the (NET/GROSS) key, change the numbers one at a time until the number is changed to the one desired.
6. Press the (ON) key twice to exit the setup mode.
7. To change the calibration number, repeat steps 1. and 2. above. Press (ON) once to enter the calibration mode. A five digit number will display. See the chart below for various calibration numbers.
8. Repeat steps 4. and 5. to change the calibration number.
9. Press the (ON) key once to exit the calibration mode. (If (ON) is pressed twice it will enter TEST mode).

Bar Setup	Weight Setup	Setup number	Calibration number
4 bar - 2 1/8	pounds (10 lbs)	146040	32640
4 bar - 2 1/8	pounds (5 lbs)	145040	32640
4 bar - 2 1/8	pounds (2 lbs)	144040	32640
4 bar - 2 1/8	kilograms (10 kg)	546040	14805
4 bar - 2 1/8	kilograms (5 kg)	545040	14805
4 bar - 2 1/8	kilograms (2 kg)	544040	14805
3 bar - 2 1/8	pounds (10 lbs)	146030	24410
3 bar - 2 1/8	pounds (5 lbs)	145030	24410
3 bar - 2 1/8	pounds (2 lbs)	144030	24410
3 bar - 2 1/8	kilograms (10 kg)	546030	11072
3 bar - 2 1/8	kilograms (5 kg)	545030	11072
3 bar - 2 1/8	kilograms (2 kg)	544030	11072
3 bar axle - 2 1/2	pounds (10 lbs)	146030	24080
3 bar axle - 2 1/2	pounds (5 lbs)	145030	24080
3 bar axle - 2 1/2	pounds (2 lbs)	144030	24080
3 bar axle - 2 1/2	kilograms (10 kg)	546030	10922
3 bar axle - 2 1/2	kilograms (5 kg)	545030	10922
3 bar axle - 2 1/2	kilograms (2 kg)	544030	10922

Suggested Weight Increments based on mixer cubic foot capacity:

Models under 300 cu. ft. set to 5 pound or 2 kilogram increments

Models of 300 cu. ft. and larger set to 10 pound or 5 kilogram increments