

# BALE KING

Vortex 3110

*Bale Processor*



*Serial # BK3660 & Up*

Your Authorized Dealer

## TABLE OF CONTENTS

Introduction	2
Warranty Information	3
Safety Precautions	4
PTO Safety Labels	5 & 6
PTO Use and Maintenance	7 & 8
PTO Lubrication	9
PTO Assembly and Disassembly	10 & 11
Greasing & Lubrication	12
Tire Inflation & Rating	13
Use and Maintenance of PTO Safety Devices	13
PTO Holder & PTO Hookup	14
Fine Chop Kit (option)	15
Shear-bolt Clutch PTO Shaft	16
Horsepower Requirements	17
Twine Guards	17
Implement Tongue	18
Hydraulic Hookup	18
Wheel Hub and Twine Guard	19
Constant Velocity PTO Joint Shielding	20 & 21
Loading Bales	22
Hoop Grate Adjustment	23
Deflectors	24
Rotor Operation	25
Rotation of Bales	25
Removal of Twine	26
Flail and Bushing Replacement	27
3 x 3 Bale Tine Installation	27
Cylinder Maintenance	28
Trouble Shooting Guide	29
Features and Specifications	30

## INTRODUCTION

Thank you for purchasing your new Bale King  
bale processor.

With the proper service and operation as outlined in this  
manual, the Bale King will provide you with years of  
trouble-free operation.

## SERIAL NUMBER LOCATION

**The Serial Number is located on the upper left hand  
corner of the tub.**

## WARRANTY INFORMATION

Bridgeview Manufacturing Inc. warrants the Bale King Vortex 3110 to its original owner for a period of two years from the date of purchase according to the following provisions:

### **Normal Farm Use:**

1st year warranty covers parts and labour

Exception: Flails are considered a wearing part and covered for breakage for 60 days from purchase date.

2nd year warranty covers parts only.

### **Commercial, Government, or Rental Use:**

1 year warranty covers parts and labour  
Exception: Flails are considered a wearing part and covered against breakage for 60 days from purchase.

- Warranty covers defects in material and workmanship.
- Warranty does not cover damage to the machine and its components if the operator does not follow the operating instructions in the operator's manual.
- Warranty does not cover normal wear and tear.
- Warranty will be VOID and Bridgeview Manufacturing Inc. is not liable in any way if the Bale King Vortex 3010 is used for any purpose other than its intended use.
- Tire Warranty is covered by the Tire Manufacturer.

All warranty service must be handled through an authorized Bale King dealer.

Any repairs after the warranty period are the owner's responsibility. Any Overtime requested by the owner to have the machine repaired during the warranty period will be the owner's responsibility.

Warranty is at the dealership and no travel time will be reimbursed. Freight costs associated with warranty repairs are not reimbursable. Warranty does not cover downtime.

Warranty will be VOID if any component is altered or modified in any way, unless written permission is given by Bridgeview Manufacturing Inc. Bridgeview Manufacturing Inc. reserves the right to make changes or improvements at any time without notice or obligation.

## SAFETY PRECAUTIONS

The following safety precautions **MUST** be followed to ensure safe operation of the Bale King Bale Processor.

1. **ALWAYS** turn off the tractor when leaving the operating platform.
2. **DO NOT** stand in front of the discharge chute while the machine is running.
3. **DO NOT** walk or move under bale forks when in the upward position.
4. **DO NOT** enter the machine while in operation.
5. **DO NOT** clean machine while in operation.
6. **DO NOT** stick any device into the machine to clear debris while the machine is in operation.
7. **ALWAYS** turn off the tractor when cleaning the machine, removing twines, or hooking/unhooking the machine.
8. **ALWAYS** use safety chain tow ring located directly behind the hitch on the underside of the hitch frame when pulling the machine on the highway.
9. **DO NOT** operate if any part of the PTO safety shielding is missing or is not secured.

## PTO SAFETY LABELS

The operator must obey all safety labels and must maintain the proper shielding. A high percentage of drive-line injuries occur when safety shielding is missing or not functioning properly.

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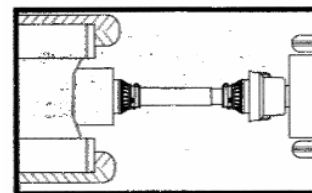
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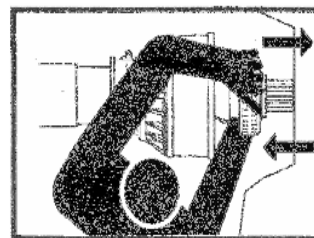
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Do not operate the machine without all driveline, tractor, and implement shields in place. Drive-line shields must turn freely on the driveshaft.



Before operating the machine, be sure drive-lines are attached **securely** to the tractor and to the implement. Check the tractor yoke.



Keep operators and bystanders  
Away from all moving parts.



**NOTE:** Contact with a rotating drive-line can cause serious injury or death.

## PTO USE & MAINTENANCE

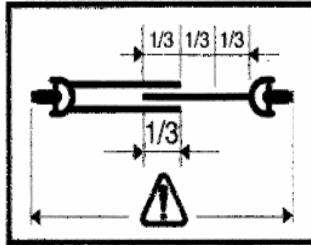
### Safety:

Shut off the tractor engine and remove the key before doing any maintenance on the machine. Use **genuine parts when replacing any worn or damaged PTO components.**



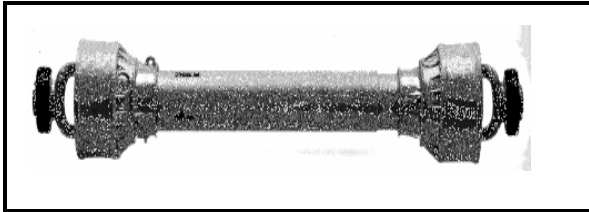
### Length:

Confirm the minimum and maximum working lengths of the drive-line. The telescoping tubes must overlap at least  $\frac{1}{3}$  of their length when in use.



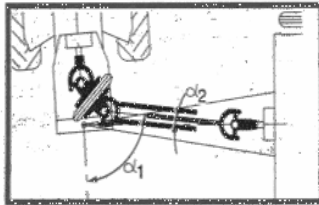
### Shielding:

Be sure that the shielding is not damaged and rotates freely on the drive shaft.



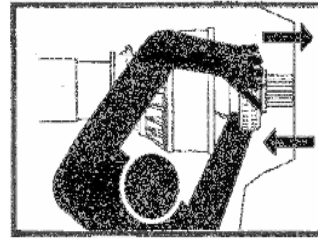
### Working Angles:

Constant Velocity joints can operate up to 80 degrees for short periods of time. Do not operate for long periods on sharp angles.



### Attachment:

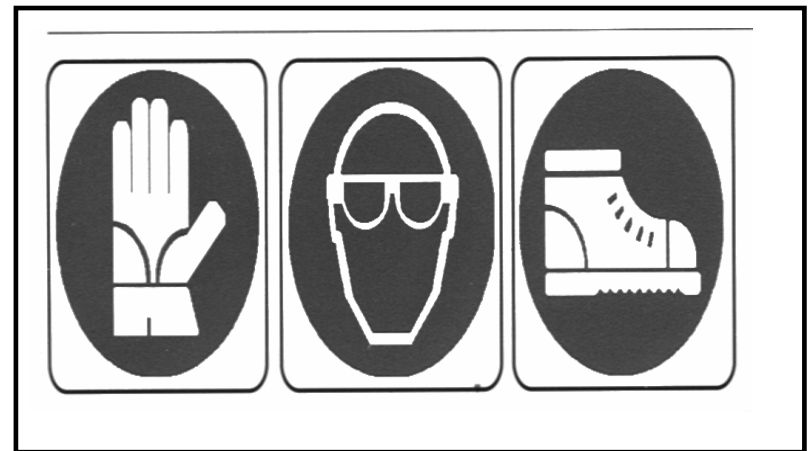
Be sure the drive-line is properly attached and all bolts and screws are tight on the implement input shaft and on the tractor PTO shaft.



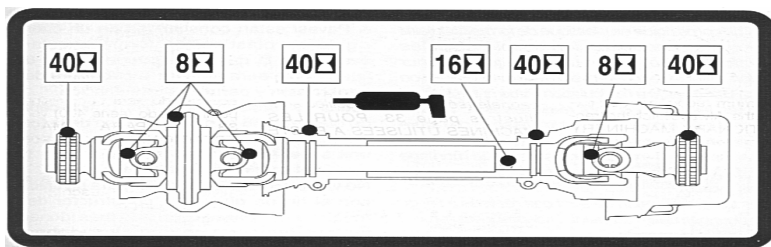
### Storage:

When not in use, cover or protect the drive shaft from the weather. When removed from the machine store both halves together to prevent damage. Check all components for proper function and lubrication before use.

**BEFORE ATTEMPTING ANY REPAIR PROCEDURES, ALWAYS USE APPROPRIATE EQUIPMENT SUCH AS SAFETY GLASSES, SAFETY SHOES, AND GLOVES.**



## PTO LUBRICATION



**Frequent lubrication is required. Grease the driveline parts as required on the chart.**

**After Storage** for long periods of time, lubricate and check the function of every driveline component before operating.

**Check** to see that all locations are lubed as per chart. Failure to grease all the joints will **void** warranty.

Lubricating the Bale King bale processor should be done on a regular basis.

### The grease nipples are located:

- on each end of the main rotor bearings blocks (grease every 250 bales).
  - at the bearings of the beaters (grease every 250 bales)
  - on the bale fork pivot (2 grease nipples every 250 bales)
- on the wheel hubs (seasonally), or more often if traveling long distances.

## GEAR BOX

There is one grease nipple on the front of the gear box. Apply 2-3 strokes of good quality grease every 8 hours.

The gear box requires 80W/9- gear oil. The oil should be filled to the level plug and checked on a regular basis.

### The change interval is as follows:

Change oil 25 hours after first use

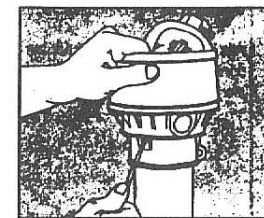
Change oil 25 hours after first change (50 hours of use from new)

Change oil every 300 hours after or yearly which ever comes first

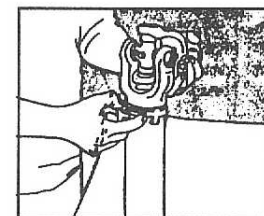
## PTO ASSEMBLY & DISASSEMBLY

### Shield Disassembly

To remove the shield, push down on cone and press in the three tabs to disengage the locking nylon bearing.



Remove the nylon bearing to remove the plastic tubes.

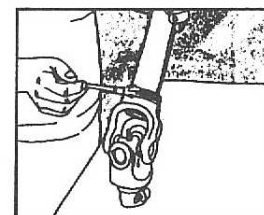


To remove the guarding from the outer yoke, press in tabs and, at the same time, pull the guard forward.

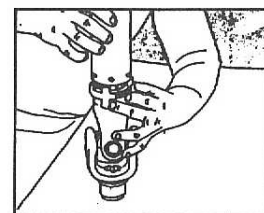


### Shield Assembly:

Grease shield bearing groove on inner yokes.

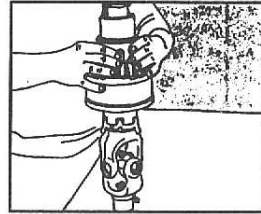


Put the bearing tabs into the slots of the plastic tubes.

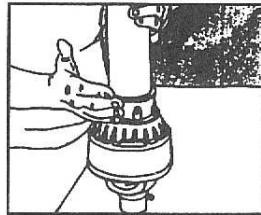


## BALE TINE INSTALLATION

Place the cone over tube and align the molded grease fitting with the grease channel on the bearing. Force the cone over tabs until they are firmly locked.

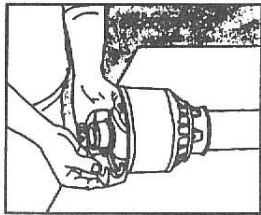


Lightly tap the cone to be sure tabs are correctly aligned and locked.

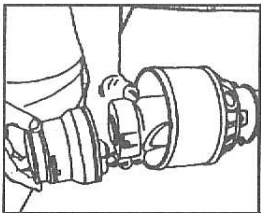


### **Full Shield Yokes:**

To assemble full shielding, place the bearing halves over the yoke.



Push in tabs on the full guard, align properly, and push over bearing. Release tabs and check for correct function.



To install the 3 x 3 bale tine, remove the cotter key on the hinge pin at the bottom of the main forks.

Slide the tine into the slot at the bottom of the forks, align holes and insert the hinge pin.

Install the cotter key in the pin and spread the cotter key to insure the hinge pin does not accidentally fall out.

There is an optional tine kit for small bales available from your Bale King Dealer.



## TIRE INFLATION & RATING

**The proper tire inflation for the Model TR 3110 with 16.5L-16.1 6 ply tires is 24 psi.**

Proper tire inflation will help alleviate a puncture problem when pulling and operating the machine on rough terrain.

Maximum speed for agricultural tires is 25 mph or 40km/h

**NOTE: Check and tighten wheel bolts regularly to ensure that bolts are tight!**

Warranty does not cover damaged rims and hubs due to loose wheel bolts.

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## Vortex 3110 Grain Unit

Grain tank capacity is 42.5cu.ft. or approximately 40 bushels.

A hydraulically driven auger elevates the grain and drops it on the windrow.

A flow control valve lets you adjust the speed of the auger so you can meter the grain deposited on the windrow or into the bunk.

A door is provided at the bottom of the tank for clean out if required.

## PTO HOLDER

A PTO shaft holder is standard with your new Bale King 3010 for safe storage of the shaft when the processor is not in use.

When unhooking the PTO shaft from the tractor, lift the free end of the PTO shaft up and place it in the holder provided. This will keep the shaft away from the hitch when hooking the tractor to the machine and keep the clear from snow and ice.

## PTO HOOKUP

Your Bale King Processor has a PTO shaft which is splined at both ends. The machine end uses 1 3/4 -20 spline with a wedge lock bolt. Install on shaft and tighten bolt. Wedge bolt should be tightened to 160 ft/lbs. and retorqued after 8 hours of use. The tractor end comes standard with a 1 3/8-21 spline quick detach and constant velocity joint. An optional 1 3/4-20 spline yoke is available through your Bale King dealer. Don't use pto adaptor to operate machine. Warranty doesn't cover damage to driveline caused by using PTO adaptors.

Always ensure that PTO shaft is attached securely to tractor. When processor is not hooked the the tractor store the shaft on the PTO holder.

Do Not transport processor without securing PTO shaft. It may bounce off holder and be damaged.

Always ensure that the drawbar is adjusted 16" from the end of the tractor PTO to the center of the hole in the drawbar.

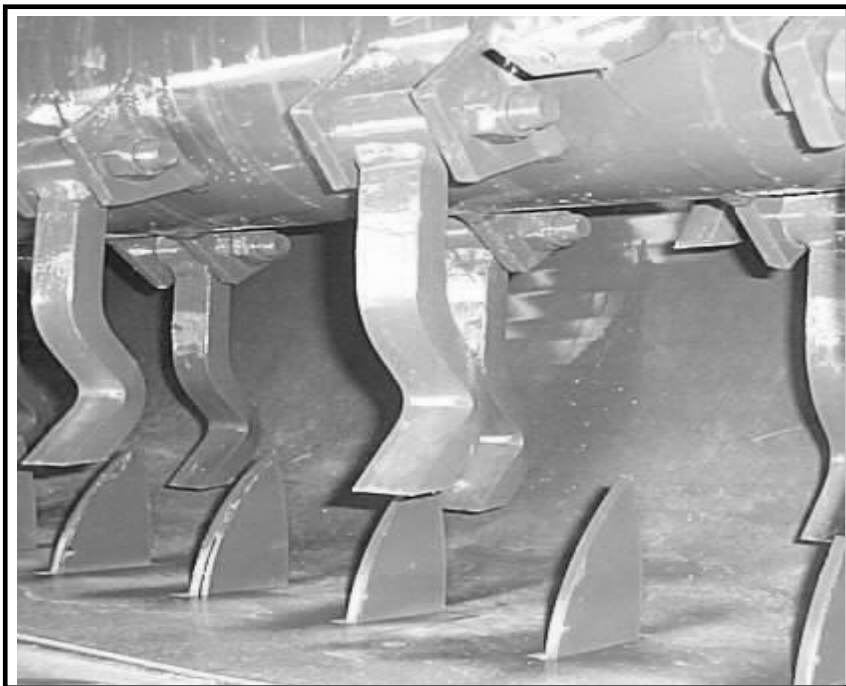


## OPTIONAL FINE CHOP KIT

The 3000 series Bale King processors have an optional fine chop knife kit available to go into the lower tub area.

This option is available if you require a shorter cut on the material which you are processing such as slough hay and silage bales.

It is recommended that the knives be lowered when bedding straw as it will affect your spread pattern. Adjust the machine as needed.



## SHEAR-BOLT CLUTCH PTO SHAFT

All new Bale King Processors are equipped with a shear bolt clutch located at the machine end of the PTO shaft.

The shear-bolt is 10mm x 60mm grade 8.8. The metric shear-bolt must be used. Any other size will damage the shear assembly.

If your shear-bolt is shearing excessively you may be over-loading the machine. If this occurs raise the grate assembly to make the machine less aggressive.

Also roll the bale more slowly. Always ensure that your machine is running at 1000 PTO RPM.

**NOTE: Please consult your local dealer to help pinpoint any problems.**



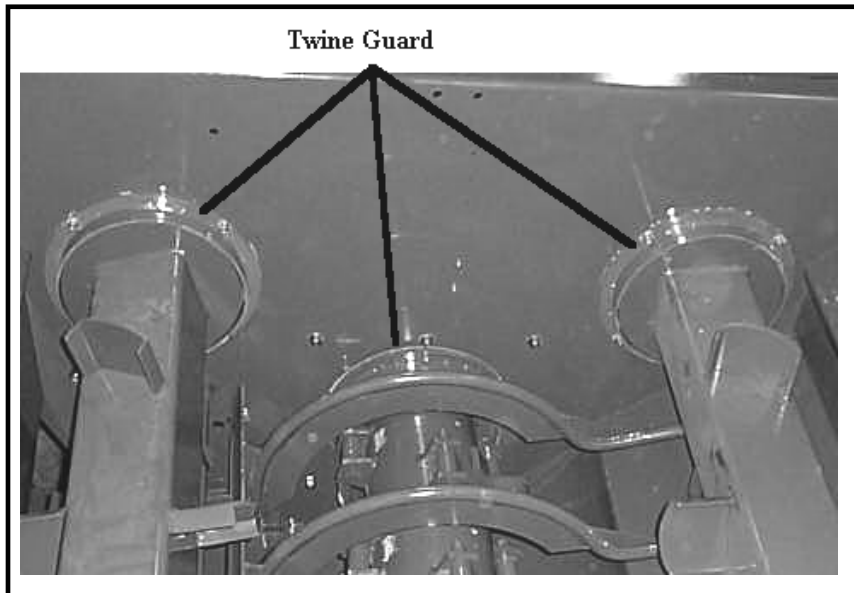
## HORSEPOWER RATING

The Bale King Processor is designed to use a minimum of 75 HP. The drive shaft is shear-bolt protected. The machine must be operated at 1000 PTO RPM.

**NOTE: Spread yokes and twisted drive shafts are signs of overload, not a manufacturer's defect and therefore not covered by warranty.**

## TWINE GUARDS

The main rotor and the beaters are equipped with removable twine guards. The guards are mounted to the front and rear wall of the machine. The twine guards are bolted and need to be removed if you need to remove or tighten the bolts on the bearings or the hydraulic motors.



## IMPLEMENT TONGUE

The new adjustable hitch on the Bale King features a casted single tongue with hammerstrap insert. This allows the use with tractors equipped with the hammerstrap or single drawbar. This allows the machine to move over rough terrain independently without bending or breaking the hitch pin.

Adjust the hitch to level the machine. A level machine helps keep the bale in the center of the processing area.

## HYDRAULIC HOOKUP

### Standard:

There are two sets of hydraulics required to operate the TR 3110 Bale King. The pairs of hoses are marked with different coloured sleeves for ease of hookup.

### Colour codes for hydraulics:

Blue Sleeve Hoses operate the bale fork  
Red Sleeve Hoses operate the beaters which rotate the bale

## WHEEL HUB & TWINE GUARD

Wheel bearings should be inspected periodically for adjustment and lubricated annually.

To tighten the wheel bearings, lift up each wheel (one at a time) until the wheel spins freely. remove dust cap and the cotter pin which retains the nut. Tighten the nut until the wheel will rotate approximately two turns when given a firm spin.

Align castle nut to closest hole and insert the cotter pin. Re-install the dust cap and lube if required.

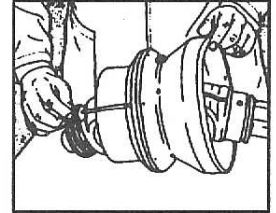
The twine guard will help keep twines away from the bearing seal. Remove twine any time you notice it on the axle.



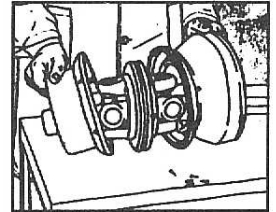
## CONSTANT VELOCITY JOINT SHIELDING

### Disassembly:

Remove the screws holding the half shells together.

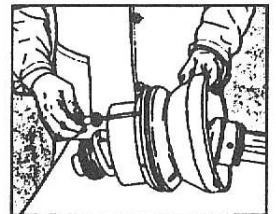


Separate the half shells and remove them from the joint. Check all the components and replace any damaged or worn parts.



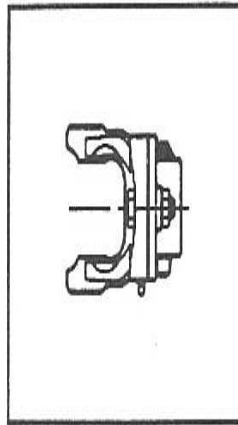
### Re-assembly:

Lubricate the bearing surfaces machined on the CV body. Align the two half shells and reinstall the screws.



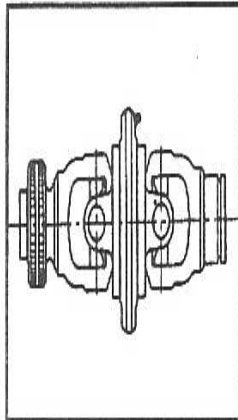
### SB- Shear-bolt Torque Limiter:

Replace sheared bolt with bolt identical in size and grade to the original.



### OC - Constant Velocity Joint:

Lubricate according to the hour chart previously mentioned and after long periods of non-use.



## LOADING BALES

**When loading bales into your Bale King bale processor, the following procedure should be followed:**

- Position the tractor and the Bale King so as to be lined up to back straight into the row of bales.
- When close to the bale, lower the forks totally (you will feel a slight vibration as the forks bottom out against the frame.)
- Back completely under the first bale.
- Allow the tractor to push forward while lifting the bale because the bale fork moves away from the machine while loading. If you are loading from the same row you can dump the bale into the machine and back straight back for the second bale. If you are going to a different stack for the second bale only raise the first bale enough to clear the ground. Move to the next row and align the machine to the bale before dumping the bale into the tub. This gives you good visibility to line up to the second bale.
- Once you have the first bale in the tub and the second bale on the forks, raise the bale fork about  $\frac{1}{4}$  of the way up. You now can transport to your feeding area to begin processing. **Note:** Carry the bale as low as possible so that there is less stress on the cylinder shafts. Carrying the bale high may bend hydraulic cylinder shafts.



## HOOP GRATE ADJUSTMENT

There are 7 adjustment settings for the hoop grate on the Bale King bale processor. These settings determine the rate of feed of the bale you are processing and the how fine the cut will be.

**Position #1** - Highest grate setting for finest cut and slowest rate of feed. Used for tough processing feeds such as silage bales and some types of hay.

**Position #2** - #6 Normal operating range. Machine gets more aggressive as grate

**Position #7** - Lowest grate position, Mo

The Bale King should be adjusted conditions to achieve a rate of feed minutes. Light brittle material such faster processing while tough stringy material such as slough hay, green feed, or flax will require slower processing. Hoop grate adjustment should be checked periodically.



**NOTE: Processing a bale more rapidly than this may cause unnecessary machine deterioration.**

**NOTE: Upper grate position should approximately -1/4" flail protrusion. Lower grate should allow 1 1/4" flail protrusion. Contact your Bale King dealer if this can't be achieved.**

The grate assembly can be removed from the machine by removing the linkage bolts and the 3/8 bolts on the opposite side. the grate will lift out the top.

## DEFLECTORS

### SIDE DEFLECTOR

Your new Bale King is equipped with a hydraulic deflector and an electric diverter valve. This allows you to use only two remotes on your tractor. The rear fork, side deflector, and wing/feed are operated by the same hydraulic lever. The middle position on the switch operates the rear forks. The deflector or wing/feed operates when you move the switch to that position. The deflector position is standard on all models, while the wing/feed is used only on 4000, 4100 or 3010, 3110 models.

The control box requires 12 volt power. The **Black** wire is power and **White** wire is ground.  
**Note:** Always attach the control box to **keyed** power to avoid draining the tractor battery when tractor is not being used.

### BOTTOM DEFLECTOR

Located at the bottom of the discharge opening is a deflector which can be adjusted up or down to suit your feeding and bedding needs. It adjusts with a handle and a spring loaded pin on the front of the Bale King.

Bedding- To bed an open area or corral, raise the side deflector to the upper position to allow straw to blow out evenly. The bottom deflector can be adjusted part way up or down to aid in distribution.

Windrowing- To windrow feed along the ground simply lower the side deflector to the desired height and adjust the bottom deflector to the lower position.

Bunk Feeding- Adjust the side deflector to clear the bunk and raise the bottom deflector up to throw the material up against the deflector. Drive along the bunk and process.

## ROTOR OPERATION

To engage the rotor for processing of a bale, be sure the PTO shaft is properly connected to the tractor. Tractor must be at idle speed when engaging the PTO. After the PTO has been fully engaged, increase pto speed until it has reached 1000 RPM. Running the processor at any speed less than 1000 PTO RPM may result in the flails springing back against the rotor after they have come in contact with the bale. This “backslap” may cause flails to fatigue and excessive vibration which may cause bearing failure. Bales may be dumped into the tub while the rotor is stopped or while it is running

## ROTATION OF BALES

The Bale King is equipped with a flow divider/combiner and two hydraulic motors for turning the bale.

Once the main rotor is turning at full speed the bale can be turned in either direction to begin processing. The faster the bale is turned in either direction, the faster it will be processed.

It may be necessary to change direction of the bale when loose debris builds on either side of the bale chamber. This will remove the loose debris preventing spillage from the machine.

This is especially true when processing soft core bales. By reversing direction regularly, soft core bales will process more evenly.

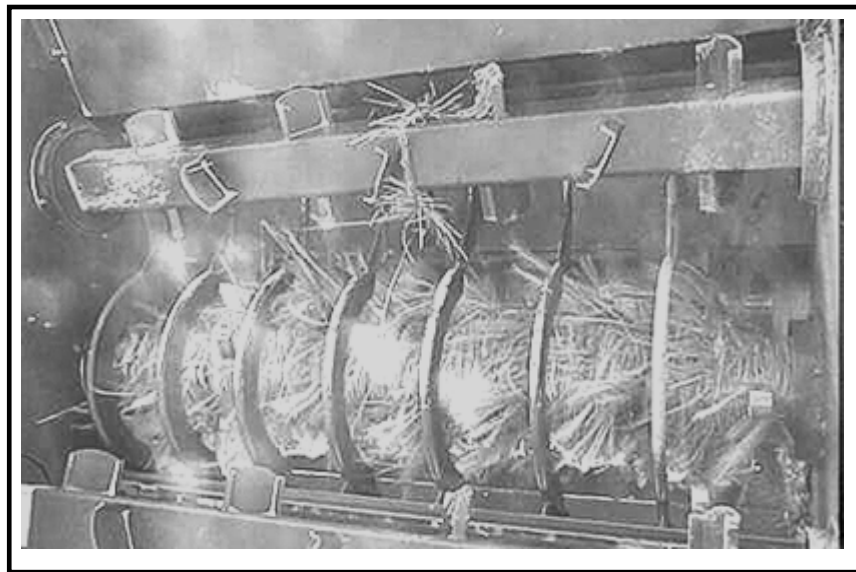
When the first bale has been processed, it is common practice to leave the rotor turning at full speed when loading the second bale into the bale chamber from the rear forks.

If the tractor has a flow control, start at a low rate. Turning bales too fast can result in rotor overloading resulting in flail backslap which in turn causes flail and bushing damage.

## TWINE REMOVAL

Before attempting the removal of twine from the main rotor, be sure the machine is stopped and the tractor shut off and placed in park. Twines can then be removed with the use of a utility knife or other knife. An electric device is available from some suppliers which melts through the twine and allows it to be pulled off. It is not allowed to burn the twine from the rotor as this has several adverse effects:

1. **It may take the temper out of the steel, rendering it weaker.**
2. **Loose straw and hay remaining in the machine may ignite causing a fire in the processor.**
3. **Excessive buildup of melted plastic.**
4. **Dry out bushings causing them to wear prematurely.**



**NOTE: Bridgeview Manufacturing Inc. VOIDS warranty if twine burning occurs.**

## FLAIL & BUSHING REPLACEMENT

Flail replacement is accomplished by removing the special ¾” bolt holding the flail to the rotor. The flail is then lifted away from the rotor. The bushing can now be removed by using slight pressure to push it out of the flail. Inspect the bolt, bushing, and flail for wear. If wear is excessive, replace with new parts.

Bridgeview Manufacturing Inc. recommends when changing flails to change in pairs (opposite each other). Processing bales with broken flails causes the rotor to be out of balance and excessive vibration may cause machine deterioration.

### **WARNING:**

**Do not walk or stand in front of the discharge chute while processing. Never direct discharge chute at cattle while processing!**

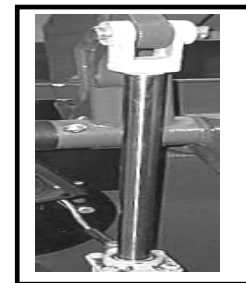
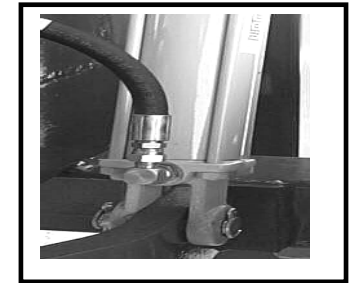
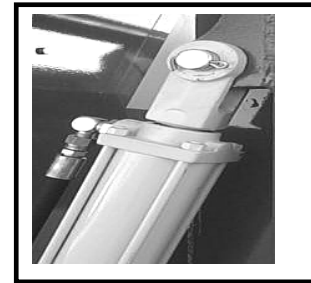
## CYLINDER MAINTENANCE

The hydraulic cylinders are easily removed for repair or maintenance simply:

1. Lowering the fork to the down position and unhooking the hydraulic lines.

**NOTE: Be sure there is no pressure on the lines and mark the lines as to their placement so there will be no confusion when it comes time to re-install the cylinders.**

2. Removing the cotter pins closest to the frame of the machine forks and sliding out the cylinder pins.
3. To re-install, reverse the removal procedure.



**NOTE: Always cover exposed cylinder shafts with grease to avoid rusting on shafts if unit is not used for extended periods of time. Rusted Cylinder shafts are not covered by warranty!**

## TROUBLE SHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY
Excessive main shear bolt breakage	Engaging PTO at high engine speed or too quickly	Idle tractor to engage PTO then bring up to full operating speed /feather PTO lever into position.
	Excessive twine wrapped on rotor causing flail movement to be restricted	Cut twine off rotor
	Broken flails causing rotor to be out of balance	Replace broken flails(in pairs opposite each other)
	Overloading rotor	<ul style="list-style-type: none"> <li>☞ Set hoops to less aggressive position</li> <li>☞ Slow rotation of bale</li> <li>☞ Change direction of bale rotation</li> </ul>
	Incorrect Shear bolt used	Use correct Shear bolt
Excessive vibration while processing bales	Excessive twine wrapped around rotor restricting full flail movement	Remove twine from rotor
	Broken or missing flails	Replace broken or missing flails(in pairs opposite each other)
	Hoops set in a position too aggressive for the type of material being processed causing an overload	Adjust hoops to a less aggressive position
	Rotating bale too fast causing rotor overload	Slow rotation of bale
	Operating machine at less than 1000 PTO speed	Operate machine at rated 1000 PTO speed
	Rotor bearing failure	Replace failed parts
Beaters stopping	Excessive loose material in tub causing beater to jam	Reverse direction of bale rotation Turn bale more slowly
A single beater stopping	Mechanical flow valve not functioning correctly	Contact your dealer for repairs

## FEATURES & SPECIFICATIONS

Rotor Extended tip Diameter	26 ½"
Disc Type Twin Guards	
Large Bale Chamber.	80"
Oil Impregnated Bushings in Flails	
Spring lock Lever Control for Grate Adjustment	
Hydraulic Control for Side Deflector Adjustment	
Heavy Duty Reinforced Frame and Axle Assembly	
Dual Hydraulic Lift Cylinders	3 x 20"
Bottom Deflector	8 x 80"
Grain Tank Capacity	40 bushels
Rotor Shaft 3" Stub Shaft 1 15/16	Lock Collar Bearing
Heavy Duty Square Jack	inside Frame
Adjustable Hitch	
Overall Weight	5250 lbs
Overall Width	114"
Overall Height	111"
Overall Length, without tines	190"
Overall Length, with tines down	234"
Frame Width	44.5"
Tread Width Centers	78"
Discharge Opening	10 ½ x 75"
Main Frame	4" x 8"
Bale Fork Frame	3" x 6"
Bale Fork Width Centers	49"
Tire Size (two)	Diamond tread 16.5L x 16.1 6ply
Inflation	24 psi.
Pto Shaft	Constant Velocity
Number of Flails	30
Flail size	3/4 x 1 ½ x 8 5/8"
Flail Tip Speed at 1000 rpm	7000 fpm
Minimum Horse Power.	75 hp
Shear Bolt	10mm x 60mm GR 8.8



## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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