

# Bale Pro<sup>®</sup>

## BP 965 Feed Chopper Operator Manual

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A DIVISION OF BOURGAULT INDUSTRIES LTD.

E20356\_C

# **Feed Chopper<sup>TM</sup> for the Bale Pro<sup>®</sup> 965**

## **Operator Manual**

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### **Highline Team Message**

***Congratulations on your purchase of the Feed Chopper for the Bale Pro® 965 manufactured by Highline Manufacturing.***

*This operator's manual has been prepared to provide information necessary for the safe and efficient operation of your Feed Chopper. In the manual you will find safety procedures, maintenance routines and detailed operational instructions.*

*If you find that you require information not covered in this manual, please feel free to consult your local dealer. Your dealer is always able to contact Highline for this technical information.*

*Highline Manufacturing thanks and congratulates you for selecting a Feed Chopper for the Bale Pro 965 as your machine of choice.*

*Highline Manufacturing*

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## **GENERAL DESCRIPTION OF THE FEED CHOPPER**

The Feed Chopper is an attachment to the Bale Pro® 965 (BP 965). When the Feed Chopper is engaged, it uses power from the flail drum of the BP 965 to run a belt drive for the Feed Chopper rotor.

When additional processing and chopping of feed material is desired, the Feed Chopper clutch is engaged and the Feed Chopper door is moved to direct material from the BP 965 into the Feed Chopper. This further chops the material before discharging it. The BP 965 must be turned off when the Feed Chopper drive clutch is engaged and the discharge door is being positioned.

When the Feed Chopper clutch is not engaged and when the Feed Chopper door is in the by-pass position, the BP 965 discharges material without any additional chopping.

The operator of the BP 965/Feed Chopper is located in the tractor cab to control the speed of driving and the speed of operation of the BP 965/Feed Chopper.

## **INTENDED USE OF THE FEED CHOPPER**

The Feed Chopper is designed to further process and chop animal feed materials that have been initially processed from a bale by the BP 965.

The Feed Chopper is designed to further process animal feed materials that have been initially processed from a bale.

The Feed Chopper is intended for use in farming applications.

The Feed Chopper is intended for off road use only.

The Feed Chopper is intended for use in locations away from people who could be harmed by the discharged materials.

Any uses of the Feed Chopper other than the above stated Intended Uses shall be considered misuse of the Feed Chopper. This misuse shall include (but not limited to):

- Using the Feed Chopper on public roads
- Using the Feed Chopper around people or in public places
- Chopping materials other than animal feed materials
- Chopping materials that have not been initially processed by the BP 965

Always use the Feed Chopper according to the instructions contained in this Operator Manual and on the safety and instruction decals on the machine.

Perform regular maintenance and repair to ensure that the Feed Chopper operates safely and efficiently.

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## **SERIAL NUMBER**

The serial number is found on the serial number plate (1) attached to the Feed Chopper on the top bar.



Serial Number Plate

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It is important to record the serial number for proof of ownership and for any service or maintenance assistance.

**Serial Number** \_\_\_\_\_

**Owner** \_\_\_\_\_

**Model** \_\_\_\_\_

**Date of Purchase** \_\_\_\_\_



## Section 1 - Safety

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### SAFETY SIGN-OFF FORM

Highline Manufacturing follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the machine should read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow someone to operate this equipment until this information has been reviewed. This information should be reviewed by all operator's before the season start-up.

This sign-off sheet is provided for record keeping to indicate that the person working with the equipment has read and understood the information in the Operator Manual and has been instructed in the safe operation of the equipment.

Date	Employee's Signature	Employer's Signature

## SAFETY ALERT SYMBOL

The Safety Alert Symbol means . . .



**ATTENTION!  
BECOME ALERT!  
YOUR SAFETY IS INVOLVED!**

The Safety Alert Symbol combined with a Signal Word alert to the presence of a hazard and the degree of possible injury.



Indicates an imminently hazardous situation that, if not avoided, **WILL** result in **DEATH OR SERIOUS INJURY**. The color is Red with White lettering.



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 or unsafe practices. The color is Orange with Black lettering.



Indicates a potentially hazardous situation that, if not avoided, **MAY** result in **MINOR INJURY**. The color is Yellow with Black lettering.

### **GENERAL SAFETY**

1. Ensure that anyone who is going to operate, maintain or work near the Feed Chopper™ 965 is familiar with the recommended operating, maintenance procedures and safety information contained in this manual and follows all the safety precautions.
2. In addition to the design and configuration of the equipment, hazard control and accident prevention are dependant upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. The Feed Chopper 965 shall not be operated without all the guards in place.

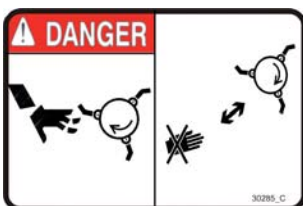
### **SAFETY DECALS**

1. Keep the decals and signs clean and legible at all times.
2. Replace decals and signs that are damaged, missing or have become illegible.
3. Parts that have been replaced should display a current decal.
4. Decals are available from the Parts Department.
5. Be familiar with the decals, the type of warning and the area or function(s) related to the area(s) that requires your awareness.



### DO NOT CONTACT THE ROTATING DRIVELINE

Contact with rotating driveline will cause serious injury or death.  
Keep all driveline guards in place.  
Securely attach drivelines at both ends.  
Check that the driveline guards turn freely on driveline.



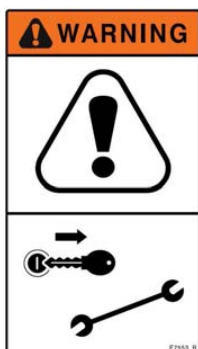
### DO NOT CONTACT ROTATING BLADES

Rotating blades will cause serious injury or death.  
Before servicing or adjusting, disengage power take off, shut off the tractor, remove key, set park brake.  
Before servicing or adjusting, wait for all parts to stop rotating.  
Keep guards in place and in good condition.



### KEEP PEOPLE AND ANIMALS CLEAR OF THE DISCHARGE AREA

Discharge material exits at a high speed.  
Discharged material will cause serious injury or death.  
Stand clear of Feed Chopper when it is engaged.



### SHUTDOWN THE TRACTOR BEFORE DISMOUNTING TRACTOR

Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the Feed Chopper.



### DO NOT OPERATE WITH SHIELDS MISSING

Contact with the moving belt or sheaves may cause serious injury or death.

Keep shields fastened in place.

Keep away from moving parts.

Do not stand or climb on the machine when operating.



### READ, UNDERSTAND AND FOLLOW SAFETY INSTRUCTIONS

Read, understand and follow all instructions and safety messages included in this manual and on decals attached to the machine.

These instructions and safety messages contain important information.

Allow only responsible, properly instructed individuals to operate and service the machine.

Failure to follow the instructions and safety messages in this manual and on the decals attached to the machine could result in serious injury or death.

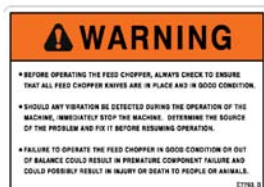
Keep all safety and instruction decals in good condition. Replace any missing or damaged decals.

### CHECK CONDITION OF THE KNIVES BEFORE OPERATING

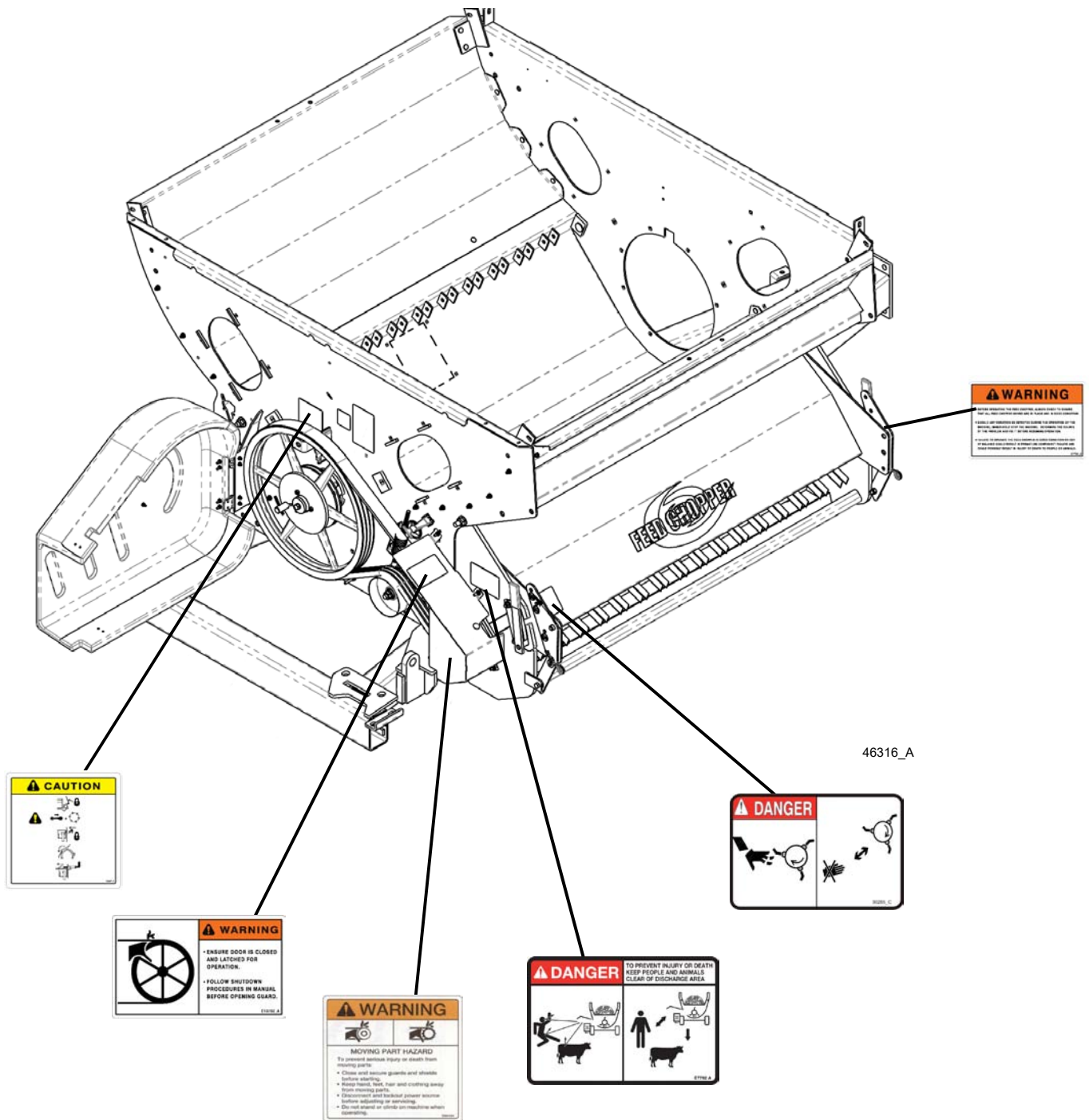
Check that all the knives are in place and in good condition.

If any vibration is detected during operation, immediately stop the machine and determine the source of the vibration before resuming.

Operating the Feed Chopper with knives missing or rotor out of balance could result in injury or death.



## SAFETY DECAL LOCATIONS



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### FEED CHOPPER PREPARATION

#### General Preparation

1. Park the tractor and BP 965 on level ground.
  - Engage the tractor parking brake.



Park on Level Ground

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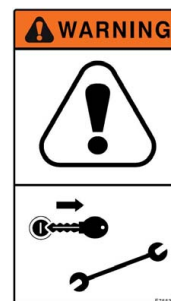
2. Shut off the tractor engine and remove the key.

3. Check the condition of the knives.



Disconnect the PTO driveline from the tractor.

Do not place hands in the chopper when it is rotating. Contact with exposed rotating blades will cause serious injury or death.



- Disengage the chopper clutch pin from the flail drum drive plate. (See Section 3 for procedures.)
- Move the rotor by hand to check all the knives.
  - Check if they are broken or worn to the point that they would not process the material properly.
- See the Section 4 - "Maintaining the Feed Chopper" for knife replacement information.



Check Condition of the Knives

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## Section 2 - Feed Chopper Preparation

4. Remove twine/wrap that is built up around the knives and rotor.

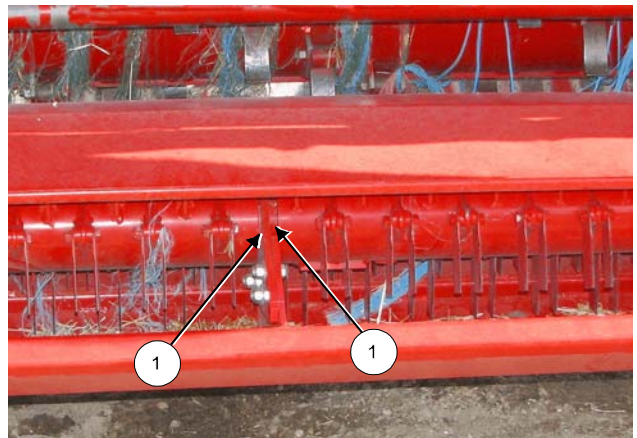


Remove Twine/Wrap from Knives & Rotor

215134

5. Remove twine/wrap that is built up around the center bearing and the rotor center support (1).

- Check the condition of the twine/wrap scrapers (1).
- See Section 4 for Twine/Wrap Scraper Adjustment.



Remove Twine/Wrap from Bearing/Support

215186C

6. Clear the rotor area of any material buildup.

- Disconnect the discharge door supports by removing the clip pins and removing the door from the support holes.



Disconnect Discharge Door Supports

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## Section 2 - Feed Chopper Preparation

- Remove the discharge door by sliding the door hinge from the slots.
- Clear the chopping area and the knives.
- Check the condition of the rotor and the knife bolts.

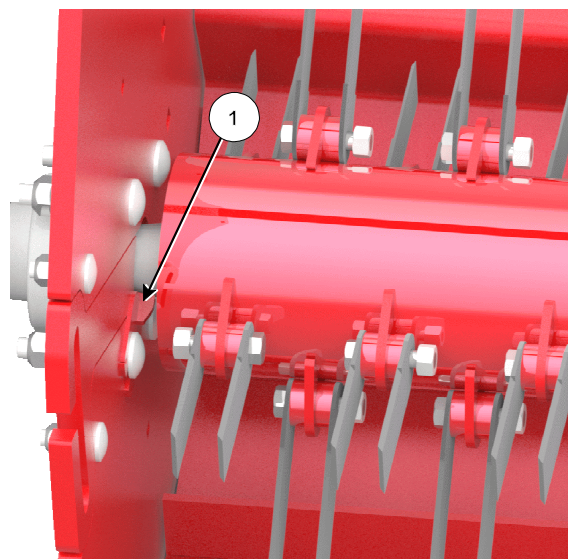


Remove Discharge Door

215149

7. Remove twine/wrap or other materials wrapped around the end of the rotor shafts.

- Check the condition of the twine/wrap scrapers (1) on the shafts.
- See Section 4 for Twine/Wrap Scraper Adjustment.
- Replace the discharge door.
- Connect door supports and fasten with the clip pins.

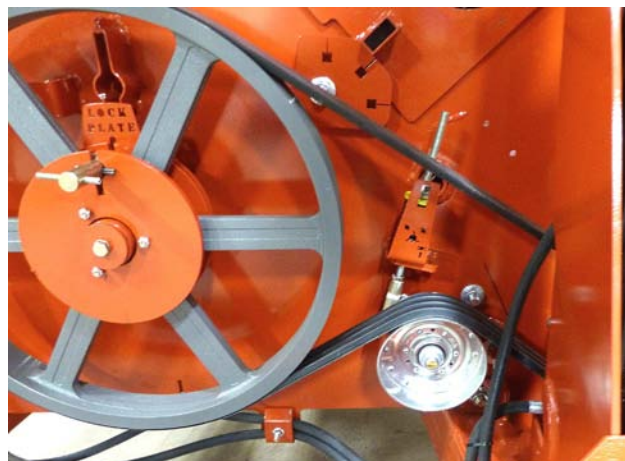


Remove Twine/Wrap From Rotor Shaft

218155C2

8. Check the drive belt tension located on the rear tub wall.

- Open the drive shield on the back wall to access the feed chopper drive.
- See Section 4 "Maintaining the Feed Chopper" for information on checking and adjusting the belt tension.



Check Chopper Drive Belt Tension

221309

## Section 2 - Feed Chopper Preparation

9. Ensure all the drive shields are in place and in good repair.



The Feed Chopper shall not be operated without all the driveline shields in place.

### **Chopper Door Setup For Feed Chopper Operation**

The Feed Chopper door is set to direct material from the processor into the Feed Chopper rotor.

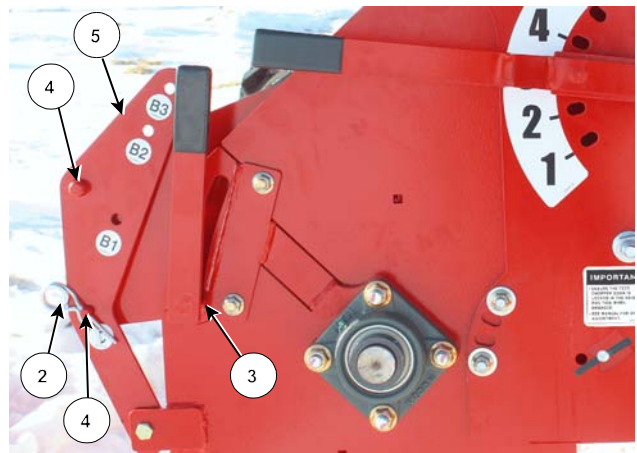
**Note:** The Feed Chopper drive clutch must be disengaged before lowering the discharge door. Serious damage to the Feed Chopper knives and discharge door will result if the drive clutch is engaged with the discharge door lowered. The rotating knives will hit the door.

1. Remove the clip pin (2) from the door pin.
2. Move the door support (5) away from the door pins.
3. Place the door hinge rod at the bottom of the slot (3).
4. Rotate the door so the back of it is up against the BP 965 tub.
5. Connect the door support so the door pins are in the large middle hole (3) and the hole labeled "C" (4).
6. Fasten with the clip pin (1).



Ensure All Drive Shields Are In Place

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Set the Chopper Door for Chopping

221312C



### Chopper Door Setup to Bypass the Feed Chopper

To bypass the Feed Chopper:

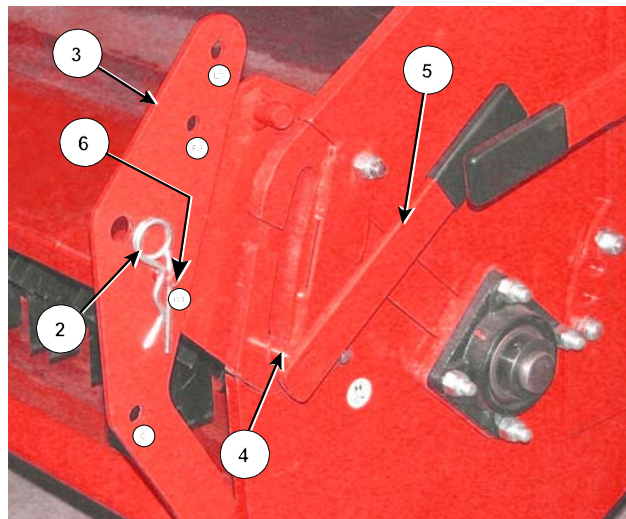
- The drive must be disengaged
- The door lowered to allow material to pass over and not be chopped further.

The discharge door has 3 bypass settings to allow for different heights of material discharge.

**Note:** The Feed Chopper drive clutch must be disengaged before lowering the discharge door. Serious damage to the Feed Chopper knives and discharge door will result if the drive clutch is engaged with the discharge door lowered. The rotating knives will hit the door.

#### Setting B1 - Bypass with No Additional Height Discharge

1. Remove the clip pin (2) from the door pin.
2. Move the door support (3) away from the door pins.
3. Place the door hinge rod at the bottom of the slot (4).

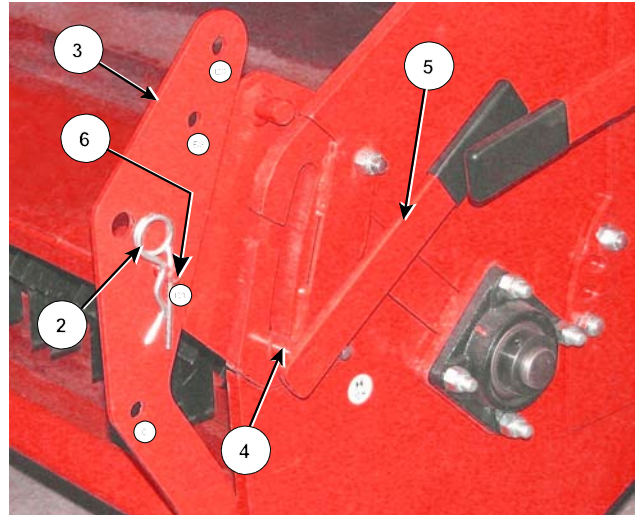


"B1" Position - No Height Discharge Setting

221315C

## Section 2 - Feed Chopper Preparation

4. Rotate the handle (5) to lower the door to be flush with the bottom of the BP 965 outlet.
  - The rotor must also be positioned with the knives at 90 degrees to the discharge door.
  - Ensure the edge between the BP 965 and the Feed Chopper inner flange is clear of debris.
5. Connect the door support with the small pin in the hole labeled "B1" (6).
6. Fasten with the clip pin (2).



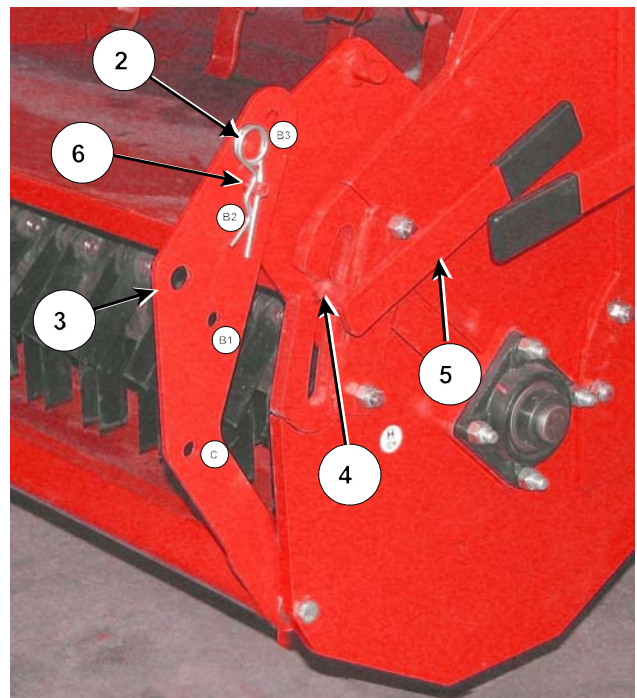
"B1" Position - No Height Discharge Setting

221315C

**Note:** The Feed Chopper drive clutch must be disengaged before lowering the discharge door. Serious damage to the Feed Chopper knives and discharge door will result if the drive clutch is engaged with the discharge door lowered. The rotating knives will hit the door.

### Setting B2 - Bypass with Some Additional Height Discharge

1. Remove the clip pin (2) from the door pin.
2. Move the door support (3) away from the door pins
3. Place the door hinge rod at the bottom of the slot (4).

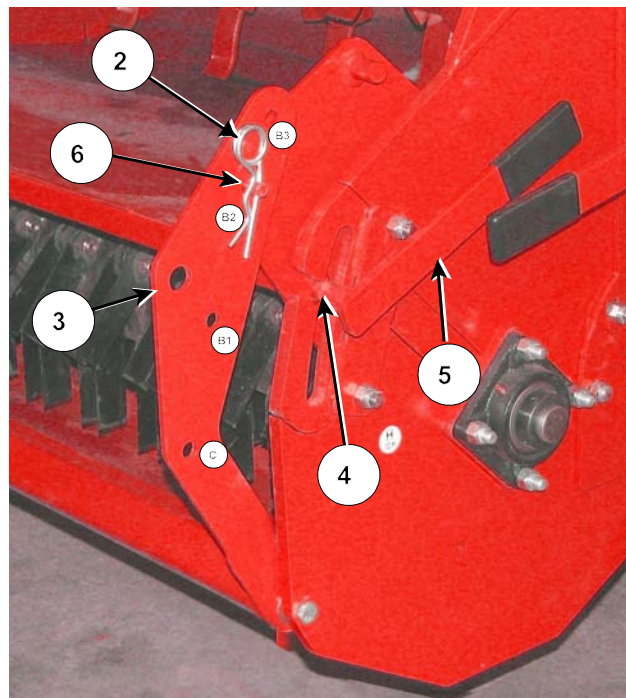


"B2" Position - Some Height Discharge Setting

221316C

## Section 2 - Feed Chopper Preparation

4. Rotate the handle (5) to lower the door to be flush with the bottom of the BP 965 outlet.
  - The rotor must also be positioned with the knives at 90 degrees to the discharge door.
  - Ensure the edge between the BP 965 and the Feed Chopper inner flange is clear of debris.
5. Connect the door support with the small pin in the hole labeled "B2" (6).
6. Fasten with the clip pin (2).

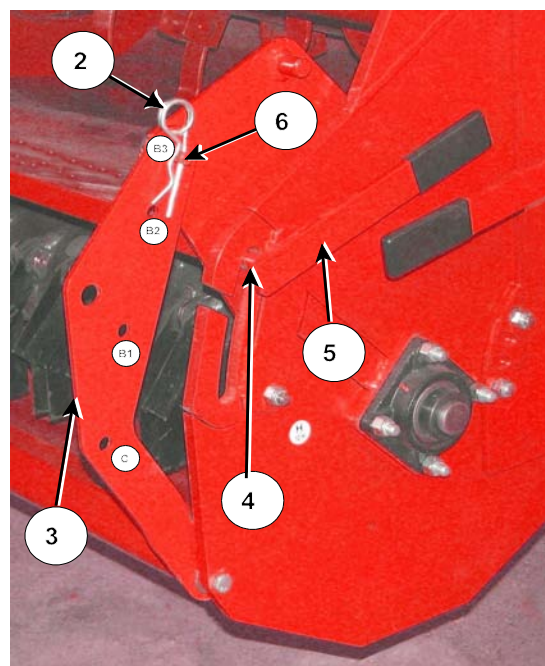


"B2" Position - Some Height Discharge Setting 221316C

**Note: The Feed Chopper drive clutch must be disengaged before lowering the discharge door. Serious damage to the Feed Chopper knives and discharge door will result if the drive clutch is engaged with the discharge door lowered. The rotating knives will hit the door.**

### Setting B3 - Bypass with Maximum Height Discharge

1. Remove the clip pin (2) from the door pin.
2. Move the door support (3) away from the door pins
3. Place the door hinge rod at the top of the slot (4).

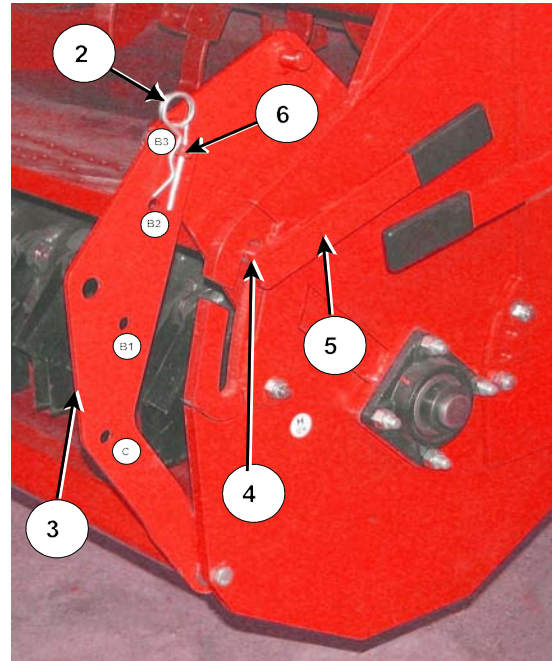


"B3" Position - Max. Height Discharge Setting 221317C

## Section 2 - Feed Chopper Preparation

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4. Rotate the handle (5) to lower the door to be flush with the bottom of the BP 965 outlet.
  - The rotor must also be positioned with the knives at 90 degrees to the discharge door.
  - Ensure the edge between the BP 965 and the Feed Chopper inner flange is clear of debris.
5. Connect the door support with the small pin in the hole labeled "B3" (6).
6. Fasten with the clip pin (2).



"B3" Position - Max. Height Discharge Setting <sup>221317C</sup>



### OPERATING THE FEED CHOPPER

#### Operating With the Feed Chopper



Shut off the tractor engine and remove the key.



Wait for all components to stop rotating.

Do not place hands in the Feed Chopper drive clutch area while the flail drum is turning. Contact with the rotating large pulley engaged to the rotating flail drum can cause serious injury.



Ensure all shields are in place and in good condition.





### Section 3 - Operating the Feed Chopper

1. Position the Feed Chopper discharge door to direct material from the BP 965 into the Feed Chopper rotor.

See Section 2 "Discharge Door Setup For Feed Chopper Operation" for the instructions in this process.



Position the Discharge Door

221321

**Note:** Before engaging the Feed Chopper drive clutch, the Feed Chopper discharge door must be raised to accept material.

Serious damage to the Feed Chopper knives and discharge door will result if the drive clutch is engaged with the discharge door lowered. The rotating knives will hit the door.



2. Open the drive guard door.
  - Remove the rubber door latch.
  - Pivot the drive guard door to access the drive clutch area.



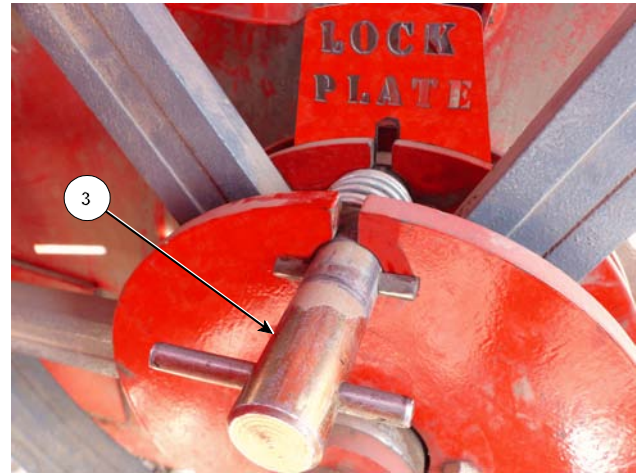
Open the Drive Guard Door

221360

### Section 3 - Operating the Feed Chopper

#### 3. Engage the feed chopper drive.

- Rotate the large pulley to have the clutch pin at the top.
- The clutch pin (3) is disengaged when the pin is pulled out against the spring and the inner roll pin is out of the slot.
- To engage, twist the clutch pin to move the roll pin forward through the slot (4).



Disengaged Clutch Pin

217156C

#### 4. Rotate the large pulley until the clutch pin snaps into a connecting hole in the flail drum plate.

- There are a number of possible connecting holes.
- A small amount of rotation of the sheave will be required to engage into one of the holes.



Twist Pin into Engagement Position

217157C

#### 5. Push the clutch pin forward and twist the pin 90 degrees until the rear roll pin snaps into a notch in the lock plate.



Push and Twist Clutch Pin

217158.

### Section 3 - Operating the Feed Chopper

- The second roll pin (5) should be behind the front plate of the clutch.



Locked Clutch Pin

217159C

6. Close the access door and fasten with the rubber door latch.

7. Begin to process a bale in the BP 965.

Note: If livestock is being fed, it is the operator's responsibility to ensure that the materials in the processed feed mix are suitable. Some of the wrapping material (twine, wrap or other materials) may be discharged with the feed if the wrapping materials are not removed prior to processing.



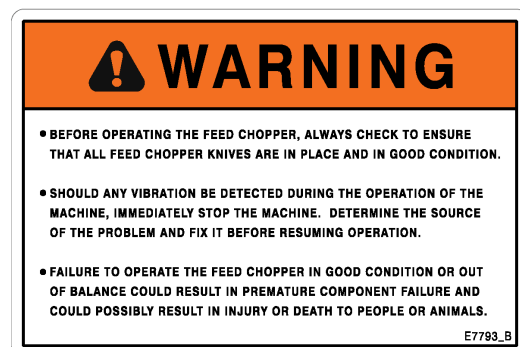
Close and Fasten the Drive Guard Door

221360

8. The Feed Chopper will be driven by the belt drive and chop the processed material an additional amount.



Should any vibration be detected during the operation of the machine, immediately stop the machine. Determine the source of the problem and fix it before resuming operation.



### Section 3 - Operating the Feed Chopper

9. Drive ahead slowly while operating the BP 965 and Feed Chopper.



Avoid discharging material in the area of people and animals.



#### Operating Without the Feed Chopper

The BP 965 can be operated without additional chopping of material.

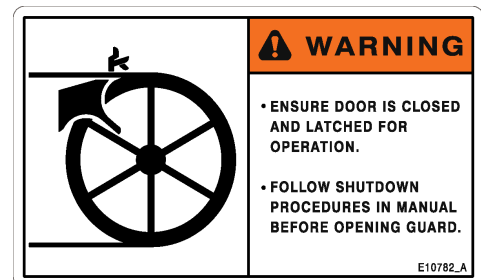


Shut off the tractor engine and remove the key.



Wait for all components to stop rotating.

Do not place hands in the Feed Chopper drive clutch area while the flail drum is turning. Contact with the rotating large pulley engaged to the rotating flail drum can cause serious injury.





### Section 3 - Operating the Feed Chopper

1. Open the drive guard door.
  - Remove the rubber access door latch.
  - Pivot the drive guard door to open the drive clutch area.



Open the Drive Guard Door

221360

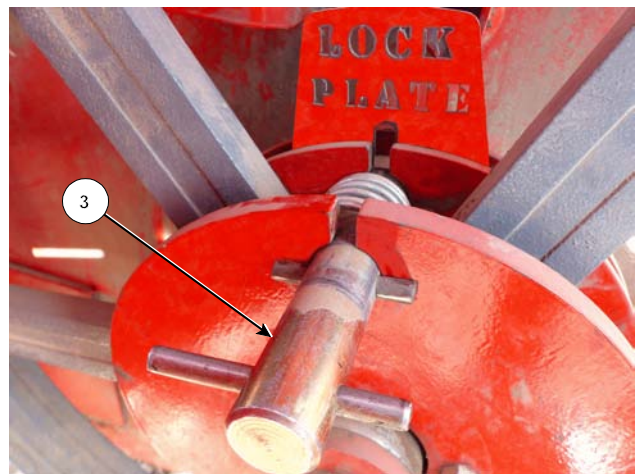
2. Disengage the Feed Chopper drive.
  - Push in the clutch pin and twist it 90 degrees to release the roll pin from the lock plate.
  - Twist the clutch pin until the spring moves the second roll pin through the slot (4)
  - This will move the clutch pin out of the flail drum plate.



Twist Clutch Pin to Disengage Drive

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3. Pull the clutch pin (3) until the second roll pin has cleared the slot.
  - Twist the clutch pin (3) until the second roll pin is resting against the clutch front plate.

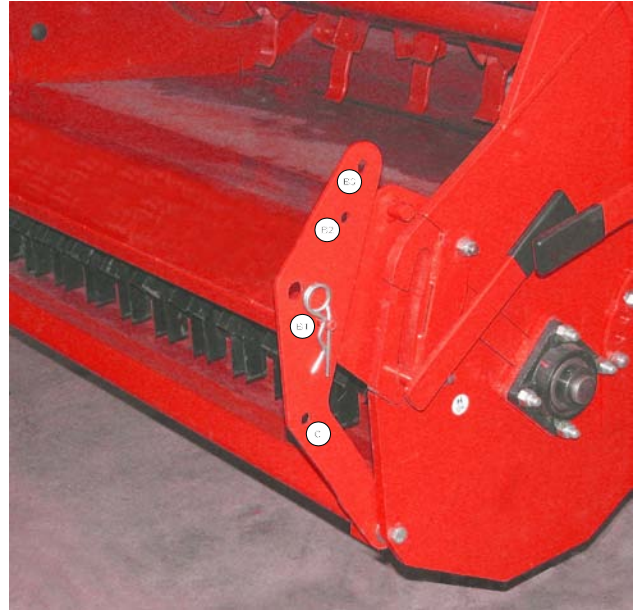


Pull and Twist Pin to Lock

217156C

### Section 3 - Operating the Feed Chopper

4. Lower the Feed Chopper discharge door to allow material to pass out of the BP 965 and over the Feed Chopper.
  - Set the door to one of the bypass positions.
  - See Section 2 - "Discharge Door Setup For BP 965 Operation Only" for the instructions in this process.



Lower Door to Pass Material Over Chopper

221319C

5. Drive ahead slowly while operating the BP 965 to process a bale.



Avoid discharging material in the area of people and animals.



Note: If livestock is being fed, it is the operator's responsibility to ensure that the materials in the processed feed mix are suitable. Some of the wrapping material (twine, wrap or other materials) may be discharged with the feed if the wrapping materials are not removed prior to processing.

### Unplugging the Feed Chopper

1. Reduce the engine speed to idle.
2. Disengage tractor power take off (PTO).
3. Set the tractor park brake.

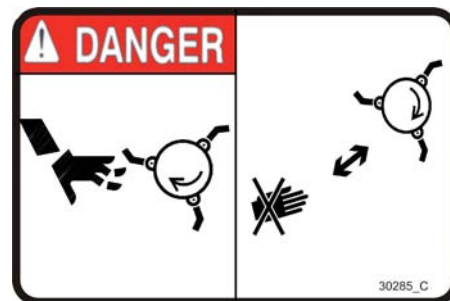


Shut off tractor engine and remove key.



Wait for all components to stop rotating.

Do not place hands in the Feed Chopper while the rotor is turning. Contact with the rotating knives will cause serious injury.



4. Disengage the Feed Chopper drive by pulling the clutch pin outward and twisting it so the second roll pin is resting on the clutch front plate.



Do not place hands in the Feed Chopper drive clutch area while the flail drum is turning. Contact with the rotating large pulley engaged to the rotating flail drum can cause serious injury.



Disengage the Chopper Drive

217156



### Section 3 - Operating the Feed Chopper

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5. Remove the discharge door to gain access to the chopper rotor and housing.

- Disconnect the discharge door supports by removing the clip pins and removing the door from the support holes.

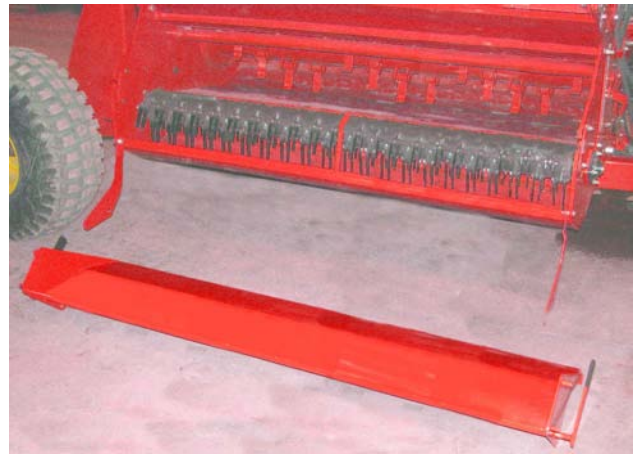


Disconnect Discharge Door Supports

215136

- Remove the discharge door by sliding the door hinge from the slots.

- Clear the chopping area and the knives.



Remove Discharge Door

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- Replace the discharge door by sliding the door hinges into the slots.

- Connect the door support with the door front pin in the middle large hole and the small pin in the lowest small hole labeled "C".

- Fasten with the clip pin.



Replace Door and Connect Door Supports

221312



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### MAINTAINING THE FEED CHOPPER



Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the machine.

Relieve all hydraulic pressure in the hoses. Disconnect the hydraulic hoses from the tractor before going near the machine.



#### Lubrication

Lubricate all grease fittings with a quality lithium soap compatible E.P. grease meeting the N.L.G.I. #2 specifications and containing no more than 1% molybdenum disulfide.

#### Every 10 Hours

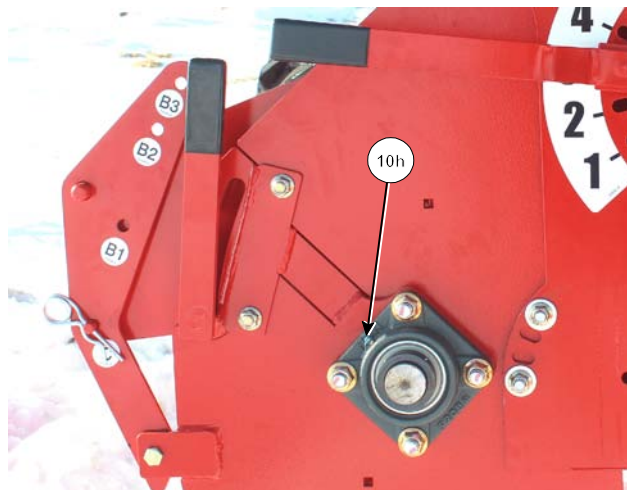
- Lubricate rear rotor bearing.
  - Access the grease point through the hole in the drive cover.



Grease Rear Rotor Bearing

221367C

- Lubricate front rotor bearing.

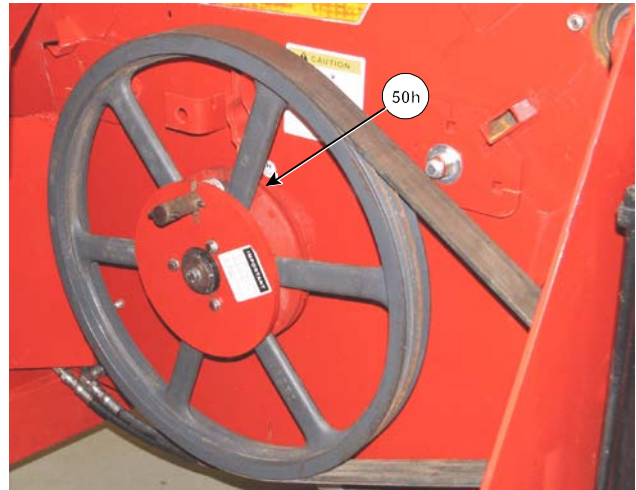


Grease Front Rotor Bearing

221312C2

### Greasing the BP 965 Rear Flail Drum Bearing (Every 50 hours)

- To access the BP 965 rear flail drum bearing:
  - Open the drive guard door.
  - Rotate the sheave to access the grease zerk on the bearing.

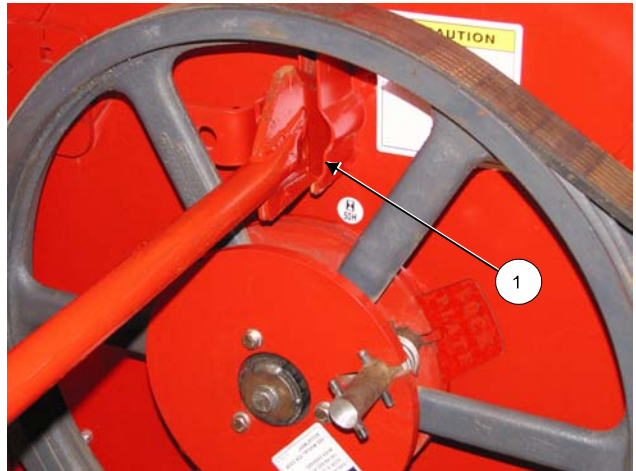


Grease Flail Drum Bearing

201260C

### Twine/Wrap Cutter Access

- To access the twine/wrap cutter opening:
  - Open the drive guard door.
  - Rotate the large sheave for an opening between the sheave spokes.
  - Insert the twine cutter into the twine cutter opening (1).



Twine/Wrap Cutter Access

201261C

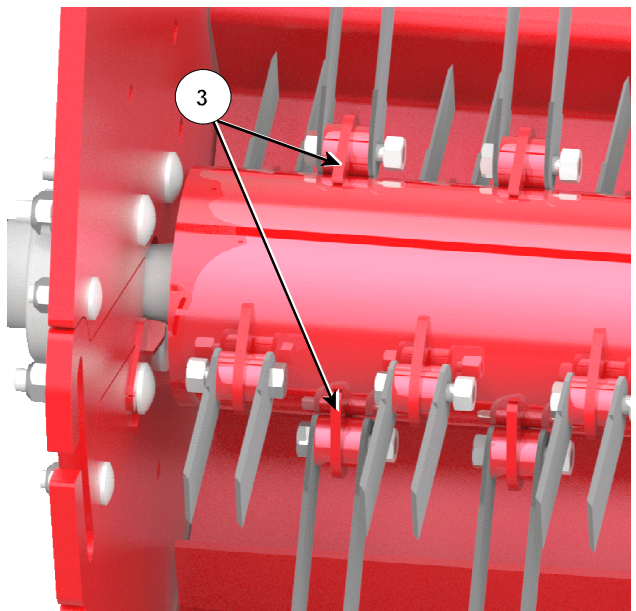
### Knife Replacement

Replace knives that are broken or worn to the point that they will not process material properly.

Four knives (2 sets) must be replaced at the same time.

Note: To maintain rotary balance, the set of knives on the opposite side of the rotor must be replaced at the same time. (3)

- Remove the nut and bolt holding the knives.
- Discard the set of old knives, the bolt and nut.
- Install the knives using the new bolt and nut.



Replace Knife Set & Opposite Set

218155C

### Rotor Twine/Wrap Scraper Adjustment End of Shafts

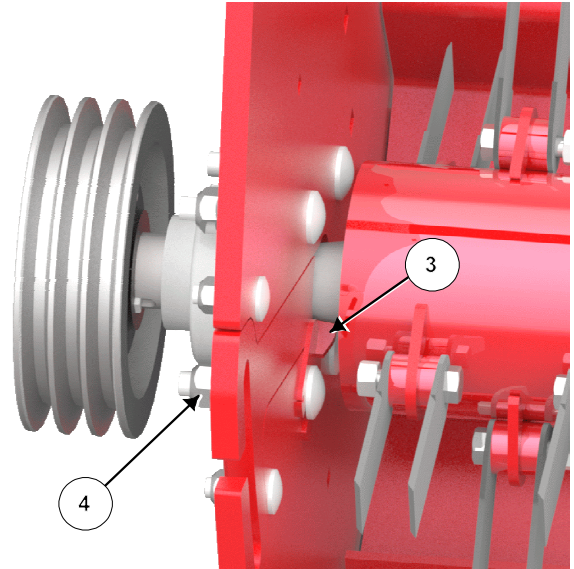
Adjust the twine/wrap scrapers (3) on both ends of the rotor shaft.

- Loosen the bearing bolt nuts (4) that have the twine/wrap scraper on it to allow the bearing bolts to be loose.

Note: On the rear shaft remove the sheave shield (1) to get access to the bearing bolts.

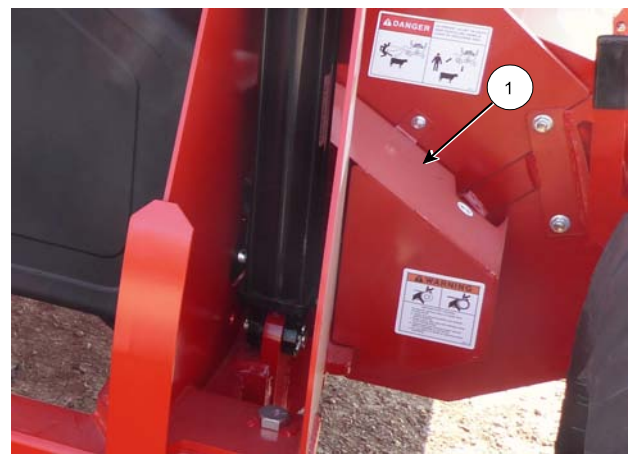
- Slide the twine/wrap scraper (3) on the bearing bolts until it is almost touching the rotor shaft.
  - Do not have the scraper touching the rotor shaft.
    - To ensure clearance, use a flashlight to check for a visible sliver of light between the edge of the twine/wrap scraper and the rotor shaft.
- Tighten the bearing bolt nuts (4) to fasten the scraper in place.
  - Torque to 65 lb-ft (88 Nm).

Note: On the rear shaft replace the outer sheave shield (1) and fasten in place.



Adjust Twine/Wrap Scrapers-Shaft Ends

218154C



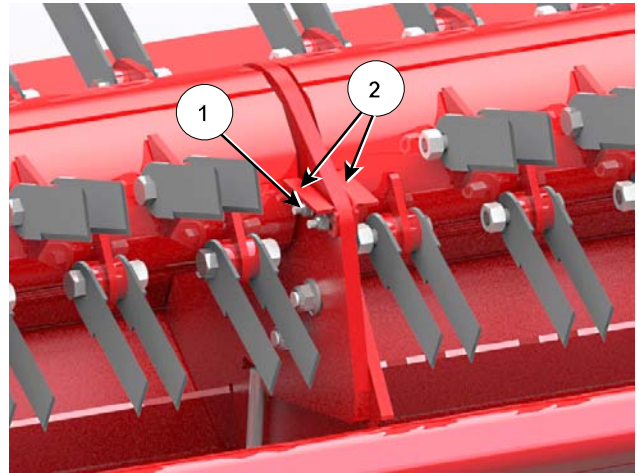
Remove Rear Sheave Shield

221368C



### Rotor Twine/Wrap Scraper Adjustment - Center Support Plate

- Loosen the nuts of the scraper bolts (1) located on the center support plate.
- Slide the twine/wrap scrapers (2) on both sides of the support plate until they are almost touching the rotor.
  - Do not have the scraper touching the rotor.
    - To ensure clearance, use a flashlight to check for a visible sliver of light between the edge of the twine/wrap scraper and rotor.
- Tighten the twine/wrap scraper nuts (1) to fasten the scraper in place.



Adjust Twine/Wrap Scrapers - Center Support 218165C

### Belt Tension Adjustment

The belt tension adjuster has a spring to keep the tension.

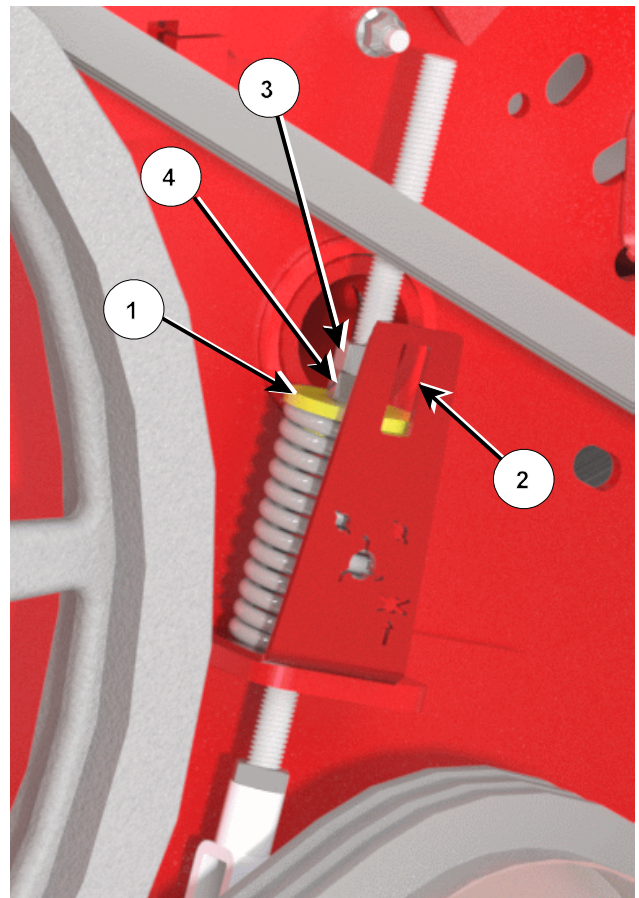
- The belt is tensioned from the factory.

To confirm adequate belt tension:

- Check if the spring washer (1) is showing in the cut out window (2). If it is showing in the window then the belt tension is in the acceptable range.

To adjust belt tension:

- If the spring washer (1) is not showing in the cut out window (2) then adjust the belt tension by:
  - Loosening the jam nut (3) on the threaded rod.
  - Turn the nut (4) next to the spring washer to adjust the spring so it shows in the cut out window (2).
- Tighten the jam nut (3).



Belt Tension Spring Adjustment

219058C

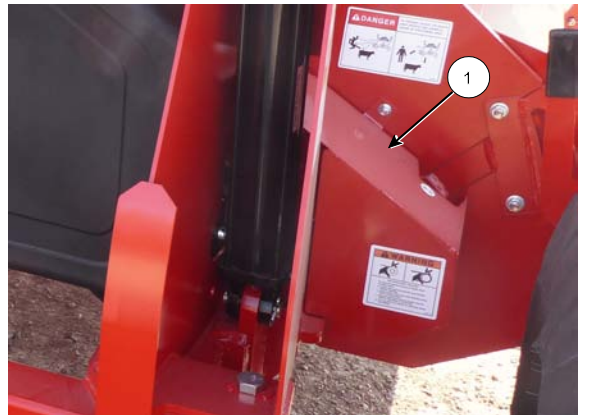
### Replacing the Feed Chopper Belt

1. Open the Feed Chopper door.
2. Remove the lower rear sheave shield (1).
  - Keep the fasteners to be re-used.
3. Release the tension on the belt:
  - Loosen the jam nut (3) on the threaded rod.
  - Turn the nut (4) next to the spring washer (1) to remove tension until the belt is loose enough to remove from the large sheave.



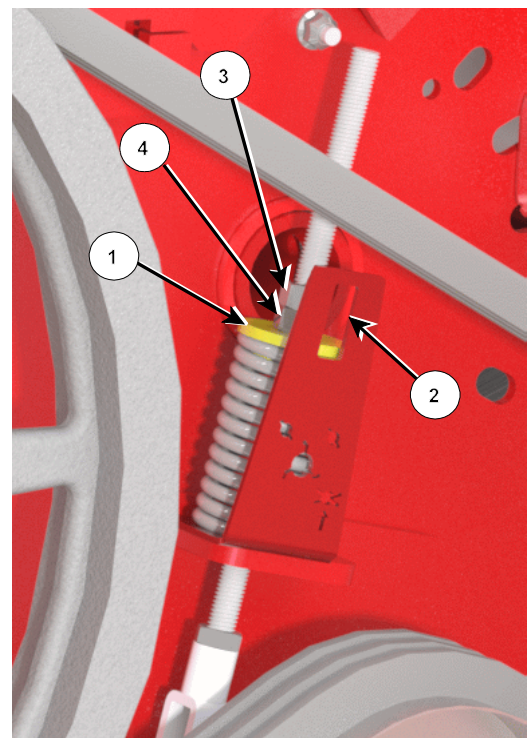
Ensure the Drive Shield Is In Place

221360



Remove Rear Sheave Shield

221368C



Release the Belt Tension

219058C

## Section 4 - Maintaining the Feed Chopper

4. Remove the drive belt from the feed chopper sheave.

- Remove the belt between the small sheave and the bale cylinder upright

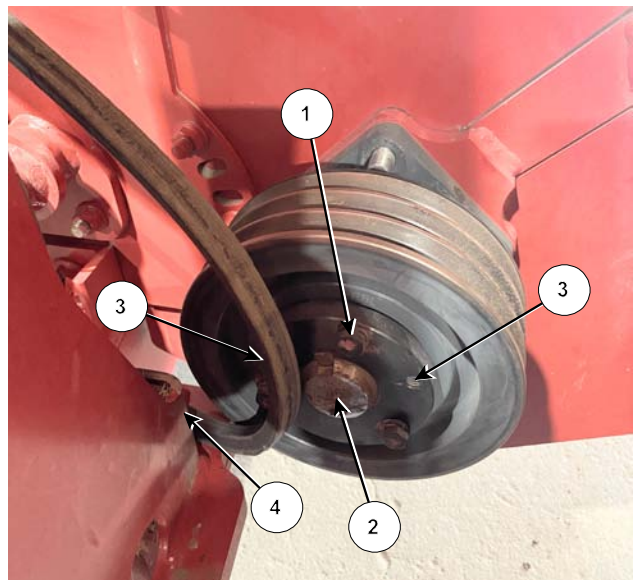
Note: If there is not enough room to remove the drive belt between the small sheave and the bale lift cylinder upright, then the small sheave will need to be moved.

- Sometimes this is necessary depending on the where the large sheave was placed on the flail drum.

To move the small drive sheave:

- Loosen the 3 bolts (1) holding the sheave.
  - Do not remove the bolts.
- Gently tap on the 3 bolts (1) and the end of the shaft (2) to break any rust that may have formed.
- Place 2 of 3/8" x 1-1/2" bolts into the threaded holes (3).
- Hand tighten the two 3/8" x 1-1/2" bolts (3) to move the sheave back towards the sidewall of the chopper and off of the internal taper of the shaft.
  - Tighten the bolts until there is enough room to remove the drive belt between the sheave and the lift cylinder upright (4).
  - Loosen the 3 bolts holding the sheave as needed.

5. Place the new drive belt around the small sheave, over the belt tensioner and around the large sheave.



Move Small Sheave (if needed)

223207C



Put the New Drive Belt in Place

221366



## Section 4 - Maintaining the Feed Chopper

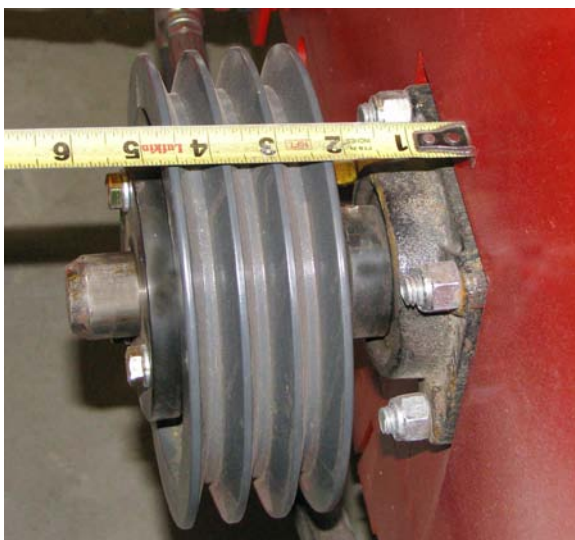
6. Realign the small sheave to the large sheave - if it was moved to remove the belt:

- Measure the distance from the edge of the large sheave to the front tub wall.
- Remove the 2 of 3/8" x 1-1/2" bolts from the small sheave.
- Tighten the 3 bolts to move the small sheave so that the edge of the sheave is the distance of the large sheave plus the thickness of the tub wall from the chopper wall.



Measure Distance - Large Sheave to Tub Wall

213061

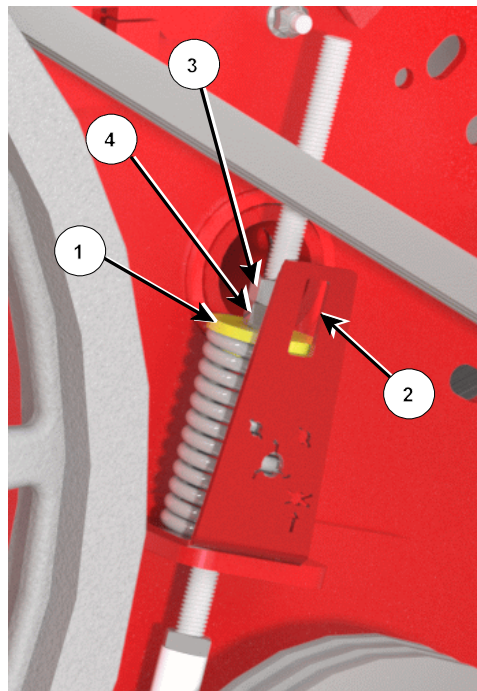


Adjust Sheave to Align to Large Sheave

223208

7. Adjust the belt tension.

- Turn the nut (4) next to the spring washer (1) to adjust
  - Turn the nut until the spring washer (1) shows in the cut out window (2).
- Tighten the jam nut (3) on the threaded rod.



Belt Tension Spring Adjustment

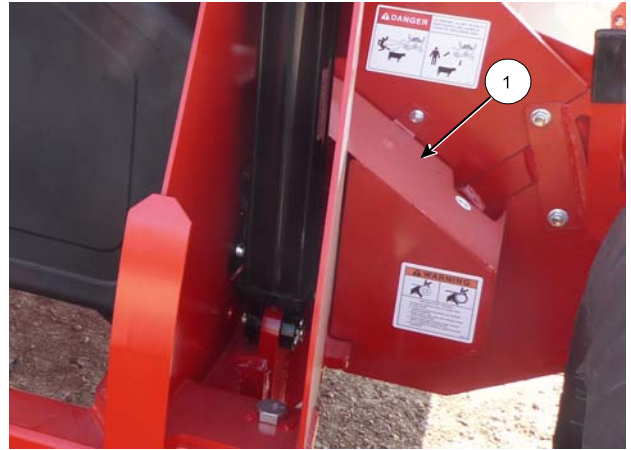
219058C



## Section 4 - Maintaining the Feed Chopper

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8. Replace the lower rear sheave shield (1).



Replace the Rear Sheave Shield

221368C

9. Close the shield door.



Ensure the Drive Shield Is In Place

221360

## TROUBLESHOOTING

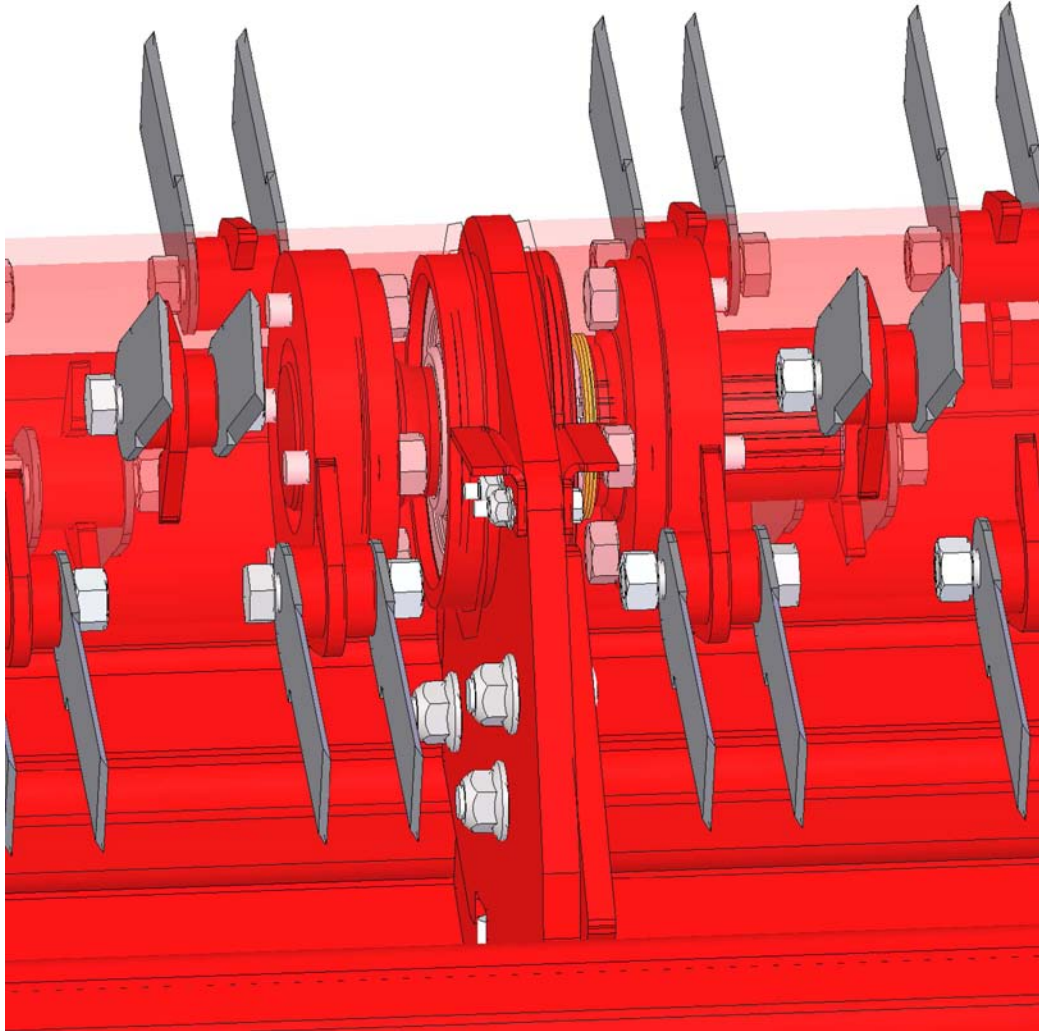
### Operation

Symptom	Problem	Solution
Excessive Rotor Noise/Vibration	Broken knife.	Replace knives in pairs. Also replace knife pair on opposite side of the rotor to maintain rotational balance.
	Missing knives.	Replace knives in pairs. Also replace knife pair on opposite side of the rotor to maintain rotational balance.
	Foreign material lodged in chopper housing.	Remove foreign material.
		Check condition of knives. Replace knives as pairs and also replace knife pair on opposite side of rotor to maintain rotational balance.
	Failed rotor end bearing.	Check for damage to the rotor.
		Check if rotor rotation feels rough. Replace failed bearing.
		Check for rotor side play. Replace failed bearing.
		Visually inspect bearing. Replace failed bearing.

## Section 5 - Troubleshooting

Symptom	Problem	Solution
Excessive Rotor Noise/Vibration	Center Bearing.	Rotate the rotor by hand to determine any bearing wear. Replace the bearing.
		Use a pry bar near the center bearing to determine if there is movement within the bearing indicating wear. Replace the bearing.
		Use a pry bar near the center bearing to determine if there is movement in the bearing support. Adjust the fasteners on the center support.
		Twine wrapped around the shafts. Remove the twine.
	The Two Rotors Are Out of Alignment.	Use a straight edge along the top of the rotors. Span the rotors. Look for gaps. Adjust with the bottom threaded bolt on the bearing support.
		Use a straight edge at 90° from the top of the rotors. Span across the rotors. Look for gaps. Adjust the center support along the slots to adjust the alignment.
	Splined shaft between the rotors is loose.	Check the fasteners at the splined shaft hub connection points. Tighten the fasteners.

## Section 5 - Troubleshooting



Center Bearing, Shaft, Supports (Outer Tube Shown Transparent for Clarity)

221322

Symptom	Problem	Solution
Rotor Does Not Spin	Drive clutch is not engaged.	Twist the clutch pin to move the roll pin into the slot. Rotate the large pulley until the drive pin snaps into a connecting hole in the flail drum plate. Push the clutch pin forward and twist to lock the clutch pin.
	Broken Belt.	Replace the belt.

### **Section 5 - Troubleshooting**

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
	Foreign material lodged in housing.	Remove foreign material to allow rotor to spin freely. Check condition of knives. Replace knives as pairs and also replace knife pair on opposite side of rotor to maintain rotational balance.
	Rotor bearing has seized.	Check bearings or replace.

Rotor Stops Spinning	Drive clutch pin has moved out and no longer is engaged with the flail drum plate.	Twist the clutch pin to move the roll pin into the slot. Rotate the large pulley until the drive pin snaps into a connecting hole in the flail drum plate. Push the clutch pin forward and twist to lock the clutch pin.
	Belt has come off the sheaves or tensioner.	Place the belt on the sheaves and the tensioner. Check the alignment of the sheaves and tensioner. Adjust if needed.
	Broken belt.	Replace the belt.

Drive Belt Loose	Belt Tension not in range	Adjust the spring tensioner. See Section 4 for information on adjusting the belt tension.
	Belt has stretched.	Replace the belt.  Adjust the spring tensioner. See Section 4 for information on adjusting the belt tension.

# Highline New Equipment Limited Warranty Policy

One (1) Year / 12 Months - Parts and Labour

Highline Mfg. (hereinafter "Highline") warrants this new product of Highline's manufacturer to be free from defects in material and workmanship, under normal use and service for one (1) full year after initial purchase/retail sale. Highline will warrant its product for one (1) year parts and labour, if performed by a qualified Dealer. This Limited Warranty shall apply only to complete machines of Highline's manufacture. Parts are covered by a separate Limited Warranty.

**EQUIPMENT AND ACCESSORIES NOT OF HIGHLINE'S MANUFACTURE ARE WARRANTED ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY AND SUBJECT TO THEIR ALLOWANCE TO HIGHLINE ONLY IF FOUND DEFECTIVE BY SUCH MANUFACTURER.**

During the Limited Warranty period specified above, any defect in material or workmanship in any warranted item of Highline Equipment not excluded below shall be repaired or replaced at Highline's option without charge by any authorized independent Highline Dealer. An authorized Dealer must make the warranty repair or replacement. Labour in accordance with Highline's labour reimbursement policy. Highline reserves the right to supply remanufactured replacement parts as it deems appropriate.

## **RETAIL PURCHASER RESPONSIBILITY**

This Limited Warranty requires proper maintenance and periodic inspections of the Equipment as indicated in the Operator's Manual furnished with each new Equipment. The cost of routine or required maintenance and services is the responsibility of the retail purchaser. The retail purchaser is required to keep documented evidence that these services were performed. This Highline New Equipment Limited Warranty may be subject to cancellation if the above requirements are not performed.

## **EXCLUSIONS AND LIMITATIONS**

The warranties contained herein shall NOT APPLY TO:

1. Any defect which was caused (in Highline's sole judgement) by other than normal use and service of the Equipment, or by any of the following:
  - a. accident
  - b. misuse or negligence
  - c. overloading
  - d. of reasonable and proper maintenance
  - e. improper repair or installation
  - f. unsuitable storage
  - g. non-Highline approved alteration or modification
  - h. natural calamities
  - i. vandalism
  - j. parts or accessories installed on Equipment which were not manufactured or installed by Highline authorized Dealers
  - k. the elements
  - l. collision or other accident
2. Any Equipment whose identification numbers or marks have been altered or removed.
3. Any Equipment which any of the required or recommended periodic inspection or services have been performed using parts not manufactured or supplied by Highline or meeting Highline Specifications including, but without limitation, lubricants (oil, grease), belt lacings, and hydraulic fluids.
4. Any Equipment used in demonstrations not performed by a Highline Dealer. Warranty will be at the discretion of Highline for all other demonstration warranty.
5. New Equipment delivered to the retail purchaser in which the warranty registration has not been completed and returned to Highline within thirty (30) days from the date of purchase.
6. Any defect that was caused (in Highline's sole judgement) by operation of the Equipment not abiding by standard operating procedures outlined in the Operator's Manual.
7. Tire Limited Warranties and support are the responsibility of the respective product's manufacturer.
8. Transportation costs, if any, of transporting to the Highline Dealer.
9. In no event shall Highline's liability exceed the purchase price of the product.
10. Highline shall not be liable to any person under any circumstances for any incidental or consequential damages (including but not limited to, loss of profits, out of service time and damage to equipment which this equipment may be attached) occurring for any reason at any time.

11. Diagnostic and overtime labour premiums are not covered under this Limited Warranty Policy.
12. Depreciation damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, and/or lack of proper protection during storage.
13. Accessory systems and electronics not of Highline's manufacture are warranted only to the extent of such manufacturer's respective Limited Warranty if any.
14. Wear items which are listed by product group below:

#### **COMMON WEAR ITEMS**

Roller chain, sprockets, clutches, shear bolts, clutch components, chains, gearbox housings bolts/torqued parts, flails, feed roller belting, coupler chain, DRV couplers, bogie wheels, apron tines and hoses, blades and blade pans, blade bolts and nuts, skid shoes, chain guards, clutches and clutch components.

#### **PARTS WARRANTY**

Parts replaced in the warranty period will receive the balance of the one year New Equipment Limited Warranty. Replacement parts after the original machine warranty are warranted to be free from defects of material for ninety (90) days or the part will be repaired or replaced, without labour coverage for removal and reinstallation.

#### **EXCLUSION OF WARRANTIES**

UNLESS OTHERWISE REQUIRED BY LAW, AND EXCEPT FOR THE WARRANTIES EXPRESSLY AND SPECIFICALLY MADE HEREIN, HIGHLINE MAKES NO OTHER WARRANTIES, AND ANY POSSIBLE LIABILITY OF HIGHLINE HEREIN UNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HIGHLINE RESERVES THE RIGHT TO MODIFY, ALTER AND IMPROVE ANY PRODUCT WITHOUT INCURRING ANY OBLIGATION TO REPLACE ANY PRODUCT PREVIOUSLY SOLD WITH SUCH MODIFICATION. NO PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY, OR TO ASSUME ANY ADDITIONAL OBLIGATION ON HIGHLINE'S BEHALF.