

BALE BAND-IT™

220

Operator's Manual

Model 220



PIKE 
Mfg. Corp.

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Safety Warning

-  Read the entire manual prior to operating or performing maintenance on your machinery.
-  Do not operate machinery in any manner other than which it was designed.
-  Do not operate machinery without taking proper safety precautions and only while all safety devices and measures are in place, set correctly, and in working condition.
-  Do not operate machinery if safety devices are not properly working. This can cause serious injury or death.
-  Maintenance should be performed by qualified personnel only and they need to ensure that power and hydraulics have been disconnected and all stored energy has been released prior to performing any maintenance.
-  Steel banding that is used in the Bale Band-It can be sharp on the edges. Please wear all necessary personal protective equipment when handling the banding.

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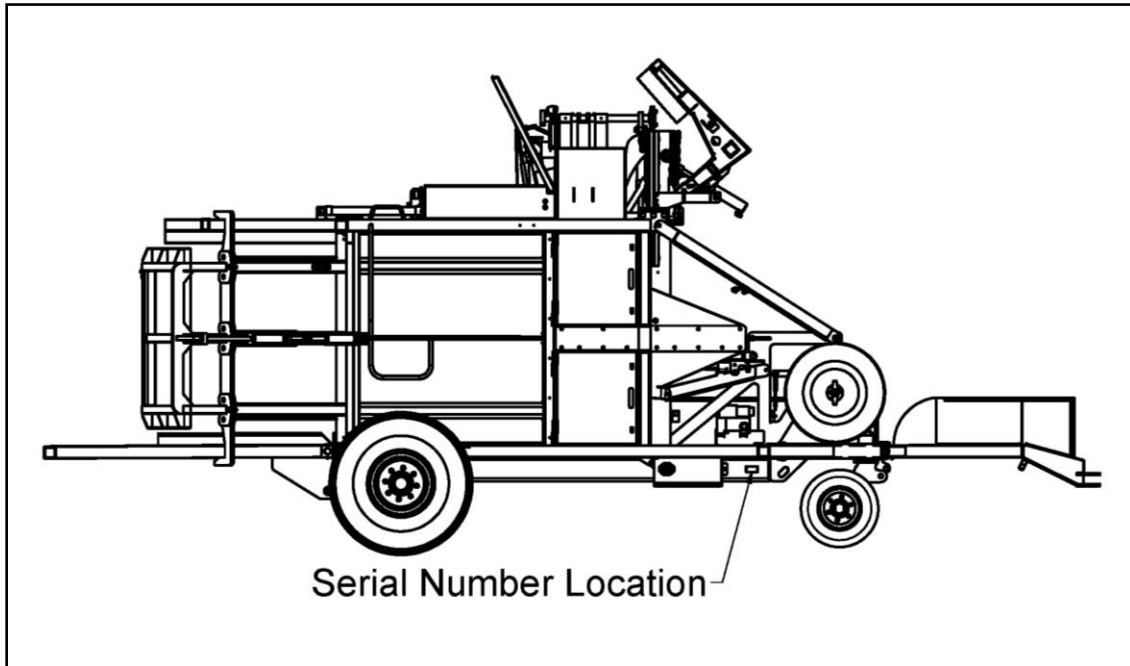
Specifications

Model	220
Dimensions	
Height	9 ft – 3.5 in (2.83 m)
Width	8.5 ft (2.59 m)
Length	20 ft (6.09 m)
Weight	
Standard	Standard = 8,500 lbs (3856 kg)
With Pickup Unit	Equipped with optional Pickup Unit = 9,000 lbs (4082 kg)
Bale Dimensions	
Length	37 in – 42 in (94 cm – 107 cm)
	14 in x 18 in (Makes 21-bale bundle – Default setting)
Height x Width	16 in x 18 in (Makes 18-bale bundle – See <i>Adjust Pressure Plate to 16" x 18" bale</i> in the Adjustments section)
Bundle Dimensions	
Height	4 ft 6 in (54 in)
Width	3 ft 6 in (42 in)
Length	8 ft (21-bale bundle) or 7 ft 10 in (18-bale bundle)
Tires	
Front tires	20.5 x 8.0 x 10-E Hwy Trl TL
Back tires	W/14L-16.1SL 8 ply FARM UTIL TL Mounted on 8 on 8" Rim
Surge Brakes (Option)	
Rear	13" Hydraulic Drum Brakes with on/off toggle on iPad
Hydraulic Requirements	
PSI	Min: 2500 psi (172.3 bar) -to- Max: 3000 psi (206.8 bar)
GPM	Min: 20 gpm (75.7 l/m) -to- Recommended: 25 gpm (94.6 l/m) & +
System	Closed Center – Piston pump
Filter Element Replacement	high collapse pressure element, non-bypass, 5 micron
Hydraulic Oil Cooler	Reversible Fan - Standard; 16hp of heat removed
Tractor Horsepower	Dependent upon Terrain - 90hp Minimum
Steel Strapping	
Size	.020 in x .5 in (0.5 mm x 12.5 mm)
Strength	1170 lb (5205 N) break strength, regular duty (not high tensile)
Roll weight	90 lb – 100 lb (41kg – 45 kg) per roll, 29.4 ft/lb
Roll dimensions	16 in ID x 20 in OD x 3 in wide (40 cm ID x 51 cm OD x 7.62 cm)
Recommended supplier	DuBose Strapping & Packaging, 800-354-3021
Baler Twine Strength	Min: 170 lb (756.2 N) knot strength Some hay conditions require greater knot strength
iPad Requirements	5 th Generation & iOS 13 or greater

Warranty and Service

- ❑ Parts are warranted for one year or 40,000 bales, whichever comes first.
- ❑ Buyer of unit provides/performs service.
 - Pike Mfg. Corp. provides free training at Pike's facilities.
- ❑ Online support videos at <https://www.balebandit.com/support/online-support/>
- ❑ Phone support during Pike (or Bale Band-It Sales Rep.) office hours.
- ❑ Video conference support.
- ❑ Pike Mfg. Corp. provides domestic shipping of warranty parts up to 2nd Day Air UPS service.
 - Upgrading from 2nd Day Air to Next Day Air, buyer pays upgrade cost
- ❑ Operating the Bale Band-It beyond its designed use is the sole responsibility of the buyer.
- ❑ See warranty agreement.

Serial Number Location



Safety

Bale Band-It Operator Safety

General Precautions

- ❑ Without proper safety precautions, the Bale Band-It has the capability of causing great injury or death to those operating or those near the machine.
- ❑ When parking the Bale Band-It on a slope, ensure machine is facing uphill and chock the rear wheels before unhitching from tractor / baler.

Live Power Precautions

- ❑ Proper disengaging of hydraulic power supply requires turning off tractor remote and turning off engine of tractor.
- ❑ The Bale Band-It is fully computer operated. If hydraulic pressure is supplied to the machine it can and will move at any time. Disengage hydraulic supply to the machine before approaching.
- ❑ Operator must properly disengage hydraulic supply before troubleshooting, working on, or approaching the machine.
- ❑ The Emergency Shut Off located on the Bale Band-It is an electrical switch that disengages a hydraulic valve. Either the electrical switch or the hydraulic valve has the potential to fail. Therefore, do not rely on this to shut off the hydraulic oil supply. Disengage hydraulic supply to the machine before approaching.
- ❑ The Emergency Shut Off located on the iBand-It app requires multiple systems to work properly to disengage a hydraulic valve. Either these systems or the hydraulic valve has the potential to fail. Therefore, do not rely on this to shut off the hydraulic oil supply. Disengage hydraulic supply to the machine before approaching.
- ❑ When using the reset buttons ensure no-one is near moving parts.

Safety Maintenance Precautions

- ❑ If at any time the Safety Light/Horn located on the machine does not work properly, it must be replaced immediately.
- ❑ Do not operate the machine without all shields in place and all doors properly closed.
- ❑ Mount / attach all hydraulic hoses and cables so that there is sufficient flexibility to turn corners without sharp points, edges or pinch points affecting the hoses and cables.
- ❑ When undertaking daily routine maintenance ensure electric and hydraulic power is off.
- ❑ Keep hydraulic systems clean.
- ❑ Repair all oil leaks immediately.
- ❑ Prevent oil contamination.
- ❑ It is recommended that hay fever sufferers do not clean or maintain the Bale Band-It.
- ❑ The loading of strapping reels should be a 2-man operation.
 - Each reel weighs 90lb – 100lb (41 – 45 kg)

Deviations from Design of Use

The Bale Band-It is designed to be pulled directly behind your small square baler.

- ❑ If machine is to be used in a manner other than that for which it is designed, then it is up to the owner / operator of the machine to ensure that further risk assessments are undertaken and suitable control measures implemented.
- ❑ In the case of using the Bale Band-It as a stationary unit: this may involve the provision of an exclusion zone to prevent personal physical access to parts of the machine that would normally operate safely when towed.

Safety Decals

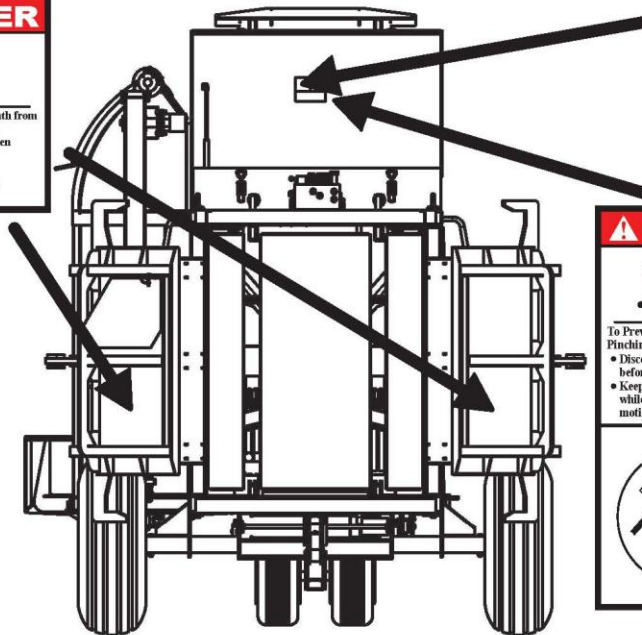
Safety Decal Key	
 CAUTION	Indicates general safety practices and reminders
 WARNING	Indicates specific potential hazards
 DANGER	Indicates specific potential hazard that is most serious

⚠ DANGER



To Prevent Serious Injury or Death from Pinching:

- Stay away from back gates when machine is in operation.
- Keep others away.
- Do not operate machine when bystanders are present.



⚠ DANGER

STOP! Before Pressing Reset Buttons Read The Following!

Before pressing "Reset Enable":

- Open side doors and empty out any bins or hose lay that may obstruct the Horizontal Plunger from fully extending. This will prevent objects from being the bottom front of Banding Box and causing machine damage!
- Check that all persons are clear from unit.
- Check that machine has been electrically and hydraulically powered within the last 2 minutes. This will help ensure that cylinders are not in a "lump-of" state.
- Check that Vertical Plunger cylinder has not "lumped" down. If it has, apply electric and hydraulic power to unit until all cylinders are in proper location.
- To prevent chance of bodily harm, ensure that the hydraulic power is disengaged from machine.
- Electric power must be engaged in order for "Reset Enable" button to work.

Before pressing "Reset Strapping":

- Check that all persons are clear from unit.
- To prevent chance of bodily harm, ensure that the hydraulic power is disengaged from machine.
- The tie power must be engaged in order for "Reset Strapping" button to work.
- Check that new rolls of strapping are threaded prior to pressing reset.
- When machine automatically stops due to bundle count run long are (Out of Strapping), machine will remain in a paused state until one of the reset buttons are pressed. Therefore, machine will move immediately after a reset button is pressed.

Note: "Reset Strapping" only changes the bundle counter on Tractor Module and does not effect the bundle count in the machine.

⚠ DANGER



To Prevent Serious Injury or Death from Pinching:

- Disconnect and lockout power source before threading steel strapping.
- Keep all persons and objects clear while any part of this machine is in motion.

⚠ DANGER

MOVING PART HAZARD

To Prevent Serious Injury or Death from Moving Parts:

CLOSE LID BEFORE STARTING OPERATION.

- Disconnect and lockout power source before threading steel strapping.
- Keep hands, feet, hair, and clothing away from moving parts.
- Do not stand or climb on machine when operating.



⚠ CAUTION

To Avoid Injury or Machine Damage:

- When servicing machine use proper tools and equipment.
- Refer to operations manual for instructions.

⚠ DANGER

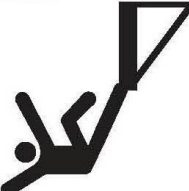


To Prevent Serious Injury or Death from Pinching:

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

⚠ CAUTION

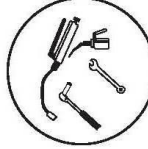
NO STEP



WARNING

To Prevent Serious Injury or Death from Falling:

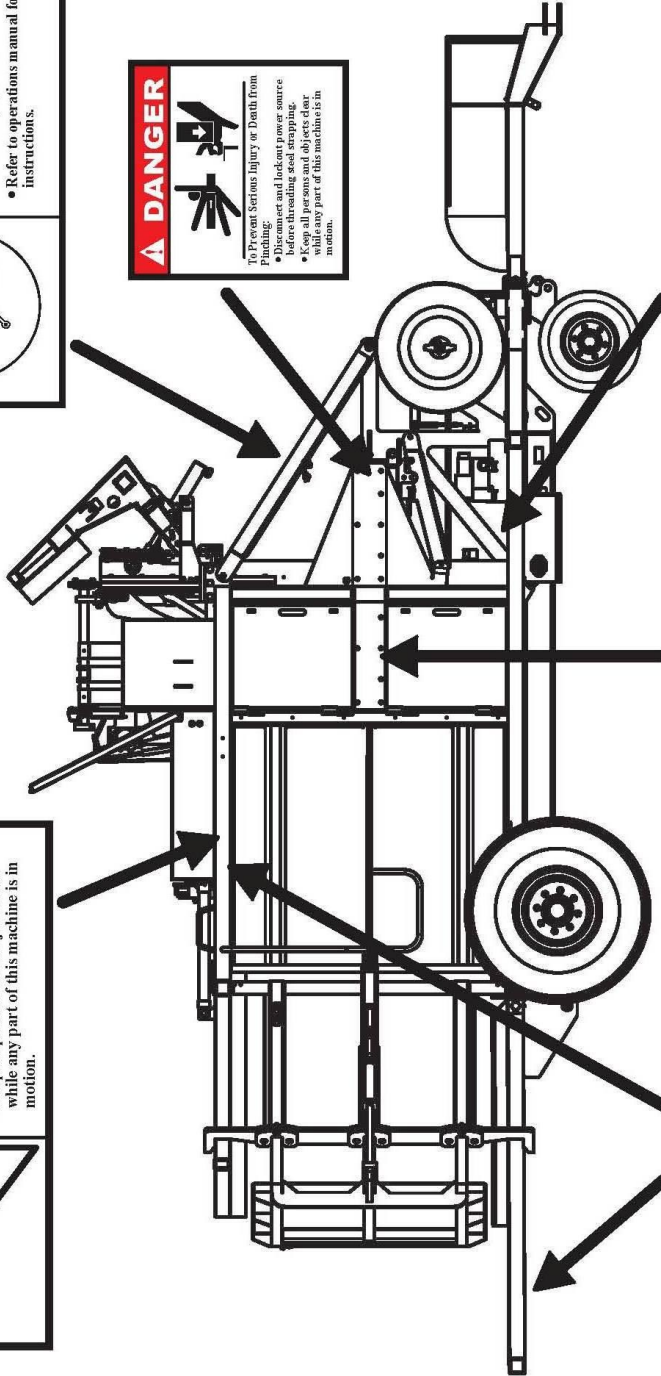
- Do not stand on or around when machine is operational.
- Keep all persons and objects clear while any part of this machine is in motion.



CAUTION

To Avoid Injury or Machine Damage:

- When servicing machine use proper tools and equipment.
- Refer to operations manual for instructions.





DANGER

To Prevent Serious Injury or Death from Pinching:

- Disconnect and lockout power source before threading steel strapping.
- Keep all persons and objects clear while any part of this machine is in motion.

CAUTION

DO NOT RIDE

WARNING

MOVING PART HAZARD

To Prevent Serious Injury or Death from Moving Parts:

- Close doors before starting operation.
- Keep hands, feet, hair, and clothing away from moving parts.
- Disconnect and lockout power source before servicing machine.
- Do not stand or climb on machine when operating.



DANGER

To Prevent Serious Injury or Death from Pinching:

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

DANGER

To Prevent Serious Injury or Death from Moving Parts:

- 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.



DANGER

To Prevent Serious Injury or Death from Pinching:

- 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.

⚠ DANGER

To Prevent Serious Injury or Death from Falling:

- Do not stand on or around when machine is operational.
- Keep all persons and objects clear while any part of this machine is in motion.

⚠ DANGER

COMPLETELY AUTOMATED EQUIPMENT

The BALE GRAB - Its completely computer controlled and automated.

To Prevent Serious Injury or Death From Pinching:

- Do not operate without guards and shields in place.
- Do not operate without power source before adjusting and servicing.
- Read operator's manual before operating equipment.

To Prevent Serious Injury or Death from Falling:

- Do not stand on or around when machine is operational.
- Keep all persons and objects clear while any part of this machine is in motion.

⚠ DANGER

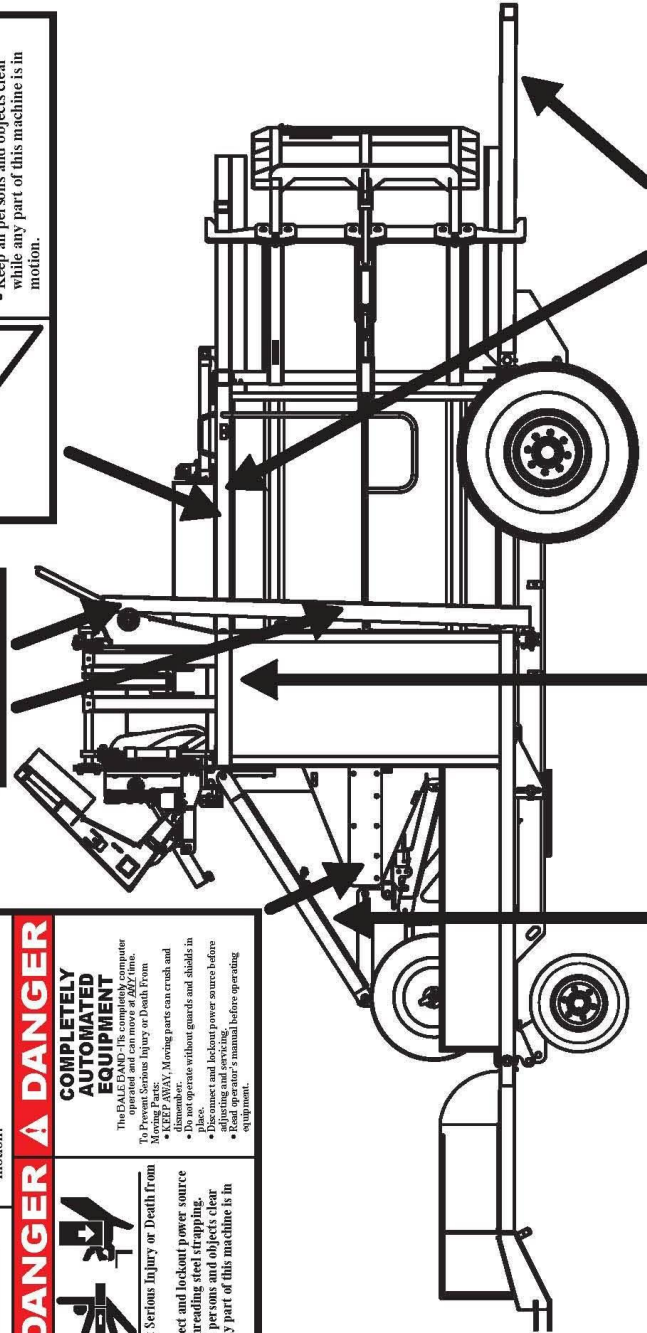
To Prevent Serious Injury or Death From Pinching:

- Do not operate without guards and shields in place.
- Disconnect and lockout power source before adjusting and servicing.

⚠ WARNING

To Prevent Serious Injury or Death from Falling:

- Do not stand on or around when machine is operational.
- Keep all persons and objects clear while any part of this machine is in motion.



⚠ CAUTION

To Avoid Injury or Machine Damage:

- When servicing machine use proper tools and equipment.
- Refer to operations manual for instructions.

⚠ DANGER

To Prevent Serious Injury or Death From Pinching:

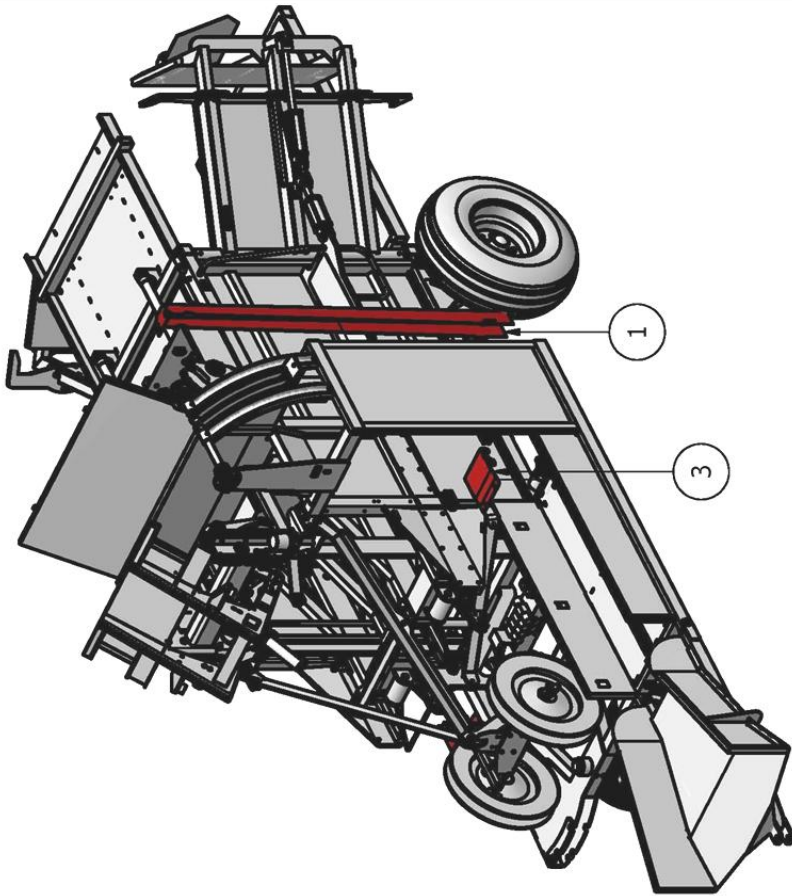
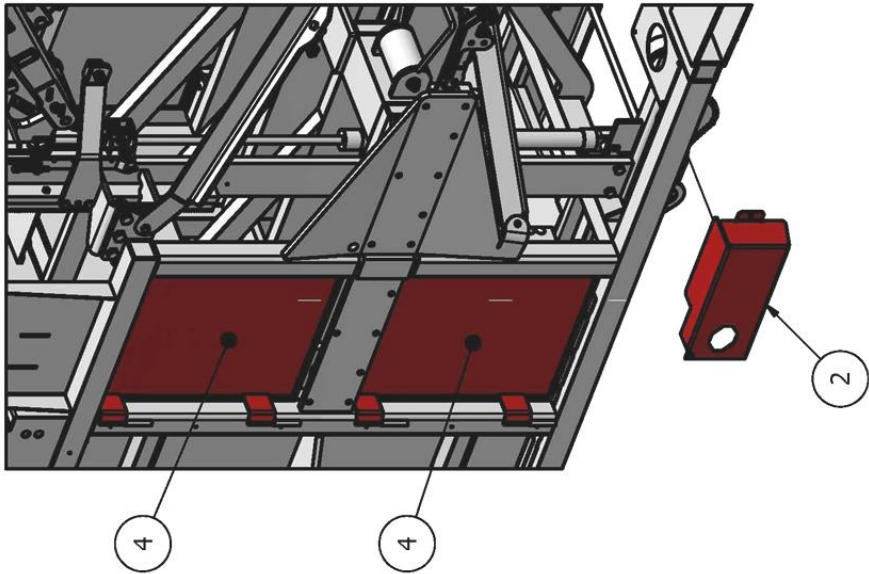
- Keep all persons and objects clear while any part of this machine is in motion.

⚠ CAUTION

DO NOT RIDE

Operational Safety Guards

Guards			Rev: 2013-01-01
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1-M-0018	Vertical Elevator Chain Guard
2	1	1-M-0168	Strap Guide Arm Chain Guard
3	1	1-M-0204	Guard - Horiz Elev Motor
4	1	1-O-0000E	Side Door



OPERATOR SAFETY:

TURN OFF TRACTOR BEFORE REMOVING ANY GUARDS.
DO NOT OPERATE THE MACHINE WITHOUT ALL SHIELDS
IN PLACE AND ALL DOORS PROPERLY CLOSED.
REPLACE ANY MISSING OR DAMAGED GUARDS.

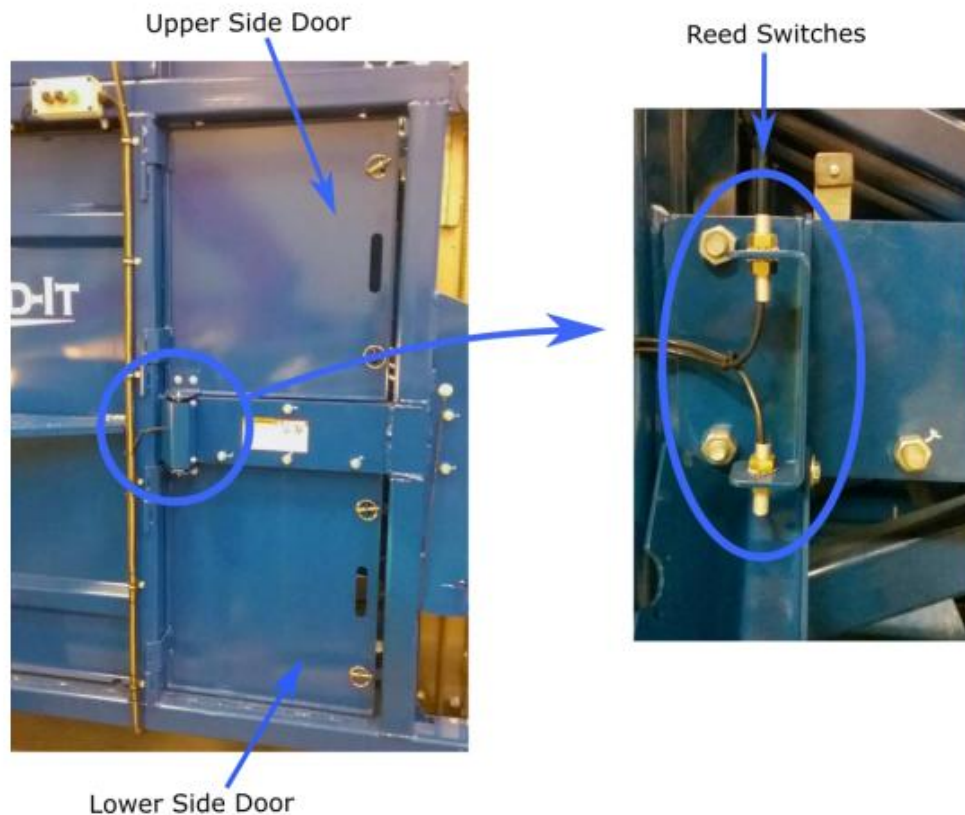
Side Door Safety Switch

The Bale Band-It has two side doors on the right-hand side of the machine that allow the operator to access the bundle compression chamber. This is helpful for removing damaged bales from the chamber, but it also allows the operator to access a hazardous part of the machine. If certain parts of the machine move while the operator is reaching into the compression chamber, it can cause severe injury or death.

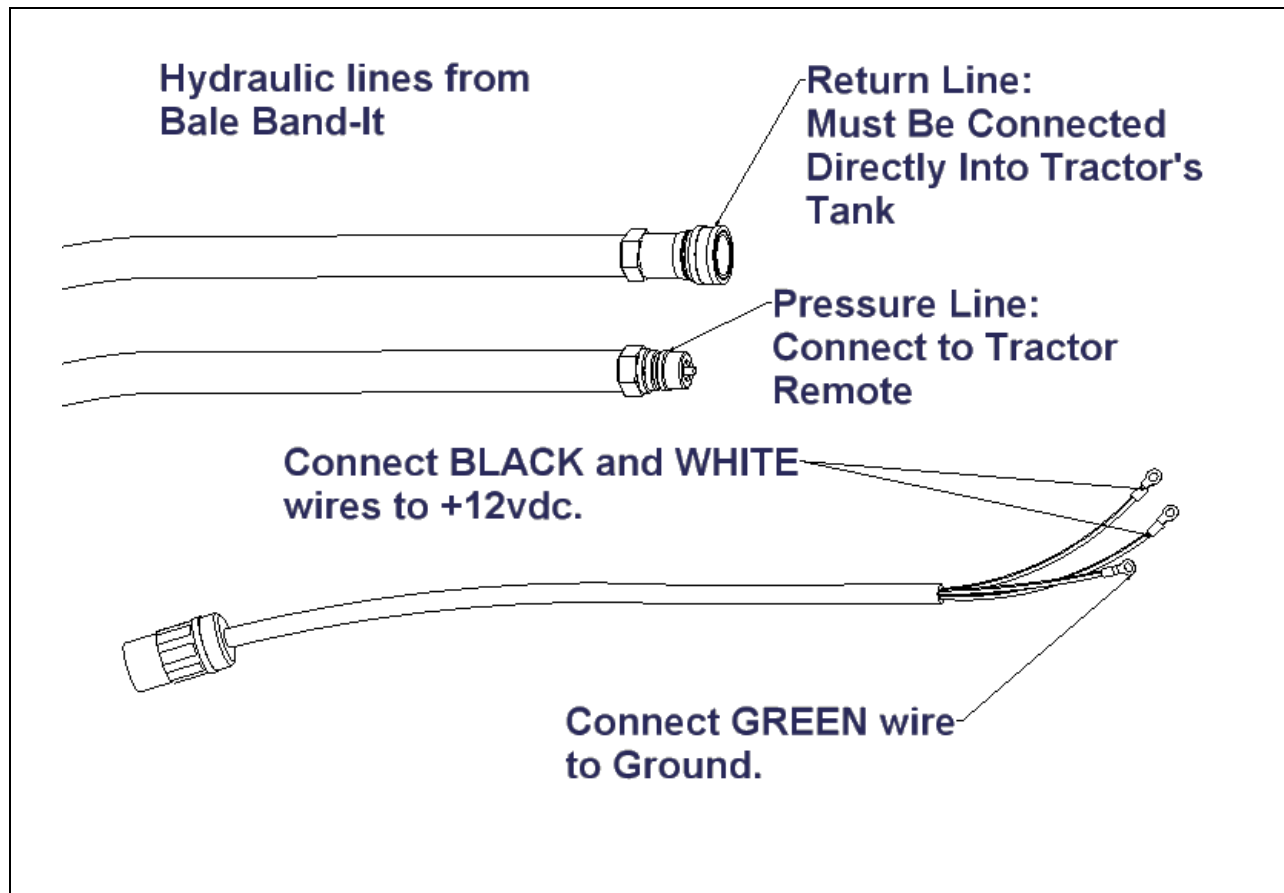
NEVER open side doors while hydraulics power is being supplied to the Bale Band-It. Any service of the machine, including opening of the side doors, should only be done while the hydraulic power from the tractor is turned OFF and the E-STOP button is pressed in. If a Nitro Boost has been installed, then the Nitro Boost Operational Ball Valve must be turned to the OFF-SAFE position before performing and inspection or maintenance on the machine.

For your safety there are also magnetic sensors (a.k.a. reed switches) installed on both side doors. These will deactivate the hydraulic operation of the machine whenever one or both of the side doors are open. However, since these switches depend on magnetism and electrical power, they should not be relied upon solely. For the operator's safety, the hydraulic power to the machine must be turned off and the E-STOP button pressed before performing any inspection or maintenance.

This update comes standard on all 210 and above models, and will be installed on all Bale-Band-Its sent to the shop in Pittsfield regardless of model or customer preference.



Hooking Up



- ❑ The Bale Band-It is connected to the baler hitch. All baler chute extensions must be taken off the baler. The center of the pin hole in the baler hitch needs to be adjusted 8-10 inches (20 cm – 25 cm) from the main chamber of the baler.
- ❑ Pike Mfg. Corp. provides all electrical cables and connectors needed for operation.
- ❑ The 10' (3 m) electrical cable (10 gauge, 5 conductor) with terminal ends is to be attached to a 12-volt DC power supply (battery of tractor). This cable consists of 5 separate insulated wires. The black and white wires are to be attached to the +12-volt DC and the green wire is to be attached to ground.
- ❑ Pike does not provide the two hydraulic hoses that are to be attached onto the baler. These hydraulic hoses go from the tractor to the Bale Band-It and must be 1 inch (25.4 mm) ID hoses. Anything less than 1 inch (25.4 mm) ID will not allow proper hydraulic flow to the machine and will slow performance. It is recommended that 1 inch (25.4 mm) male pipe thread ends be crimped on one end of each of the two hoses mounted on the baler. This will allow for the provided couplers to be attached to the hoses. Pressure and return hoses both must be 1 inch (25.4 mm) ID and rated for a minimum of 3,000 psi (207 Bar).
- ❑ Pike provides one set of 1 inch (25.4 mm) pipe thread male/female couplers. These couplers are to be used to connect to the existing hydraulic couplers located on the front chute of the machine to the hoses mounted on the baler.
- ❑ An additional set of 1 inch (25.4 mm) pipe thread male/female couplers can be purchased from Pike to provide an easy connection from baler hose return to tractor reservoir.

- ❑ When attaching hydraulic hoses to tractor, it is very important that the pressure line is attached to the tractor remote and the tank line is attached directly to the reservoir of the tractor. The Bale Band-It filters the pressure line right before it enters the first hydraulic valve manifold. This filter is located between the white Banding Drums. Be certain that the line coming from this filter (the pressure line) is connected to the tractor remote. Reversing the pressure line and the return line can cause damage to the machine. The return line DOES NOT connect to the tractor remote. The return line must connect directly to the reservoir of the tractor with NO BACK PRESSURE! Back pressure will not allow the Bale Band-It to work properly. Back pressure is the most common mistake made in hooking up the Bale Band-It. The return line CANNOT be connected directly to the remote or ran through a return kit. It must be connected directly to the tank of the tractor or through the fill cap WITHOUT restriction.
- ❑ Mount hoses on baler so that while turning corners the hoses are not crimped, cut or stretched between the tractor and baler and between the baler and Bale Band-It. Also mount hoses away from any sharp points or edges to prevent cutting or damaging hoses.

Bale Band-it New Features

Rotating Side Ladder

The Bale Band-It 210 & 220 is equipped with a step ladder on the left side of the machine and a bar step on the right side. These steps provide quick and easy access to areas higher up on the machine, especially the banding box. If desired, the right side can also be equipped with a step ladder instead of the bar step. See parts manual for part number ordering information.



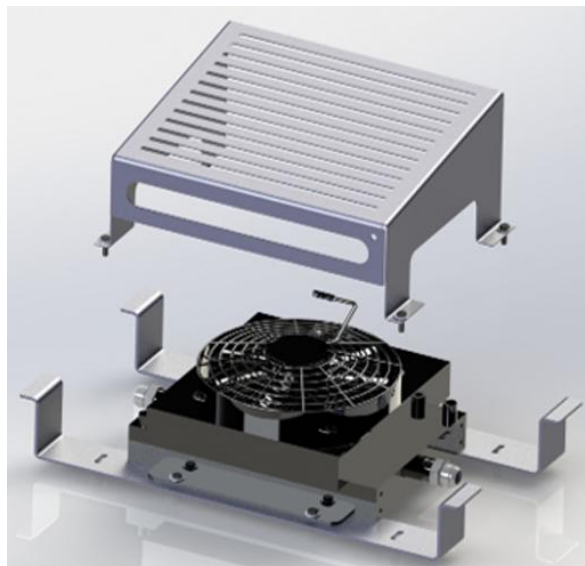
Step Ladder – left side of machine



Bar step – right side of machine

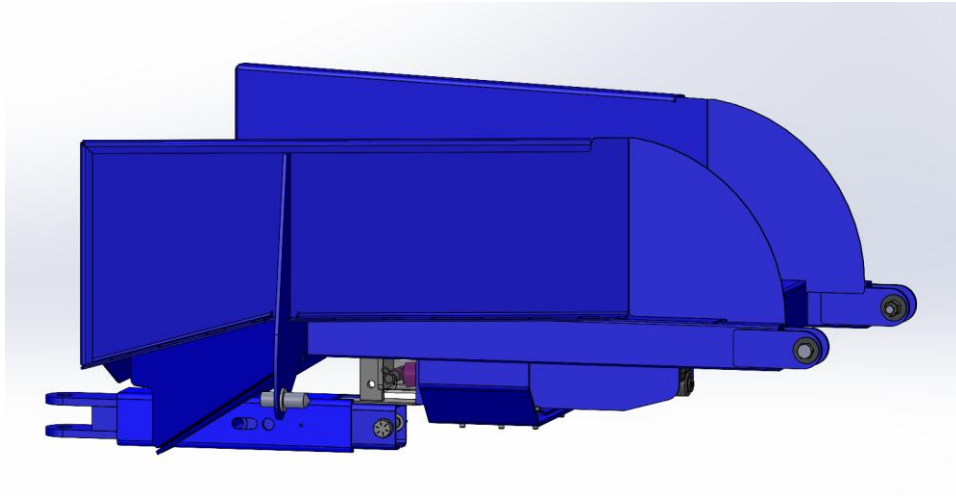
Hydraulic Oil Cooler

Hydraulic oil cooler mounted to the bottom of the Bale Band-It controls hydraulic oil temperature for consistent and efficient operation.



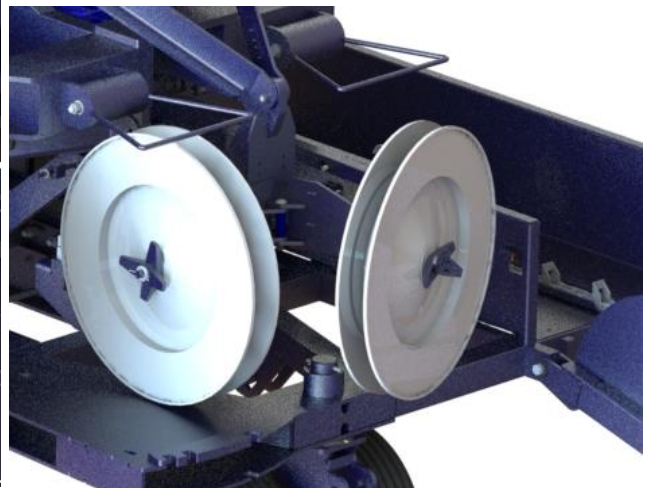
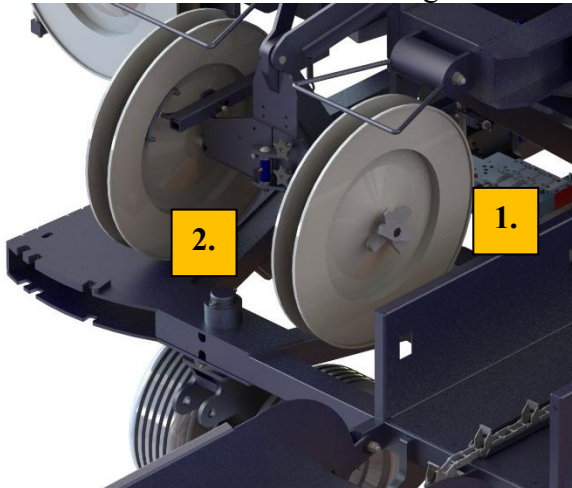
Surge Brakes (Option)

This option automatically applies brakes to the rear wheels of the Bale Band-It when the Tractor is going down a hill. This system provides smoother slow down with its contained hydraulic actuator



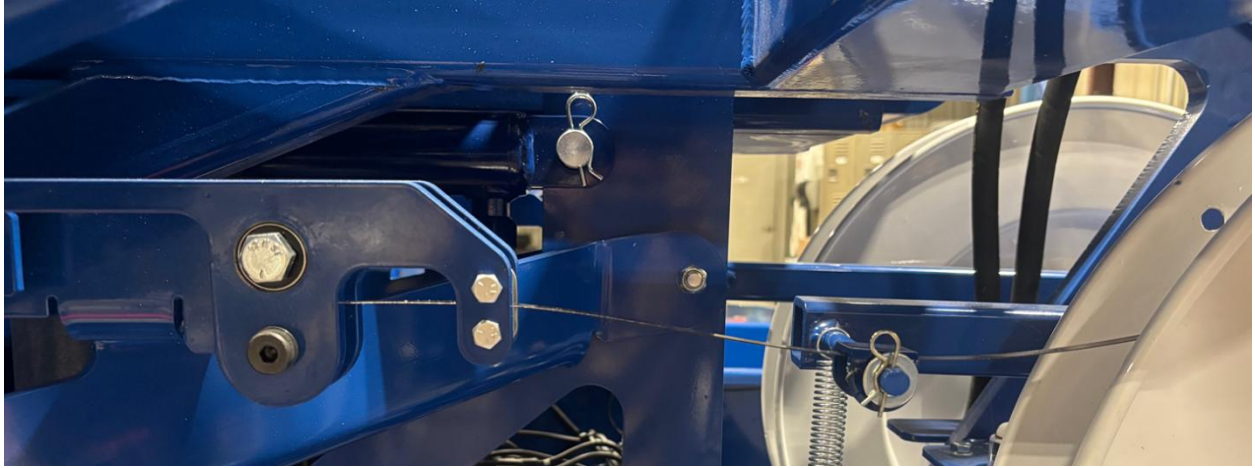
Pivoting Banding Drum Holder

1. Unlatch the brake spring from its containing hook.
2. Unscrew the 2 star handles to gain access to the pivoting feature



Banding Feed Assist

1. Thread the strapping between the Upper Crimper Roller and the Lower Bearing.
Utilize a $\frac{3}{4}$ " Socket and Impact Gun on the Upper Crimper roller bolt to feed the necessary length of strapping



Strap Guide Arm Rotary Encoder

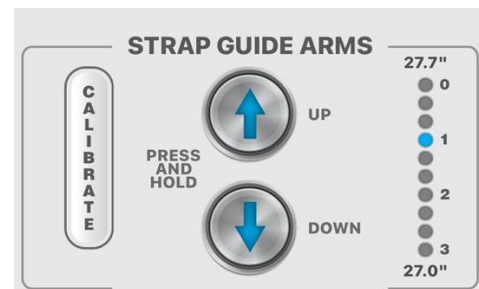
New on the Bale Band-It 220 model is the addition of a rotary encoder to monitor the position of the strap guide arms. This feature replaces the sensor bar that was equipped on previous models. Benefits of this encoder provide increased accuracy, elimination of the sensor bar made up of 4 individual sensors, and providing feedback to the strap guide motor and interface of the iPad.

Operation

The encoder is programmed to report out the location and activate the functions required at each position of the strap guide arms (Bale0, Bale1, Bale2, & Bale3).

Calibration Sequence & Troubleshooting

- The encoder will be calibrated from the factory to verify the position and will retain the strap guide arm position to memory when the machine is powered down no matter where the strap guide arms are stopped.
- Calibration will only need to occur at the initial startup of the machine (done at factory), and whenever any mechanical adjustments are made to the strap guide arms that will affect their vertical position. Such as chain replacement, chain tensioning, and wear strips replaced.
- During this procedure the strap guide arms will be sent to TOP position and remain there for 5 seconds. Next it will send the strap guide arms to the BOTTOM position and wait 5 seconds. Finally, it sends the strap guide arms back to TOP position. This process measures the length of travel from top to bottom and verifies the positioning of the arms is within the limits of the machine specs.
- If the calibration sequence fails, a pop will display an error code. The error codes associated with the encoder are listed below
 - 013 Waiting for Strap Guide Arms at Bale Position 1. 79
 - 014 Waiting for Strap Guide Arms at Bale Position 2. 80
 - 015 Waiting for Strap Guide Arms at Bale Position 3. 82
 - See Troubleshooting Tips for the error code displayed for further help
 - Top Diffs Error: "Top differences too great. Expected: x Found: y"
 - Top to Bottom Error: "Top to Bottom distance too small. Expected: x Found: y"
 - Verify adequate tension on both strap guide arm chains
 - Verify that the strap guide arms are aligned with each other
 - Also can reference the troubleshooting tips for error codes 013, 014, & 015



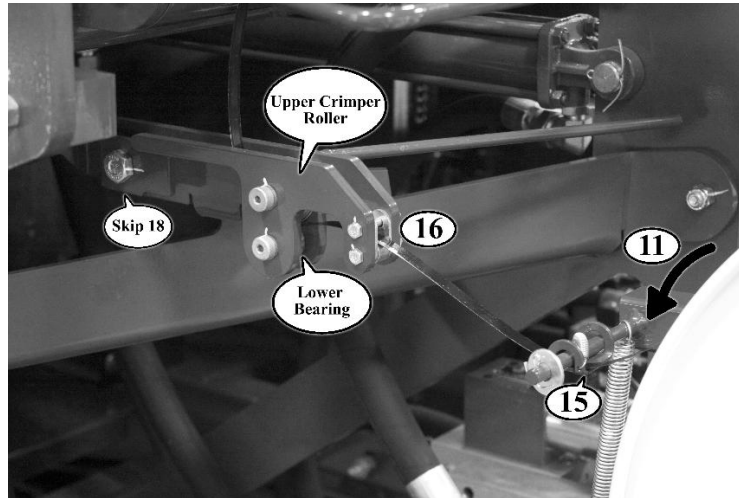
Bale Band-It Threading Instructions

**** Steel banding that is used in the Bale Band-It can be sharp on the edges. Please wear all necessary personal protective equipment when handling the banding. ****

1. Remove white banding drums from Bale Band-It by removing clip pin, releasing brake arm and sliding empty white banding drum off of shaft.
 2. Unthread wing nuts and split banding drums in half.
 3. Remove any remaining strapping (if any) and metal insert from previous spool.
 4. Place new roll of strapping onto white banding drum. Note that the end of the strap must come off the top of the roll. (Therefore, if you have both drums setting on flat surface next to each other, one of the rolls should come off in clockwise manner and the other counterclockwise.)
 5. Verify the end of the strapping is taped down good.
 6. Cut the three bands that wrap around the strapping.
 7. Pull the cut bands out from around the strapping roll. If these bands are left on, they will cause problems during operation.
 8. Place banding drum side over the threaded pipe and begin threading the first wing nut on.
 9. Work the banding drum side as you tighten the wing nut. The better the drum side fits into the strapping insert, the less force is needed by the wing nut. Turn banding drum vertical and tighten wing nut more.
 10. Tighten the first wing nut until you are able to make the second wing nut flush with the end of the threaded pipe. Then, jam the second wing nut onto the first wing nut. Do not over tighten the first wing nut and crush the center cone.
- Note:** If band drums are well used then you may have to tighten the first wing nut tighter. The goal during operation is that when the brake stops the inside surface, the outside half of the drum and the strapping roll also stop. Older drums may need to be tightened more to still “pinch” the strapping roll tight.
11. Slide fully assembled banding drum (now with strapping) onto the banding drum rod. Verify that correct roll is placed on the correct side of the machine, as the strapping must feed off the top of the roll.
 12. Pick up on the brake arm and slide roll on completely. Apply as many washers as possible and install the clip pin.
 13. Repeat procedure for other banding drum.



14. Remove tape that holds down end of strapping. Give yourself some slack in the strapping by releasing the brake arm and turning the drum. The end of the strap must come off of the top of the roll.



15. Thread the strap between the ½" (12.5 mm) rod and the spring-loaded strap guide attached to the banding drum brake arm. The strap should be under the ½" (12.5 mm) rod and on top of the spring-loaded strap guide.

16. Thread the strapping above the roller but under bolt.

17. Thread the strapping between the Upper Crimper Roller and the Lower Bearing. Utilize a ¾" Socket and Impact Gun on the Upper Crimper roller bolt to feed the necessary length of strapping

If not using feed assist - This will take some force to push through, as this is where the edges of the strapping are beveled. Cutting the end of the strap at an angle will allow strapping to get started easier.

18. Always skip back roller unless using baling wire

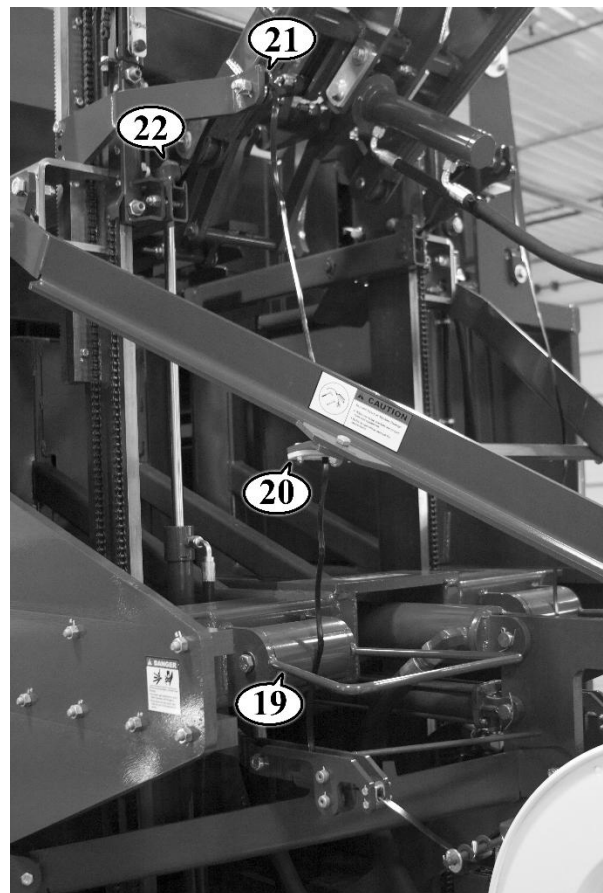
19. Thread the strapping inside of the Rod Frame and against the large roller mounted on the Horizontal Plunger.

20. Thread the strapping through the UHMW slot mounted to the cross brace.

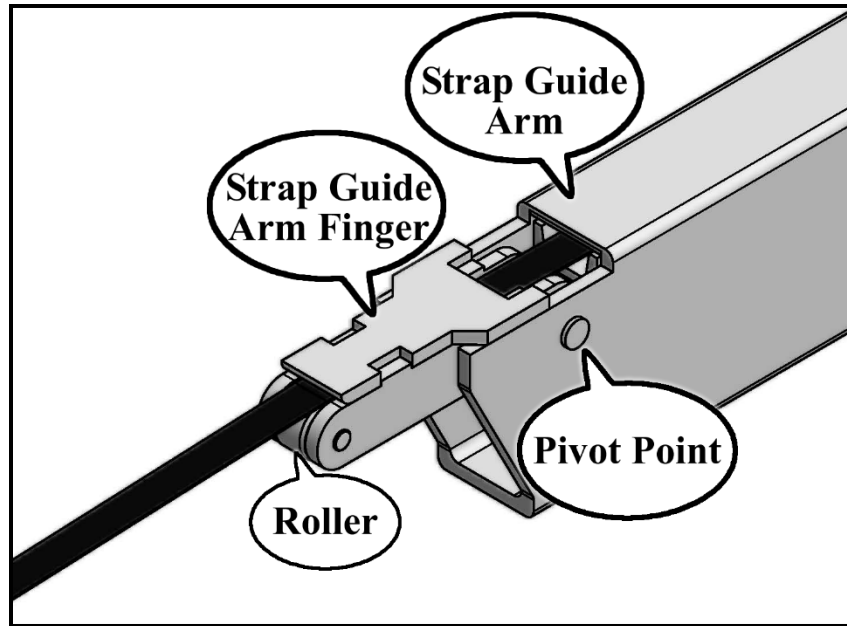
21. Thread the strapping over the bearing on the upper bearing arm.

22. Thread the strapping under the roller and in the channel of the Strap Guide Arms. For easier threading, straighten the strapping before threading under the roller. This will allow the strapping to flow easily through the Strap Guide Arm and out the other side.

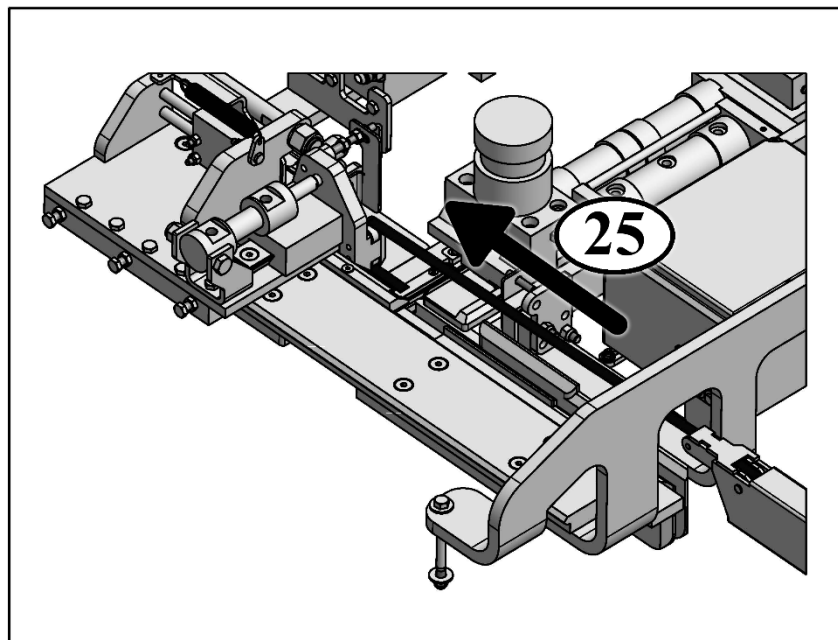
23. As the strapping is being threaded through the Strap Guide Arm, it must be threaded on top of the pivot point of the Strap Guide Arm Finger.



24. Thread the strapping on top of the roller mounted at the end of the Strap Guide Arm Finger.



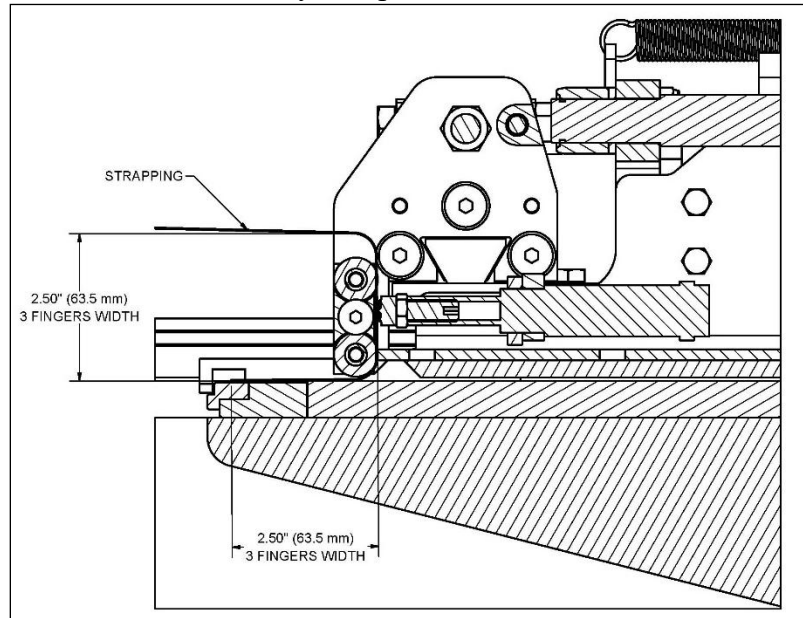
25. Pull approximately 30" (0.75 m) of strapping from the Strap Guide Arm Finger.



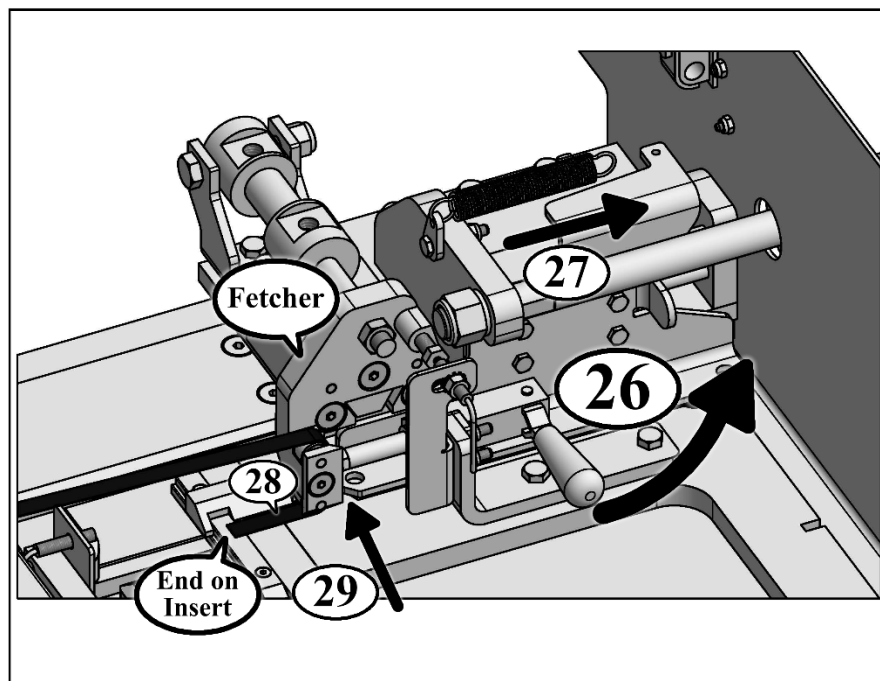
26. Release the tension on the red handled clamp by pulling the handle back.

27. Pull back on the spring-loaded skid plate.

28. Pre-bend the strapping into a “C” shape. Use 3 fingers to approximate the distance. Make the lower leg of the “C” flat, without any bumps.



29. As the spring-loaded skid plate is being pulled back, slide the strapping around the side of the fetcher rollers in the direction of the arrow labeled “29”. At this point the strapping should be located between the 2 rollers and the Gripper. Release the spring-loaded skid plate and re-apply tension to the red handled clamp. The end of the strapping should end on the zinc plated insert (see pic).



Note: The amount of tension on the red handled clamp can be adjusted by adjusting the bolt mounted in the end of the clamp. Typically, the tension should not be changed after the initial break in period. **Never adjust Red Handle with hydraulic power off!** This adjustment pushes against the fetchers which can seep forward with no hydraulic power and cause adjustment to be over tight and damage assembly when hydraulic power resumes. Refer to Red Handle Adjustment in the Adjustment section of the manual.

Sequence of Events

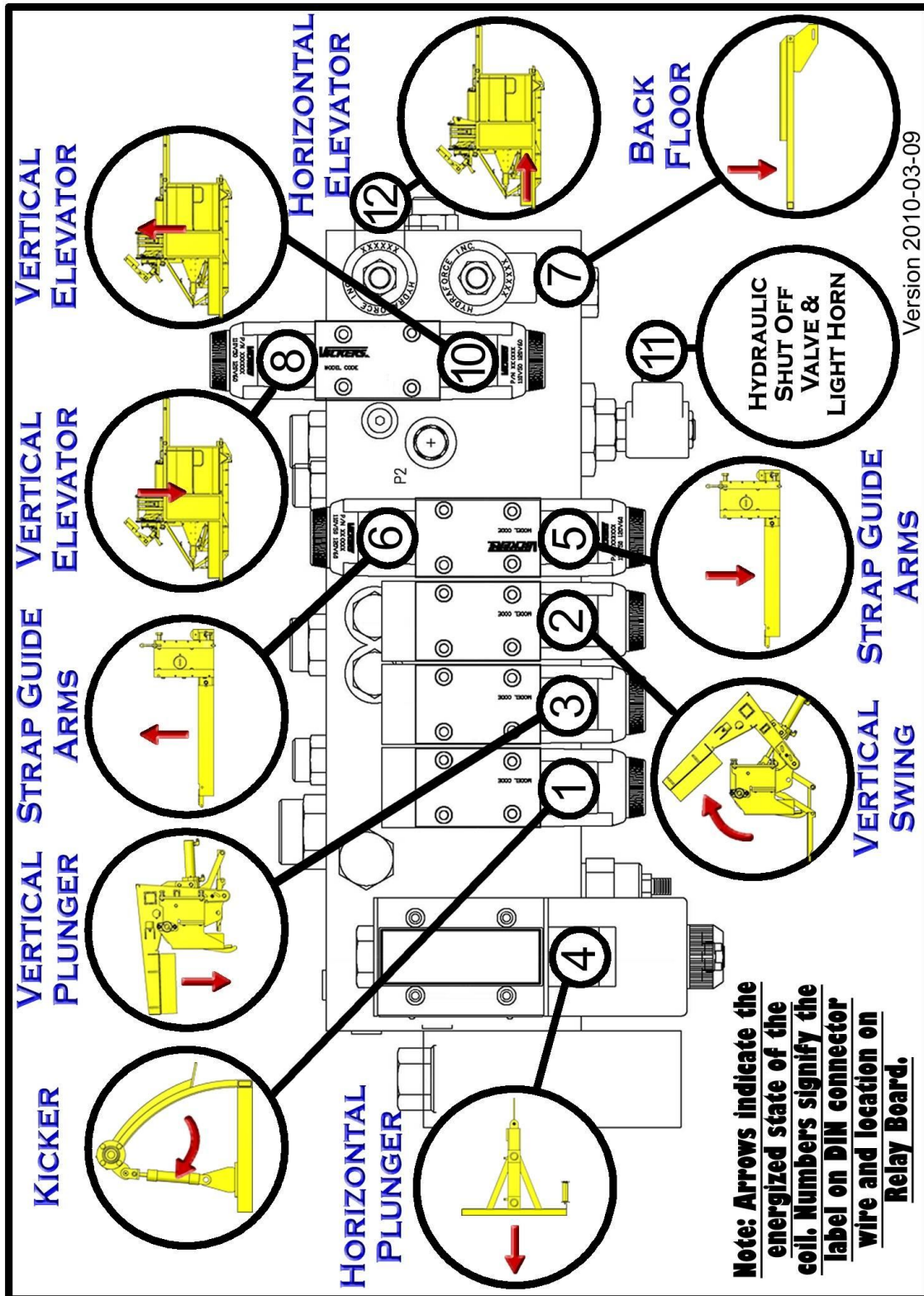
The Bale Band-It does not move until activated by an incoming bale. It will then perform a series of operations that correspond to where the machine is at in the 21-bale process.

1. Bale 1 loaded into stacking chamber at Bale Position 1.
2. Bale 2 loaded into stacking chamber at Bale Position 2.
3. Bale 3 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
4. Bale 4 loaded into stacking chamber at Bale Position 1.
5. Bale 5 loaded into stacking chamber at Bale Position 2.
6. Bale 6 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
7. Bale 7 loaded into stacking chamber at Bale Position 1.
8. Bale 8 loaded into stacking chamber at Bale Position 2.
9. Bale 9 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
10. Bale 10 loaded into stacking chamber at Bale Position 1.
11. Bale 11 loaded into stacking chamber at Bale Position 2.
12. Bale 12 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
 - b. Back floor drops, lowering the previously made bundle of 21 small square bales to the ground. The bundle then unloads with ground travel.
13. Bale 13 loaded into stacking chamber at Bale Position 1.
14. Bale 14 loaded into stacking chamber at Bale Position 2.
 - a. Back floor raises to horizontal position.
15. Bale 15 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
 - b. Back gates close.
16. Bale 16 loaded into stacking chamber at Bale Position 1.
17. Bale 17 loaded into stacking chamber at Bale Position 2.
18. Bale 18 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber.
19. Bale 19 loaded into stacking chamber at Bale Position 1.
20. Bale 20 loaded into stacking chamber at Bale Position 2.
21. Bale 21 loaded into stacking chamber at Bale Position 3.
 - a. Horizontal plunger pushes the 3 bales in stacking chamber, rearward into the main chamber, and compresses the 21-bale bundle.
 - b. The bundle is tied with 2 steel bands
 - c. Back gates open, allowing exit of newly created bundle
22. Bale process starts over and repeats the sequence of events again.

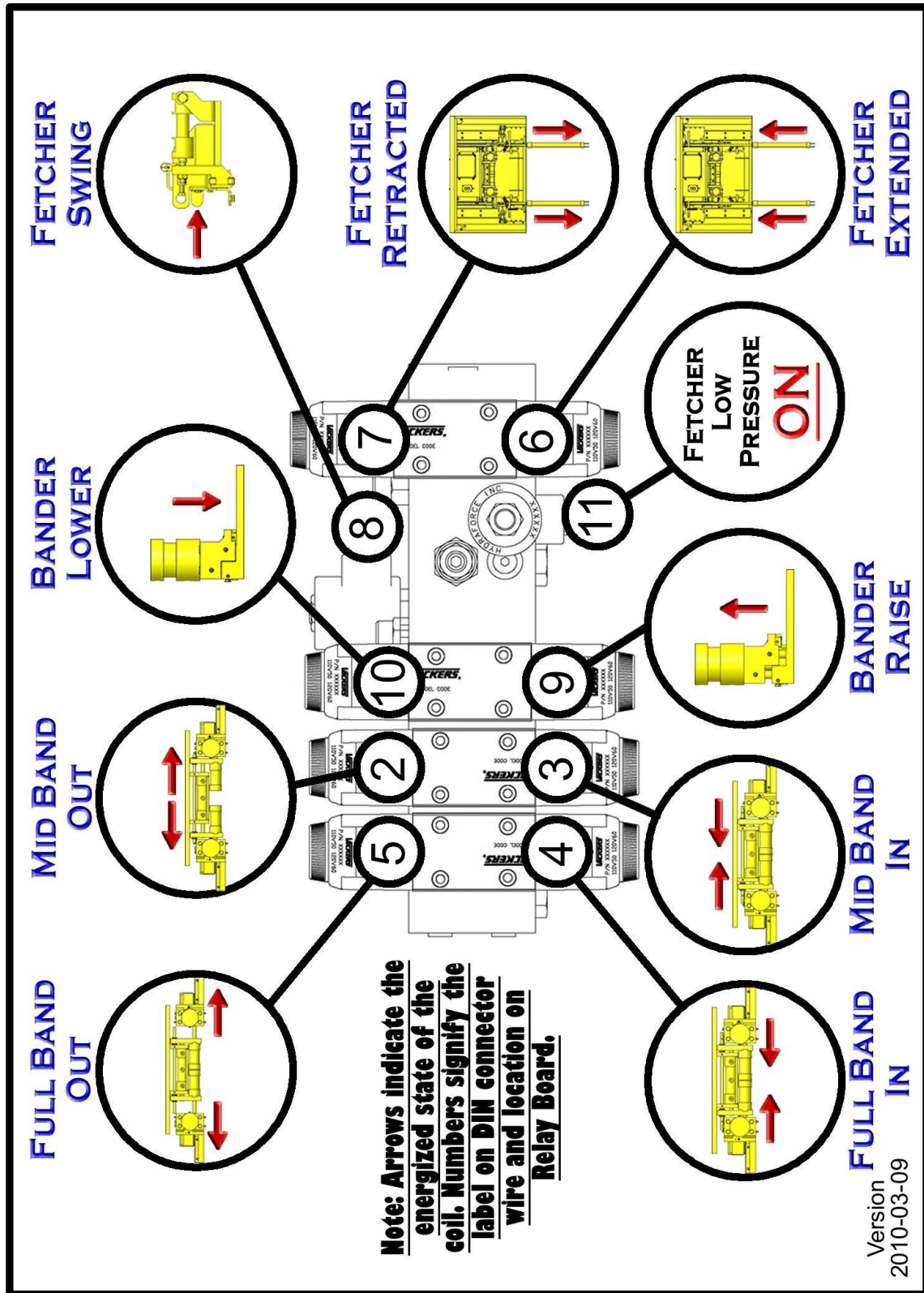
Bundles are tied with banding on bale 21. Bundles are unloaded on bale 12 of the next bundle.

Hydraulic Manifold Layout

Front Manifold

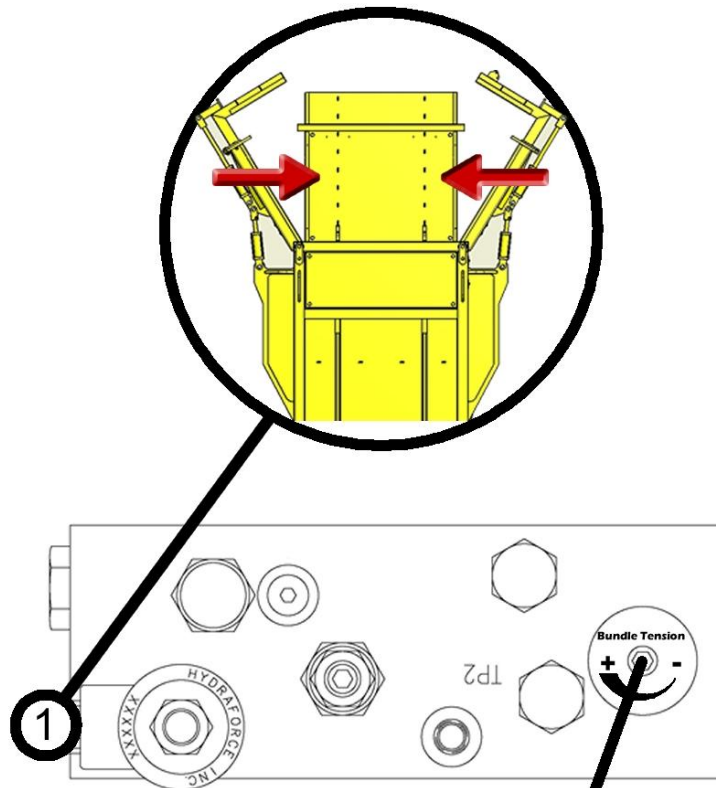


Banding Box Manifold



Outside Banding Box Manifold

BACK GATES



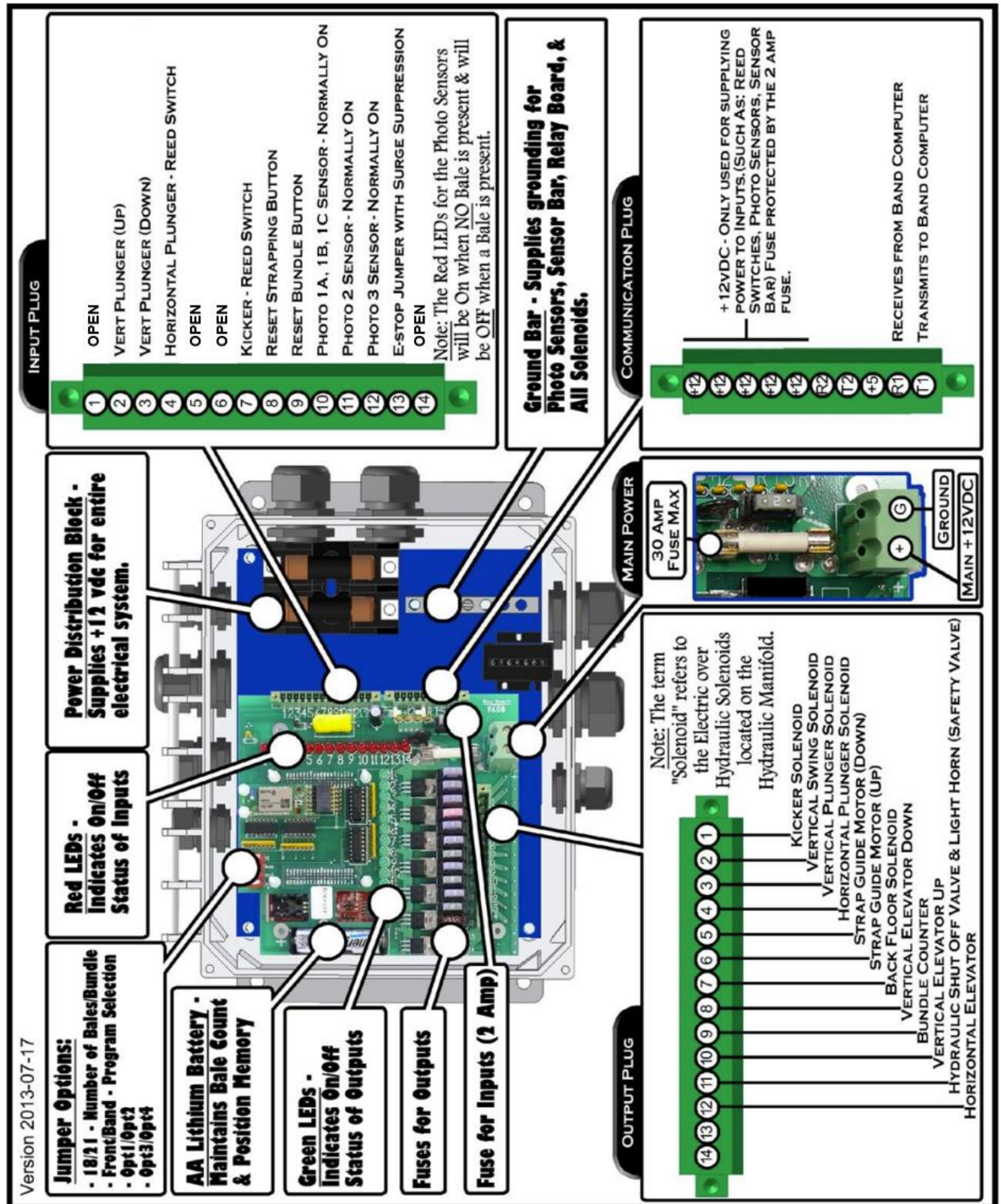
Note: Arrows indicate the energized state of the coil. Numbers signify the label on DIN connector wire and location on Relay Board.

**BUNDLE
TENSIONING
ADJUSTMENT
VALVE**

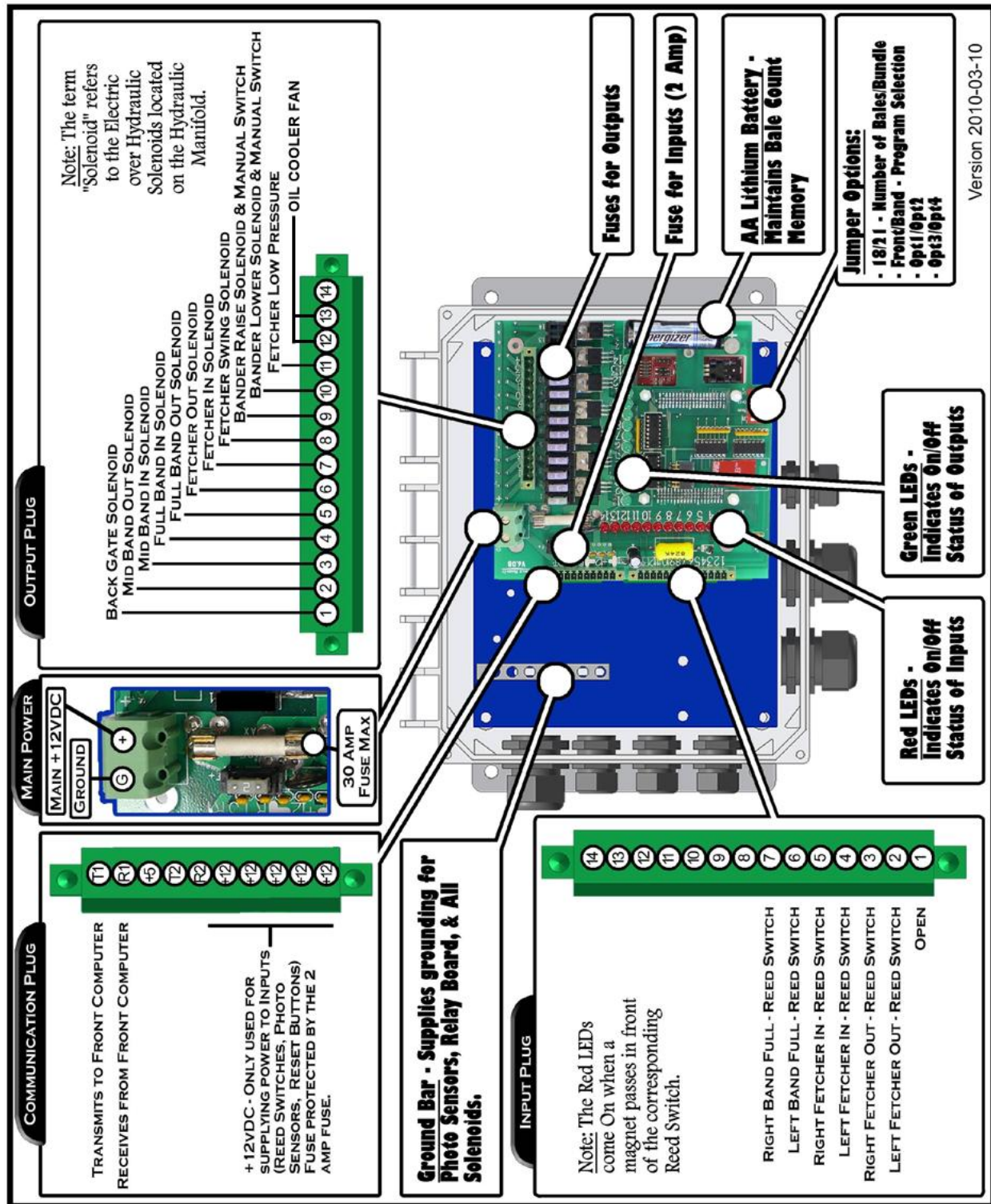
Version 2010-03-09

Electrical Layout

Front Relay Box (located behind Banding Drums)



Band Relay Box (located in Banding Box)



Electrical Overview

There are two gray electrical boxes on the machine. The Front electrical box is located on the front of the machine, on the right side (opposite the elevator). The Band electrical box is located in the Banding box. Both of the electrical boxes contain a computer/relay board. The computer/relay boards and software are identical and therefore are interchangeable between Front & Band boxes.

RED LEDs = Inputs

When a red LED is on this indicates that that specific input is on. For example, if red LED #7 is on in the Front box, then the Kicker read switch has a magnet in front of it. The Photo eye LEDs work a little different. The red LED inputs# 10, 11, 12 will be on when NO bale is present.

GREEN LEDs = Outputs

When a green LED is on this indicates that that specific output is on. For example, if green LED #2 is on in the Front box, then the Vertical Swing is in the “Energized State” (Vertical Swing Cylinder is Extended, see “Hydraulic Manifold Layout”)

When Front and Band relay boards are swapped, the following must be accounted for:

- Before starting verify machine is on Bale Position 0.
- Unplug main power cord.
- The white rocker switch labeled “Front” and “Band” should be changed so that the boards match their respective locations.
- The Bluetooth device must always be plugged on the Front board. Cut zip tie, plug Bluetooth device onto new Front board, and re-secure with new zip tie.
- The Front and Band computer relay boards control different outputs; therefore, the output fuses are different. Fuses must match what box they are in. (See below.)

Front Computer Relay Board

<u>Output #</u>	<u>Green LEDs</u>	<u>Fuse Size (Amps)</u>
1	Kicker	3
2	Vertical Swing	3
3	Vertical Plunger	3
4	Horizontal Plunger	4
5	Strap guide motor Down	3
6	Strap guide motor Up	3
7	Back Floor	2
8	Vertical Elevator Down	3
9	Counter	2
10	Vertical Elevator Up	3
11	Safety valve/Light & Horn	2
12	Horizontal Elevator	2
13	Extra Fuse	3
14	Extra Fuse	3

Banding Box Computer Relay Board

<u>Output #</u>	<u>Green LEDs</u>	<u>Fuse Size (Amps)</u>
1	Back gate	2
2	Mid band out	3
3	Mid band in	3
4	Full band in	3
5	Full band out	3
6	Fetcher out	3
7	Fetcher in	3
8	Fetcher swing	2
9	Bander raise	3
10	Bander lower	3
11	Fetcher Low Pressure	2
12	Oil Cooler Fan (Normal)	3
13	Oil Cooler Fan (Reverse)	3
14	Extra Fuse	2

Bundle Options

There are two bundle options available on the machine. The 18 bales/bundle option is intended for the 16 inch x 18 inch small square bales. This program will bundle together 18 bales. The 21 bales/bundle option is intended for the 14-inch x 18-inch small square bales. This program will bundle together 21 bales. In order to switch programs, first unplug the main power cord, move the switch to the desired program option (perform on both Front and Band boards). Plug the main power cord back together. The pressure plate will also have to be adjusted to account for the different bale size. From the factory all machines are defaulted to the 21-bale bundle.

Photo Eyes

The Bale Band-It Model 200 has 5 photo eyes that are used to detect the bale. All the photo eyes are the same part but are wired and function slightly different.

- Green light indicates that photo eye is receiving power.
- Red Signal Light will turn on and off depending upon detection status of bale.
- Using Screwdriver Adjustment set how far out the photo eye will detect the bale.
- Turn clockwise to increase detecting distance.
- Turn counterclockwise to decrease detecting distance.
- Check detecting distance by placing object in-line but away from photo eye and then slowly move object closer to eye. Red Signal Light changes when object just gets inside the photo eye's detection range.

Photo Eye 1 – Details:

- Photo eye 1 is made up of 3 photo eyes on the Horizontal Elevator.
- These 3 photo eyes are labeled photo 1A, 1B, and 1C.
- When the eye detects a bale, then the red Signal Light is on
- When the eye is unable to detect a bale, then the red Signal Light is off.
- If any one of these photo eyes detects a bale, then in the Front Relay Box red input light #10 will turn off, and the computer (if ready) will turn on the horizontal elevator chain.
- Set photo eye 1 detection distance 4" (101.6 mm) to 5" (127 mm) from the sheet metal pan with square cutouts.

Photo Eye 2 – Details:

- Photo eye 2 is in the Vertical Elevator.
- When the eye detects a bale, then the red Signal Light is off.
- When the eye is unable to detect a bale, then the red Signal Light is on.
- When photo eye 2 detects a bale, then in the Front Relay Box red input light #11 will turn off, and the computer typically will turn off the horizontal elevator chain while leaving the vertical elevator chain on.
- Set photo eye 2 detection distance 1" (25.4 mm) to 2" (50.8mm) from end of chain attachment.

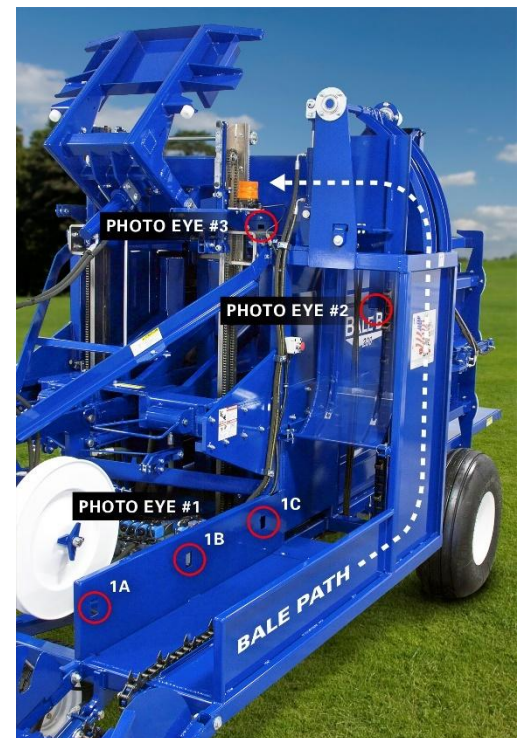


Photo Eye 3 – Details:

- Photo eye 3 is in the Banding Box and counts the bale once it rounds the top corner.
- When the eye detects a bale, then the red Signal Light is off.
- When the eye is unable to detect a bale, then the red Signal Light is on.
- When photo eye 3 detects a bale, then in the Front Relay Box red input light #12 will turn off, and the computer typically will begin stacking the bale.
- Set photo eye 3 detection distance 2”(50.8 mm) to 3”(76.2 mm) from the sheet metal pan with square cutout.

Wiring Photo Eyes:

Color	Description	Photo Eye 1	Photo Eye 2	Photo Eye 3
		Wire Location	Wire Location	Wire Location
Red	Power	+12 on Communication Plug (Front)	+12 on Communication Plug (Band)	+12 on Communication Plug (Band)
White	Select	Ground Bar (Front)	+12 on Communication Plug (Band)	+12 on Communication Plug (Band)
Black	Ground	Ground Bar (Front)	Ground Bar (Band)	Ground Bar (Band)
Green	Input to computer	1-X-Assembly-020 terminal block	Input # 11 (Front)	Input # 12 (Front)

The above chart uses (Front) and (Band), meaning that this wire finds its connection ultimately in either the Front Electrical Box or the Band Electrical Box.

Photo 1 Special Case

Photo 1A, 1B, and 1C are connected so that if any one of the photo eyes detect a bale, then Input #10 turns off. This circuit logic is completed by connecting the 3 green input wires into the terminal block of 1-X-Assembly-020 (in Front box).

The yellow wire of 1-X-Assembly-020 then goes to Input #10 (Front) to give proper signal to computer. Because of this circuit logic the photo eye's white wire (Select) goes to ground.

Photo 2 Special Case

Photo 2 is not wired directly into the front box. Photo 2's red, white, and black wires wire into the Banding Electrical Box, and its Green wire, splices into black wire #3 which transfers its signal to Input #11 in front box.

Photo 3 Special Case

Photo 3 is not wired directly into the front box. Photo 3's red, white, and black wires wire into the Banding Electrical Box, and its Green wire, splices into black wire #4 which transfers its signal to Input #12 in front box.

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**WHEN DOING MAINTENANCE MAKE SURE MACHINE’S ELECTRICAL
POWER IS UNHOOKED AND HYDRAULIC POWER IS SHUT OFF.**

REPAIR ALL OIL LEAKS IMMEDIATELY

PREVENT OIL CONTAMINATION

KEEP HYDRAULIC SYSTEM CLEAN!

Prevent contamination when changing filters, hoses, etc. Always clean the area around the components. The system has a high pressure 6 micron filter to keep contamination out of precision valves.

Caution

An oil or trash covered machine is a fire hazard.
Ensure all combustible materials are cleared daily.

Grease Zerk Locations

Lubrication Location	Time Frame (hours)	# of Zerks
Front Caster Wheel	8	2
Vertical Plunger Main Pivot	8	2
Vertical Swing Cam Track Rollers	8	2
Vertical Plunger Swing Cylinder	8	2
Kicker Cylinder Pin	8	1
Kicker Rotation Shaft	8	2
Horizontal Elevator	8	1
Vertical Elevator	8	1
Back Gates	40	4
Banders	40	8
Back Floor	40	2
Banding Pivot Holder	40	1
Banding Storage Door	40	2
Total Grease Points		30

Break in Period

Wheels & Lugs

Front 6 Lug Wheel:

Torque = 85 – 100 ft-lb (115.24 - 135.58 N-m)

Rear 8 Lug Wheel:

Torque = 230 ft-lb (311.8 N-m)

After First 4 hours of operation
Tighten lugs on wheels

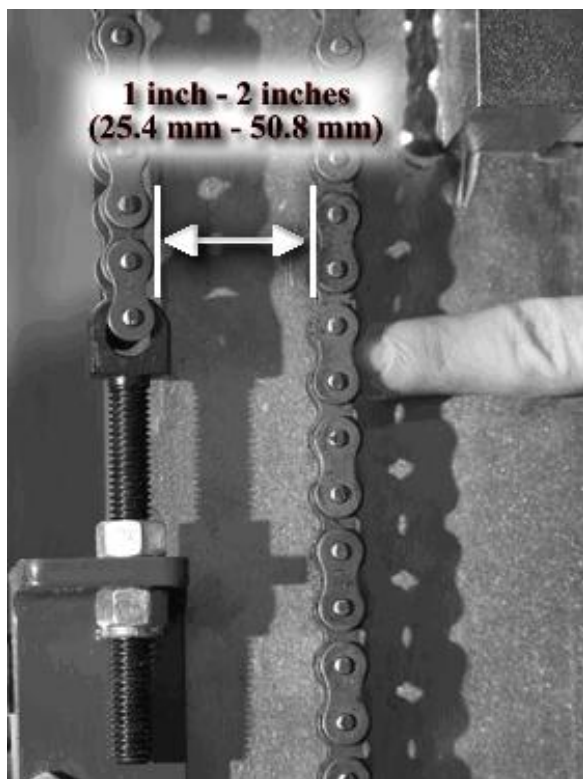
After First 8 hours of operation
Tighten lugs on wheels

Within the First 100 hours of operation
Check torque of lugs on wheels frequently

Fasteners

Check for loose bolts and fasteners. New equipment especially needs to be checked, as vibration and usage will work fasteners against the painted material and allows fasteners to loosen.

Hardware without a nylon locknut require Loctite on threads when you reassemble.



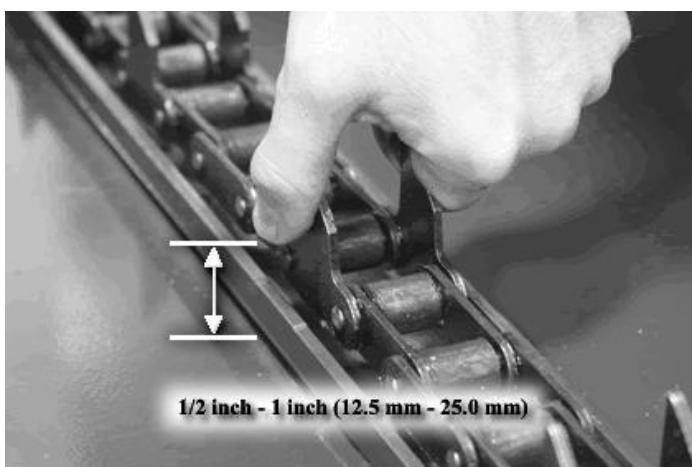
Strap guide arm chains

Check after first 8 hours of operation. Continue to check after each additional 8 hours of operation, until the chains stay tight.

Procedure: The best time to tighten the strap guide arm chain is when the strap guide arms are in bale position one. This will give you a bale count of 1, 4, 7, 10, 13, 16, or bale 19.

Check the spacing between the chains by taking the slack out with your hand. Correct spacing = 1 inch – 2 inches (25.4mm – 50.8mm). If the spacing is not correct then loosen the locking (upper) nut. Tighten the tightening (lower) nut and check the spacing between the chains, until you reach the correct dimension. After adjusted properly retighten the locking (upper) nut. Repeat procedure for other strap guide arm.

Horizontal Elevator Chain



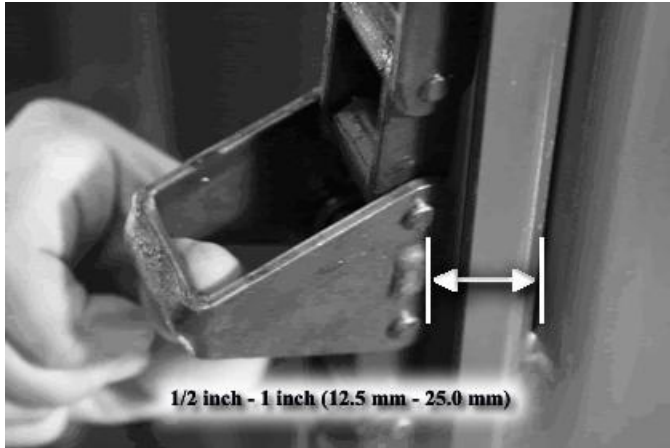
Check after first 8 hours of operation. Continue to check after each additional 8 hours of operation, until the chain stays tight.

It is recommended to have a raised chain dimension between 1/2 inch - 1 inch (12.5 mm – 25.0 mm).

Tighten Horizontal Elevator Chain:

1. Loosen the UHMW chain tightener assembly
2. Press down firmly on UHMW assembly.
3. Tighten assembly in place.

Vertical Elevator Chain



Check after first 8 hours of operation. Continue to check after each additional 8 hours of operation, until the chain stays tight.

It is recommended to have a raised chain dimension between $\frac{1}{2}$ inch - 1 inch (12.5 mm – 25.0 mm).

Tighten Vertical Elevator Chain:

1. Loosen lower jam nuts.
2. While holding head of bolt, tighten upper locknut to drive bar down which tightens the chain.
3. Adjust both bolts evenly. Use tape measure to reference bar to tubing.
4. Adjust so raised chain dimension is between $\frac{1}{2}$ inch - 1 inch (12.5 mm – 25.0 mm).
5. Lock lower jam nut in place.

Daily Maintenance – 8 hours

Cleanliness

The entire Bale Bandit should be cleaned of all hay and chaff daily. Compressed air is the fastest and most effective way to remove chaff.

Remove hay chaff buildup under photo eye 1.

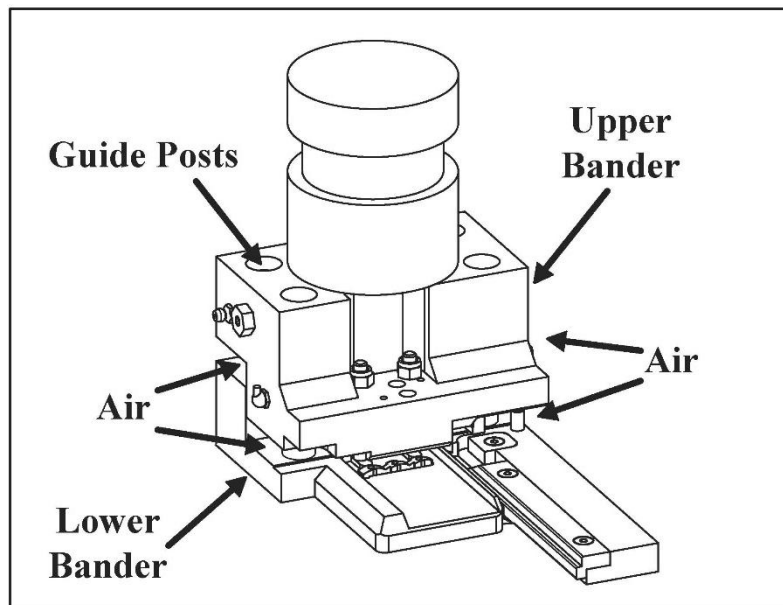
Check extended hay sweeps on horizontal plunger. Remove excessive hay chaff buildup that can damage extended sweeps.

Clean Banding Box

Compressed air is the fastest and most effective way to remove chaff. Shop vacs are also very helpful in removing the remaining chaff that doesn't want to blow out of the box.

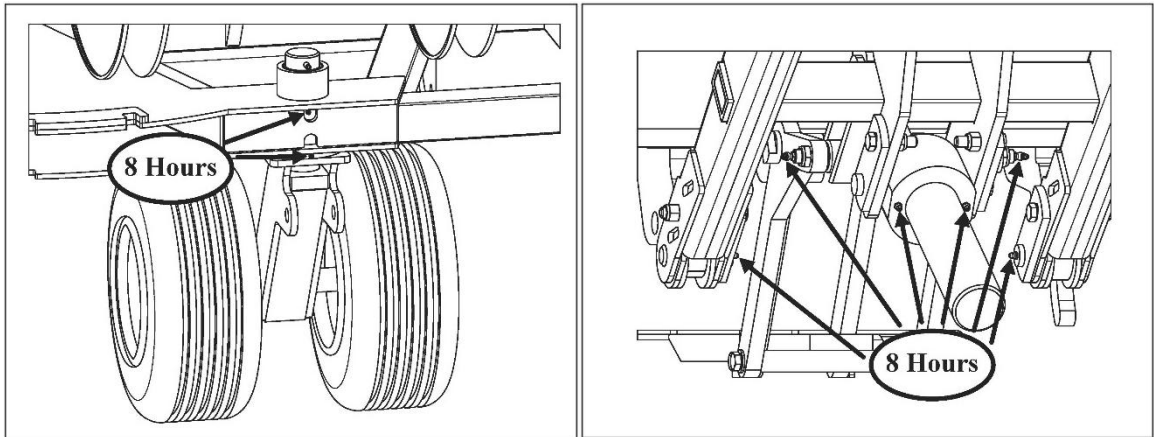
Clean Banders: This is critical in keeping the banders in optimal working condition.

1. Banders must be in the up position to permit cleaning. If they are not in the up position then the Bale Band-It must be "Live" and using the toggle switch move the banders to the up position.
2. Using a compressed air nozzle blow between the upper and lower plates of the bander. Especially blow from the side so that any chaff around the four guide posts will get flushed out.
3. Hay and grease packed between the upper and lower plates will prevent the banders from going down full stroke. This will cause seals not to be stamped full depth and will lead to seal failure.



Front Caster Wheels

The Front Caster Wheel has 2 grease points. The top grease point fills the bushing cavity. The lower grease point greases the spiral grease plate.



Vertical Plunger

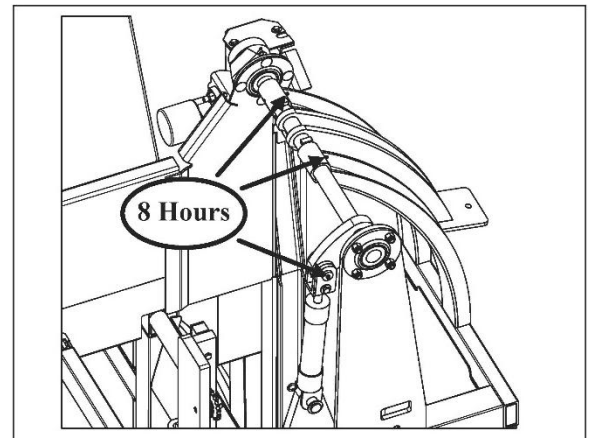
The Vertical Plunger has a total of 6 grease points.

- 2 grease points on the main vertical swing pivots
- 2 grease points on the cam track roller
- 2 grease points on the vertical swing cylinder

Kicker

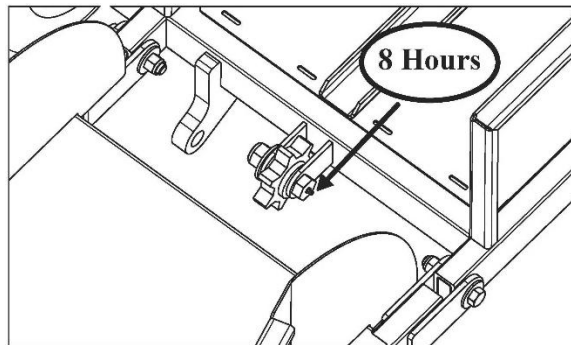
The Kicker has 3 grease points. 2 grease points are on the rotating kicker shaft.

- 1 grease point is on the non-rotating kicker cylinder pin.
- If excessive slack exists on kicker cylinder pin, replace with new pin 1-M-0000AB



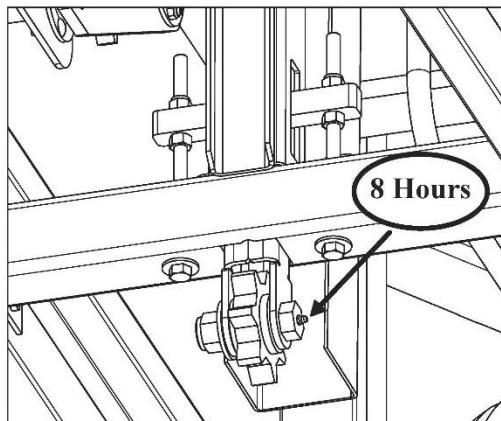
Horizontal Elevator

The Horizontal Elevator has 1 grease point on the front idler sprocket bolt.



Vertical Elevator

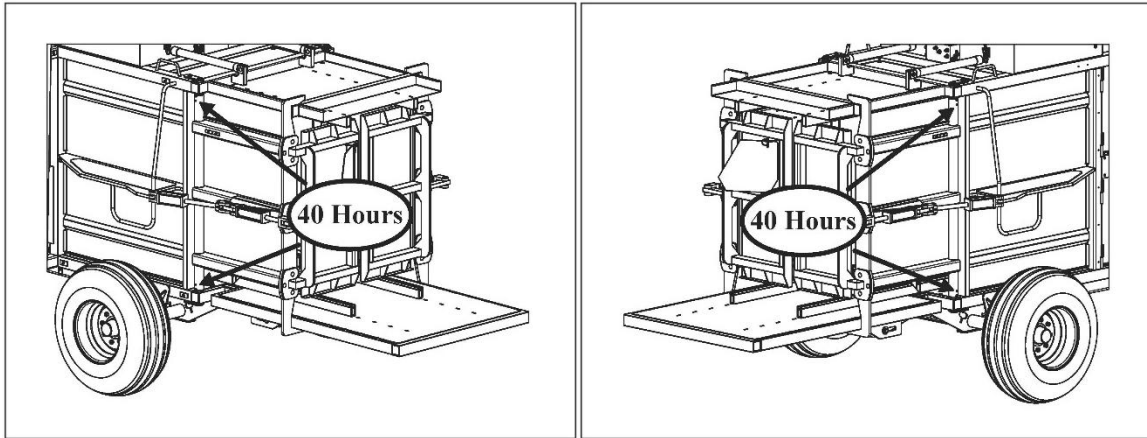
The Vertical Elevator has 1 grease point on the bottom idler sprocket bolt.



Weekly Maintenance – 40 hours

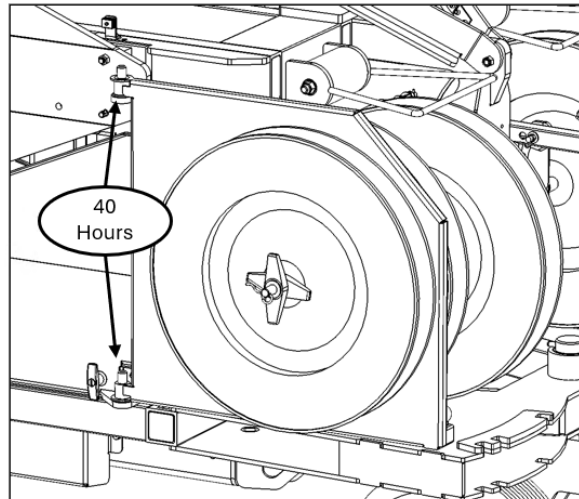
Back Gates

The Back Gates have a total of 4 grease points, 2 on each side.



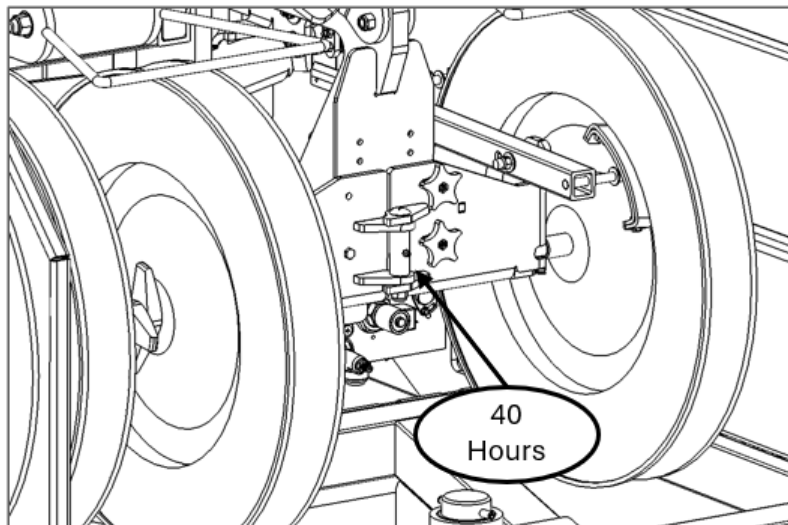
Banding Storage Door

There are 2 grease points on each hinge of the door



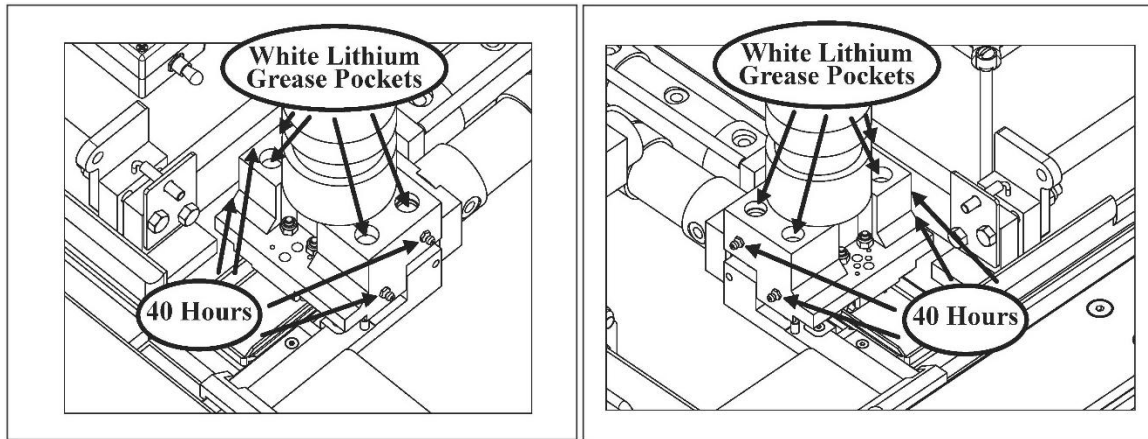
Pivoting Banding Drum Holder

There is 1 grease point located on the hinge of the drum holders



Banders

It is best to use white lithium grease on the banders. Although it is better to grease with standard grease than to withhold grease because unable to source lithium grease.

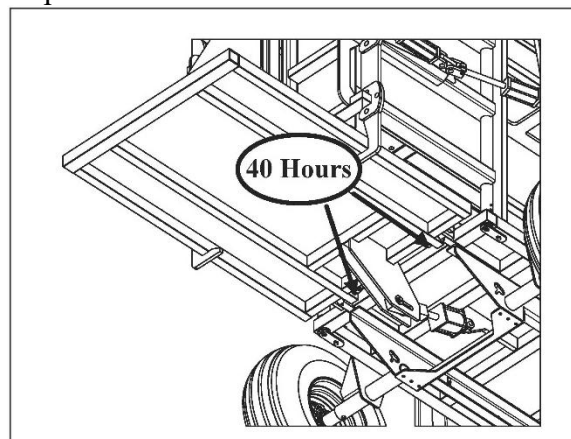


- The Banders have a total of 8 grease points, 4 on each side.
- Also add grease to the top of each of the bander pins (8 total, 4 on each side). This provides a boundary layer to prevent dust and dirt from getting down into the pin area.

Note: Over greasing on the bander grease zerks can cause problems. Each zerk gets just a shot. If you notice grease coming out the top then stop applying grease. The grease will go out the bottom just as it does the top and that will cause premature chaff buildup between the blocks.

Back Floor

The Back Floor has 2 grease points. Both on the underside of its main pivot bolts.



Strap guide arm chains

Procedure: The best time to tighten the strap guide arm chain is when the strap guide arms are in bale position one. This will give you a bale count of 1, 4, 7, 10, 13, 16, or 19.

Refer to Break in Period for complete procedure.

Horizontal Elevator Chain

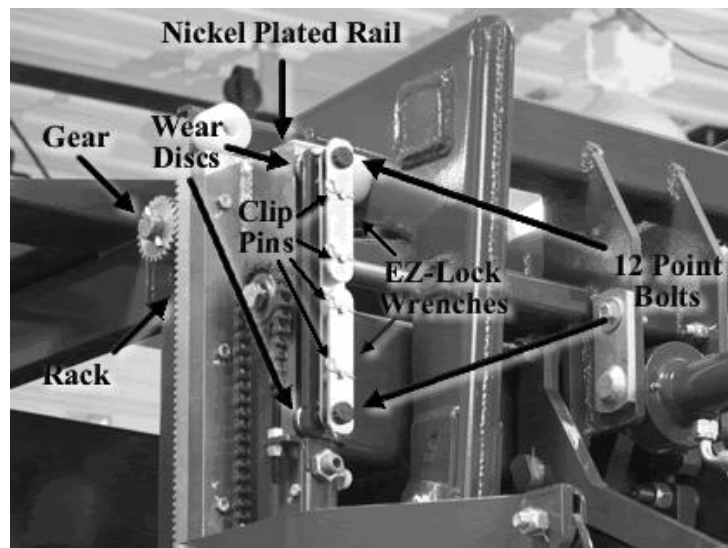
It is recommended to have a raised chain dimension between ½ inch - 1 inch (12.5 mm–25.0 mm). Refer to Break in Period for complete procedure.

Vertical Elevator Chain

It is recommended to have a raised chain dimension between ½ inch - 1 inch (12.5 mm–25.0 mm). Refer to Break in Period for complete procedure.

Vertical Plunger Wear Discs

As the Vertical Plunger Wear Disc wear, the gear and rack clearance is going to increase. The EZ-Lock design allows us to adjust the wear discs to keep components operating at optimum performance.



Adjusting the Wear Holder EZ-Lock:

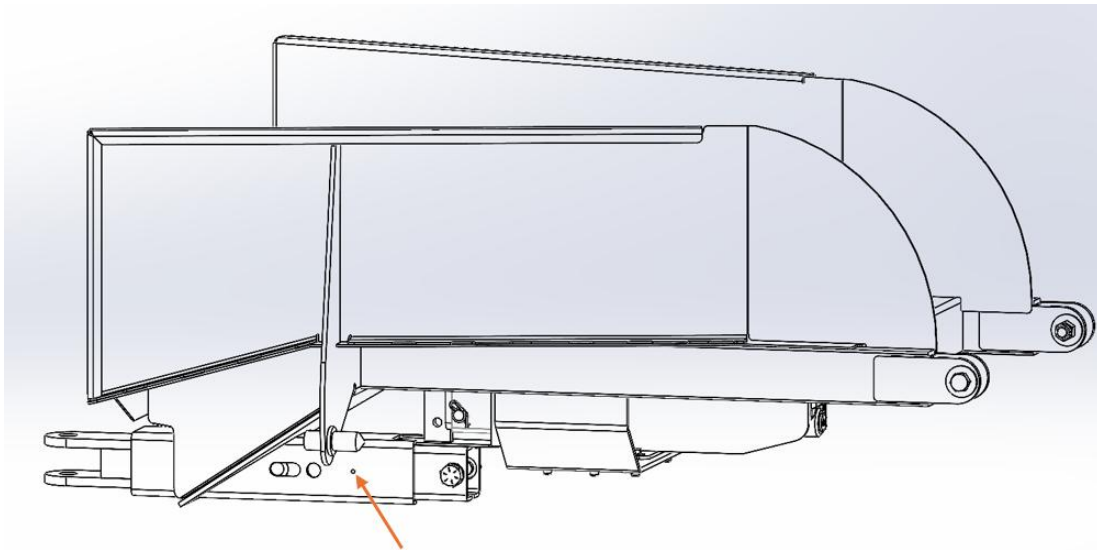
1. Remove all 8 clip pins that hold on the EZ-Lock wrenches.
2. Use wrench to over tighten all 4 of the twelve-point bolts. (This ensures the gear and rack are fully seated.)
3. Now loosen one of the bolts out just enough so that the disc is not touching the Nickel-Plated Rail.
4. Then re-tighten this bolt gently so that the disc just touches the Nickel-Plated Rail.
5. Line the EZ-Lock wrench up to the pins on the Lock Holder. If the wrench must be turned to line up with the pins then it is best to loosen the wrench to do so.
6. Snap the clip pins in to ensure the wrench is secure.
7. Repeat steps 3 through 6 to the other three bolts.

It is important to understand how the adjustment of the Wear Disc affects performance and wear.

- If Wear Disc is adjusted too tight
 - o Then the rack will be exerting too much force on the spur gear, causing the shaft to bow, the gear to contact the rack at an angle, and quickly giving excessive wear on the gear and rack.
- If Wear Disc is not adjusted tight, or is not adjusted after significant wear
 - o Then slack will appear between the gear and rack, causing: upper portion of rack and gear to slowly wear as they shift across one another. If significant slack is present then gear and rack can come out of time.

Surge Brakes (Option)

- There are 2 grease points that lubricate the brake tongue



Monthly Maintenance – 250 hours

Wheels & Lugs

Tighten lugs on wheels

Torque = 85 – 100 ft-lb (115.24 - 135.58 N-m)

Strap Guide Wear Discs

As the Strap Guide Arm Wear Discs wear, the up and down slack in the arms are going to increase. The EZ-Lock design allows us to adjust the wear discs to keep components operating at optimum performance.

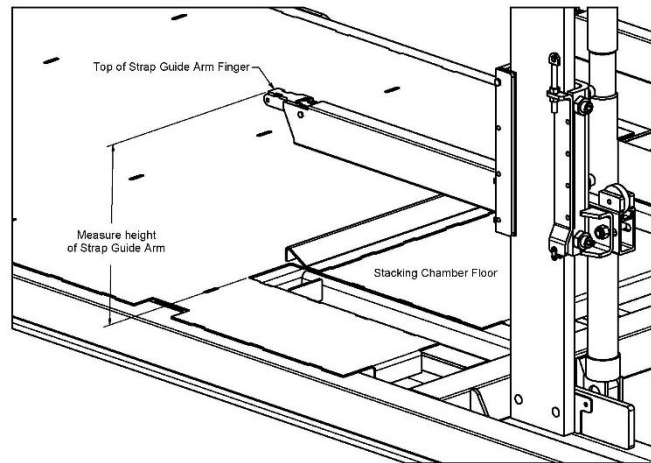
Checking the "Up and Down" Slack:

Position:

Remove all hay in the main chamber. Position the strap guide arms in bale position two. Then, verify all hydraulic and electric power to Bale Band-It is off.

Measure:

Measure from the floor of the stacking chamber to the top surface of the strap guide arm finger. Record your measurement. With your hand, raise the strap guide arm so that all the slack in the wear discs is taken out. Record the measurement at the new raised position.



Verify:

Verify what is moving. If the arm is moving with respect to the plate it is bolted, then the slack is in the bolts. However, if the whole assembly is moving with respect to the nickel-plated rail then this is correctly measuring the Wear Discs.

Calculate:

Take your measurements and subtract them from one another to get your strap guide arm “up & down slack”. If this slack is greater than 3/8” (9.5 mm), then you need to adjust the wear discs on that strap guide arm. The minimum “up and down slack” is 1/8” (3.2 mm). Repeat the process on the other arm.

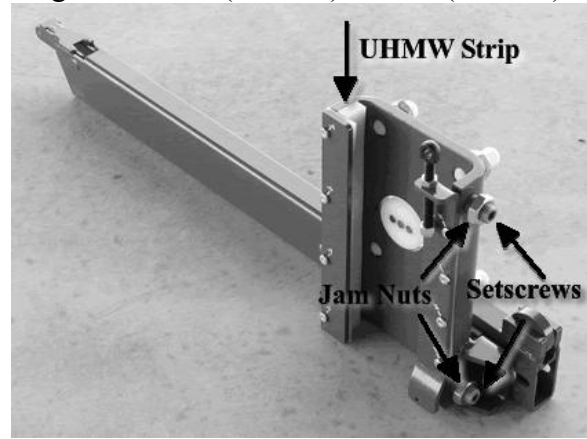
If your "up and down slack" is not in the acceptable range from 1/8" (3.2 mm) to 3/8" (9.5 mm) then the wear discs will have to be adjusted.

Adjusting the Wear Discs:

Adjust one arm at a time.

1. Loosen both jam nuts
2. Over tighten both setscrews. (This ensures that the UHMW strip on the back side of the Nickel-Plated Rail is tight against the rail.)
3. Now loosen one of the setscrews out just enough so that the disc is not touching the Nickel-Plated Rail. Notice that disc is bonded to end of setscrew.
4. Then re-tighten this setscrew gently so that the disc just touches the Nickel-Plated Rail.
5. Hold the hex wrench securely while locking the jam nut in place. You do not want your adjustment to change while tightening the jam nut.
6. Repeat steps 3 through 5 to the other setscrew.
7. Check that your "up and down slack" is now in the acceptable range from 1/8" (3.2 mm) to 3/8" (9.5 mm). If not make adjustments accordingly.

Repeat procedure to other strap guide arm if applicable.

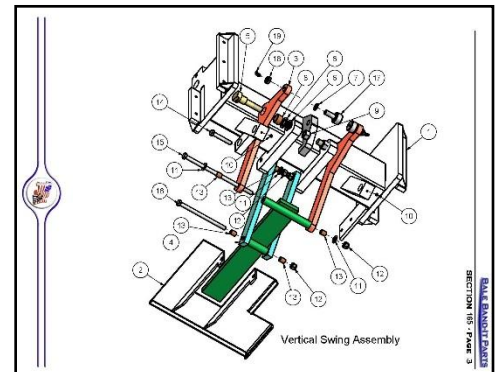


Vertical swing table Check

Wear in the Vertical Plunger Swing Table can be found by inspecting side to side slack in the arms (Items 3 & 4).

Note: It is normal for slack to be in rotation direction, as Item 17 fits loosely in track.

Excessive side to side slack can be caused by loose hardware. However, if hardware is tight and excessive slack exists then bushings (Items 13 & 8) are worn. Upon removal inspect bolts (Item 14, 15, 16) for wear. Typically bolts last several bushing replacements (Item 13). Also, bushings (Item 8) last around 60,000 to 80,000 small bales. Press new bushings in and apply anti-seize to bolts prior to assembly.



Yearly Maintenance – 40,000 small bales

This section covers Pike Mfg. Corp's recommended post season checks, maintenance, and storage procedures:

- ☑ Use this to increase productivity and decrease downtime.
- ☑ Request a current Update packet for your serial number Bale Band-It
 - Look over list of updates available and perform as needed
- ☑ If there were problems in the field, downtime, etc. that have not been resolved then contact Tech Support and let them know your concerns.
- ☑ Thoroughly go over all the regular maintenance items previously indicated
- ☑ Follow the remaining items in this section for in depth end of year procedures

Tractor

Meet your tractor manufacturer's recommendations regarding hydraulic fluid & filter replacement as required for your hour & severity of usage.

Inspect filter

The Bale Band-It uses a non-bypass high pressure filter. The filter housing has an indicator to show element replacement is needed. This indicator works off pressure differential and can easily be falsely tripped. Therefore, do not replace unless inspection of element indicates replacement is needed. As the filter begins to collect significant levels of debris, the flow to the Band-It is restricted. As flow is restricted the Band-It will operate at slower cycle times. Pike Mfg. Corp. recommends replacing element of filter on an as needed basis.

Location:

The Bale Band-It's high-pressure filter is located between the white strapping drums.

Procedure:

1. Turn tractor engine off
2. Place remote in float position, to relieve any line pressure
3. Clean canister and upper valve body area
4. Unscrew canister from the upper valve body
5. Remove element from canister. Inspect element:
 - a. If necessary, clean element in clean container using paint thinner
 - b. If necessary, replace element
6. Place element in canister
7. Screw canister into the upper valve body
8. Complete

Maintain shaft on Strapping Drum

- a. Release clip pin and slide white drum off its shaft
 - i. May need to apply some slack in strapping (or unhook strapping completely) to do this
- b. Using a flap disc grinder wheel, remove all rust, paint, and rough places, but do not remove material from the shaft itself.
- c. Apply anti-seize liberally to shaft
- d. Place drum back on shaft & check how freely drum spins
- e. Repeat with other drum

Remove strapping burs

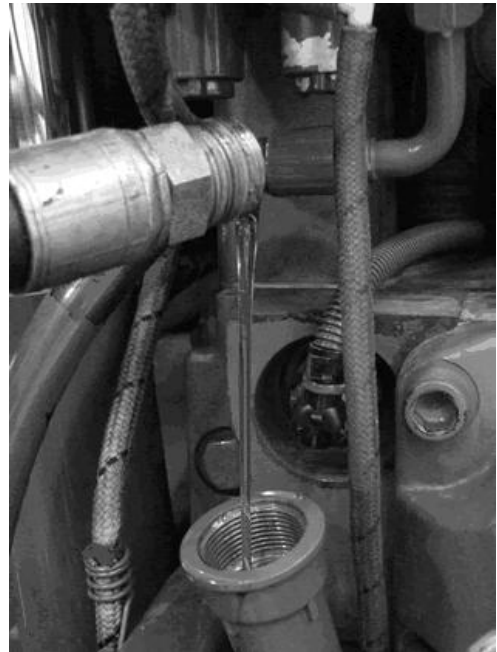
Inspect every place that strapping touches through the whole threading process.

- Verify all bearings and bushings turn freely
- Any slot or metal that can touch strapping, can develop a bur or rough edge.
 - o Using a Dremel or file to radius rough edges to a smooth surface

Hydraulic Bypass check

This procedure allows you to determine how much internal bypass your machine has. It tells you what is acceptable and what is not.

1. Verify machine operation code is 100-1 “Photo 1 Ready Waiting for a Bale”
2. Only perform this operation on bales 1-20. This will guarantee that the horizontal plunger is in the retracted position (towards the tractor).
3. Turn hydraulics off
4. Uncouple return hose from back of tractor
5. Clean quick coupler on hose and clean around hydraulic fill cap on tractor
6. Unscrew quick coupler end off return hose
7. Place end of hose into hydraulic fill cap
8. Turn hydraulics on, electric on
 - a. Band-It is powered up in “Live” mode, but nothing on machine is moving
9. Inspect the return flow, dumping into your fill cap
 - a. Ways to determine How much bypass you have
 - i. Diameter of fluid dumping into fill cap
 1. If leakage is diameter of #2 pencil or smaller then bypass acceptable
 2. If leakage is larger than the diameter of a #2 pencil then bypass exists
 - a. Locate and fix internal leak
 - ii. Time it takes to fill up a specified size container, to calculate gpm
 1. Subtract this bypass gallon per minute (gpm) from the tractor’s rated gpm to determine your actual flow available to Bale Band-It.
 2. The higher the bypass gpm the hotter the return oil, and the harder it is for the tractor to cool the fluid.



Visual inspections

All chains, chain drives, sprockets, spur gears, and racks should be visually inspected for the following:

- Excessive wear
- Misalignment

- Proper lubrication

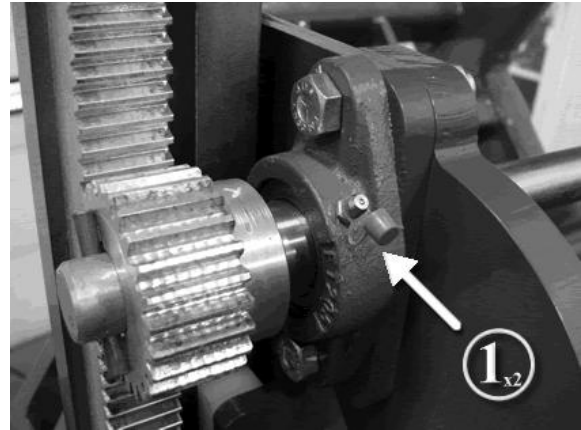
Kicker cylinder pin wear

If excessive slack exists on kicker cylinder pin, replace with greaseable / non rotating pin 1-M-0000AB.

Vertical Plunger Pillow Block Bearing

Caution: Do not over grease! Over greasing can cause grease to be forced through seal or damage to bearing shield. This can allow contaminants opportunity to enter.

The Vertical Plunger has 2 pillow block bearings. Each pillow block bearing has 1 grease zerk. Lightly grease!

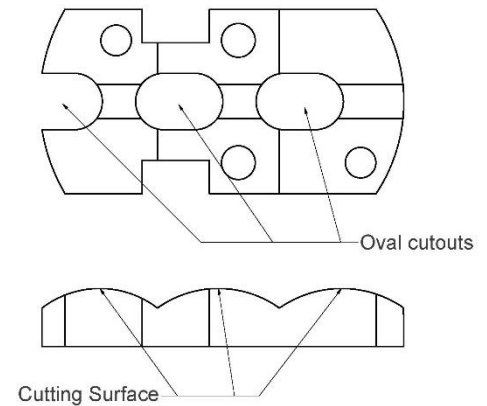


Removal of Top Bander

This procedure steps you through how to separate the top and bottom bander assembly. This can be helpful for maintenance cleaning, remove excess strapping, and inspecting critical parts. It also specifies how to adjust the lifter bolts.

- 1) Only perform this operation on bales 0-20. You must not perform this procedure while the Bale Band-It is on bale 21.
- 2) With hydraulic power on push the toggle switch (located on the reset bundle / reset strapping box) so that the banders raise.
 - a) If banders will not raise with this switch, then remove DIN # 10 (Bander Lower) and then try switch again. – Refer to Operator's Manual 27
 - b) Remove DIN # 4 (Full Band In)
 - c) Manually shift the full band directional valve on the #5 side so that the full band cylinders stroke out.
 - d) Turn hydraulics off.
- 3) Disassembly - refer to Bale Band-It Parts Section 115 Page 6
 - a) Remove lifter nuts (Item #3)
 - b) Unscrew Item #4
 - c) Using something thin like a thin chisel, drive it between the thin head of pin (Item #1) and the lower bander. This will pop the pin away from lower bander. Remove pin.
 - d) Leaving hydraulic hoses attached, pull upper bander off four leader posts, and flip bander over to see the underneath side. Careful to not hit the full band reed switch.
- 4) General Maintenance inspections - refer to Band-It Parts Section 115 Page 2-5

- a) Remove strapping from upper die
 - i) Strapping can perfectly fit in the center of the upper die and be difficult to see. Verify that you can see the 3 oval cutouts and the material color of the die is the same in all places. If strapping is present, it will cover the oval cutouts and will be the color of the strapping.
 - b) For both upper and lower dies, verify that dowel pins and screws are not extending past the cutting surface.
 - c) Remove all chaff buildup, excess grease, debris
 - i) Notice over greasing causes buildup
 - d) Inspect upper and lower knives.
 - e) Inspect upper and lower dies.
 - f) Inspect lifter bolts and the pockets they set in.
 - g) Remove any strapping found in groove between bottom bander foot and 1-G-0029 & 1-G-0030.
- 5) Assembly - refer to Bale Band-It Parts Section 115 Page 6
- a) Place upper bander back onto four leader posts. Careful to not hit the full band reed switch.
 - b) As the bander goes down onto the posts, the lifter bolts (Item #2) will also have to be lined up with their holes.
 - c) Insert pin (Item #1) into back of bander. It will not go all the way in until it lines up with the rod of the bander cylinder. Continue to press pin as you work the upper bander down. When the hole lines up with the pin it will slide into place.
 - d) Install hex cap screw (Item #4) using 248 blue Loctite.
 - e) Tighten lifter nuts (Item #3) according to the following specifications.
 - i) Only start the nuts with just 1-2 threads.
 - ii) Turn hydraulics on, E-stop on
 - iii) Verify that the grease zerks on the bander are in a safe location if the bander were to raise and lower.
 - iv) Using the toggle switch, lower the banders.
 - v) Using the toggle switch, raise the banders and hold the toggle switch so they stay energized in the raised position.
 - vi) While holding the toggle switch, use a nut driver / or small 1/4" drive ratchet with extension to tighten the lifter nuts until firmly snug.
 - vii) These steps ensure that the lifters are tight when the banders are up, yet not too tight to cause damage to the lifters or pocket in bottom bander foot.
 - f) Place DIN # 4 (Full Band In) back on coil– Refer to Operator's Manual 27
 - i) If this does not cause the Full Band cylinder to retract, then manually shift the valve on the Full Band In #4 side.
 - g) If you removed DIN # 10 (Bander Lower) earlier than place back on coil
 - h) All electrical connections should be secured back on their respective coils.
 - i) If when you started this procedure the banders were in the up position, then move the toggle switch so that the banders are in the up position.
 - j) If when you started this procedure the banders were in the down position, then move the toggle switch so that the banders are in the down position.
 - k) Perform a bander flush and re-grease
 - l) Complete



Bander flush and re-grease

This procedure is helpful for routine maintenance cleaning. This works best if performed after Removal of Top Bander, although it is not required.

- a) Only perform this operation on bales 1-20. You must not perform this procedure while the Bale Band-It is on bale 21.
- b) With hydraulic power on push the toggle switch (located on the reset bundle / reset strapping box) so that the banders raise and lower.
 - a. While raising and lowering the banders, spray penetrating fluid down the four bander posts. Continue this process of working up and down while spraying, until the system is thoroughly flushed.
- c) Move the banders to the up position
 - a. Grease the zerks, being careful not to over grease
 - b. Grease the tops of the four posts, filling the cavities
 - i. This provides a boundary layer so that debris stays away from posts and bushings
- d) Most likely when you started this procedure the banders were in the down position, move the toggle switch so that the banders are in the down position.
- e) Complete

Shutdown procedure – End of year

At the end of the season it is good to remove the machine of all forage products, complete off-season maintenance, install new updates, and get the machine in storage position so that it is ready for the next season. This procedure steps through how to get machine in storage position by explaining how to reset a bundle and how to close the back gates.

- a) If the machine is not on bale 0, then we must prepare the machine for a reset
 - a. Are there any bales on the strap guide arms (in stacking chamber)?
 - i. If yes, then open side doors and remove bales. This step is required.
 - ii. If not already done you may want to remove the rest of the hay in the main chamber. This is your option, it is not required to complete a reset bundle.
 - b. Apply electric and hydraulic power to machine, allowing it to power up
 - c. Press reset bundle
 - d. Allow machine to reset and verify that monitor says:
 - Photo 1 Ready
 - Bale 00
 - i. If monitor doesn't say the above, then machine has not reset, and we must look at the operation code to determine the problem and allow the machine to finish its reset.
 - e. Rethread strapping, verifying that strapping is not wrapped around any bales in the main chamber.
- b) If the machine is on bale 0, then machine is ready for storage
- c) If you would also like to close the back gates, then
 - a. Refer to Band Relay Box (Operator's Manual page 20)
 - i. Locate on the output plug
 - 1. Output #1 Back gate solenoid
 - 2. + Main +12VDC
 - ii. Using a jumper wire (12-14 ga.) connect the above locations on the output plug. Tighten the jumper wire with the wires already in these locations.
 - iii. Apply hydraulics and electric power to machine.
 - iv. Back gates will then close.
 - v. Turn off hydraulics, and place remote in float position before disconnecting hydraulic hoses. Disconnect electric power.
 - vi. Remove above jumper wire.

The next time the Band-It is powered up, the back gates will open automatically and Band-It will be ready for a bale.

Adjustments

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Adjust Pressure Plate to 16" x 18" bale

From the factory all Bale Band-Its are setup to handle the smaller 14" x 18" small square bale and place 21 of these bales per bundle. The larger 16" x 18" bale can also be used. This bale will stack 18 bales per bundle. There are two primary adjustments needed to the Bale Band-It for it to switch between bale sizes.

- 1.) Switch location on electrical boards. (See Bundle Options in the Electrical Overview)
- 2.) Adjust the Pressure Plate. (Steps outlined below)

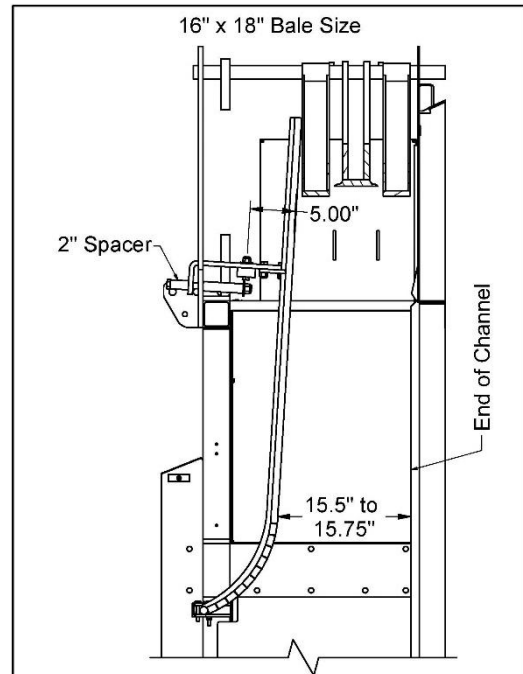
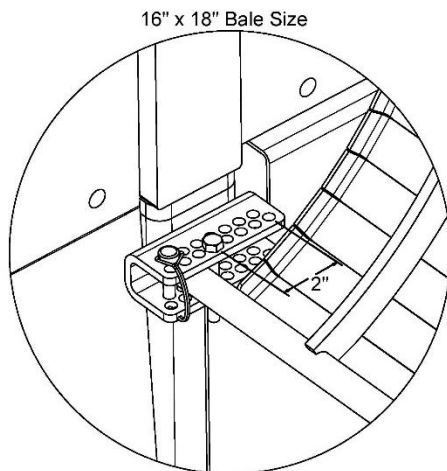
Adjusting the Pressure Plate to accommodate a 16" x 18" bale:

Upper Pressure Plate Adjustment

- 1 Loosen 1/2" nut on Stop.
- 2 Move stop in slot so the center measures 5" (127 mm) from sheet metal face.
- 3 Tighten nut and stop at this position.
- 4 Remove the 5/8" bolt, nut, washer, spacer, and spring.
- 5 Rearrange the 5/8" bolt assembly by placing the 2" (50.8 mm) spacer at the head of the bolt.
- 6 The spring, washer and nut go back on 5/8" bolt as it did before.

Lower Pressure Plate Adjustment

- 7 Move the lower portion of the Pressure Plate towards the front 2" (50.8 mm).



These adjustments will get you real close. Additional adjustments may be needed depending upon bale conditions. Reference the Bale Pressure Plate Adjustment section for fine tuning.

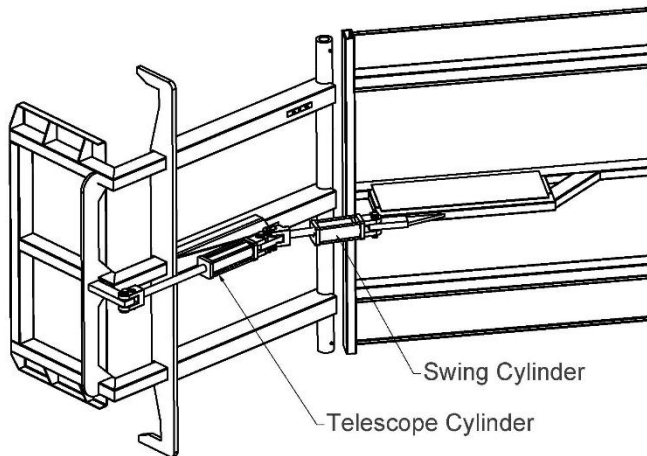
Adjust Reed Switches in Banding Box

There are six reed switches (1-Y-0213) in the Banding Box.

- Fetcher Extend – Left & Right
- Fetcher Retract – Left & Right
- Full Band Out – Left & Right

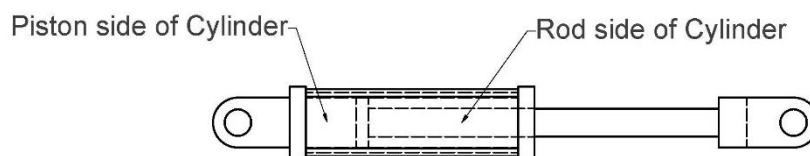
The Bale Band-It utilizes a small black magnet to activate the reed switches in the Banding Box. When cylinders are in the proper position adjust the reed switch so it lines up with the magnet. All reed switches in the Banding Box should have a 1/8" (3.2 mm) air gap between magnet and reed switch.

Back Gate Hydraulic Valve Adjustment



For location of this adjustment valve see the Outside Banding Box Manifold found on "Operator's Manual Page 18". There are two types of cylinders that control the back gates. The swing cylinders open and close the back gates in place. The telescope cylinders hold the compression of the bales.

By adjusting the valve, it changes the pressure on the rod side of the telescope cylinder.



Turn adjustment valve:

Clockwise to increase pressure - Counterclockwise to decrease pressure

How it works:

On bale 15 the back gates close and telescope in completely.

On bale 21 the horizontal plunger extends full stroke and compresses the small bales.

The mechanical force exerted on the small bales is then exerted on the back gates.

If the mechanical force from the bale is greater than the telescoping cylinder holding force set by the adjustment valve, then the telescoping cylinders are going to stroke out until equilibrium is reached between the compressive force and the force set by the adjustment valve.

Once the tie cycle is complete the back gates telescope out completely and then swing open.

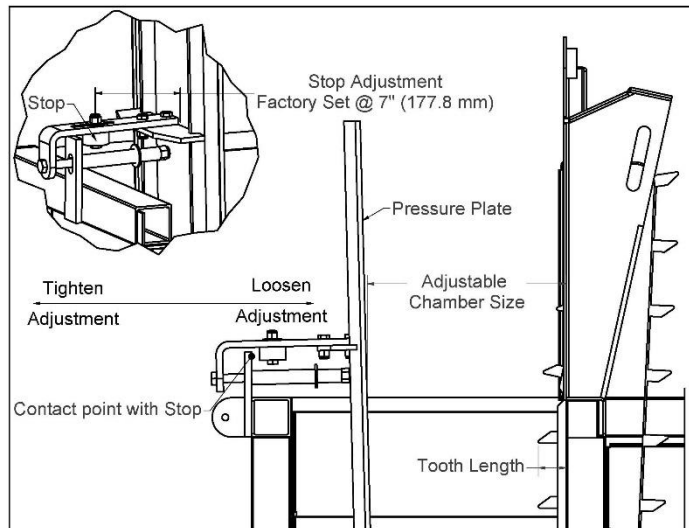
General rules of thumb:

- The greater the hydraulic pressure setting the greater the compression potential.
- If the back gates do not telescope out any during compression, then increasing the pressure setting at the adjustment valve will not increase compression.
- The telescope cylinder has an 8" (20.32 cm) stroke. For most products, if the telescope cylinder strokes out 4" (10.16 cm) during compression, the bundles will be tight.

Bale Pressure Plate Adjustment

Stop Adjustment

The stop adjustment considers that the bales are a specific depth 14" (355.9 mm) or 16" (406.4 mm), that the chain tooth length is only so long, and if the adjustable chamber size continues to increase then the bale will disengage from the chain tooth. The stop provides a definite maximum chamber size limit that prevents the bale from disengaging from chain tooth.



If Stop adjustment is too loose:

Then bale will disengage from chain tooth and not have full tooth contact.

Since the teeth only have partial engagement into the bale, the tooth is then more apt to pull through. This will cause bales to hesitate as they are rounding the corner of the elevator.

If Stop adjustment is too tight:

Then bale is wedged tightly as it goes up the chamber.

If bale material is dense and has good length of crop

Then hydraulic motor will stall out & chain will stop

This will give you an operation code "Photo 3 Ready"

If bale material is fine and has short length of crop

Then chain tooth can pull through material & chain will continue to run.

This will give you an operation code "Photo 3 Ready"

Ideal Stop adjustment:

Make the adjustment as tight as possible, without stalling out the hydraulic motor. This will provide a bale that "pops" around the corner with no hesitation at all.

Spring Adjustment

The spring adjustment is not critical.

If adjustment is too tight:

Then the bale will cause the spring to bottom out and act like the stop before the stop hits the contact point.

If adjustment is too loose:

No disadvantage. At least keep nylon locknut far enough on bolt so that the nylon still engages bolt threads.

Lower Pressure Plate Adjustment

If the lower adjustment is too passive then the bale will not be set deep in the vertical elevator chain teeth. This can cause the bale to “hang up” and not round the top corner, because the teeth can easily pull out of the hay.

A passive lower pressure plate adjustment can also cause the bale to fall to the ground and not make it up the vertical elevator, because the vertical elevator teeth are not engaged into the bale. However, this scenario can also be caused by bale length being too short.

If the lower adjustment is too aggressive then the bale will stall out the elevator hydraulic motor. However, this scenario can also be caused by bale length being excessively long.

The adjustment for 14” x 18” bales should generally be in the most aggressive position (closest to the chain). For 16” x 18” bales move the adjustment away from the chain about 2” from the most aggressive position.

Carriage Adjustment

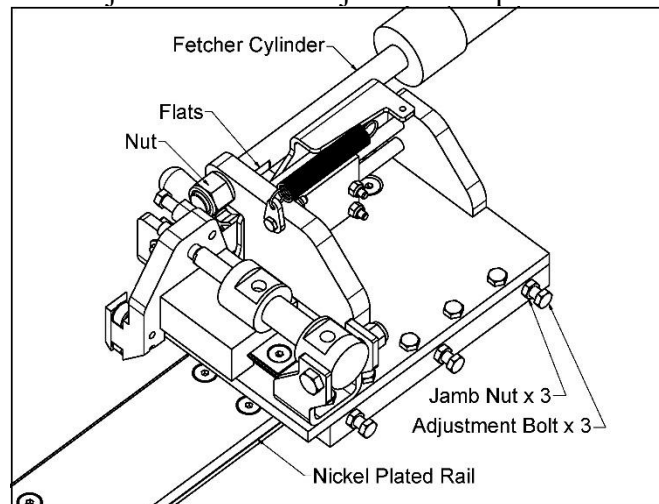
The carriage cycles only once every 21 bales. Low cycles on the robust V-Slide rail system gives you a wear area that doesn’t require adjustment very often. Hydraulics and electric should be off during this entire procedure.

Check Side to Side Slack:

- 1) Disengage the red handle clamp.
- 2) Grab the carriage and push and pull side to side to determine how much side to side slack there is between the UHMW slides and the nickel plated rail.
 - a) If no side to side slack is present then adjustment is not needed. Engage the red handle clamp and check the other side.
 - b) If side to side slack is present then it can be adjusted out. See adjustment steps below.

Carriage Adjustment:

- 1) Loosen and remove fetcher cylinder nut.
 - a. To prevent the cylinder rod from turning place a 3/4" wrench on the flats of the cylinder rod.
 - b. As you loosen the nut continue to advance the carriage forward so that the nut can continue to be loosened and removed.
- 2) Now the carriage should easily slide up and down the rail by hand.
- 3) Loosen jam nuts on the three adjustment bolts.
- 4) Firmly tighten all three adjustment bolts. Notice how the carriage can no longer slide up and down the rail by hand.
- 5) In half turn increments loosen the three adjustment bolts until the carriage can easily slide up and down the rail by hand.
- 6) Check the side to side slack in the carriage.
- 7) The goal is to adjust so that both the following parameters are met at the same time:
 - a. No side to side slack is present in the carriage.
 - b. The carriage is able to easily slide up and down the rail by hand.

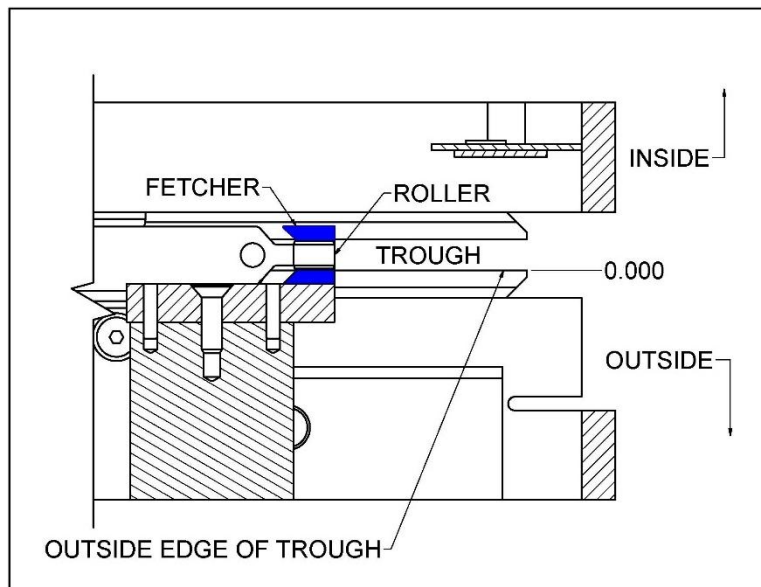


Note: If the carriage is adjusted too tight, then significant drag will result causing increased wear and potential cylinder stall out. It is important that the carriage be able to easily slide up and down the rail by hand.

- 8) Securely hold the adjustment bolt in the newly adjusted position while tightening the jam nut. If the adjustment bolt turns when the jam nut is tightened, then the adjustment has been altered.
- 9) Perform step 8 for all three adjustment bolts and jam nuts.
- 10) Check adjustment again & re-adjust if not properly met.
 - a. No side to side slack is present in the carriage.
 - b. The carriage is able to easily slide up and down the rail by hand.
- 11) Install fetcher cylinder nut and washer. Tighten securely.
- 12) Re-engage the red handle clamp.
- 13) Repeat for other side.

Fetcher Swing Cylinder Adjustment

1. Manually shift the fetchers forward halfway
 - a. Hydraulics & electric on
 - b. Unplug Din # 7, fetcher retracted (Refer Operator's Manual page 17)
 - c. Manually shift #6, fetcher extended side of valve
 - i. Fetchers will go forward only as fast as you depress the valve
 - ii. Extend the fetchers about half stroke
 - iii. Leave hydraulics & electric on
2. Looking straight down on top of the fetcher (see illustration)
 - a. Press the fetcher rollers toward the outside of the machine, moving the side to side slack all to one side.
 - i. The fetcher rollers have a little side to side slack
 - b. The outside of the roller should line up with outside edge of the trough

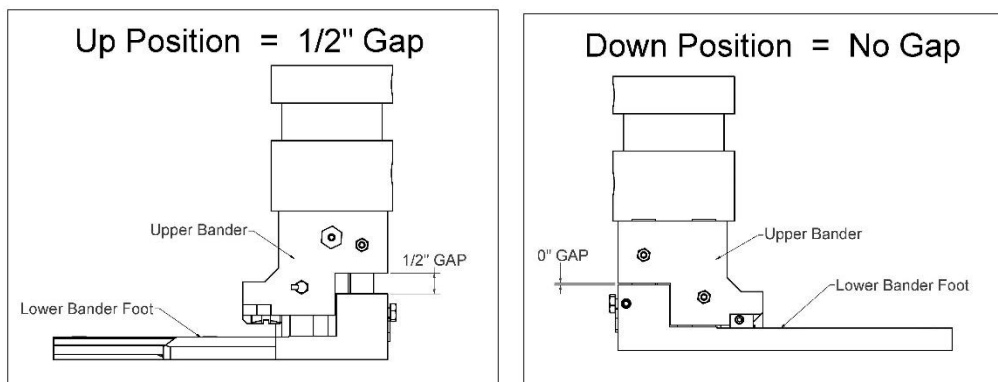


3. If the outside edge of roller is toward the outside
 - a. Then, adjust the fetcher swing cylinder (Refer Bale Band-It Parts Section 115 Pages 11-12)
 - b. Loosen jam nut (Item #33)
 - c. In order to adjust the fetcher roller toward inside of machine, turn flats on fetcher swing cylinder (Item #39) clockwise.
 - d. Adjust until the outside of the roller is lined up with the outside edge of the trough

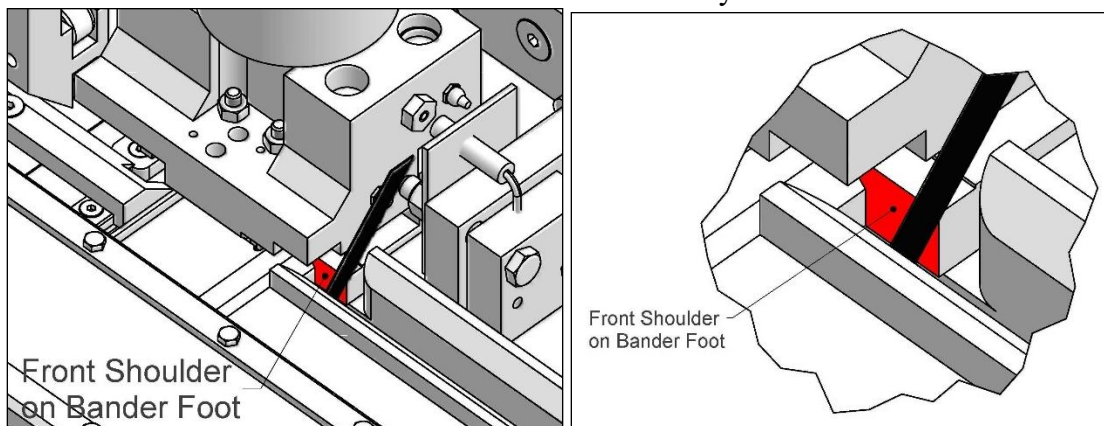
- e. Tighten jam nut
4. If the outside edge of the roller is toward the inside
 - a. Then, adjust the fetcher swing cylinder (Refer Bale Band-It Parts Section 115 Pages 13-14)
 - b. Loosen jam nut (Item #33)
 - c. In order to adjust the fetcher roller toward outside of machine, turn flats on fetcher swing cylinder (Item #39) counter clockwise
 - d. Adjust until the outside of the roller is lined up with the outside edge of the trough
 - e. Tighten jam nut
5. If the adjustment is correct
 - a. Then you have finished the Fetcher Swing Cylinder Adjustment
 - b. Move cylinders to home position
 - i. Plug DIN # 7 back on, fetcher cylinder will retract

Full Band Out Cylinder Adjustment

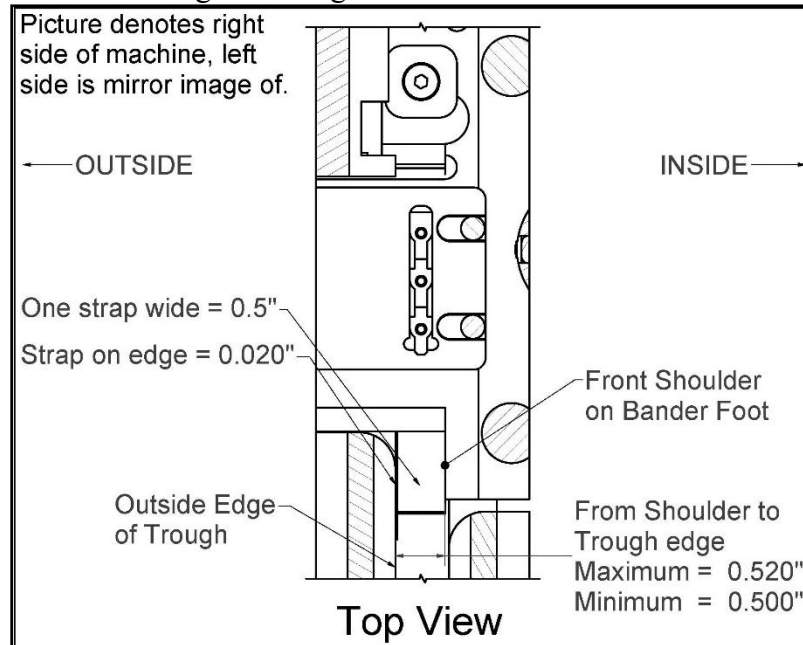
1. Before performing this procedure, it is necessary that the hardware (Item # 4 & Item # 6) holding the mid band and full band cylinders are tight. (Refer Bale Band-It Parts Section 115 Page 7) **Check this first!**
2. Get machine in Bale 00 position
3. Leave hydraulics and electric on
4. Verify Banders are in the up position



- a. If banders are in the down position, then move the toggle switch so that the banders are in the up position.
5. Unplug Din # 2 (Mid Band Out) & Din # 5 (Full Band Out), and set off to the side
(Refer Operator's Manual page 17)
6. Unplug Din # 3 (Mid Band In) & Din # 4 (Full Band In)
 - a. Then plug these connectors onto the front coils # 3 & 4
 - b. This will cause the Mid Band and Full Band cylinders to stroke out



7. Cut two pieces of strapping around 6" long each.
8. We are using the strapping as a measuring gauge; therefore do not force or wedge the strap for the following checks.
 - i. When using the strap width we are using the 0.500" measurement
 - ii. When using the strap edge we are using the 0.020" measurement
9. Position the strapping so as to measure the gap between the Front Shoulder on Bander Foot and the Outside Edge of Trough. See illustration.



10. If you can place the ½" wide strap and have a little side to side play, but not enough play to get the 0.020" thick strap alongside it, then you are within the acceptable range. Ideally the measurement would be 0.510".
 - a. If within the acceptable range, then skip to Step #12, you do not need to adjust the full band cylinder.
11. If you are not in the acceptable range then the Full Band Cylinder needs adjustment,
 - a. Remove DIN #4 which is currently on Full Band Out coil. Manually shift the Full Band In (DIN # 4) directional valve so cylinder is mid-stroke. (This gets you in both a good position for next step and releases pressure off piston of cylinder so we can adjust.)
 - b. Remove setscrew (Item # 8) (Bale Band-It Parts Section 115 Page 7)
 - i. ***Very Important, remove setscrew***
 - c. If measurement was less than 0.500" (too tight)
 - i. Then using flats on rod of full band cylinder, turn wrench clockwise screwing threads farther into bander foot.
 - ii. Plug DIN # 4 onto Full Band Out coil
 - iii. Recheck dimension
 - d. If measurement was greater than 0.520" (too loose)
 - i. Then using flats on rod of full band cylinder, turn wrench counterclockwise unscrewing threads out of bander foot
 - ii. Plug DIN # 4 onto Full Band Out coil
 - iii. Recheck dimension
 - e. Continue steps a, c, and d until measurement is in acceptable range
 - f. Using blue 248 loctite, install setscrew (Item #8)(BB Parts Section 115 Page 7)
12. Getting cylinders back to original position (Refer to Operator's Manual page 17)
 - a. Place DIN connectors back onto original locations.

- i. This will cause both mid and full band cylinders to retract
 - ii. Tighten screws on all DIN connectors
- b. If banders were in down position when you started,
 - i. Then move the toggle switch to make the banders go down
- c. If banders were in up position when you started,
 - i. Then leave them in the up position
- d. Procedure complete

Horizontal Plunger Reed Switch Adjustment

Overview:

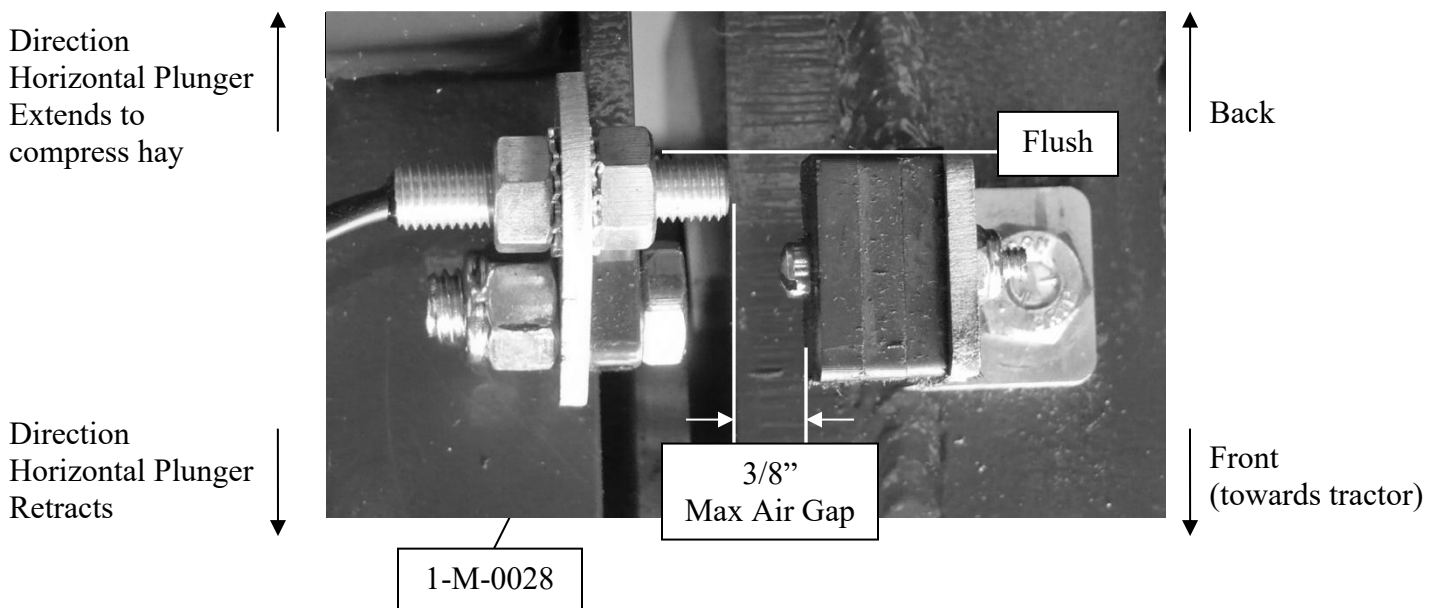
The Horizontal Plunger (HP) utilizes 1 reed switch with 2 magnets:

- When HP is fully extended magnet is inline with reed switch. (Red input #4 on)
- When HP is fully retracted magnet is inline with reed switch. (Red input #4 on)
- When HP is mid-stroke magnets are away from reed switch. (Red input #4 off)

This gives the computer the signal that the Horizontal Plunger is in process of moving (when red input #4 is off) or completed its operation (when red input #4 is on).

Front to Back Adjustment:

- Band-It should be on bale 0. This ensures the Horizontal Plunger is fully extended.
- Turn hydraulics off.
- Loosen mounting bolt for 1-M-0028
- Rotate 1-M-0028 so back edge of Reed Switch is flush with back edge of Magnets
- Tighten mounting bolt for 1-M-0028



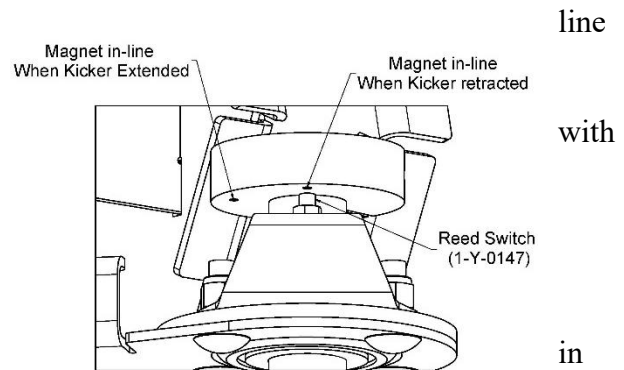
Air Gap Adjustment

- Maximum 3/8" air gap between reed switch face to magnet face.
- Must check air gap while checking the side to side slack between rollers and rails.
 - At the tightest position Reed Switch must not contact Magnet assembly.
 - At loosest position Reed Switch must not have more than 3/8" air gap.
- Also, check air gap at 2 positions: extended & retracted.

Kicker Magnet Holder Adjustment

The Kicker utilizes one reed switch and two magnets. The reed switch detects the magnet when the kicker is fully retracted and fully extended. To move the magnet holder, loosen the socket head cap screw that is keeping it tight on the shaft. The magnet holder can be adjusted both rotationally and by changing the air gap between magnet and sensor.

- With the Kicker cylinder fully retracted, up the magnet with the reed switch.
- Fully extend the Kicker cylinder to verify that second magnet also lines up reed switch.
- Place about a 1/8" (3.2 mm) air gap between magnet and reed switch.
- Tighten socket head cap screw to secure magnet holder to shaft.
- Double check that magnets still line up both extended and retracted positions.



Lifter Adjustment

Lifters are factory set, and require no additional adjustment. If you look at the lifters and they look loose, that is normal, do not adjust. **If you adjust lifters without following the below procedure then damage will occur to lifters and bander.**

- 1) Perform only when bale count is 0-20
- 2) Refer to Bale Band-It Parts Section 115 Page 6
- 3) Tighten lifter nuts (Item #4) according to the following specifications
 - a) Turn hydraulics on, E-stop on
 - b) Verify that the grease zerks on the bander are in a safe location if the bander were to raise and lower.
 - c) Using the toggle switch, lower the banders
 - d) Using the toggle switch, raise the banders and hold the toggle switch so they stay energized in the raised position
 - e) While holding the toggle switch, use a nut driver / or small 1/4" drive ratchet with extension to tighten the lifter nuts until firmly snug.
- 4) These steps ensure that the lifters are tight when the banders are up, yet not too tight to cause damage to the lifters or pocket in bottom bander foot

Red Handle Adjustment

See Bale Band-It Parts Section 115 – Page 8 & 9 for an exploded view with item & part numbers.

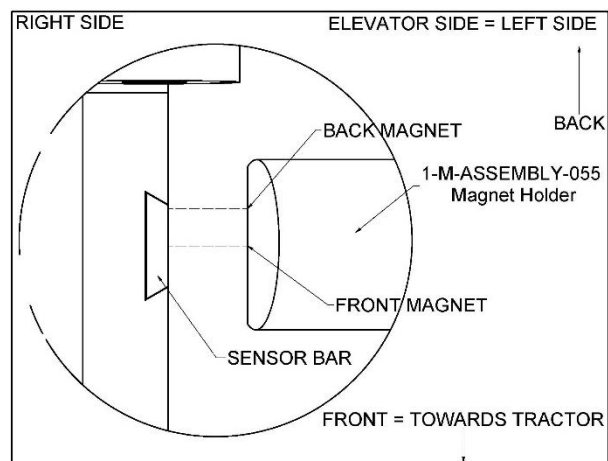
1. Adjust red handle

- Hydraulic and electric power must be on! With emergency stop pulled out, so Band-It is in “Live” mode!
- Strapping must be in gripper
- Engage red handle, noticing the amount of force required to do so
- Proper adjustment =
 - Requires one hand a medium to full amount of force to engage red handle
 - Does not require two hands to engage red handle
- If it needs adjustment
 - Then loosen the jam nut
 - Release red handle
 - If red handle needs to be tighter
 - Then unscrew (Item #9) Adjustable Gripper
 - If red handle needs to be looser
 - Then screw in (Item #9) Adjustable Gripper
 - Engage red handle, noticing the amount of force required to do so
 - Continue procedure until red handle meets proper adjustment
- Once properly adjusted
 - Leave red handle engaged
 - Put blue 248 loctite on threads
 - Holding head of (Item #9) Adjustable Gripper, tighten jam nut
- Red handle adjustment complete

Vertical Plunger Magnet Holder Adjustment

The Vertical Plunger must be in the up and closed position in order to adjust the magnet holder.

- To get in this position let machine its cycle so the Vertical Plunger is normal up and open position.
- Then remove the #2 DIN connector on the Front Manifold. causes the Vertical Swing to close.
- Turn off hydraulic power.
- Line the front magnet with the center of the sensor.
- Tighten magnet holder in place.

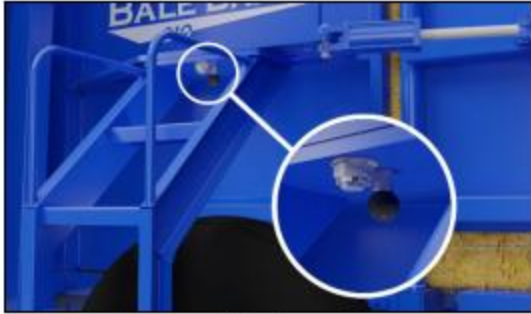


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in its

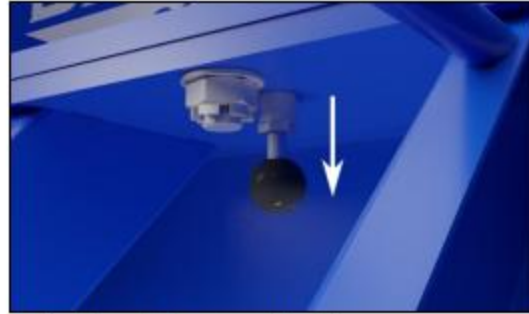
This

Rotate Side Ladder

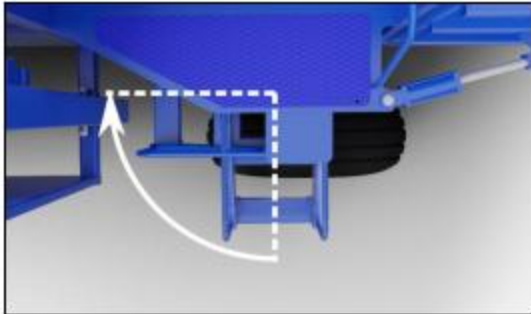
The step ladder can be rotated 90° and locked in place. This is especially useful when transporting the Bale Band-It on a trailer or when performing maintenance on the wheel behind it. The ladder can also be locked at two intermediate positions, if desired. To rotate the ladder out of the way, follow the steps below:



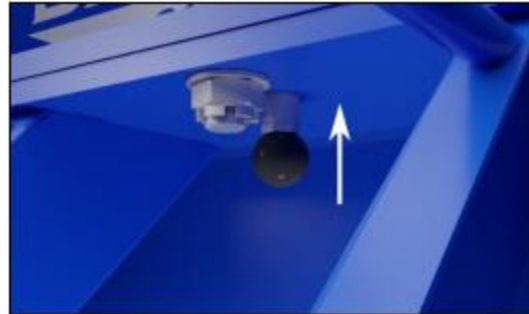
1. Locate black pull-knob



2. Pull knob down and hold



3. Rotate ladder



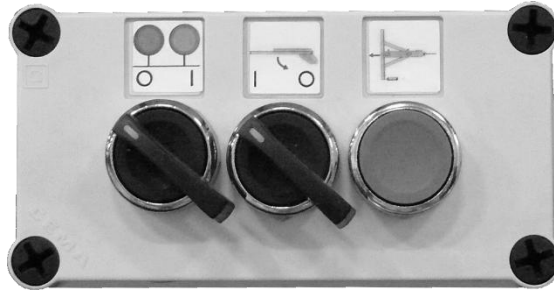
4. Release knob

Manual Overrides

Tail Lights, Back Floor, and Horizontal Plunger Manual Buttons

The following switches and button are located on the right side of the Bale Band-It. They control the Tail Lights the Back Floor and the Horizontal Plunger respectively.

Tail Lights: This is the only Tail Light control. When top of selector switch is pointing to the “O” position Tail lights are off. When top of selector switch is pointing to the “I” position Tail lights are on. Main power cord to Bale Band-It must be plugged in for lights to operate.



Back Floor: The Back Floor cycles up and down automatically based off bale count. If the Back Floor is up, move top of selector switch to the “I” position and the floor will drop. Place the top of the selector switch back to the “O” position and the floor will raise. If the floor is already down because bale count is on 12 or 13, then selector will not raise floor.

The Back Floor selector switch should **never** be activated if the Back Gates are closed! Damage to the Back Gate lower hooks can result. The Back Gates close on bale 15 and open after the tie cycle is complete on bale 21.

The Back Floor should **never** be raised if the Back Gates are closed! Damage to the Back Gate lower hooks can result. Normal automatic operation all these details are already taken into consideration. These situations only occur when manually manipulating the machine.

Horizontal Plunger: The Horizontal Plunger extends and retracts automatically based off bale count. The Horizontal Plunger momentary button is used to manually extend the Horizontal Plunger. Since it is a momentary button, as soon as you release the button the Horizontal Plunger will retract. If the Horizontal Plunger is already extended (i.e. bale 0) then the momentary button will not cause Plunger to retract.

Manual Bundle Removal

The Back Floor selector switch and Horizontal Plunger button (as described above) will be used to remove a tied 21 bale bundle from the Bale Band-It. Follow all safety guidelines when performing. When putting oneself in harms way live power must be turned off at source.

- Check that Back Gates are open and that Horizontal Plunger is retracted.
 - If Back Gates are closed, then there is not a tied bundle in the chamber
 - If Horizontal Plunger is extended (bale 0), then add one more bale to the Bale Band-It and the Horizontal Plunger will retract.

- Open the side doors of machine.
- Remove all bales on top of the Strap Guide Arms.
- Insert one small square bale (on edge) into the bottom side door opening and under the Strap Guide Arms.
- Close all side doors and properly fasten them.
- Press and hold Horizontal Plunger button until Horizontal Plunger is at the end of its stroke and release.
- Insert another bale into the bottom side door and repeat the above process until the entire bundle is sitting on the Back Floor (4 bales total).
- Activate the Back Floor selector switch “I”. The bundle should now be partially on the ground. Pull the machine forward and out from under the bundle.
- Remove any remaining loose bales.
- Deactivate the Back Floor selector switch “O” and properly fasten all side doors.

Strapping Count & Reset Strapping Button

The Strapping Count number displays how many more bundles can be bundled with the current 2 rolls of strapping. For example if Strapping Count = 52, then you can bundle approximately 52 more bundles before running out of strapping. When counter down counts to zero, then monitor displays ‘Out of Strapping’ and buzzer is activated. The Bale Band-It will not process more bales until Reset Strapping button is pressed.

- If you are out of strapping, then rethread the Bale Band-It with 2 new rolls as outlined in the Threading Instructions. Press the Reset Strapping button every time two new rolls of strapping have been put onto the machine.
- If there is still enough strapping to do more bundles, press the Reset Strapping button and continue baling. It is now your responsibility to keep a close watch on the amount of strapping left, so that you can stop before running out completely.

Important Note: When the monitor says ‘Out of Strapping’, the Bale Band-It automatically stops you right after it tied a bundle (bale 0). Bale 0 is the ideal time to rethread because of the position of the machine and there are no loose bales to deal with.

Therefore, if you have pressed Reset Strapping and are watching your rolls to see how many more bundles you can get out of it, then note that it is best to also stop the Bale Band-It right after it tied a bundle (bale 0). If you start stacking a bundle and then realize that you do not have enough strapping to finish it, then you will have to press Reset Bundle and deal with those loose bales. After threading the strapping, press Reset Strapping again so that your two new rolls start at Strapping Count 122.

Upon pressing Reset Strapping the Bale Band-It will immediately begin processing bales. Reset Strapping resets the Strapping Count to 122. Two new rolls of strapping will band together approximately 122 bundles. This is not an exact count due to the fact that each bundle will vary in the amount of strapping that it will use and each lot of strapping may be rolled at different weights.

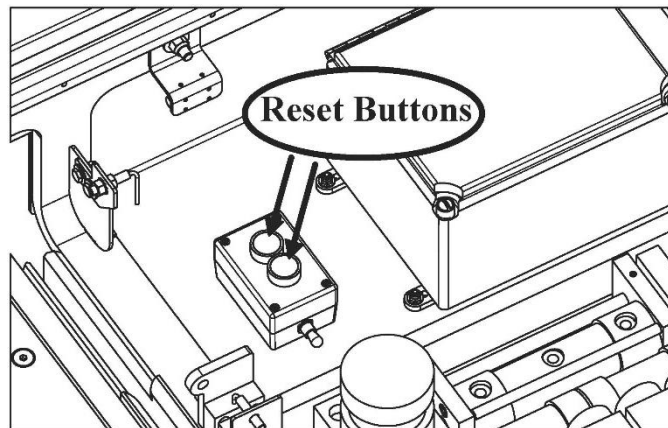
Reset Bundle Button

There are a number of safety concerns that should be considered before pressing the Reset Bundle Button. Please see Reset Bundle in the Areas of Concern section of the manual.

Press the Reset Bundle button when you want to start a new bundle. It changes the bale count number on your monitor to “Bale 00”, and physically puts the Bale Band-It in bale position 0.

This is helpful if you are:

- Finished with a cutting or season, desiring to empty machine and get it ready for next baling.
- Strapping runs out mid bundle or breaks and need to rethread and start a new bundle
- Reset Bundle does not need to be used during regular use of the machine.
- Do not use Reset Bundle if you have an operation code and want it to reset and clear the operation code. You will only prolong the problem. Address the operation code and the machine will continue where it left off.



The Reset Bundle and Reset Strapping buttons are located inside the banding box next to the electrical box.

Areas of Concern

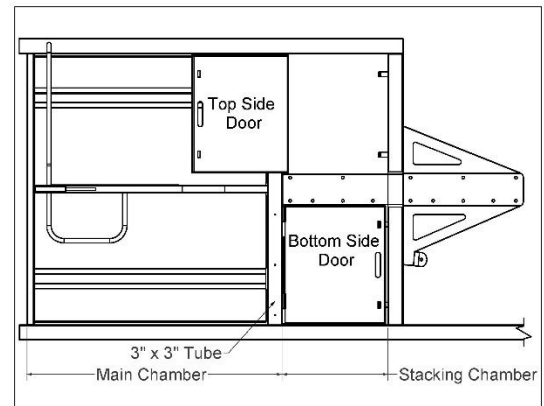
Since the Bale Band-It is fully automatic, there are a few areas on the Bale Band-It that require special attention so that the Bale Band-It is not damaged.

Reset Bundle

THINK SAFETY! STAY AWAY from moving parts when using **RESET BUNDLE BUTTON!** **Do not reset** if people are close to moving parts.

Before pressing Reset Bundle the following must be considered.

1. Notice Danger decal located inside banding box lid
2. If there are bales in the stacking chamber
 - a. Then remove bales out side doors.
3. If there are bales in the main chamber
 - a. That's ok, you can leave them in the main chamber
4. If no bales in stacking chamber
 - a. Apply electric & hydraulic power, letting machine power up fully before next step.
 - b. Press and hold reset bundle button for 1 second. Only press this button once.
 - c. Allow Band-It to cycle through its reset sequence
 - d. Once fully reset, monitor should display
BALES IN BUNDLE: 00
OPERATION CODE: 100
Photo 1 Ready Waiting for a Bale
 - e. Band-It is positionally reset
 - i. Turn off hydraulics and electric.
5. Check if strapping is reset



Concept: The Band-It never senses the strapping. If you reset bundle and the monitor says Bale 00, but the strapping is still wrapped around bales in the main chamber, then the Band-It will try to band together more than 21 bales. This will not work.

- a. If strapping feeds from strap guide arm finger, down around bales, and back up to the red handle clamp
 - i. Then strapping is wrapped around bales, and must be rerouted
 - ii. Release red handle clamps
 - iii. Pull strapping out of grippers
 - iv. Back spin white banding drums until end of strapping is at end of strap guide arm finger
 1. If this proves to be difficult to backspin, then pull slack at back of bundle and then back spin white banding drums
 - v. Pull strapping from strap guide arm finger to red handle clamp and finish threading
- b. If strapping feeds from strap guide arm finger directly to the red handle clamp
 - i. Then strapping is routed correctly

6. Machine is fully reset and ready to accept more bales
7. If there is still hay in the main chamber
 - a. Then bale until you reach bale 12
 - i. This will push all the bales in the main chamber rearward onto the back floor.
The back floor will be down, allowing you to easily remove these bales.
 - b. Stop baling
 - c. Clean out any loose bales or left over strapping out the back of the Band-It

Do not turn off hydraulics during tie cycle

During the tie cycle there is a small period of time that if hydraulic pressure is not present then it is possible for that bundle to miss-tie.

Visual indicators:

If a non-emergency situation occurs where you need to remove hydraulic power, check if bale count on monitor says “Bale 21”. If it does then watch the machine until the back gates open. Once the back gates open, then tie cycle is complete and you can turn off hydraulics.

If bale count on monitor does not say “Bale 21” then at any time you can turn off hydraulic remote.

Return Hose uncoupled

Identifying the return line:

The return line on the Band-It starts at a “T” hydraulic fitting which joins all the return hoses together, and it ends with the female side of the quick coupler connecting to the return line on the baler. The return line on the baler then connects to the tractor’s reservoir dump port via a quick coupler. If either return quick coupler fails or comes apart, then the Band-It will stop operating.

Symptoms:

If machine seems out of sequence, and cylinders are extending when they should not. Example: kicker cylinder extended and shouldn’t be, horizontal plunger cylinders extended and shouldn’t be.

Reasoning:

When the return line is uncoupled and the pressure line has system pressure (around 2700 psi), then the return circuit has no place for the return oil to go and it also has full system pressure. When cylinders have equal pressure on both sides of the piston, the side with the larger area exerts the most force and causes the cylinders to extend.

Solution:

1. Place hydraulic remote in float position
2. Reattach return quick coupler
 - a. If this proves difficult do the following to release pressure
 - i. Electric on - Hydraulics off (in float)
 1. Press / release green horizontal plunger button on side of machine, cycle multiple times
 - ii. Depress end of quick coupler
 - iii. Unscrew end of quick coupler from hose

Before you apply hydraulics:

Inspect positions of fetcher cylinder and fetcher swing cylinder. The normal “home” position for fetcher cylinder is retracted. The normal “home” position for fetcher swing cylinder is extended.¹

- If either fetcher or fetcher swing cylinders are partially extended
 - i. Then you must retract these cylinders by hand or by relieving hose pressure to these cylinders until you are able to retract these cylinders to their home positions.
- If both the fetcher and fetcher swing cylinders are retracted (check both left & right sides) in their “home” positions
 - i. Then Band-It is ready for hydraulics to be applied
- If these steps are not performed before you apply hydraulics then mechanical damage could result.

Starting Out Empty

When the Bale Band-It starts out empty (no bales in chamber), then there is an opportunity for stacking failure on the first tier (first 3 bales). If the first three bales are not on top of each other when the horizontal plunger pushes bales into the main chamber, then the bundle / stack is messed up. This is usually caused by bales that are not uniform in shape or if the slope of the ground causes bales to fall over.

Prevention:

To prevent stacking failure, simply watch the first two bales go into the Bale Band-It. From the tractor cab you can see if the bales have already fallen over. If in doubt, turn off hydraulics and walk to back of Bale Band-It. If bales have fallen over or look unstable, then adjust them on the Strap Guide Arms. Get out of main chamber. Turn on hydraulics. Add third bale and let Bale Band-It process it. Verify stack has properly transitioned to the main chamber. If bales are somewhat staggered but still stacked on top of each other, then that is ok. When bundle hits back gates it will straighten up.

What if first tier (first 3 bales) falls over:

There is no way to salvage this bundle or to manually stack the bales back on top of each other. Open banding box lid and release red handle clamps. Remove strapping from carriage assembly. With hydraulics off, remove all bales on Strap Guide Arms and from main chamber. Turn electric and hydraulic power on. Press reset bundle button. Rethread the strapping back to red handles. Back spin any slack in strapping back to white drums. Bale Band-It is now ready for bales. Follow the prevention steps outlined above.

Typical:

The good news is that typically this isn't even an issue. If the bales are in decent shape and you are not bouncing the machine as you go uphill, the first three bales generally stack fine without any extra precautions. Once there is a stack of three bales in the main chamber then the stacking tier is supported and will not fall over. So this can only occur on the first three bales, when machine is completely empty.

¹ Assuming your couplers did not come uncoupled in the middle of a tie cycle.

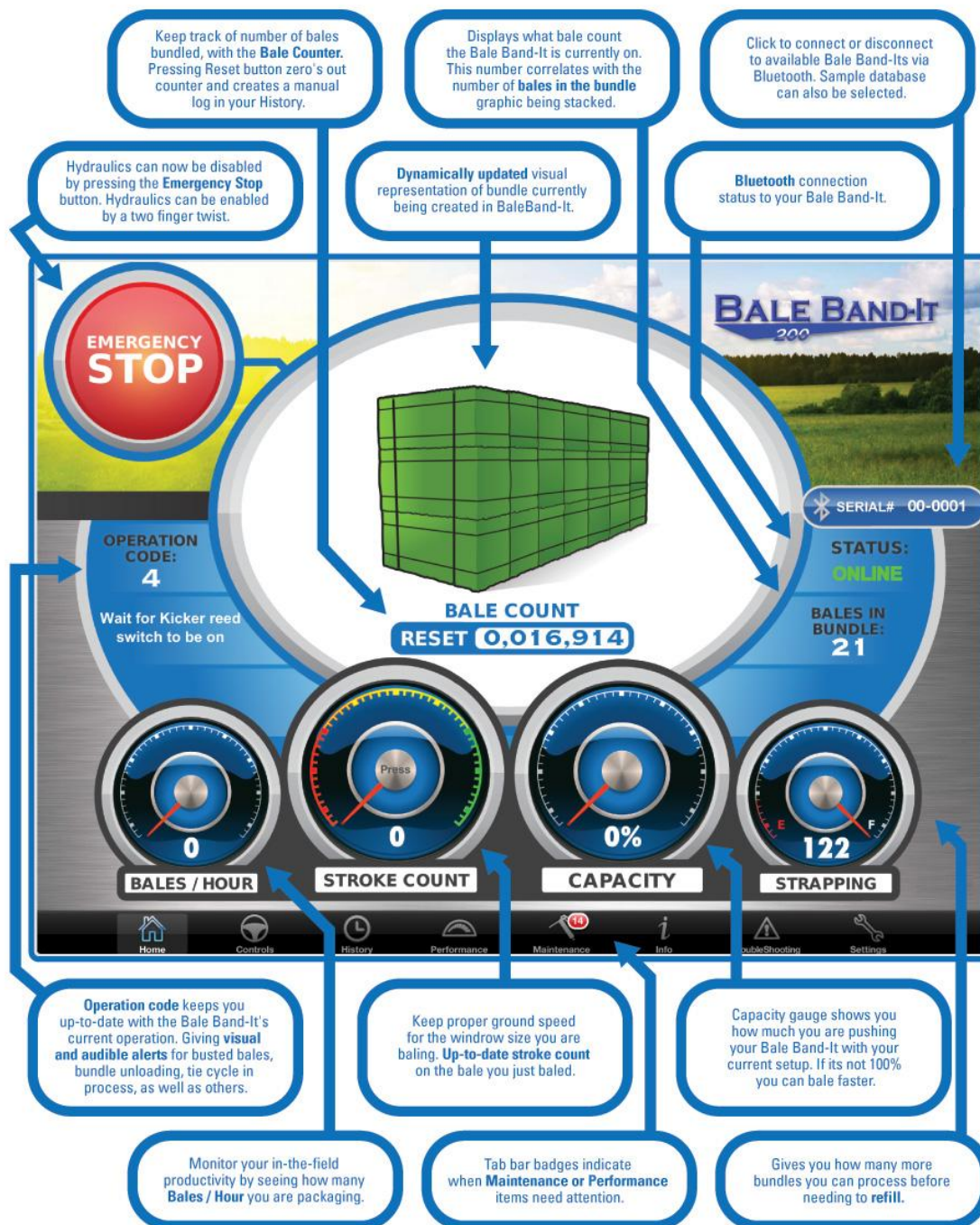
The iBand-It App

As of 2013, all new Bale Band-It model 200 machines are designed to interface with the iBand-It iPad app, available on the Apple Store. Prior to 2013, model 100 and 200 machines were equipped with a dedicated display monitor. However, all model 200 machines can be upgraded to use the iBand-It app.

App Compatibility – Revision added 6/21/2024

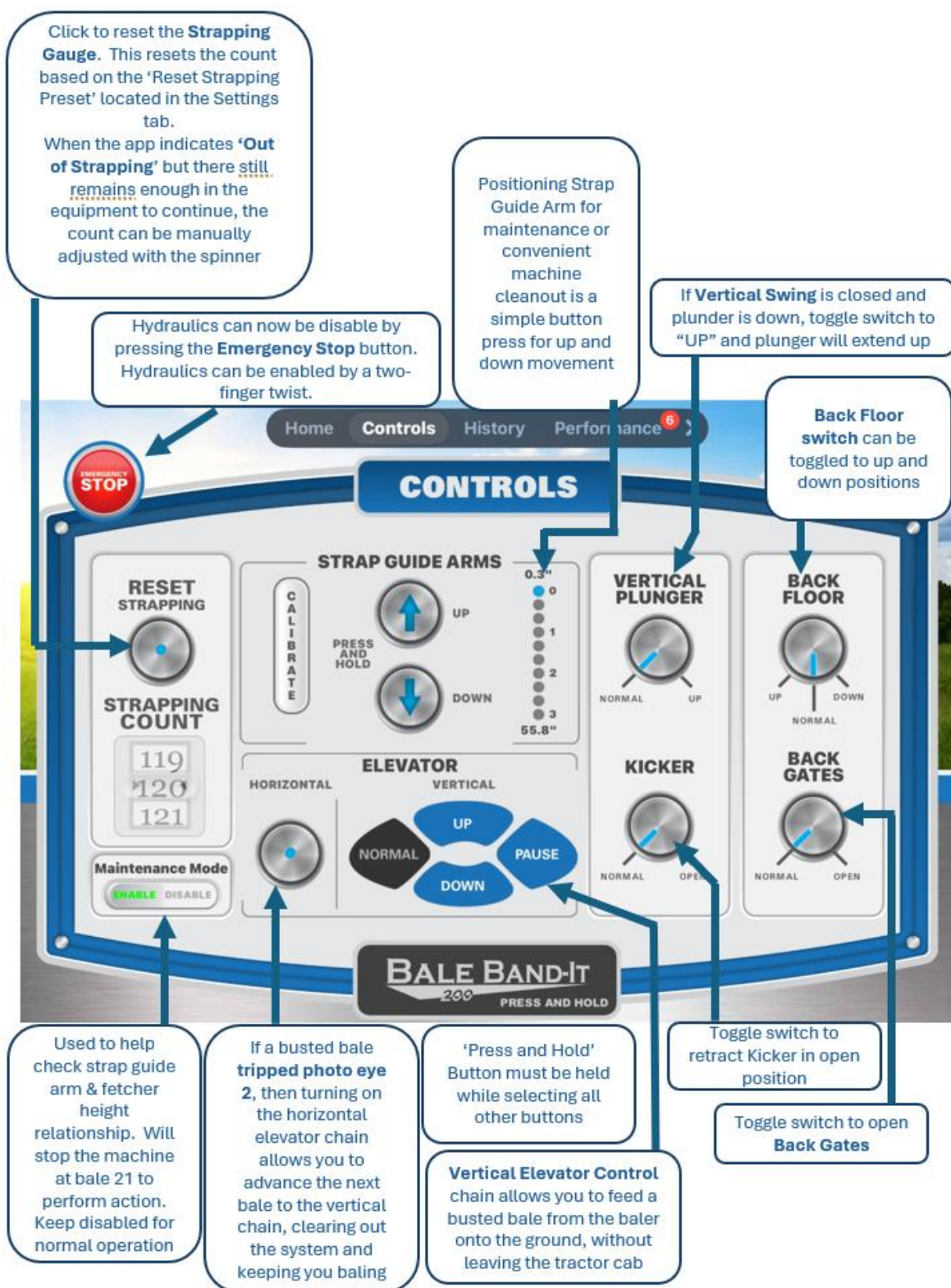
- The iBand-It App is designed to work on iPad iOS 13 and above which will allow users access to updates.
- iPads below iOS 13 that already have the app installed can continue to use the app but will not have access to any updates.
- If the iPad has a software version less than iOS 13, and the app is not installed the user will not be able to download the app to the iPad.

Main Screen



Controls Tab

The Controls tab is a helpful area that allows you to safely control parts of the Bale Band-It from the tractor seat. The buttons are only accessible when connected to a Bale Band-It (i.e. the status is ONLINE).



History Tab

Three types of **history logs** are saved for each Bale Band-It:

1. Daily logs are automatically saved for each day's baling.
2. Manual logs are created when clicking the RESET button on the Home screen.
3. Favorite logs can be created to span a specific time range. Create as many favorite groupings as you want.

The **History** page lists all Bale Band-Its that have connected to the app. A separate history database is saved for each one.

Click the **arrow** to collapse or expand the log table.

Click on the **bale** to see how many bales were produced in this area. Click on the **arrow** to see more detailed info.

The screenshot shows the app interface with the 'History' tab selected. The top bar displays 'Bale Band-It SN: Sample 00-0000'. Below the top bar are three tabs: 'Daily', 'Manual', and 'Favorites'. The 'Daily' tab is active, showing a list of logs for December 13-18, 2012. Each log entry shows '3,000 bales (142 bundles)' and a blue arrow icon. A search bar labeled 'Search Notes' is at the top of the list. The bottom of the screen features a navigation bar with icons for Home, Controls, History, Performance, Maintenance, Info, Troubleshooting, and Settings. The main area of the app is a map showing the location of bales, represented by green 3D bale icons. A callout box on the map indicates '58 bales (2 bundles)' with a blue arrow icon. The map has a zoom control on the left and map style buttons (Standard, Hybrid, Satellite) at the bottom right.

Clicking on the history log displays the **GPS locations** on the map.

Notes can be added to any log by clicking the blue accessory button.

Each bale's GPS location is logged when the bale reaches **Photo 3** of the equipment.

Pinch to zoom in/out on the map.

Performance Tab

iBand-It app records actual cycle times of key functions on the Bale Band-It. If the function is performing slower than the normal rate for that gpm, then the gauge indicator goes in the red, and the badge on the Performance tab appears. This provides an indicator that there may be a problem with a specific function.



Maintenance Tab

MAINTENANCE

Lists each **Lubrication** and **Adjustment** item.

Popup window gives **picture** and **procedure** of how to maintain that item.

Strap Guide Wear Discs

As the Strap Guide Arm Wear Discs wear, the up and down slack in the arms are going to increase. The fully adjustable design allows us to adjust the wear discs to keep components operating at optimum performance.

Checking the 'Up and Down' Slack:

Position:
Remove all hay in the main chamber. Position the strap guide arms in bale position two. Then, verify all hydraulic and electric power to Bale Band-It is off.

Measure:
Measure from the floor of the stacking chamber to the top surface of the strap guide arm finger. Record your measurement. With your hand, raise the strap guide arm so that all the slack in the wear discs is taken out. Record the measurement at the new raised position.

Vertical Plunger Pillow Block

Adjustment

Vertical Plunger Swing Table

Strap Guide Wear Discs

42

BALES 20000

RESET

Info

Home Controls History Performance Maintenance Info Troubleshooting Settings

Gauge selector shows the number of bales since this item has last been maintained.

The **badge number** indicates the number of Maintenance items needing attention.

This number indicates the bale count required for this Maintenance item. Break in periods are **automatically** adjusted for.

Reset button sets the bale counter to zero for the Maintenance item. This tells the app that maintenance has been performed.

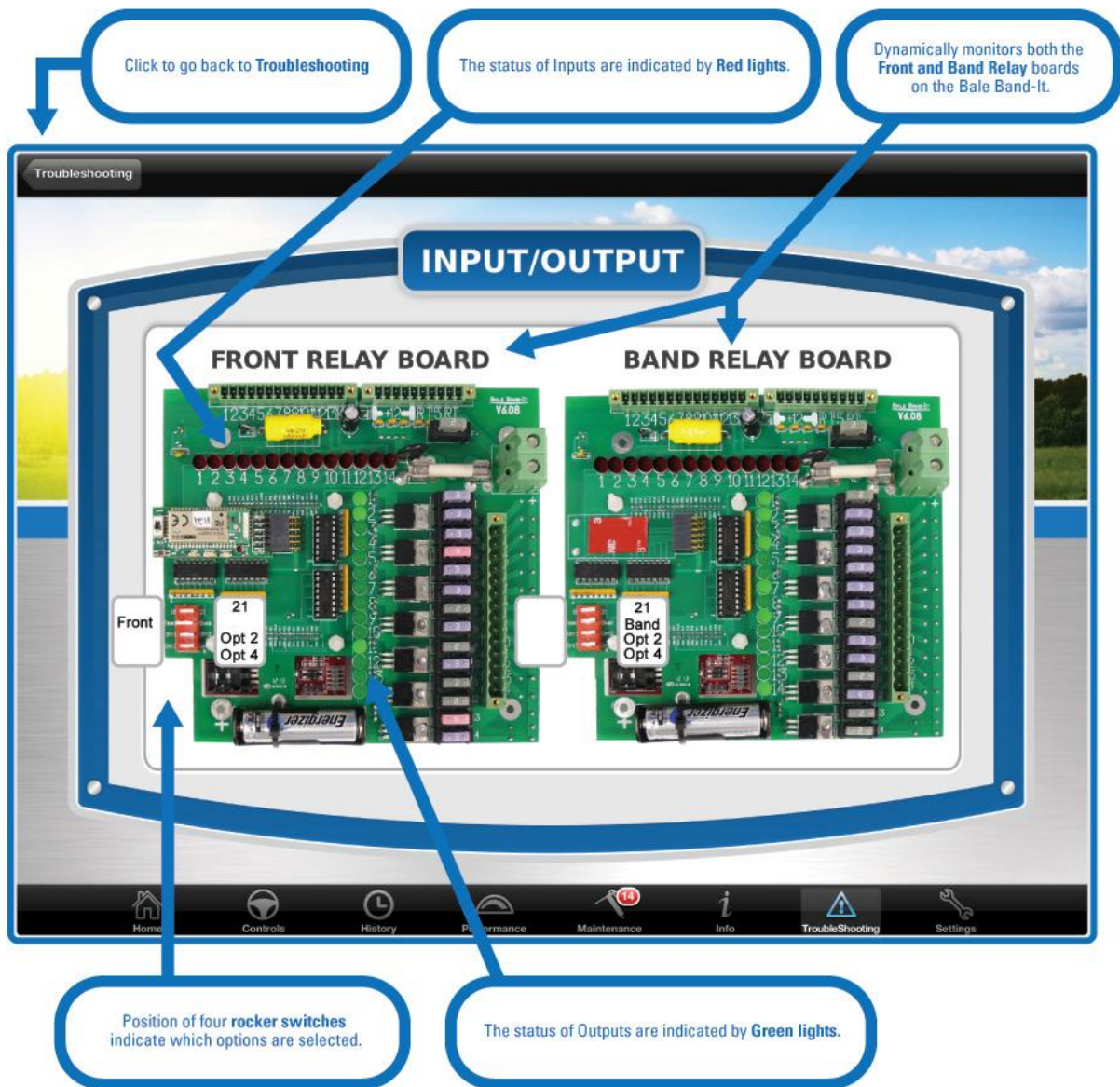
Click **info** button to open popup window.

Info Tab

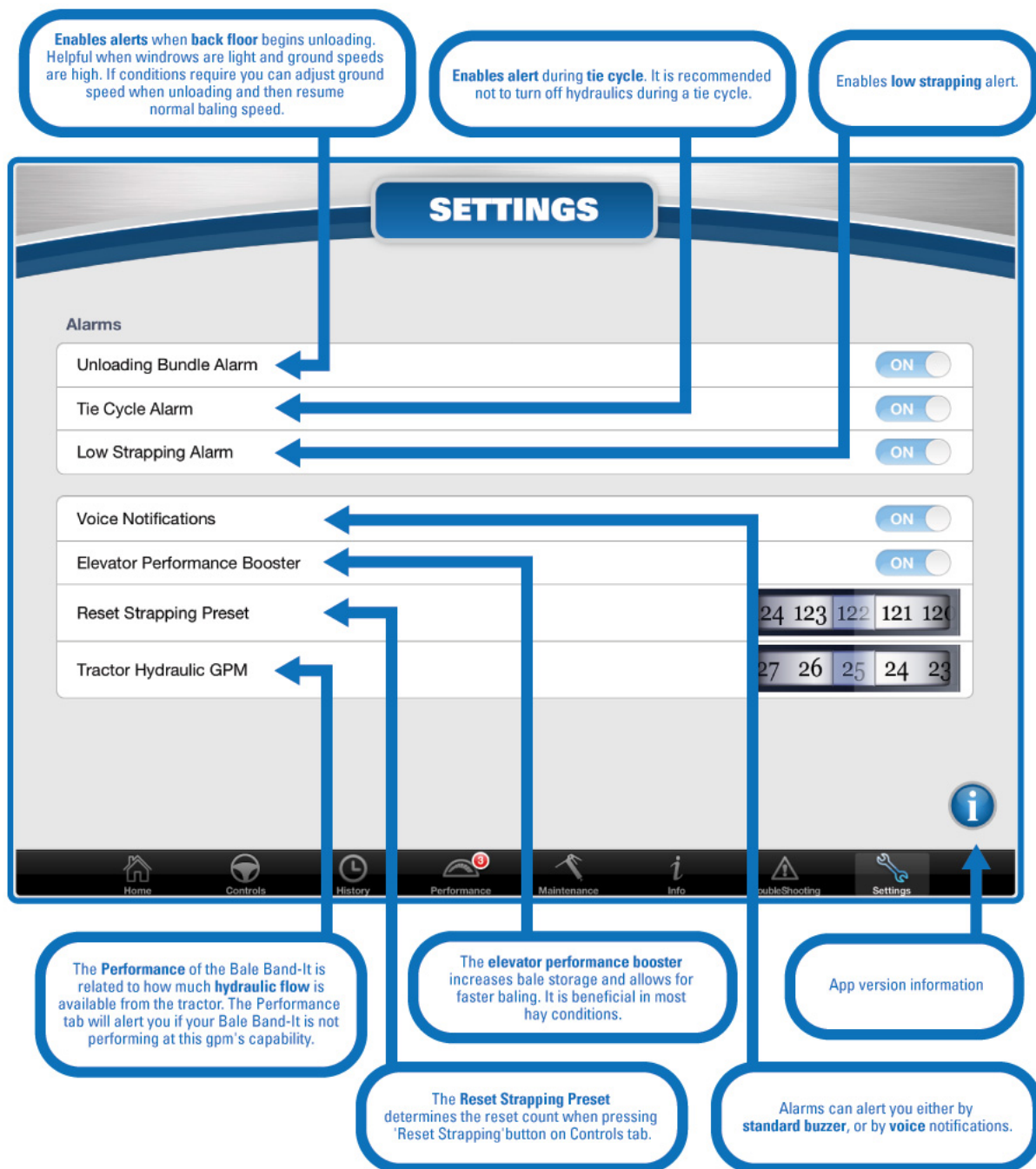


Troubleshooting Tab





Settings Tab



Other iBand-It App Information

Important Note: This app will only work with Bale Band-It equipment that has the new Bluetooth LE module.

FAQ for iBand-It app: If I purchase a new Model 200 Bale Band-It will it be equipped to connect to the iBand-It app?

Ans: Yes, new Bale Band-Its are sold with the new Bluetooth W2.2 board and Stroke Count hardware as standard equipment.

Do I purchase iPad through Pike Mfg. Corp.?

Ans: No. Apple does not currently offer an OEM program.

How do I purchase an iPad for my New Model 200 Bale Band-It?

Ans: Purchase your iPad through an Apple reseller. Go to <https://www.apple.com/buy/> to shop online or to find the closest reseller near you. Before purchasing an iPad for use with the iBand-It app please view the [iBand-It app requirements](#).

Is the iPad I purchase locked to a specific carrier?

Ans: Yes. When you purchase an iPad you will specify which carrier the iPad is locked to.

What if I already have an iPad, will mine work?

Ans: In order to utilize the iBand-It app and link via Bluetooth connection to the Bale Band-It the iPad must be 3rd generation or higher. In order to utilize the GPS mapping feature the iPad must be the Wi-Fi + Cellular model. No additional service plans are required to utilize the GPS feature. Just take your iPad to a Wi-Fi connection and all your GPS data is visible. Please view the full [iBand-It app requirements](#).

How much does the app cost?

Ans: The iBand-It app cost is approximately \$9.99 US. Please check App Store for up-to-date pricing. In order to upgrade an earlier Model 200 to connect to the iBand-It app additional hardware charges also apply.

Can anyone download the iBand-It app?

Ans: Yes, the iBand-It app is available on the App StoreSM. The downloadable app comes with a sample database of information so you can explore some of the features of the app without connecting to a Bale Band-It machine.

Will the iBand-It app work on my Model 100 Bale Band-It?

Ans: The iBand-It app will not work on any Model 100 Bale Band-It.

Will the iBand-It app work on my Model 200 Bale Band-It?

Ans: Any Model 200 Bale Band-It can be updated to interface with the iBand-It app on iPad.

How long will the AA batteries last?

Ans: The batteries should last at least a season. It is a good practice to shut down the iBand-It app when done for the day. This will help battery life if you store the iPhone or iPad within Bluetooth® range of your baler. Also, at the end of the season it is a good practice to remove the two AA batteries from the battery holder.

Recommendations & requirements to fully utilize the iBand-It app:

iPad Generation:	Generation 5 or higher (required)
Operating System	iOS 13 (earliest version accepted)
Retina display:	Yes (required)
iPad mini:	Not recommended
GPS:	Wi-Fi + Cellular model (required)
Storage Capacity:	64 GB or higher (required)
Network Carrier:	Options: AT&T, Sprint, or Verizon
AppleCare+:	Optional coverage
Data Plan:	Not required.
Recommended accessory:	Clear screen protector

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Display Monitor Troubleshooting Solutions

Other Display Monitor Functions:

❑ **Bundle unloading is indicated with buzzer:**

Helpful when windrows are light and ground speeds are high. If conditions require you can adjust ground speed when unloading and then resume normal baling speed. This buzzer keeps you informed so you can adjust on the go.

Note: Verify main power cord is unplugged before moving rocker switches.

Turn Unloading Bundle Alarm ON:

- Move rocker switch on Front Relay Board to OPT 1

Turn Unloading Bundle Alarm OFF:

- Move rocker switch on Front Relay Board to OPT 2

❑ **‘Out of Strapping’ displayed with buzzer:** This occurs after 122 bundles have been banded. When the display shows ‘Out of Strapping’ and the buzzer is on, the Reset Strapping button must be pressed in order for the Bale Band-It to continue. Once this has been done the computer resets its strapping counter to 122.

If the operator determines there is still enough strapping remaining to do more bundles, press the Reset Strapping button and continue baling without reloading strapping. But then operator must visually keep a close watch on the amount of strapping to prevent the possibility of running out. Anytime two new rolls of strapping have been put onto the machine the Reset Strapping button must be pressed in order for Bale Band-It to keep an accurate Strapping count.

❑ **Busted Bale:** The Bale Band-It can help notify the operator of a possible busted bale from the baler. If a bale does not move through the elevator process in a timely fashion the Display Monitor will indicate to the operator by beeping twice. This does not remove the responsibility from the operator to watch for untied bales, but it does provide a help.

❑ **Foreign object blocking Photo Eye #3:** Before the elevator moves the bale from Photo Eye #2 position to Photo Eye #3 position, the software does a safety check on Photo Eye #3. If any hay chaff or debris is detected a Photo Eye #3 the elevator process will stop the bale at Photo Eye #2 and the monitor buzzer will be activated. To continue, the operator must disengage the tractor’s hydraulic power supply (turn off the hydraulic remote) to the machine. Then unplug the main electrical power cord to the machine, remove the hay chaff or debris from Photo Eye #3, plug the main electrical power cord back together, re-engage hydraulic power supply and the machine will continue operation.

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Operation Code

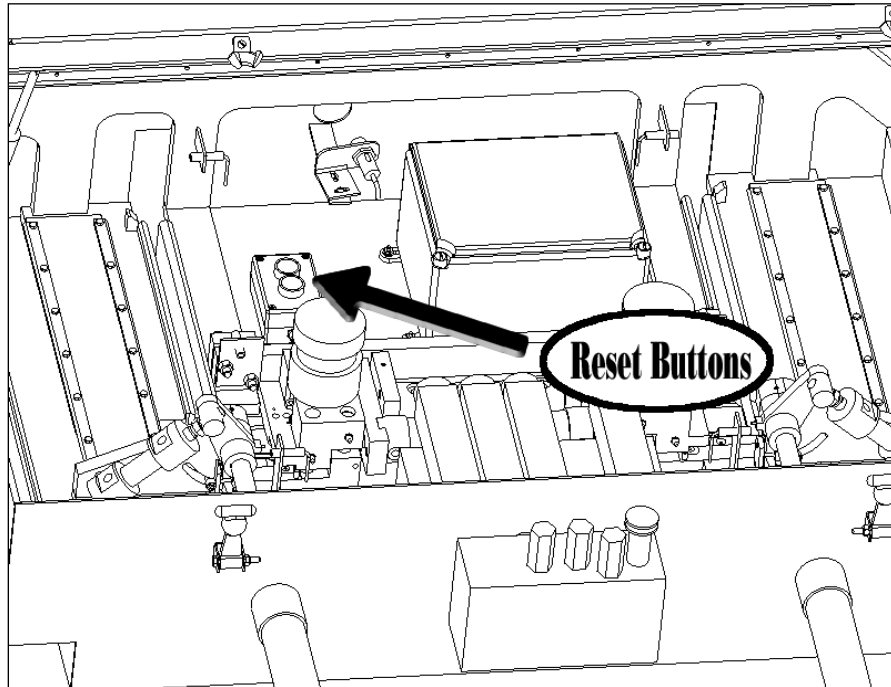
Possible Solutions

001 Reset Bundle button is stuck on.

- Press Reset Bundle Button a few times to un-stick it.
- Tap on the side of button.
- Take Reset Bundle Button apart internally and clean out hay dust

002 Reset Strapping button is stuck on.

- Press Reset Strapping Button a few times to un-stick it.
- Tap on the side of button.
- Take Reset Strapping Button apart internally and clean out hay dust



003 Waiting for Kicker reed switch to be off.

Note: Before the machine extends the Kicker cylinder, the Kicker reed switch is in front of the first magnet mounted in the round plastic. When the machine extends the Kicker cylinder it rotates the round plastic, moving the first magnet away from the switch, which turns the Kicker reed switch off. This is what the machine is waiting for.

If the Kicker cylinder is fully extended,

- Loosen nuts on Kicker reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “003”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.

If the Kicker cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Kicker from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless hydraulic power or return has been disconnected or shut off.

If the Kicker cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Kicker from extending.
- Check that the directional valve is not stuck.

004 **Waiting for Kicker reed switch to be on.**

Note: After the machine has extended the Kicker cylinder, the Kicker reed switch should be lined up with the magnet mounded in the round plastic, which turns the switch on. This is what the machine is waiting for.

If the Kicker cylinder is fully extended,

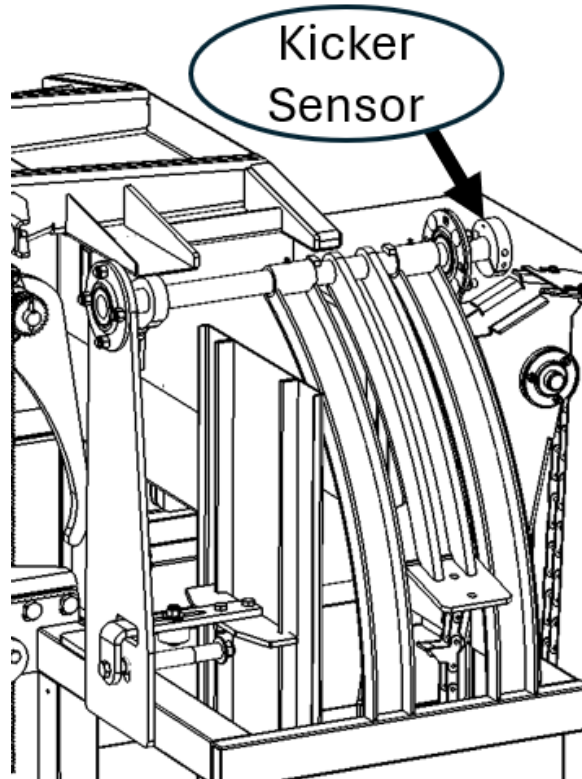
- Check the air gap distance between the Kicker reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

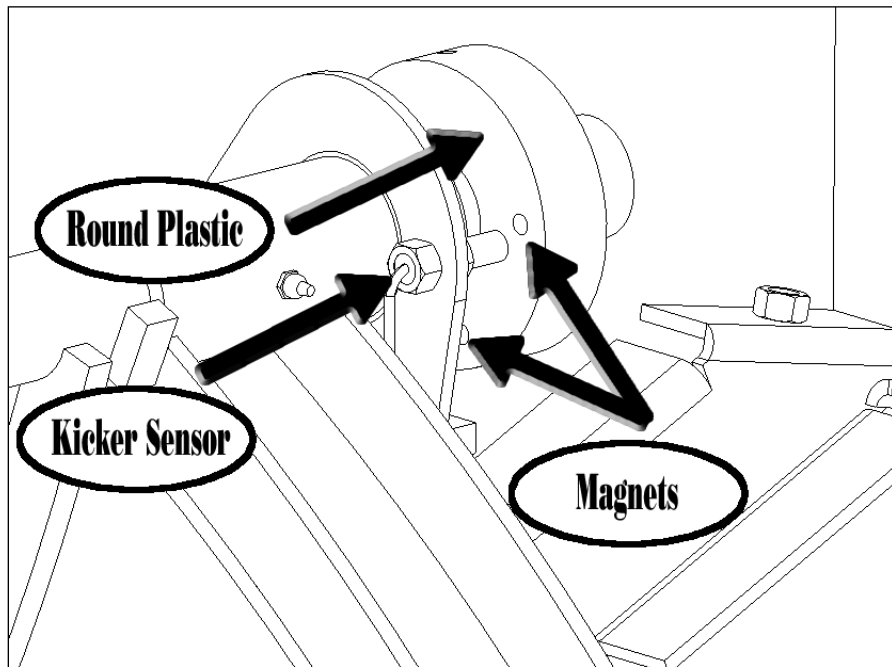
If the Kicker cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Kicker from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Kicker cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Kicker from extending.
- Check that the directional valve is not stuck.





005 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

006 Waiting for Horizontal Plunger reed switch to be off.

Note: Before the machine retracts the Horizontal Plunger cylinder, the Horizontal Plunger reed switch is in front of the first set of magnets. When the machine retracts the Horizontal Plunger cylinder it moves the first magnet away from the switch, which turns the Horizontal Plunger reed switch off. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully retracted,

- Loosen nuts on Horizontal Plunger reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “006”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.

If the Horizontal Plunger cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Horizontal Plunger from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger from retracting.
- Check that the directional valve is not stuck.

007 Waiting for Horizontal Plunger reed switch to be on.

Note: After the machine has retracted the Horizontal Plunger cylinder, the Horizontal Plunger reed switch should be lined up with a set of magnets, which turns the switch on. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully retracted,

- Check the air gap distance between the Horizontal Plunger reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

If the Horizontal Plunger cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from retracting.
- Check that the directional valve is not stuck.

008 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

009 Waiting for Horizontal Plunger reed switch to be on.

Note: After the machine has retracted the Horizontal Plunger cylinder, the Horizontal Plunger reed switch should be lined up with a set of magnets, which turns the switch on. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully retracted,

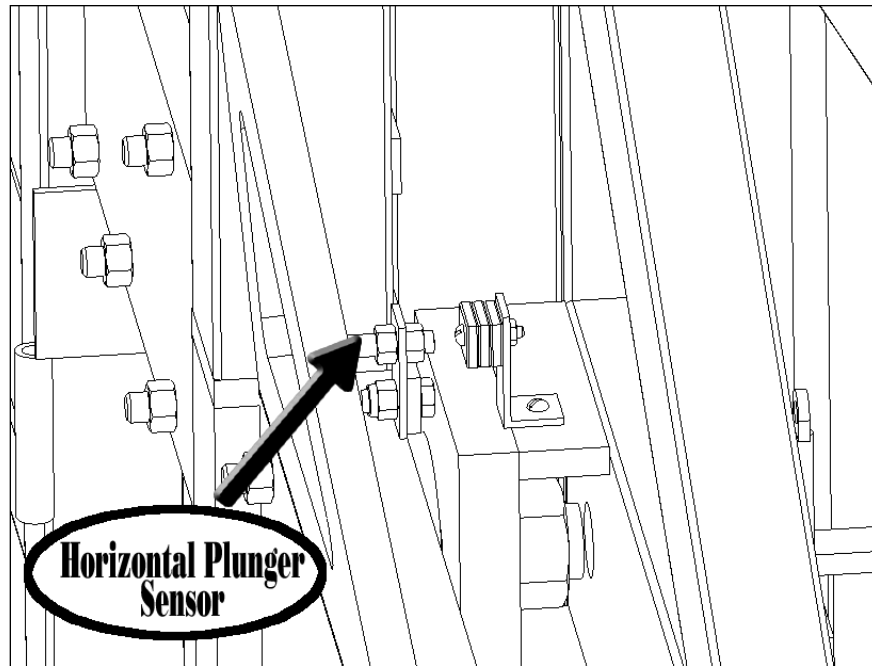
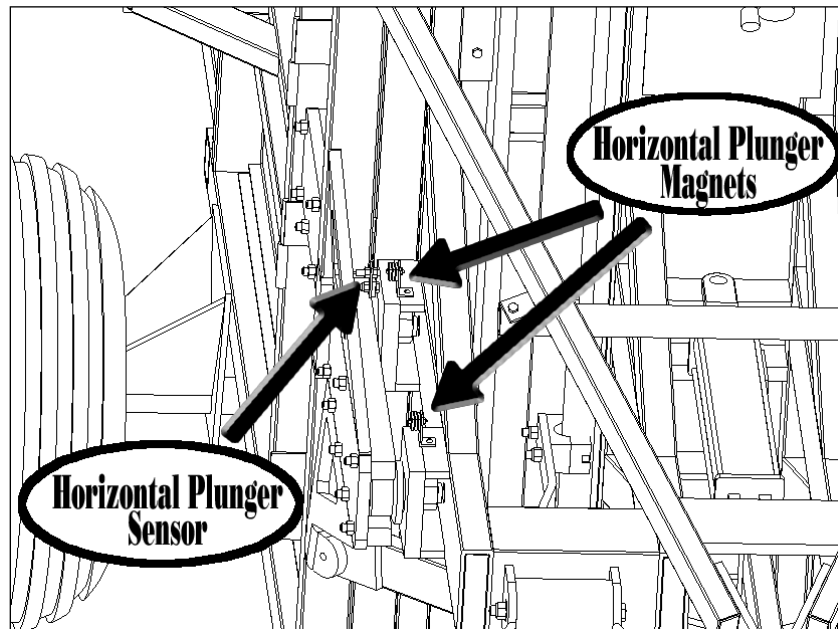
- Check the air gap distance between the Horizontal Plunger reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

If the Horizontal Plunger cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from retracting.
- Check that the directional valve is not stuck.



010 Vertical Plunger Up sensor is stuck on.

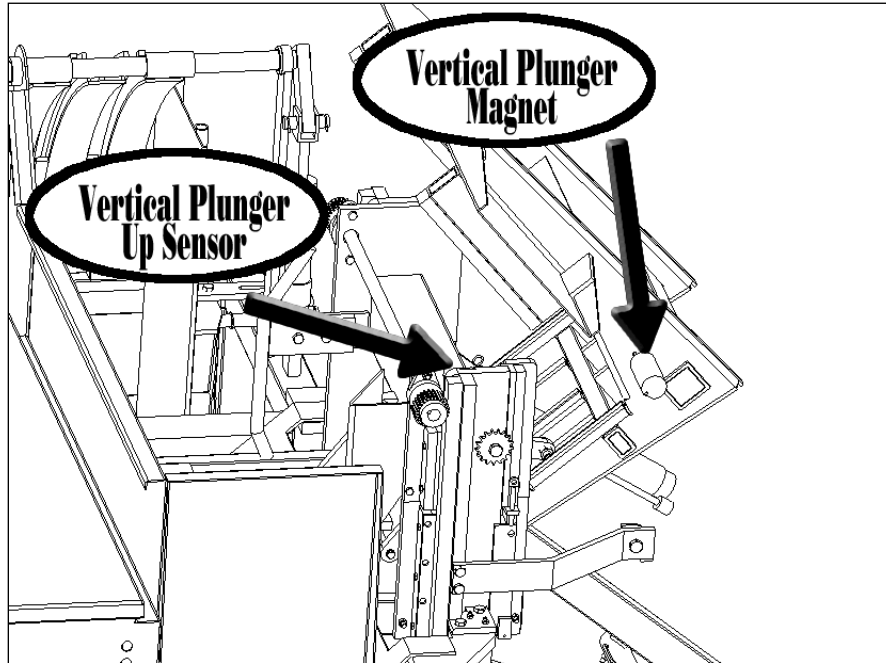
Note: Before the machine retracts the Vertical Plunger Swing cylinder it does a safety check on the Vertical Plunger Up sensor. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation. The switch is located at the top of the chrome rail

If Vertical Plunger Swing cylinder is retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from extending.
- Check that the directional valve is not stuck.

If Vertical Plunger Swing cylinder is fully extended,

- Tap on Vertical Plunger Swing sensor until display number changes or replace the sensor.



011 **Waiting for Vertical Plunger Up sensor to be on.**

Note: After the machine has retracted the Vertical Plunger Swing cylinder, the Vertical Plunger Up magnet should be lined up with the Vertical Plunger sensor switch, which turns the switch on. This is what the machine is waiting for. The switch is located at the top of the chrome rail.

If the Vertical Plunger Swing cylinder is fully retracted,

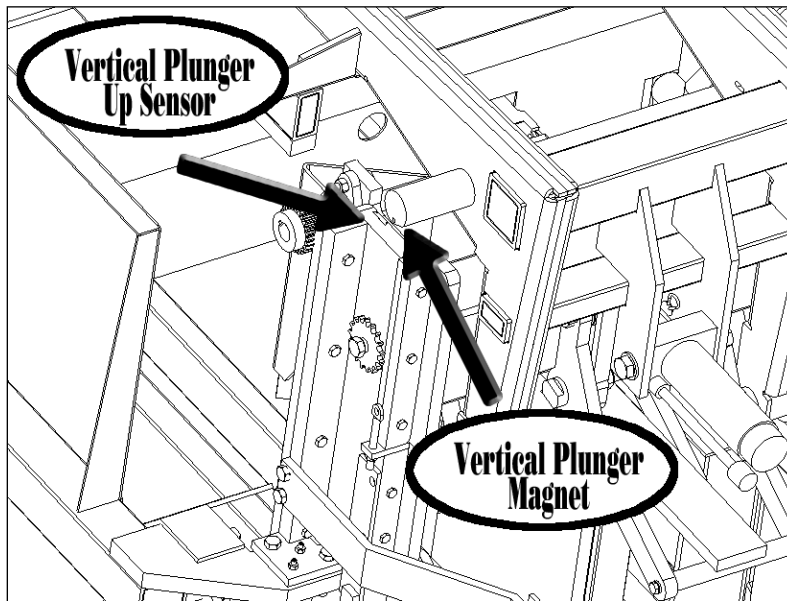
- Check the air gap distance between the Vertical Plunger Up sensor and the magnet. The distance should be a maximum of 3/8 inch (9mm). If it is within the suggested range then the sensor needs to be replaced.

If the Vertical Plunger Swing cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Vertical Plunger Swing cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from retracting.
- Check that the directional valve is not stuck.



012 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

013 Waiting for Strap Guide Arms at Bale Position 1.

Note: The machine has turned on the Strap Guide Arms motor and sent them down. When the Strap Guide Arms reach the Bale Position 1, the machine stops the motor. The machine is waiting to reach the Bale Position 1. This position is mid-way down the chrome rail at the green mark which is 42-1/8" from the top of the chrome rail.

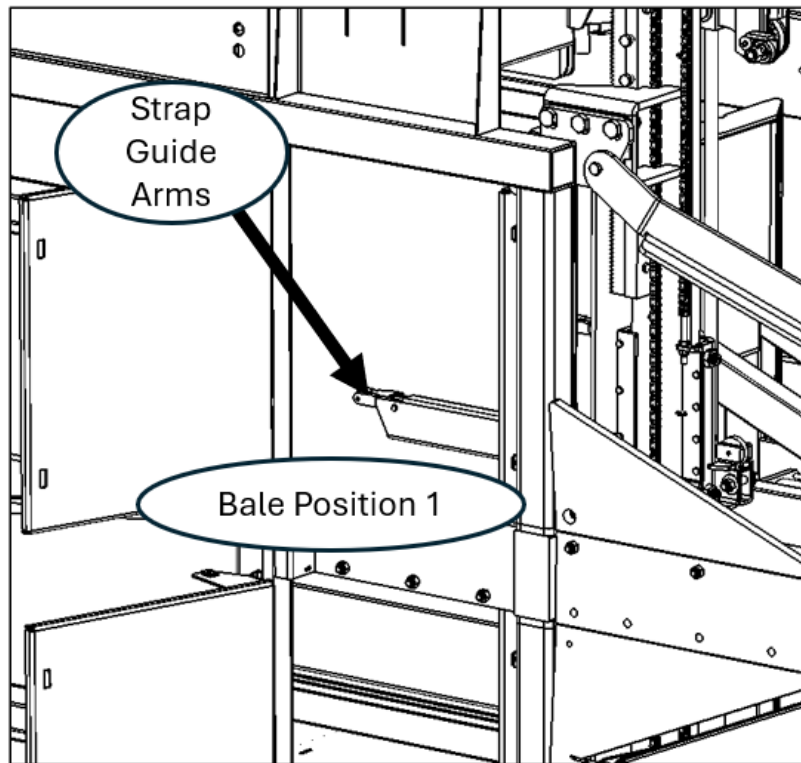
Check position of Strap Guide Arms.

If Strap Guide Arms are on the floor,

- Check how the return line is hooked to the tractor and make sure there is NO BACKPRESSURE. If there is any backpressure at all the Bale Band-It will not operate properly and will continue to release the Strap Guide Arms motor's brake causing improper location of Strap Guide Arms. Backpressure is the #1 problem with the Strap Guide Arms not being in the proper position. The return line CANNOT be connected directly to the remote or ran through a return kit. It must be connected directly to the tank of the tractor or through the fill cap WITHOUT restriction.
- Since the Strap Guide Arms are currently on the floor, after each of the next 2 bales are placed into the machine operation codes 014 & 015 will be displayed because the Strap Guide Arms are not in the correct position to activate the next sequence. When operation codes 014 & 015 appear follow the instructions for that specific operation.

If the Strap Guide Arms are not on the floor,

- Check that the tension applied by the Strap Crimper Roller is not too great. If the strapping is too thick or foreign material is located in the Strap Crimper Roller it will cause excessive strap tension. If the tension is too great it will stall the Strap Guide Motor.
- Check that the strapping is not caught or kinked preventing it from flowing easily.
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Strap Guide Arms from moving.
- Check that the directional valve is not stuck.



014 **Waiting for Strap Guide Arms at Bale Position 2.**

Note: The machine has turned on the Strap Guide Arms motor and sent them down. When the Strap Guide Arms reaches the Bale Position 2, the machine stops the motor. The machine is waiting to reach the Bale Position 2. This position is mid-way down the chrome rail at the blue mark which is 60-1/16" from the top of the chrome rail.

Check position of Strap Guide Arms.

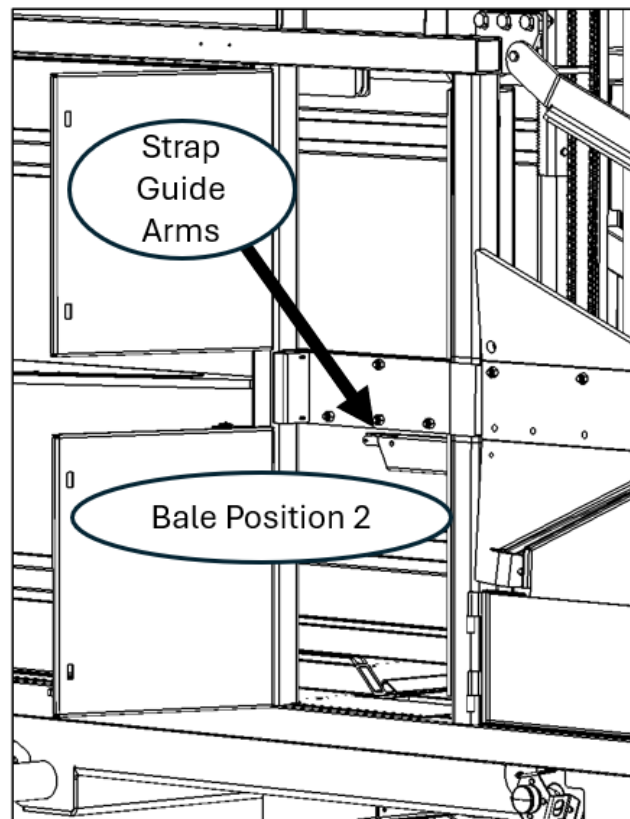
If Strap Guide Arms are on the floor,

- Check how the return line is hooked to the tractor and make sure there is NO BACKPRESSURE. If there is any backpressure at all the Bale Band-It will not operate properly and will continue to release the Strap Guide Arms motor's brake causing improper location of Strap Guide Arms. Backpressure is the #1 problem with the Strap Guide Arms not being in the proper position. The return line **CANNOT** be connected directly to the remote or ran through a return kit. It must be connected directly to the tank of the tractor or through the fill cap **WITHOUT** restriction.
- Since the Strap Guide Arms are currently on the floor, after the next bales is placed into the machine operation code 015 may be displayed because the Strap Guide Arms are not in the correct position to activate the corresponding sequence. When operation code 015 appears follow the instructions for that specific operation.

If the Strap Guide Arms are not on the floor,

- Check that the tension applied by the Strap Crimper Roller is not too great. If the strapping is too thick or foreign material is located in the Strap Crimper Roller it will cause excessive strap tension. If the tension is too great it will stall the Strap Guide Motor.
- Check that the strapping is not caught or kinked preventing it from flowing easily.
- Check that hydraulic power is still on to the machine and that return line is still connected.

- Check that a bale or foreign object is not preventing the Strap Guide Motor from moving.
- Check that the directional valve is not stuck.



015 **Waiting for Strap Guide Arms at Bale Position 3.**

Note: The machine has turned on the Strap Guide Arms motor and sent them down. When the Strap Guide Arms reaches the Bale Position 3, the machine stops the motor. The machine is waiting to reach the Bale Position 3. This position is towards the bottom of chrome rail at the yellow mark which is 71-7/8" from the top of the chrome rail.

Check position of Strap Guide Arms.

If Strap Guide Arms are on the floor,

- Check how the return line is hooked to the tractor and make sure there is NO BACKPRESSURE. If there is any backpressure at all the Bale Band-It will not operate properly and will continue to release the Strap Guide Arms motor's brake causing improper location of Strap Guide Arms. Backpressure is the #1 problem with the Strap Guide Arms not being in the proper position. The return line CANNOT be connected directly to the remote or ran through a return kit. It must be connected directly to the tank of the tractor or through the fill cap WITHOUT restriction.

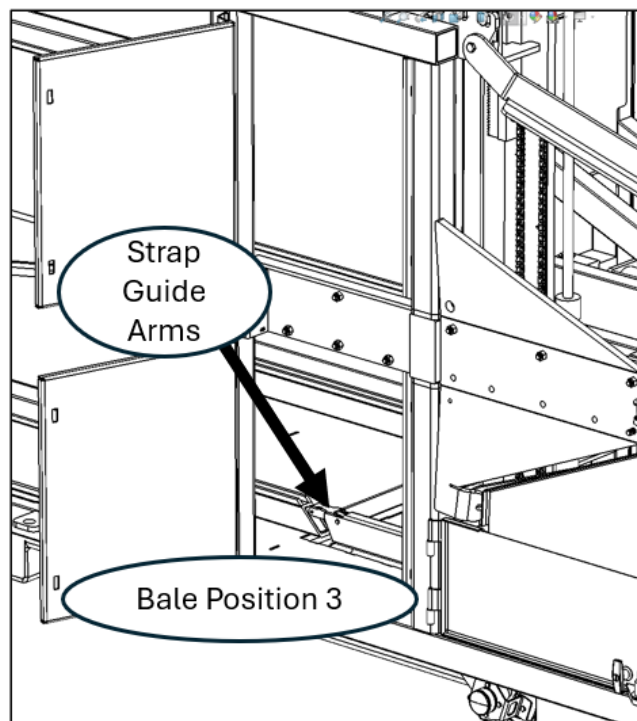
- Check for excess hay or chaff under the Strap Guide Arms preventing them from going down. Chaff will periodically build up here according to the different conditions of the hay. The dryer the hay, the more chaff builds up. It is a good operating practice to periodically clean the area under the Strap Guide Arms to prevent this. To do this engage manual mode and shift the Strap Guide Arms to Bale Position 1. The machine should continue to operate, raising the Strap Guide Arms to the top of the machine.

Disengage hydraulic power before removing chaff and excess hay from under the Strap Guide Arms.

- Check that Strap Guide Arms are in time with each other. They should be the same height. If their heights vary $\frac{1}{2}$ inch (12.5 mm) or greater than they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.

If the Strap Guide Arms are not on the floor,

- Check that the tension applied by the Strap Crimper Roller is not too great. If the strapping is too thick or foreign material is located in the Strap Crimper Roller it will cause excessive strap tension. If the tension is too great it will stall the Strap Guide Motor.
- Check that the strapping is not caught or kinked preventing it from flowing easily.
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Strap Guide Motor from moving.
- Check that the directional valve is not stuck.



016 Computer Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power. If this doesn't change the "098" code, then take out all bales in front chamber by opening the side doors. Once the bales are out, press the Reset Bundle button.

017 Waiting for Vertical Plunger Down sensor to be on.

Note: After the machine has retracted the Vertical Plunger cylinder, the Vertical Plunger Down sensor will be illuminated Orange and Green, which turns the switch on. This is what the machine is waiting for.

If the Vertical Plunger cylinder is fully retracted,

- Sensor located at the bottom of the cylinder will be illuminated with an Orange and Green LED

- Check the mounting bolts to ensure they are fully tightened

If the Vertical Plunger cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from retracting.

- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Vertical Plunger cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.

- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from retracting.

- Check that the directional valve is not stuck.

018 Waiting for Kicker reed switch to be off.

Note: Before the machine retracts the Kicker cylinder, the Kicker reed switch is in front of the first magnet mounted in the round plastic. When the machine retracts the Kicker cylinder it rotates the round plastic, moving the first magnet away from the switch, which turns the Kicker reed switch off. This is what the machine is waiting for.

If the Kicker cylinder is fully retracted,

- Loosen nuts on Kicker reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays "018". If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.

If the Kicker cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Kicker from retracting.

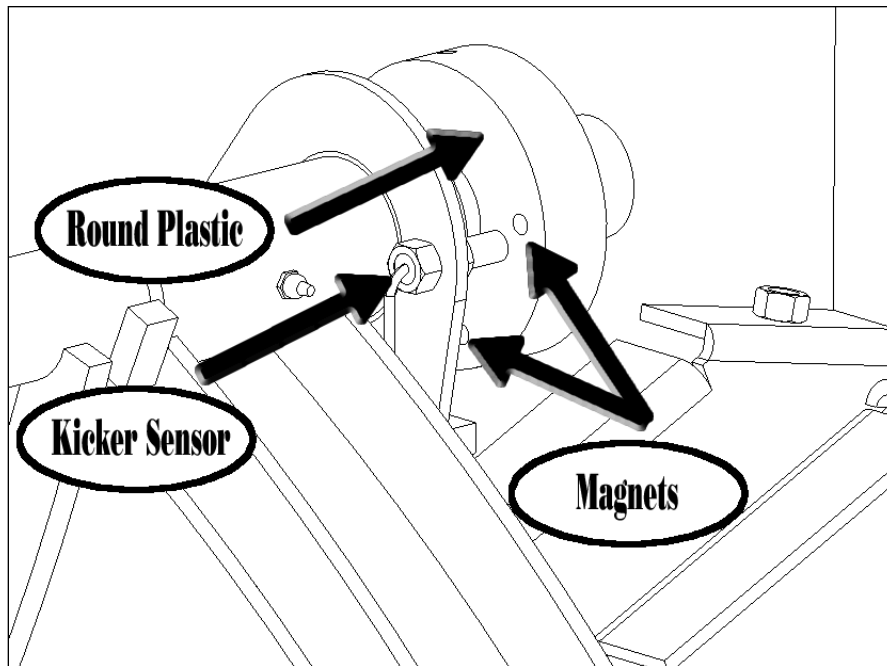
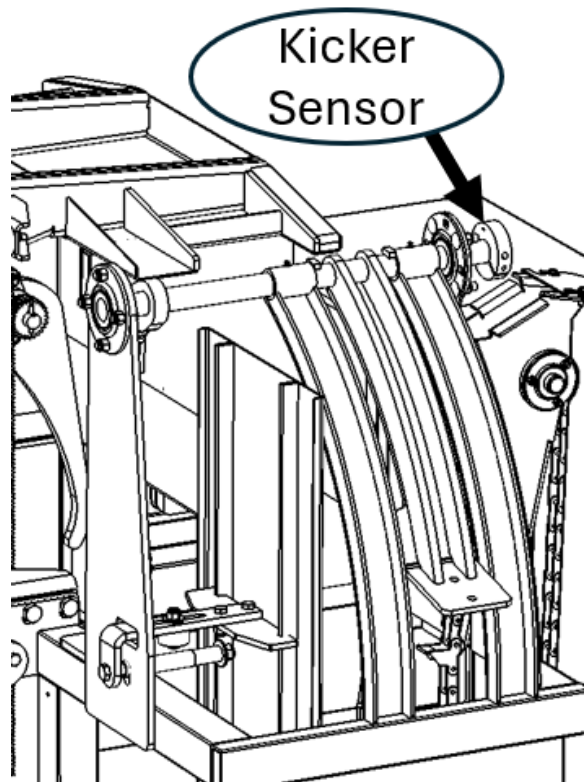
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Kicker cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.

- Check that a bale or foreign object is not preventing the Kicker from retracting.

- Check that the directional valve is not stuck.



019 Waiting for Horizontal Plunger reed switch to be off.

Note: Before the machine extends the Horizontal Plunger cylinder, the Horizontal Plunger reed switch is in front of the first set of magnets. When the machine extends the Horizontal Plunger cylinder it moves the first magnet away from the switch, which turns the Horizontal Plunger reed switch off. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully extended,

- Loosen nuts on Horizontal Plunger reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is

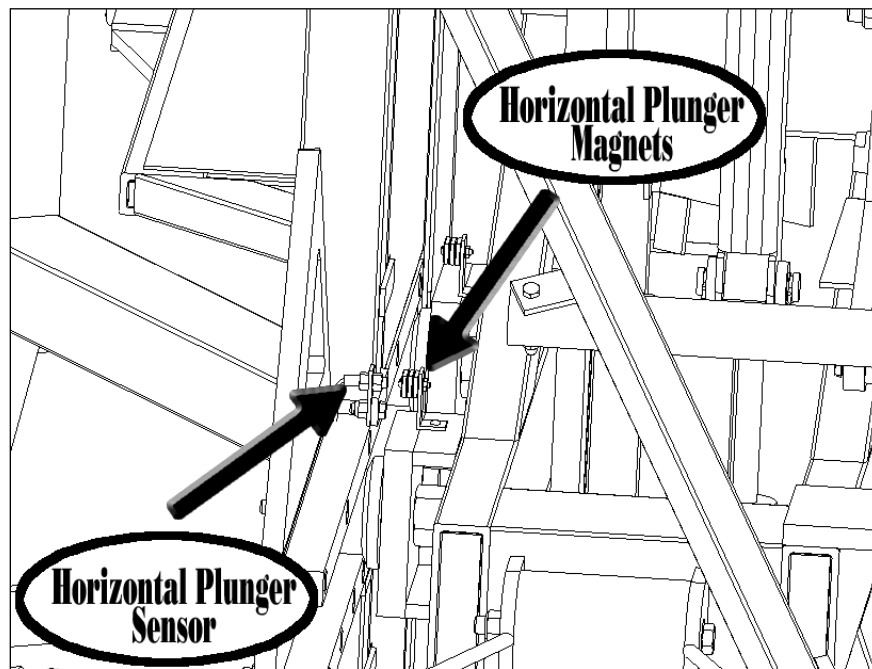
still displays “019”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.

If the Horizontal Plunger cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Horizontal Plunger from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger from extending.
- Check that the directional valve is not stuck.



020 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

021 Waiting for Horizontal Plunger reed switch to be on.

Note: After the machine has extended the Horizontal Plunger cylinder, the Horizontal Plunger reed switch should be lined up with a set of magnets, which turns the switch on. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully extended,

- Check the air gap distance between the Horizontal Plunger reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

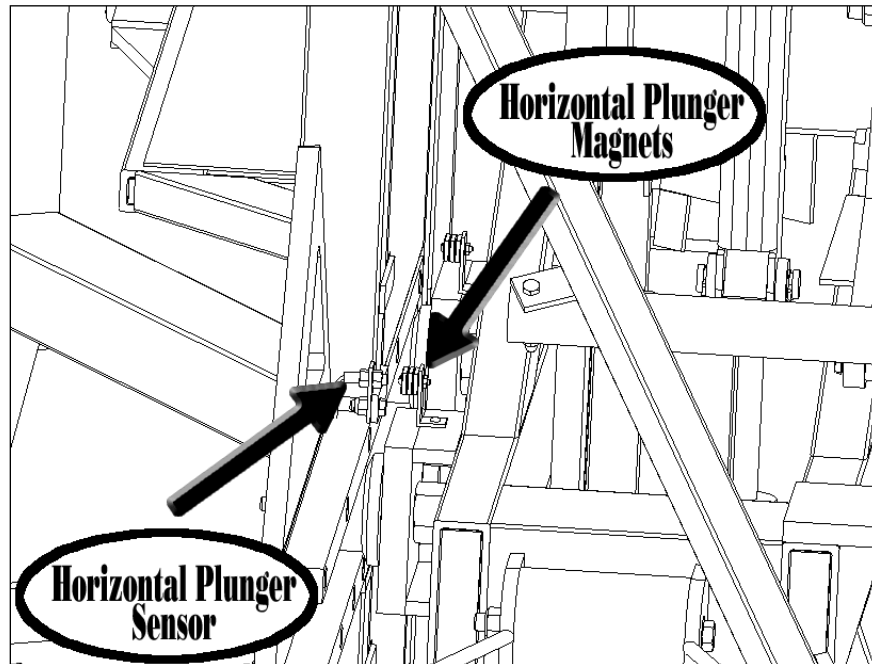
If the Horizontal Plunger cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from extending.

- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from extending.
- Check that the directional valve is not stuck.

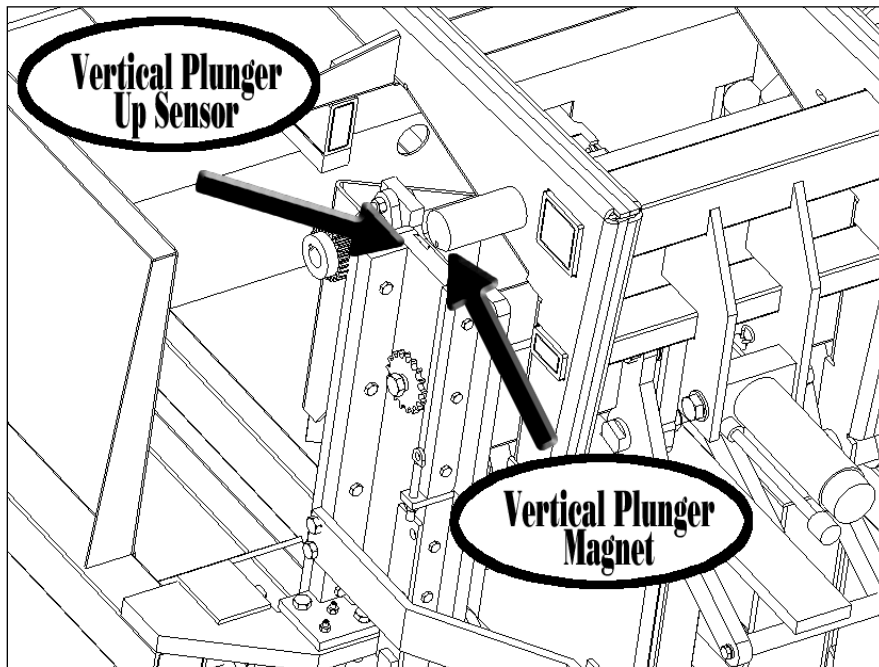


022 Vertical Plunger Up sensor is stuck on.

Note: Before the machine extends the Vertical Plunger cylinder it does a safety check on the Vertical Plunger Up sensor switch. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation. The switch is located at the top of the chrome rail

If Vertical Plunger cylinder is retracted,

- Tap on Vertical Plunger Swing sensor until display number changes or replace the sensor.



023 **Waiting for Vertical Plunger Up sensor to be on. .**

Note: After the machine has extended the Vertical Plunger cylinder, the Vertical Plunger Up magnet should be lined up with the Vertical Plunger sensor switch, which turns the switch on. This is what the machine is waiting for. The switch is located at the top of the chrome rail

If the Vertical Plunger cylinder is fully extended,

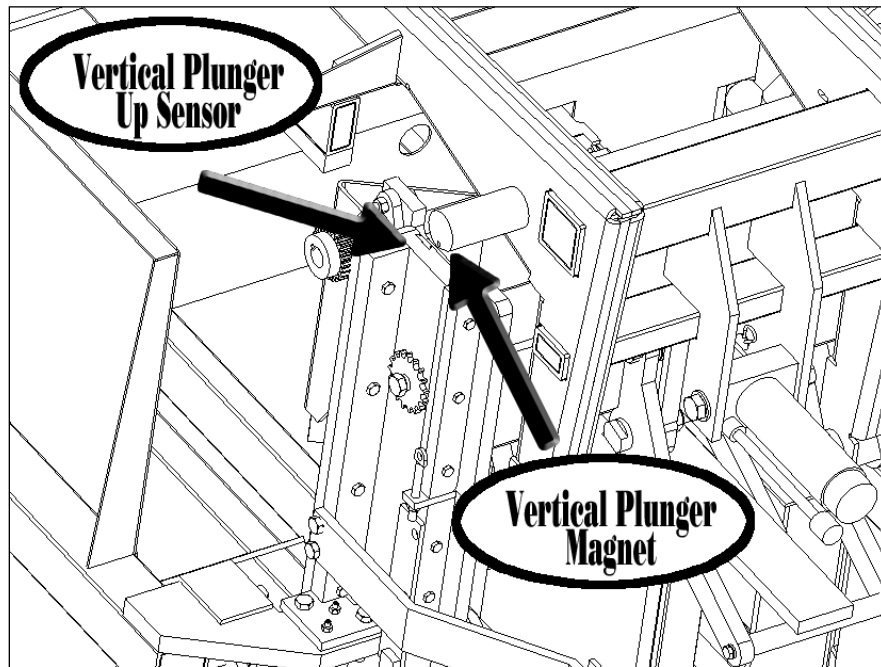
- Check the air gap distance between the Vertical Plunger sensor and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the sensor needs to be replaced.

If the Vertical Plunger cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Vertical Plunger cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Vertical Plunger cylinder from extending.
- Check that the directional valve is not stuck.



024 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

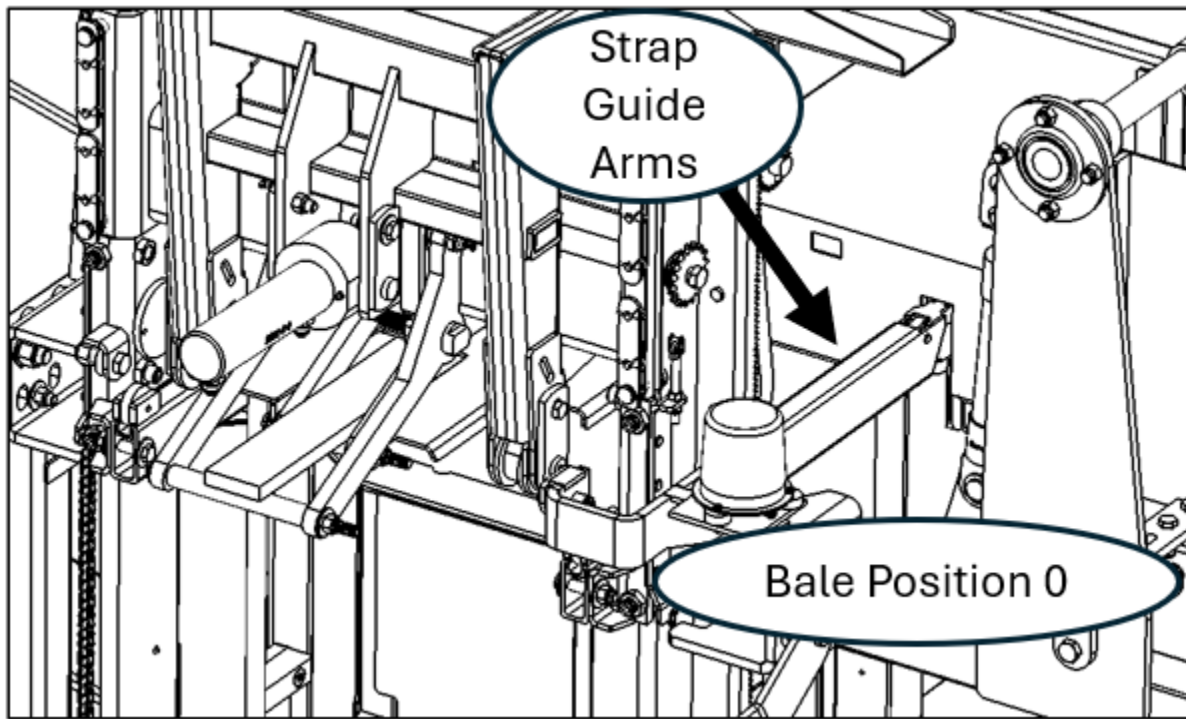
025 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

026 Bale Position 0 sensor stuck on.

Note: Before the machine raises the Strap Guide Arms it does a safety check on the Bale Position 0 position. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation.

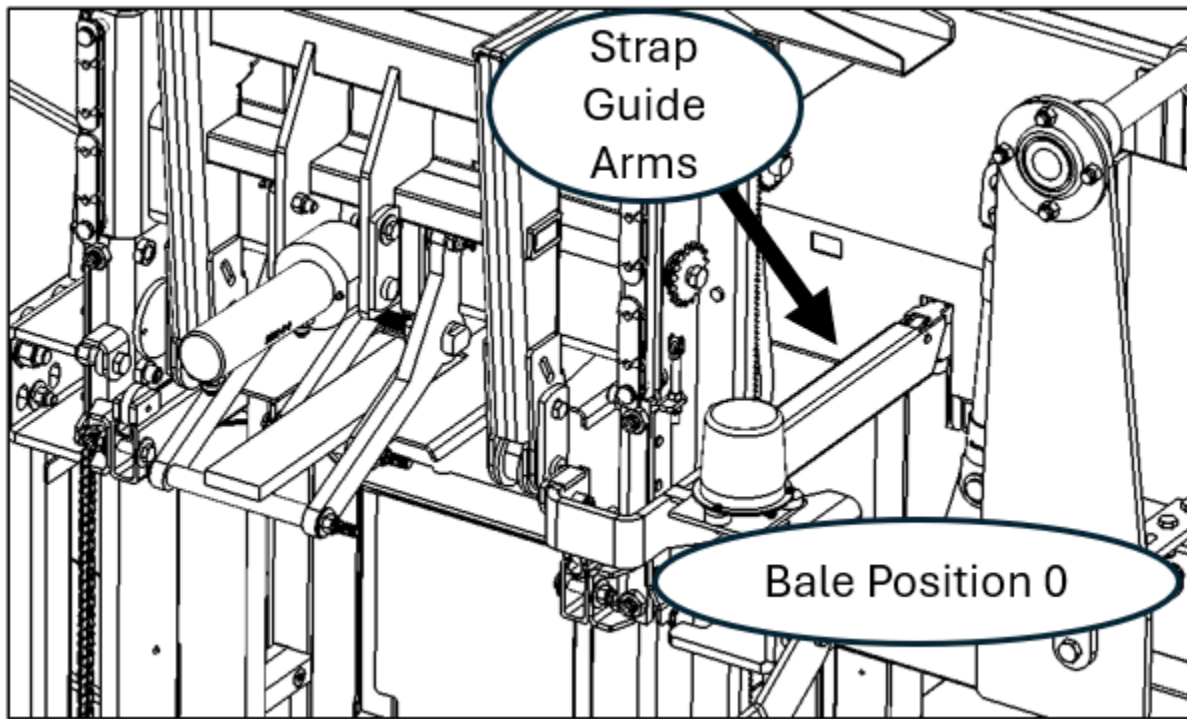
- Tap on Bale Position 0 sensor until display number changes or replace the sensor.



027 Waiting for Strap Guides to be at top position.

Note: The machine has turned on the Strap Guide Arms motor and sent them up. When the Strap Guide Arms reach Bale Position 0, the machine stops the motor. The machine is waiting to reach the Bale Position 0. This position is upper part of the chrome rail at the brown mark which is 17-3/16" from the top of the chrome rail.

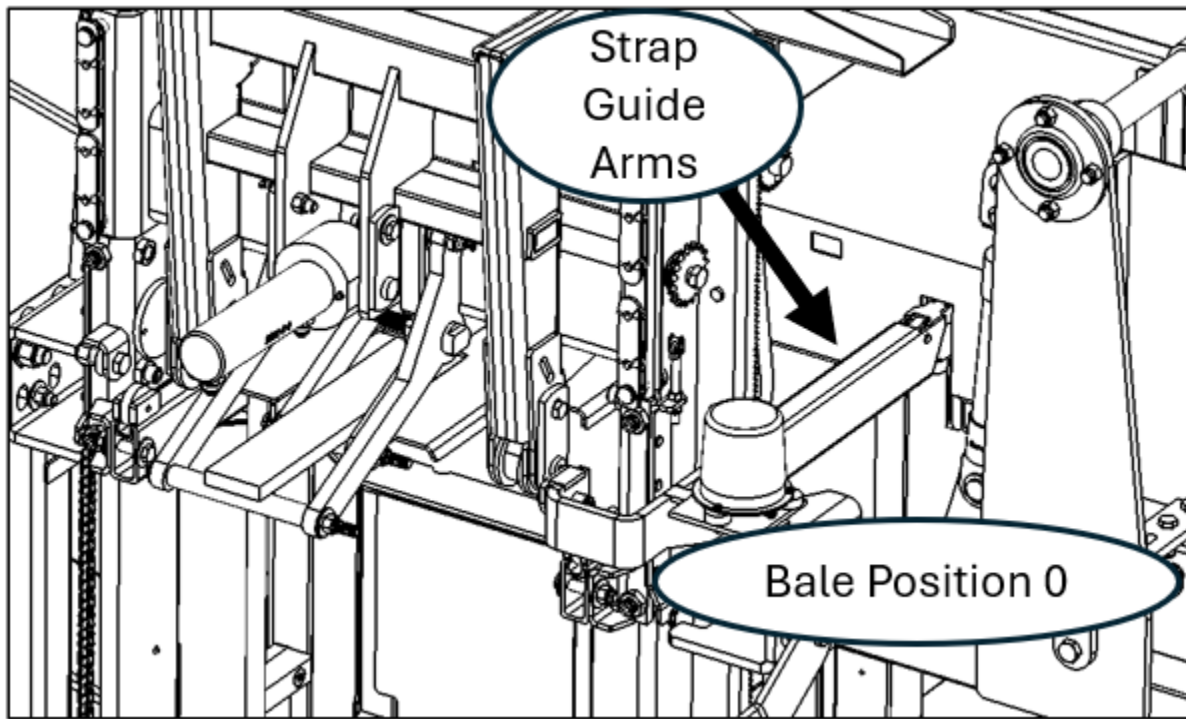
- Check that Strap Guide Arms are in time with each other. They should be the same height. If their heights vary ½ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. The right side should be the same distance as the left side. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale, excess hay or foreign object is not preventing the Strap Guide Arms from rising.
- Check that the directional valve is not stuck.



028 Waiting for Strap Guides to be at top position

Note: The machine has turned on the Strap Guide Arms motor and sent them up. When the Strap Guide Arms reaches Bale Position 0, the machine stops the motor. The machine is waiting to reach the Bale Position 0. This position is upper part of the chrome rail at the brown mark which is 17-3/16" from the top of the chrome rail.

- Check that Strap Guide Arms are in time with each other. They should be the same height. If their heights vary $\frac{1}{2}$ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. The right side should be the same distance as the left side. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale, excess hay or foreign object is not preventing the Strap Guide Arms from rising.
- Check that the directional valve is not stuck.



029 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

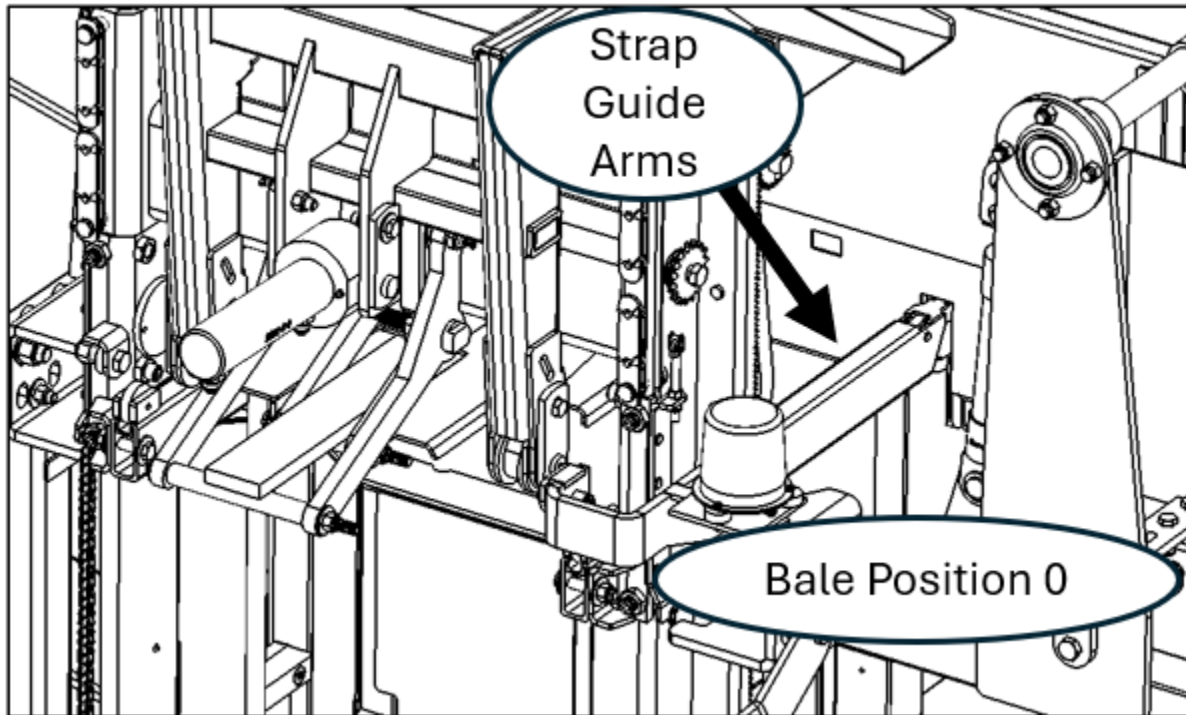
030 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

031 Waiting for Strap Guides to be at top position.

Note: The machine has turned on the Strap Guide Arms motor and sent them up. When the Strap Guide Arms reaches Bale Position 0, the machine stops the motor. The machine is waiting to reach the Bale Position 0. This position is upper part of the chrome rail at the brown mark which is 17-3/16" from the top of the chrome rail.

- Check that Strap Guide Arms are in time with each other. They should be the same height. If their heights vary ½ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. The right side should be the same distance as the left side. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale, excess hay or foreign object is not preventing the Strap Guide Arms from rising.
- Check that the directional valve is not stuck.



032 Waiting for Vertical Plunger Up sensor to be off.

Note: After the machine has extended the Vertical Plunger Swing cylinder, the Vertical Plunger magnet should be moved away from the Vertical Plunger Up sensor switch, which turns the switch off. This is what the machine is waiting for. The switch is located at the top of the sensor at the white mark.

If the Vertical Plunger Swing cylinder is fully extended,

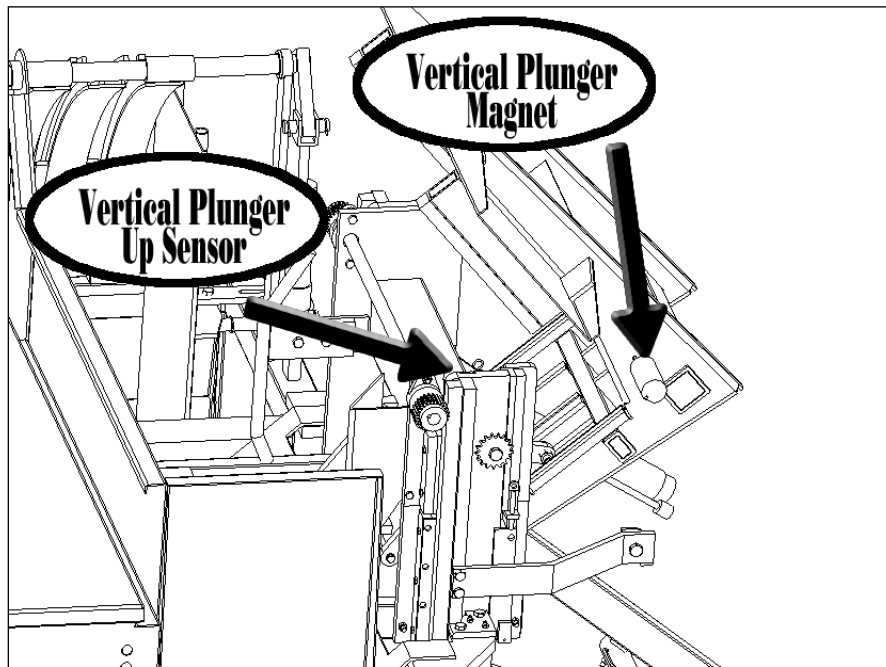
- If the Vertical Plunger Swing cylinder is fully extended then no magnets or metallic materials should be near the switch. Lightly tap the switch to free up the stuck switch. The switch may need to be replaced if this problem continues.

If the Vertical Plunger Swing cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Vertical Plunger Swing cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from extending.
- Check that the directional valve is not stuck.



033 **Waiting for Vertical Plunger Up sensor to be on.**

Note: This code occurs when the Reset Bundle button has been pressed. The machine begins its reset mode. In order to properly reset the machine it retracts the Vertical Plunger cylinder (unless it is already retracted) and waits for the Vertical Plunger magnet to be in front of the Vertical Plunger Up sensor switch. The switch is located at the top of the sensor at the white mark.

If the Vertical Plunger Swing cylinder is fully retracted,

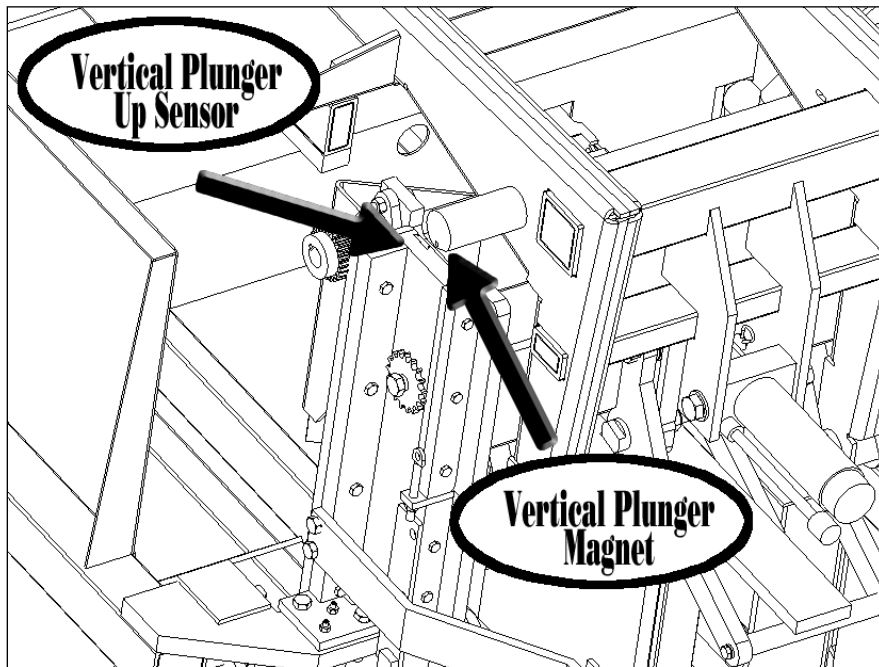
- Check the air gap distance between the Vertical Plunger Up sensor and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the sensor needs to be replaced.

If the Vertical Plunger Swing cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Vertical Plunger Swing cylinder is still extended,

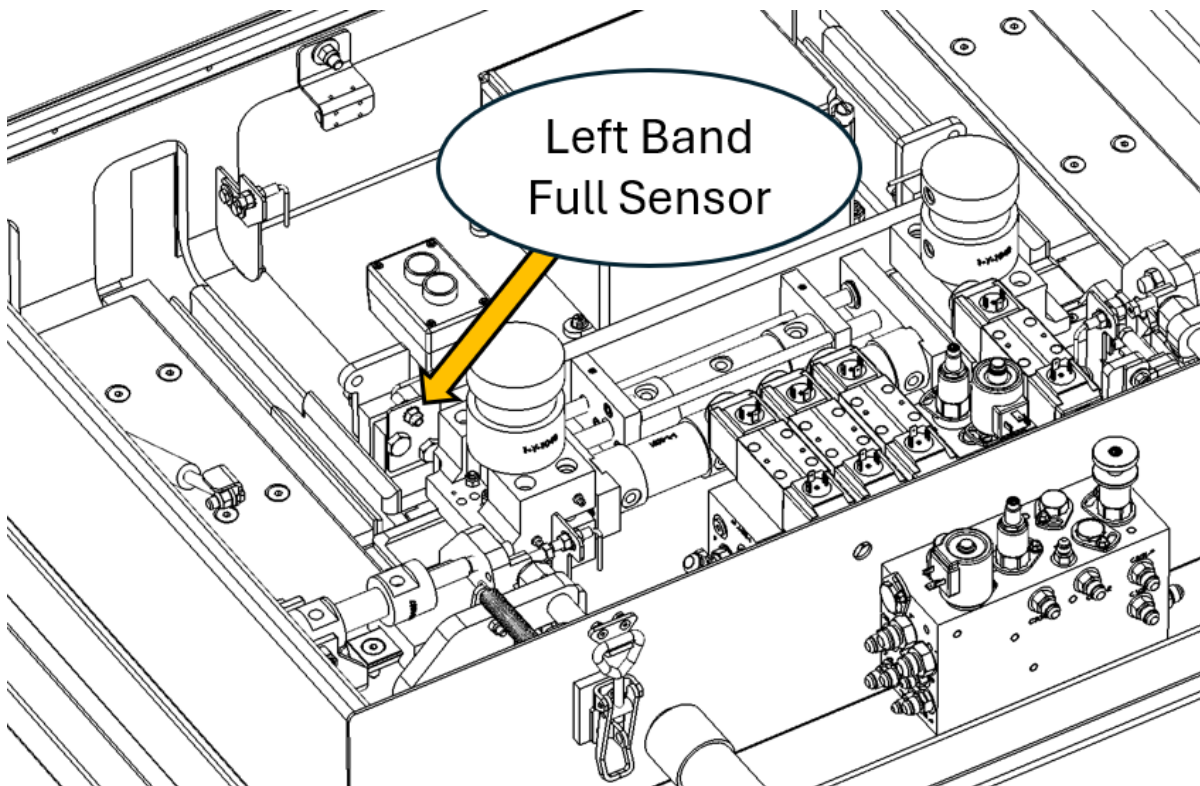
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Vertical Plunger Swing cylinder from retracting.
- Check that the directional valve is not stuck.



034 Left Band Full reed switch is stuck on.

Note: Before the machine extends the Right/Left Mid Banding Position cylinders it does a safety check on the Left Band Full reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

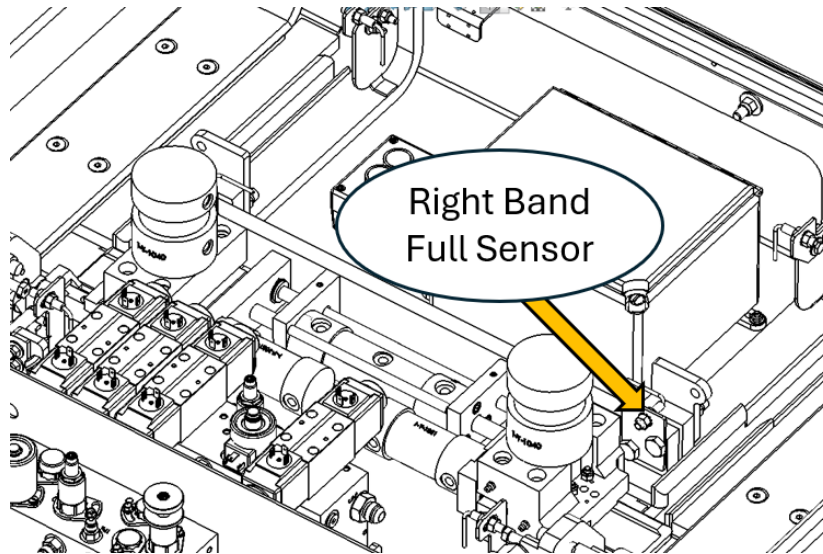
- Loosen nuts on Left Band Full reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays "034". If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



035 Right Band Full reed switch is stuck on.

Note: Before the machine extends the Right/Left Mid Banding Position cylinders it does a safety check on the Right Band Full reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

- Loosen nuts on Right Band Full reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “035”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



036 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

037 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

038 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

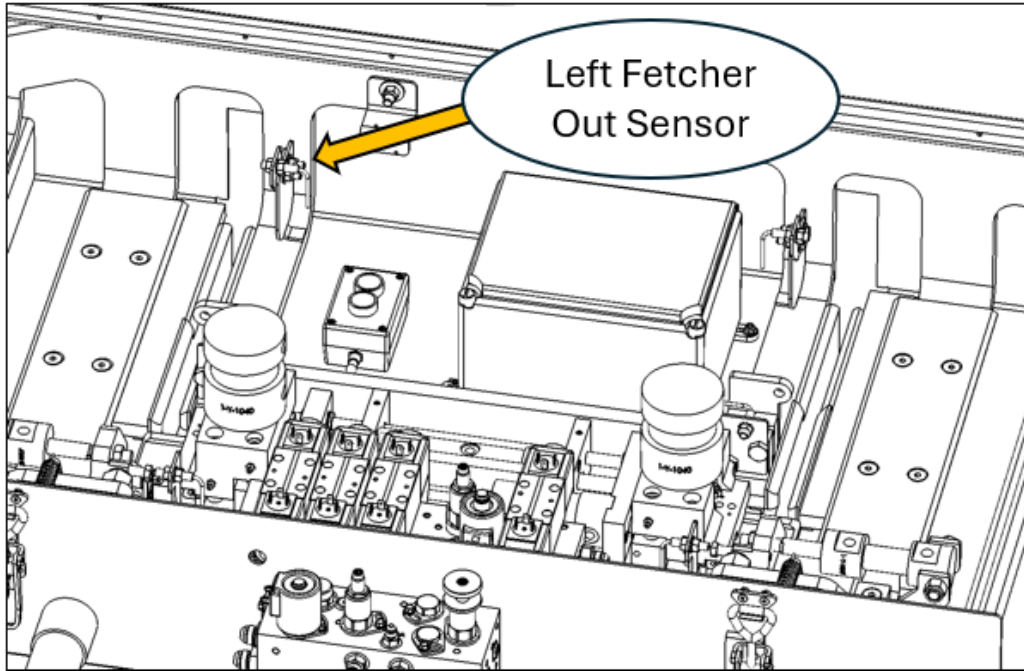
039 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

040 Left Fetcher Out reed switch is stuck on.

Note: Before the machine extends the Right/Left Fetcher cylinders it does a safety check on the Left Fetcher Out reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

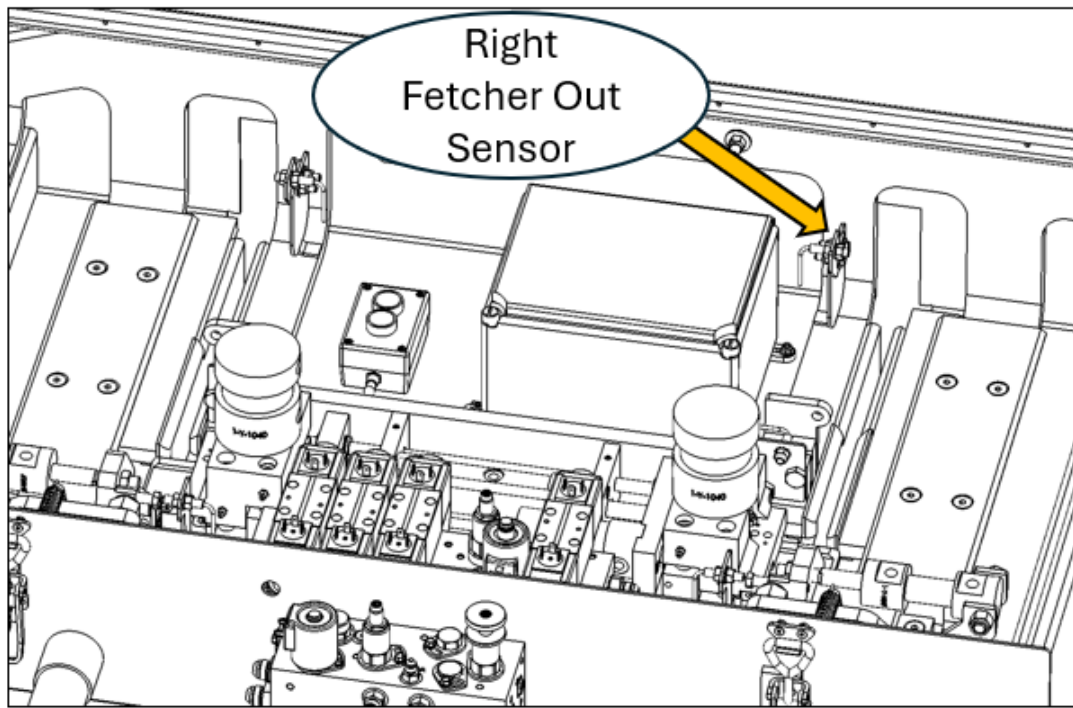
- Loosen nuts on Left Fetcher Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “040”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



041 Right Fetcher Out reed switch is stuck on.

Note: Before the machine extends the Right/Left Fetcher cylinders it does a safety check on the Right Fetcher Out reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

- Loosen nuts on Right Fetcher Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “041”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



042 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

043 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

044 Communication from Band Computer

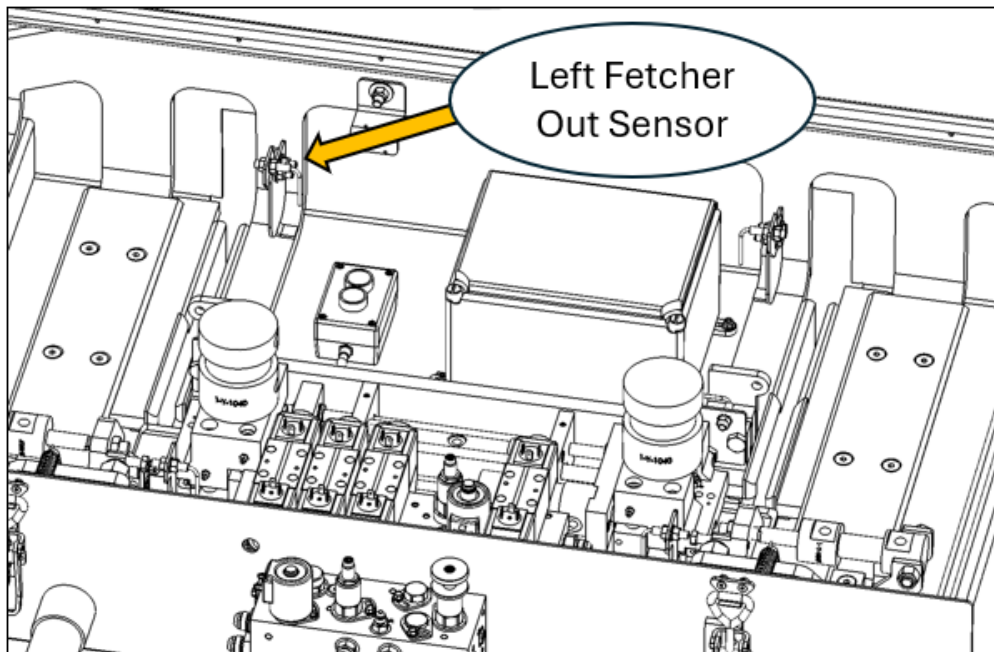
- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

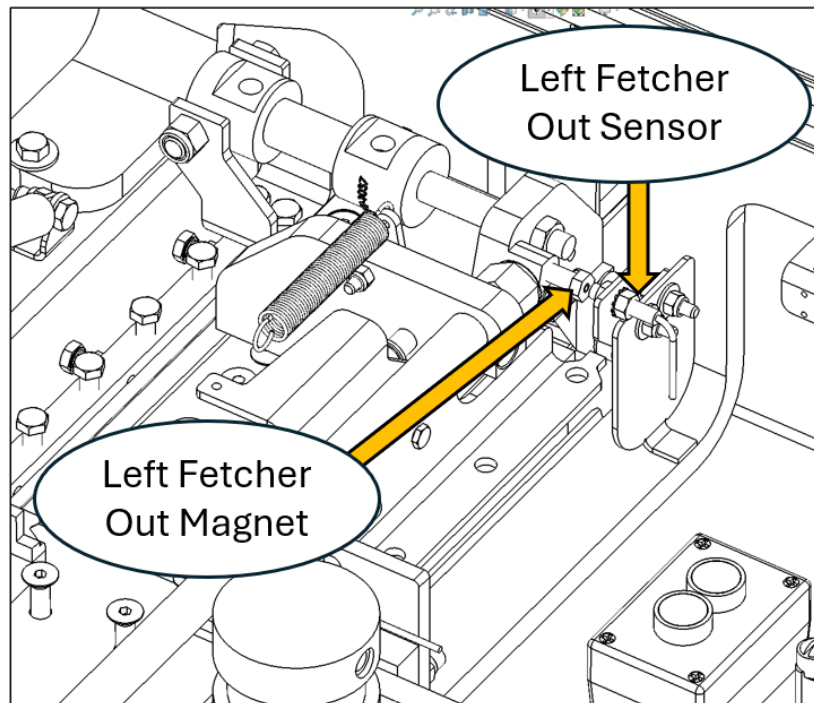
045 Waiting for Left Fetcher Out reed switch to be on.

Note: After the machine has extended the Right/Left Fetcher cylinder, the Left Fetcher Out reed switch should be lined up with the Left Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Left Fetcher cylinder is fully extended,
 - Check the air gap distance between the Left Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.

- If the Left Fetcher cylinder is partially extended,
 - Check that a foreign object is not preventing the Left Fetcher cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Left Fetcher cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher cylinder from extending.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.

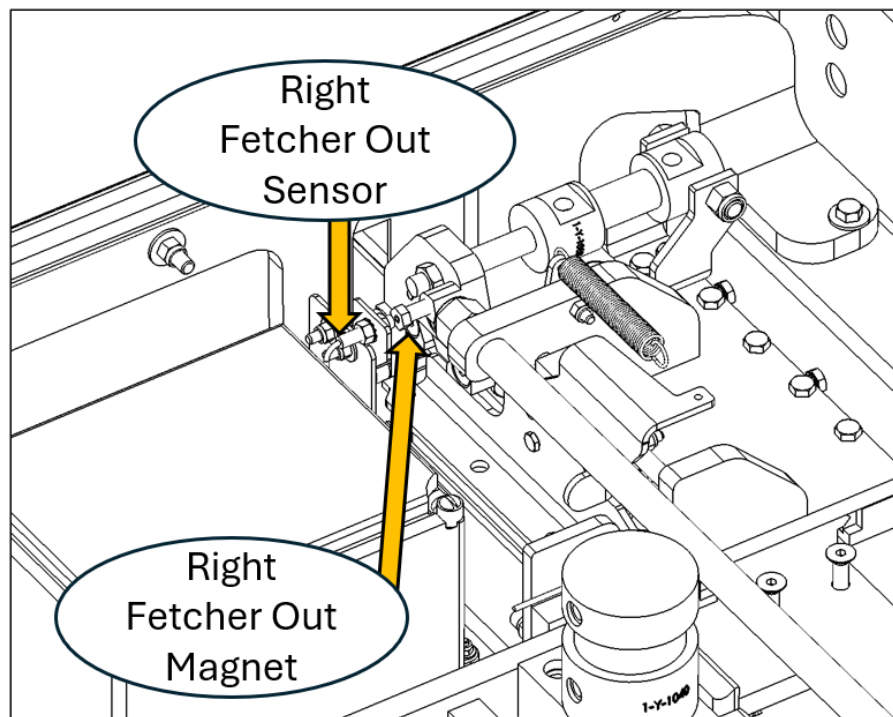
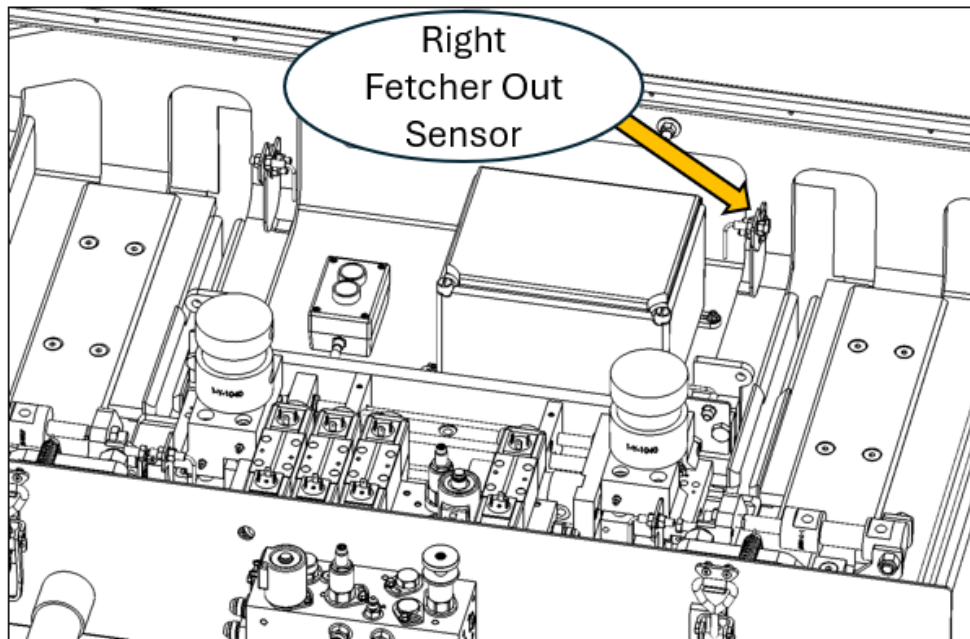




046 **Waiting for Right Fetcher Out reed switch to be on.**

Note: After the machine has extended the Right/Left Fetcher cylinder, the Right Fetcher Out reed switch should be lined up with the Right Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Fetcher cylinder is fully extended,
 - Check the air gap distance between the Right Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Fetcher cylinder is partially extended,
 - Check that a foreign object is not preventing the Right Fetcher cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - If the Right Fetcher cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Fetcher cylinder from extending.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



047 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

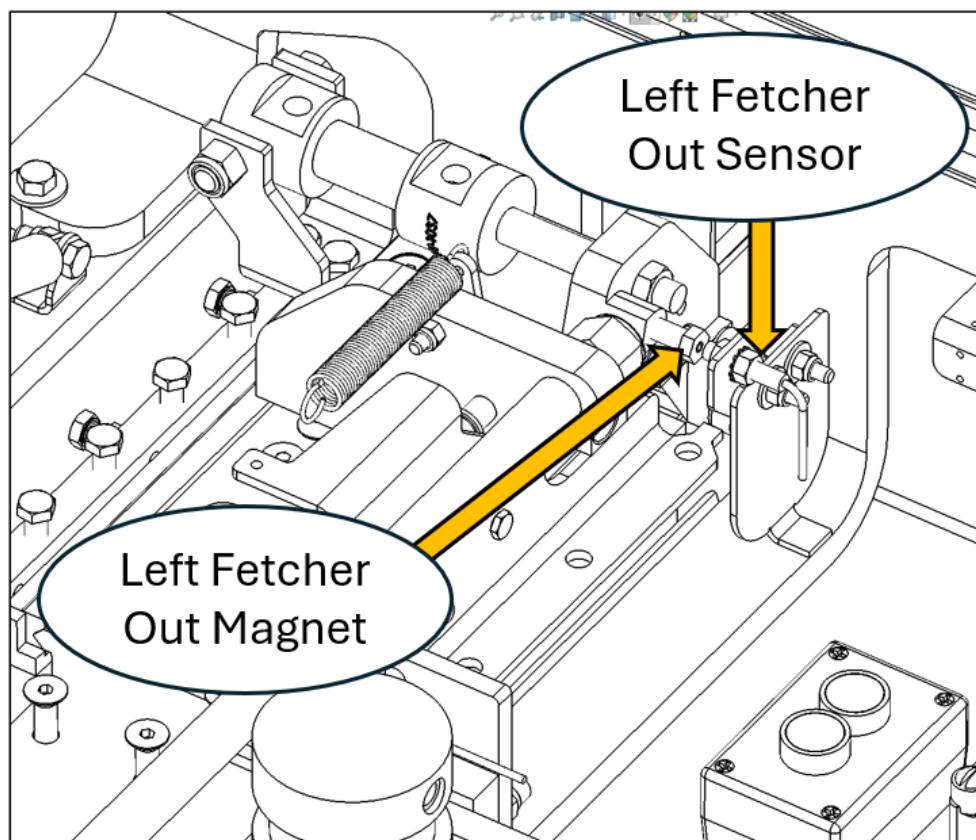
048 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

049 Waiting for Left Fetcher Out reed switch to be off.

Note: The machine has retracted the Right/Left Fetcher Swing cylinders. When they are extended it rotates the Left Fetcher magnet away from the Left Fetcher Out reed switch, which turns the switch off. This is what the machine is waiting for.

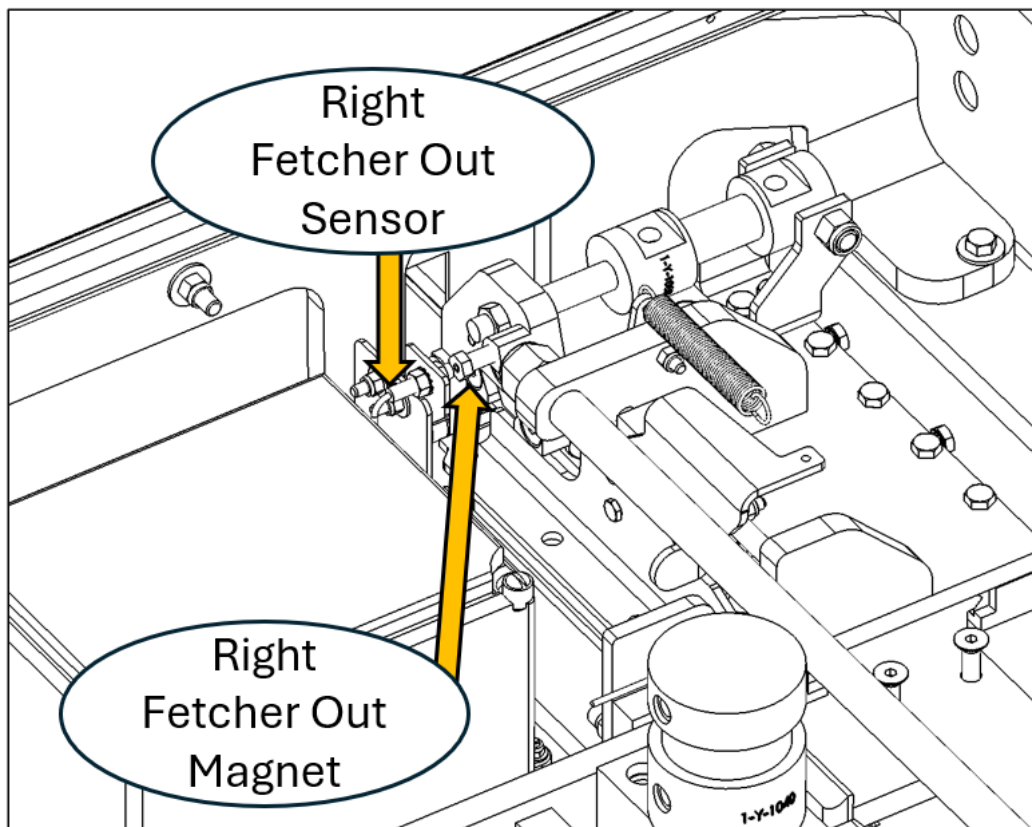
- If the Left Fetcher Swing cylinder is fully extended,
 - Loosen nuts on Left Fetcher Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “049”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.
- If the Left Fetcher Swing cylinder is partially extended,
 - Check that a foreign object is not preventing the Left Fetcher Swing cylinder from extending.
 - Check to see if the Left Fetcher is hitting the Strap Guide Arms. If it is, check that the Strap Guide Arms are in time with each other. They should be the same height. If their heights vary $\frac{1}{2}$ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- If the Left Fetcher Swing cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher Swing cylinder from extending.
 - Check that the directional valve is not stuck.



050 **Waiting for Right Fetcher Out reed switch to be off.**

Note: The machine has extended the Right/Left Fetcher Swing cylinders. When they are extended it rotates the Right Fetcher magnet away from the Right Fetcher Out reed switch, which turns the switch off. This is what the machine is waiting for.

- If the Right Fetcher Swing cylinder is fully extended,
 - Loosen nuts on Right Fetcher Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “050”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.
- If the Right Fetcher Swing cylinder is partially extended,
 - Check that a foreign object is not preventing the Right Fetcher Swing cylinder from extending.
 - Check to see if the Right Fetcher is hitting the Strap Guide Arms. If it is, check that the Strap Guide Arms are in time with each other. They should be the same height. If their heights vary $\frac{1}{2}$ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - If the Right Fetcher Swing cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Fetcher Swing cylinder from extending.
 - Check that the directional valve is not stuck.



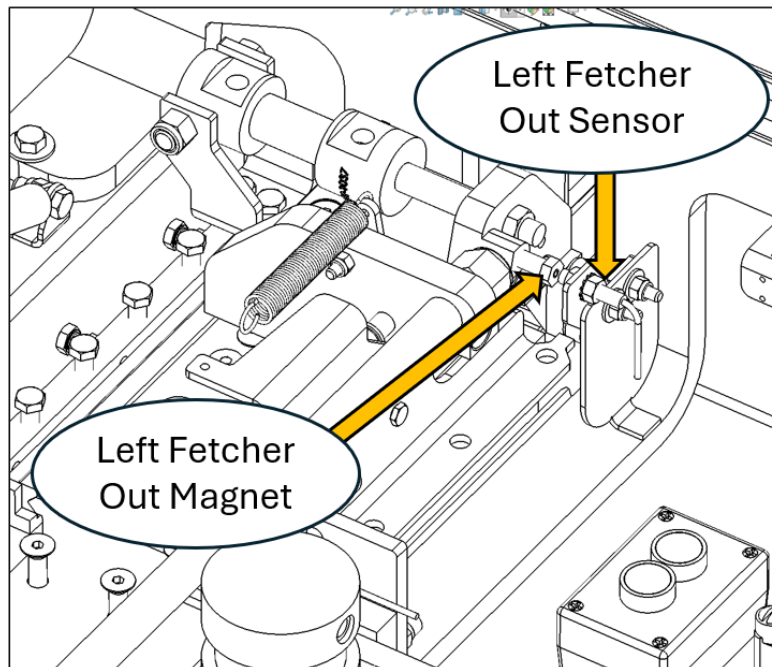
051 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

052 Waiting for Left Fetcher Out reed switch to be on.

Note: After the machine has retracted the Right/Left Fetcher Swing cylinders, the Left Fetcher Out reed switch should be lined up with the Left Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

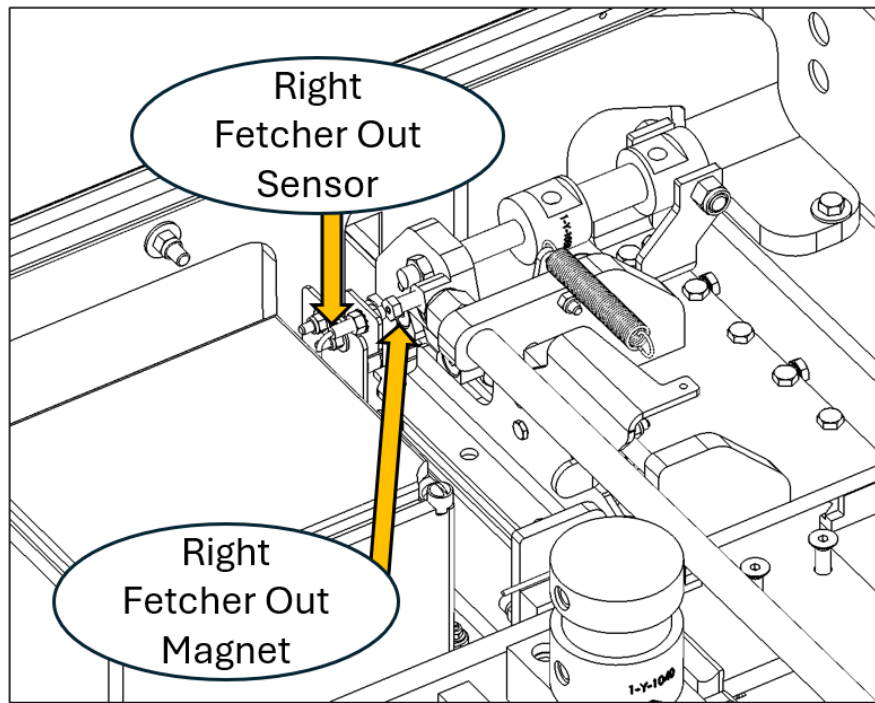
- If the Left Fetcher Swing cylinder is fully retracted,
 - Check the air gap distance between the Left Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Left Fetcher Swing cylinder is partially retracted,
 - Check that a foreign object is not preventing the Left Fetcher Swing cylinder from retracting.
 - Check to see if the Left Fetcher is hitting the Strap Guide Arms. If it is, check that the Strap Guide Arms are in time with each other. They should be the same height. If their heights vary ½ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - If the Left Fetcher Swing cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher Swing cylinder from retracting.
 - Check that the directional valve is not stuck.



053 **Waiting for Right Fetcher Out reed switch to be on.**

Note: After the machine has retracted the Right/Left Fetcher Swing cylinders, the Right Fetcher Out reed switch should be lined up with the Left Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Fetcher Swing cylinder is fully retracted,
 - Check the air gap distance between the Right Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Fetcher Swing cylinder is partially retracted,
 - Check that a foreign object is not preventing the Right Fetcher Swing cylinder from retracting.
 - Check to see if the Right Fetcher is hitting the Strap Guide Arms. If it is, check that the Strap Guide Arms are in time with each other. They should be the same height. If their heights vary ½ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- If the Right Fetcher Swing cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Fetcher Swing cylinder from retracting.
 - Check that the directional valve is not stuck.



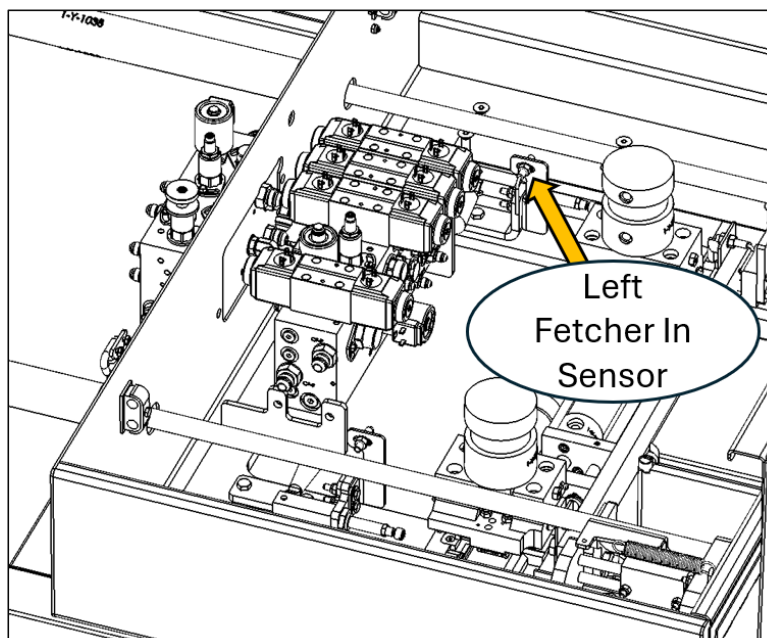
054 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

055 Left Fetcher In reed switch is stuck on.

Note: Before the machine retracts the Right/Left Fetcher cylinders it does a safety check on the Left Fetcher In reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

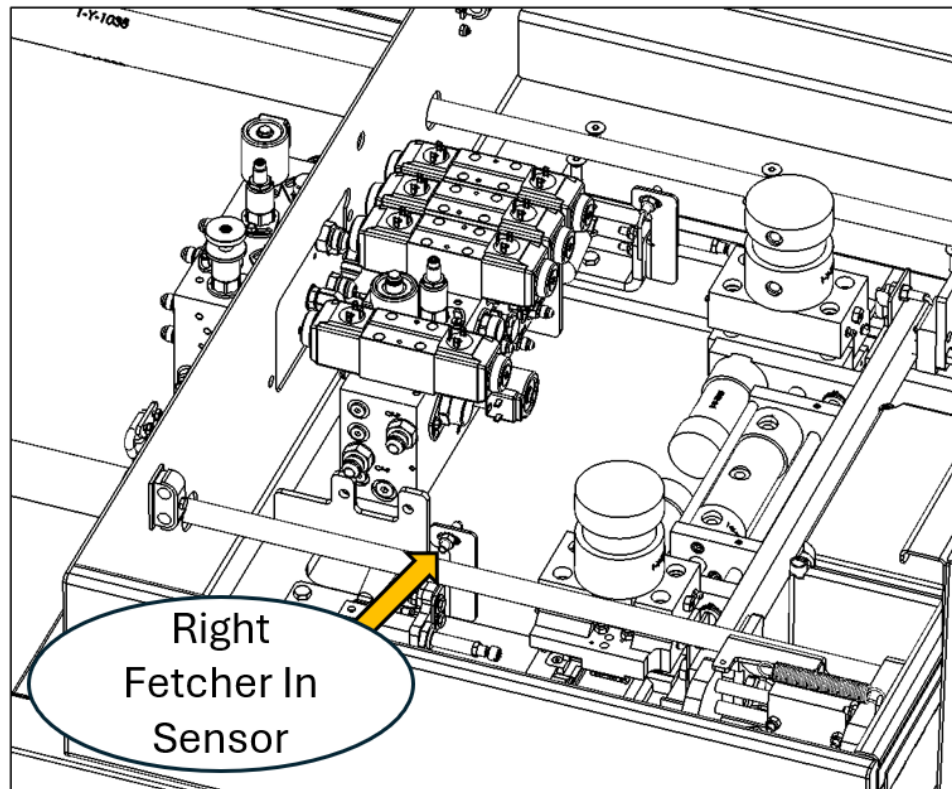
- Loosen nuts on Left Fetcher In reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays "055". If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



056 Right Fetcher In reed switch is stuck on.

Note: Before the machine retracts the Right/Left Fetcher cylinders it does a safety check on the Right Fetcher In reed switch. It checks to see if the reed switch is stuck on. If it is, it will wait until the reed switch is off before continuing the operation.

- Loosen nuts on Right Fetcher In reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays “056”. If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.



057 Communication from Band Computer

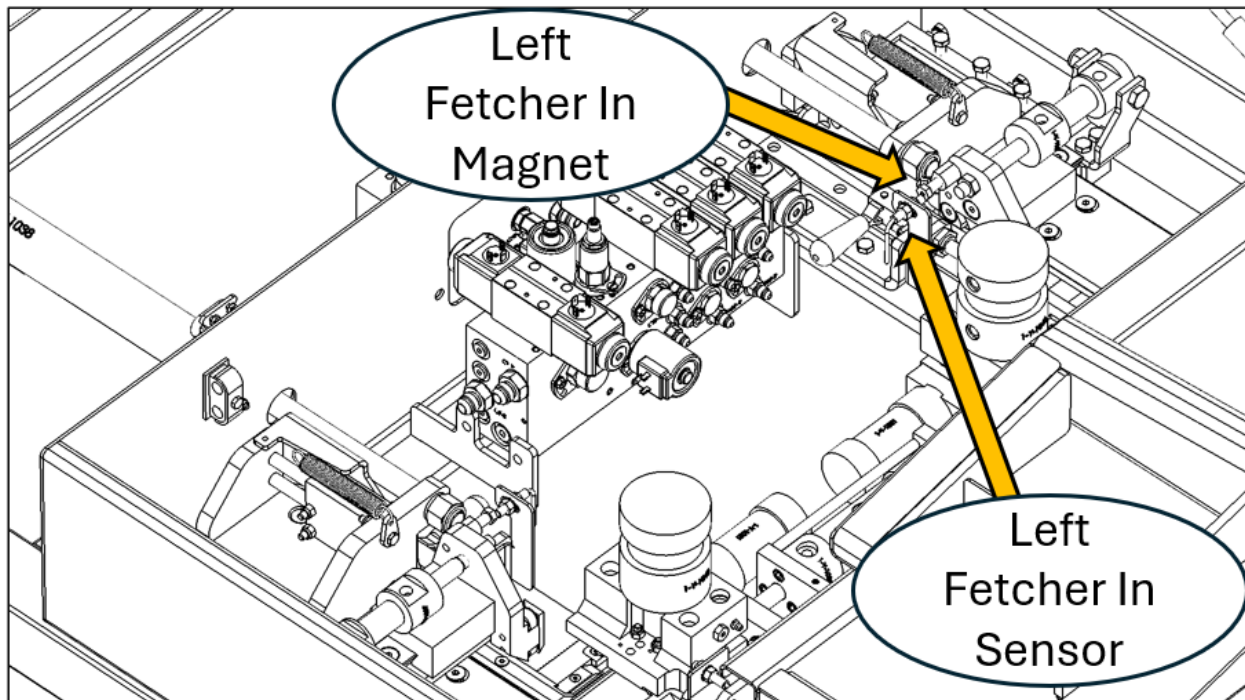
- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

058 Waiting for Left Fetcher In reed switch to be on.

Note: After the machine has retracted the Right/Left Fetcher cylinder, the Left Fetcher In reed switch should be lined up with the Left Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Left Fetcher cylinder is fully retracted,
 - Check the air gap distance between the Left Fetcher In reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.

- If the Left Fetcher cylinder is partially retracted,
 - Check that a foreign object is not preventing the Left Fetcher cylinder from retracting.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Left Fetcher cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher cylinder from retracting.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.

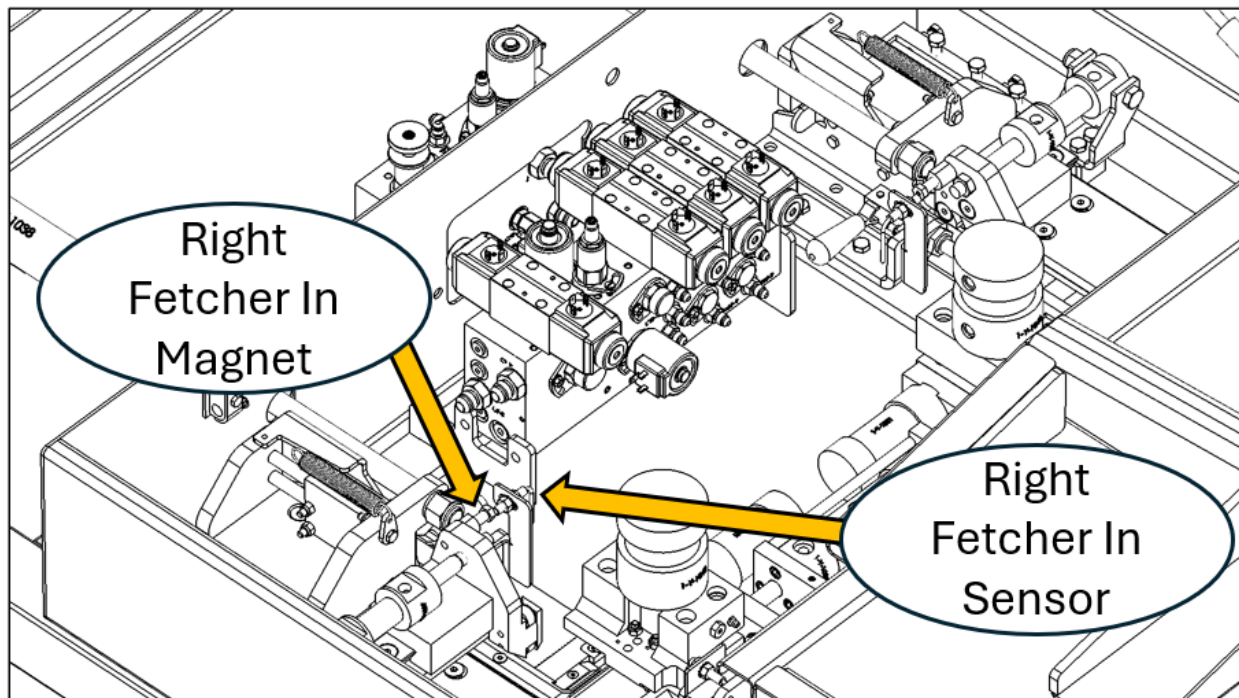


059 **Waiting for Right Fetcher In reed switch to be on.**

Note: After the machine has retracted the Right/Left Fetcher cylinder, the Right Fetcher In reed switch should be lined up with the Right Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Fetcher cylinder is fully retracted,
 - Check the air gap distance between the Right Fetcher In reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Fetcher cylinder is partially retracted,

- Check that a foreign object is not preventing the Right Fetcher cylinder from retracting.
- Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Right Fetcher cylinder is still extended,
- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a foreign object is not preventing the Right Fetcher cylinder from retracting.
- Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- Check that the directional valve is not stuck.



060 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

061 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

062 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

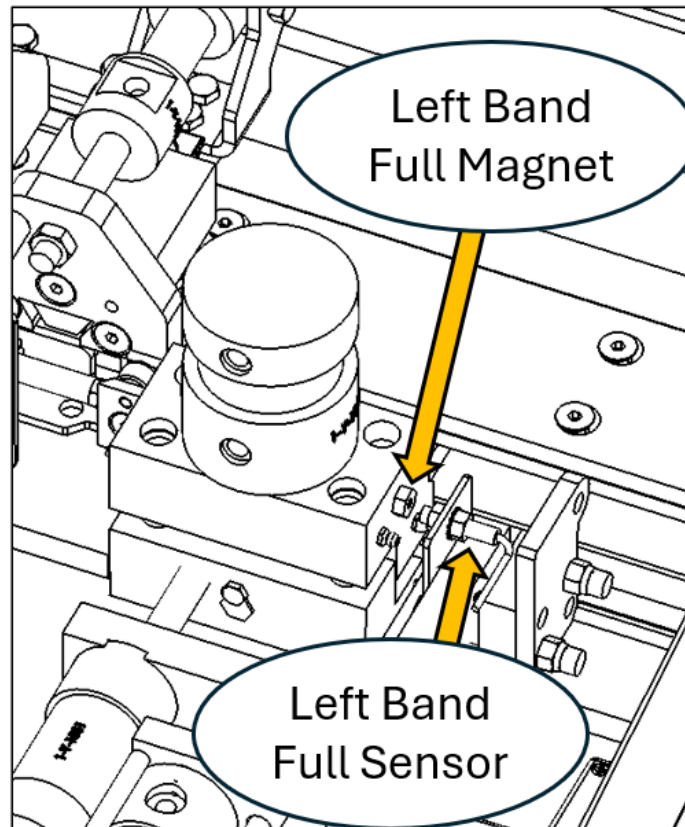
063 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

064 Waiting for Left Band Out reed switch to be on.

Note: After the machine has extended the Right/Left Full Band cylinders, the Left Band Out reed switch should be lined up with the Left Band magnet, which turns the switch on. This is what the machine is waiting for.

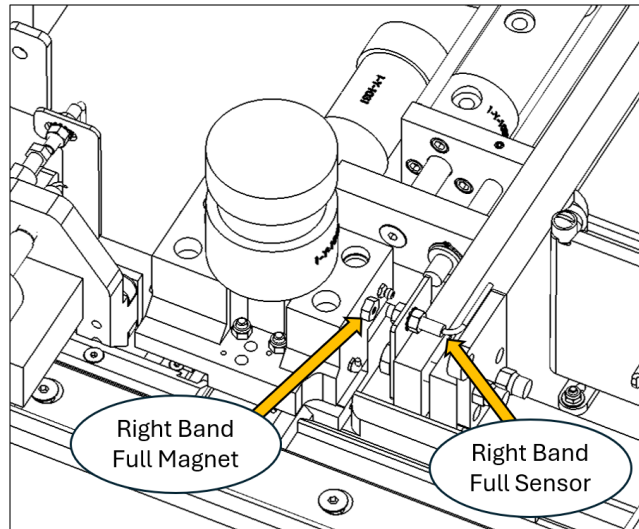
- If the Left Band Full cylinder is fully extended,
 - Check the air gap distance between the Left Band Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Left Band Full cylinder is partially extended,
 - Check that a foreign object is not preventing the Left Band Full cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe all 4 Band Position check valves. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Left Band Full cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Band Full cylinder from extending.
 - Remove and observe all 4 Band Position check valves. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



065 **Waiting for Right Band Out reed switch to be on.**

Note: After the machine has extended the Right/Left Full Band cylinders, the Right Band Out reed switch should be lined up with the Right Band magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Band Full cylinder is fully extended,
 - Check the air gap distance between the Right Band Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Band Full cylinder is partially extended,
 - Check that a foreign object is not preventing the Right Band Full cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe all 4 Band Position check valves. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Right Band Full cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Band Full cylinder from extending.
 - Remove and observe all 4 Band Position check valves. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



066 **Timer Delay Error**

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

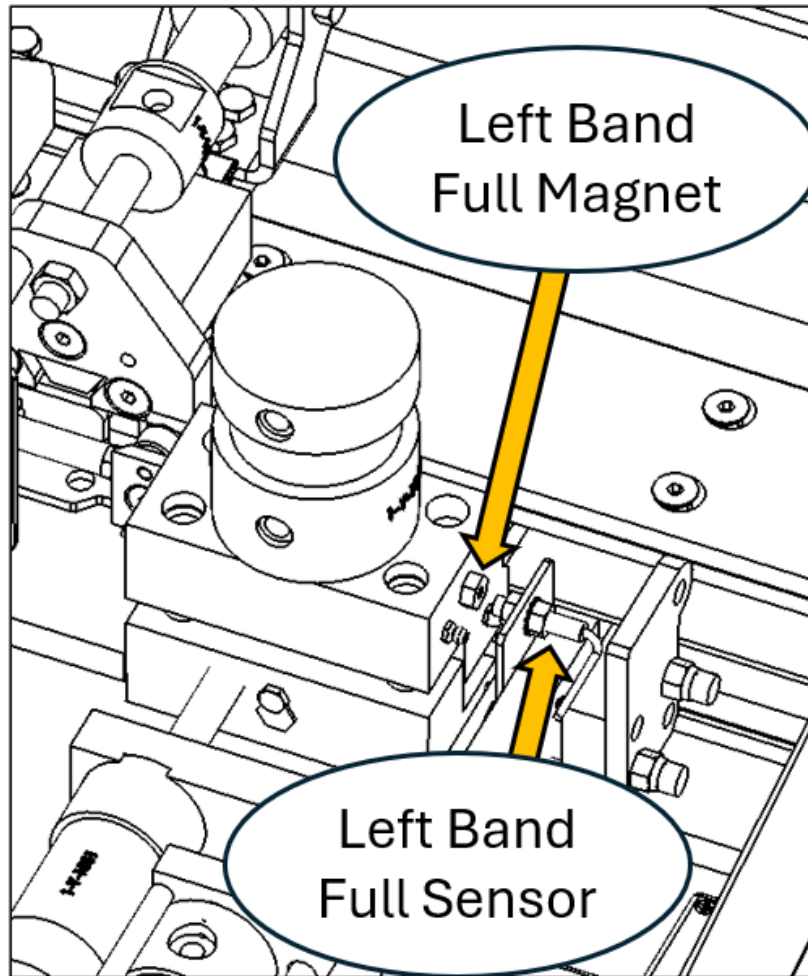
067 **Communication from Band Computer**

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

068 **Waiting for Left Band Out reed switch to be off.**

Note: After the machine lowers the Right/Left Bander cylinders it checks to see if they are down by making sure that the Left Band Out reed switch is off. When the Bander cylinders go down it moves the Bander magnets down with it. This removes the magnet away from the Left Band Out reed switch, turning the reed switch off. This is what the machine is waiting for.

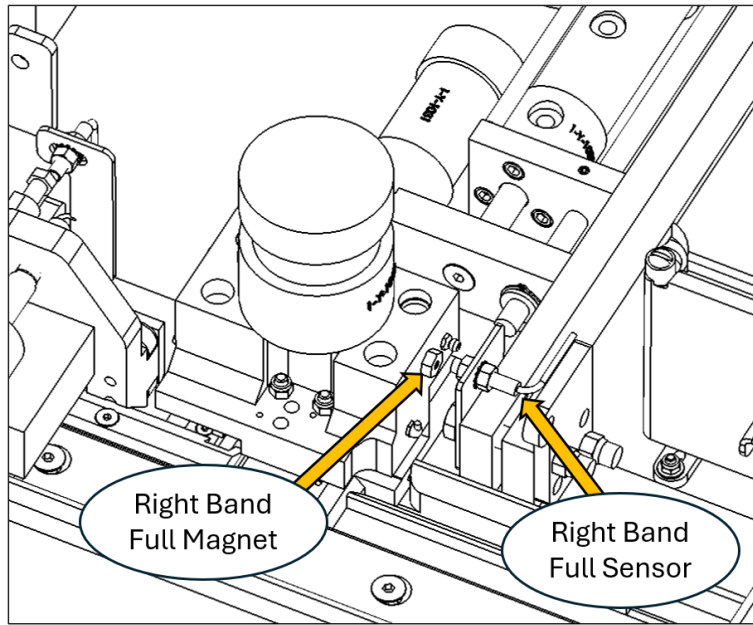
- If the Left Bander cylinder is fully retracted,
 - Loosen nuts on Left Band Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays "068". If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.
- If the Left Bander cylinder is partially retracted,
 - Check that a foreign object is not preventing the Left Bander cylinder from retracting.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- If the Left Bander cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Bander cylinder from retracting.
 - Check that the directional valve is not stuck.



069 Waiting for Right Band Out reed switch to be off.

Note: After the machine lowers the Right/Left Bander cylinders it checks to see if they are down by making sure that the Right Band Out reed switch is off. When the Bander cylinders go down it moves the Bander magnets down with it. This removes the magnet away from the Right Band Out reed switch, turning the reed switch off. This is what the machine is waiting for.

- If the Right Bander cylinder is fully retracted,
 - Loosen nuts on Right Band Out reed switch and hold the switch away from any magnets or metal for approximately 10 seconds. Check tractor box display to see if it is still displays "069". If it does, lightly tap the switch on something to free up the stuck switch. The switch may need to be replaced if this problem continues.
- If the Right Bander cylinder is partially retracted,
 - Check that a foreign object is not preventing the Right Bander cylinder from retracting.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- If the Right Bander cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Bander cylinder from retracting.
 - Check that the directional valve is not stuck.



070 **Timer Delay Error**

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

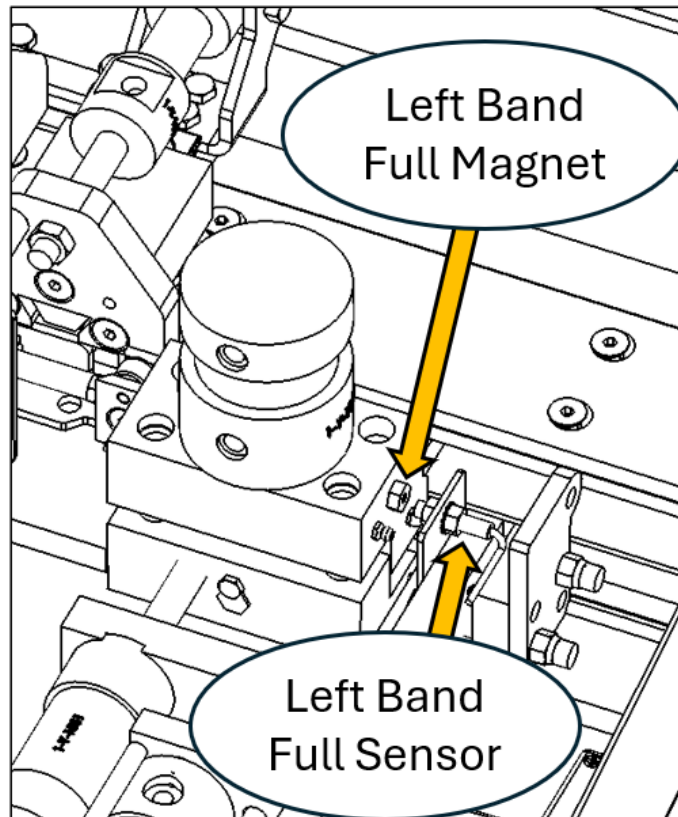
071 **Communication from Band Computer**

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

072 **Waiting for Left Band Out reed switch to be on.**

Note: After the machine has raised the Right/Left Bander cylinders, the Left Band Out reed switch should be lined up with the Left Band magnet, which turns the switch on. This is what the machine is waiting for.

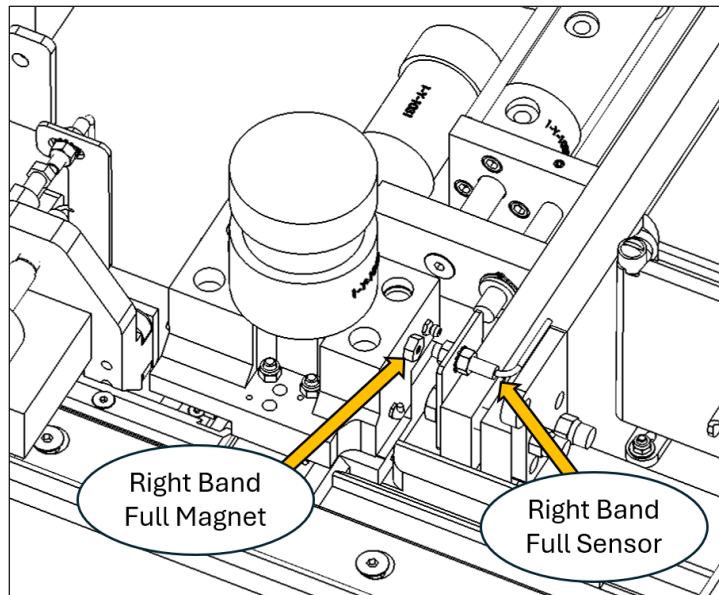
- If the Left Bander cylinder is fully extended,
 - Check the air gap distance between the Left Band Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Left Bander cylinder is partially extended,
 - Check that a foreign object is not preventing the Left Bander cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - If the Left Bander cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Bander cylinder from extending.
 - Check that the directional valve is not stuck.



073 Waiting for Right Band Out reed switch to be on. .

Note: After the machine has raised the Right/Left Bander cylinders, the Right Band Out reed switch should be lined up with the Right Band magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Bander cylinder is fully extended,
 - Check the air gap distance between the Right Band Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Bander cylinder is partially extended,
 - Check that a foreign object is not preventing the Right Bander cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
- If the Right Bander cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Bander cylinder from extending.
 - Check that the directional valve is not stuck.



074 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

075 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

076 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

077 Timer Delay Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.

078 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

079 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

080 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

081 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

082 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

083 Communication from Band Computer

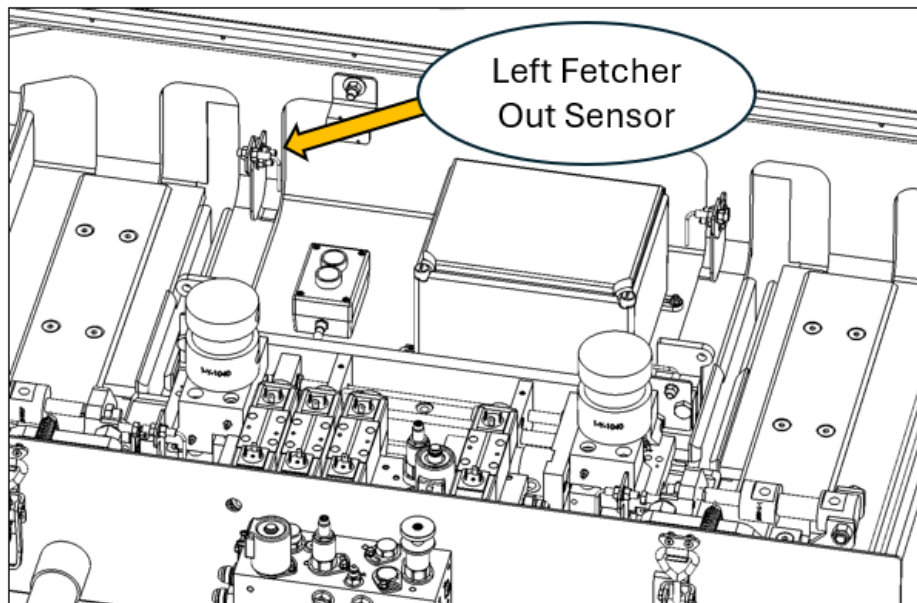
- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

084 Waiting for Left Fetcher Out reed switch to be on.

Note: This code occurs when the Reset Bundle button was pressed while the Fetcher cylinders were extended or partially extended. In order to properly reset, the machine will fully extend the Fetcher cylinders (unless they are already extended). The machine

will then wait until the Left Fetcher magnet is in front of the Left Fetcher Out reed switch.

- If the Left Fetcher cylinder is fully extended,
 - Check the air gap distance between the Left Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Left Fetcher cylinder is partially extended,
 - Check that a foreign object is not preventing the Left Fetcher cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Left Fetcher cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher cylinder from extending.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.

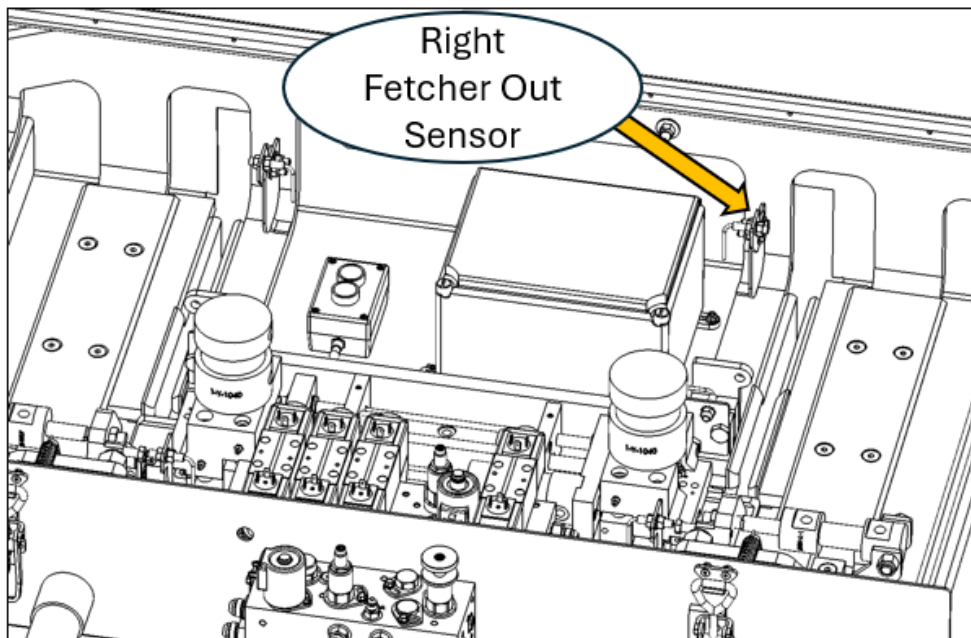


085 Waiting for Right Fetcher Out reed switch to be on.

Note: This code occurs when the Reset Bundle button was pressed while the Fetcher cylinders were extended or partially extended. In order to properly reset, the machine will fully extend the Fetcher cylinders (unless they are already extended). The machine will then wait until the Right Fetcher magnet is in front of the Right Fetcher Out reed switch.

- If the Right Fetcher cylinder is fully extended,

- Check the air gap distance between the Right Fetcher Out reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Fetcher cylinder is partially extended,
 - Check that a foreign object is not preventing the Right Fetcher cylinder from extending.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Right Fetcher cylinder is still retracted,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Fetcher cylinder from extending.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



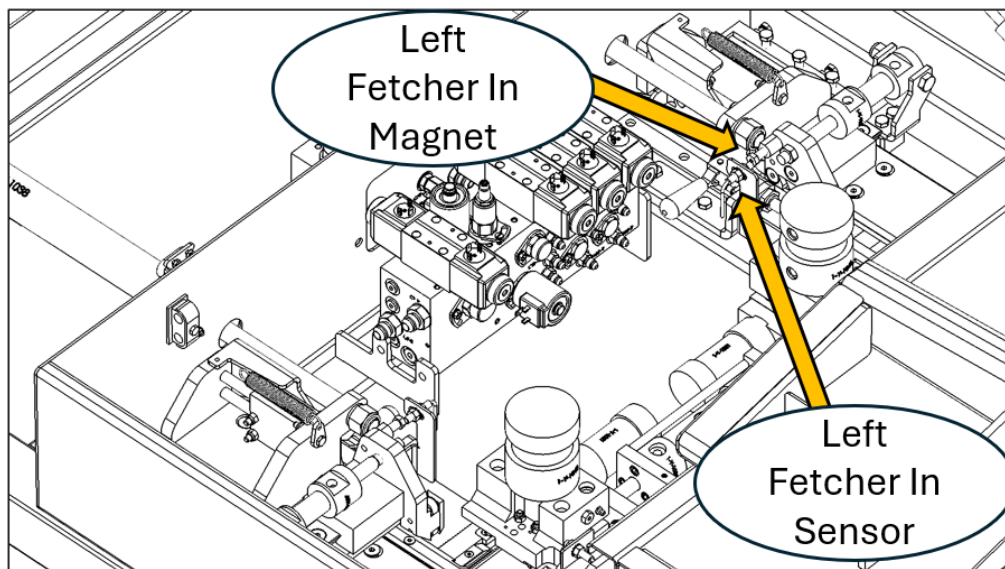
086 Communication from Band Computer

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

087 **Waiting for Left Fetcher In reed switch to be on.**

Note: This code occurs after the Reset Bundle button has been pressed. After the machine has retracted the Right/Left Fetcher cylinder, the Left Fetcher In reed switch should be lined up with the Left Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

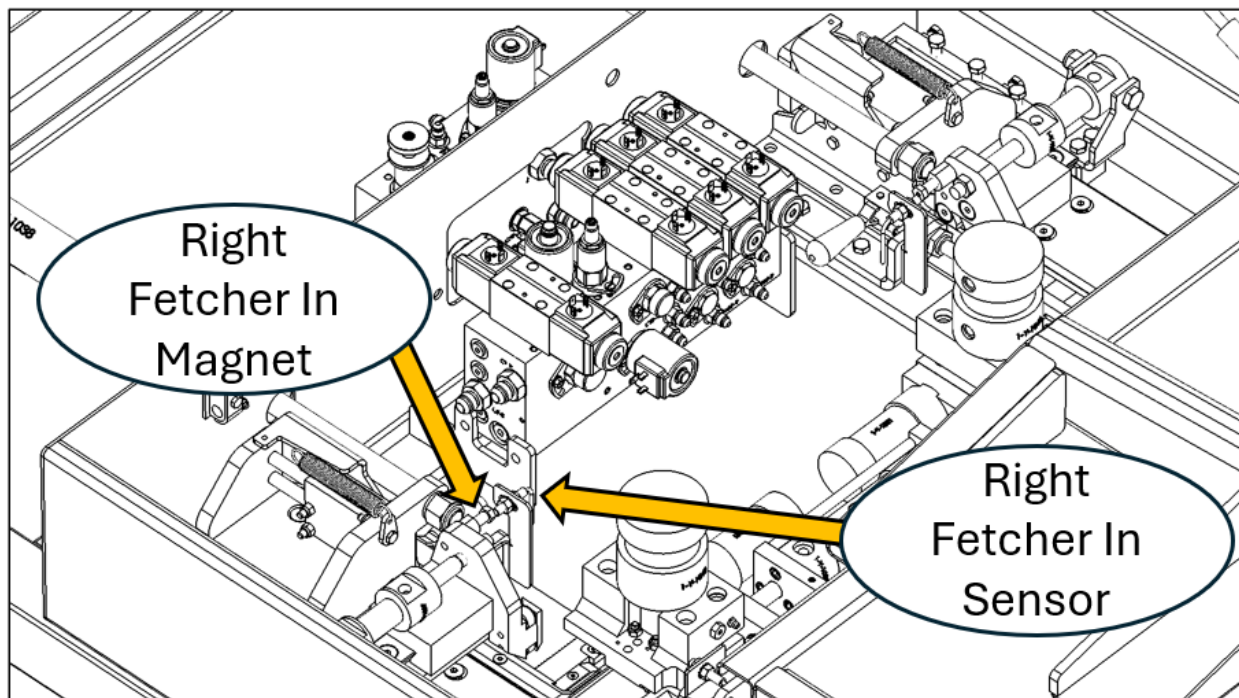
- If the Left Fetcher cylinder is fully retracted,
 - Check the air gap distance between the Left Fetcher In reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Left Fetcher cylinder is partially retracted,
 - Check that a foreign object is not preventing the Left Fetcher cylinder from retracting.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Left Fetcher cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Left Fetcher cylinder from retracting.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



088 **Waiting for Right Fetcher In reed switch to be on.**

Note: This code occurs after the Reset Bundle button has been pressed. After the machine has retracted the Right/Left Fetcher cylinder, the Right Fetcher In reed switch should be lined up with the Right Fetcher magnet, which turns the switch on. This is what the machine is waiting for.

- If the Right Fetcher cylinder is fully retracted,
 - Check the air gap distance between the Right Fetcher In reed switch and the magnet. The distance should be a maximum of 1/8 inch (3 mm). If it is within the suggested range then the reed switch needs to be replaced.
- If the Right Fetcher cylinder is partially retracted,
 - Check that a foreign object is not preventing the Right Fetcher cylinder from retracting.
 - Electric power or hydraulic power or hydraulic return has been disconnected or shut off from machine.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
- If the Right Fetcher cylinder is still extended,
 - Check that hydraulic power is still on to the machine and that return line is still connected.
 - Check that a foreign object is not preventing the Right Fetcher cylinder from retracting.
 - Remove and observe the Fetcher check valve. If the snap ring in the bottom of the check valve is missing then the check valve needs to be replaced. If you are unable to push the plunger from the end of the check valve in and it spring back, then the check valve needs to be replaced.
 - Check that the directional valve is not stuck.



089 **Waiting for Kicker reed switch to be on.**

Note: This code occurs after the Reset Bundle button has been pressed. After the machine has retracted the Kicker cylinder, the Kicker reed switch should be lined up with the Kicker magnet located in the round plastic, which turns the switch on. This is what the machine is waiting for.

If the Kicker cylinder is fully retracted,

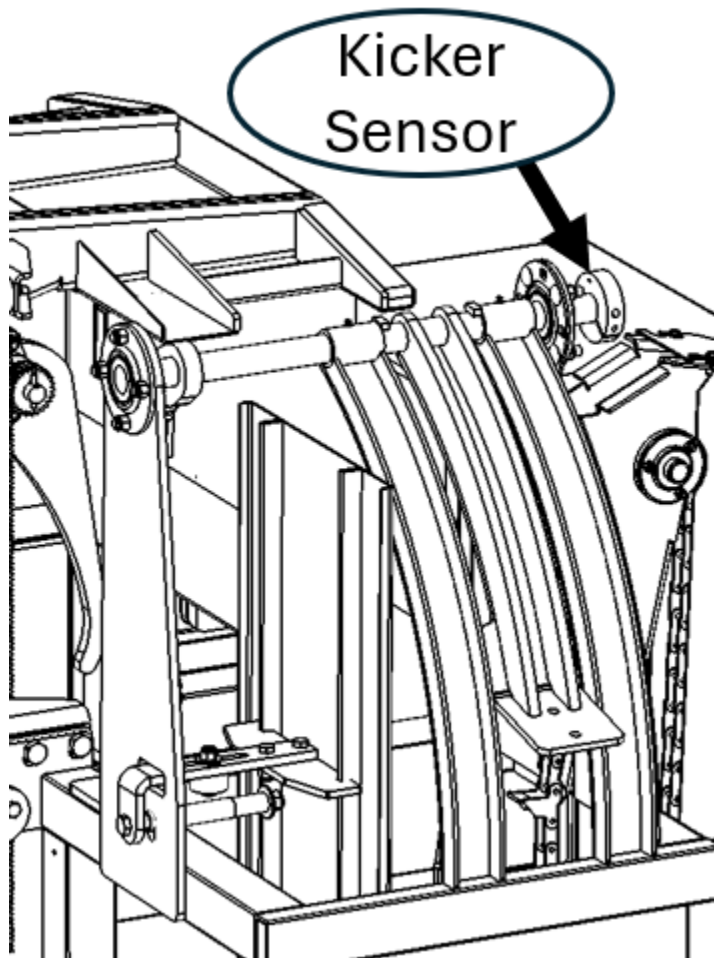
- Check the air gap distance between the Kicker reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

If the Kicker cylinder is partially retracted,

- Check that a bale or foreign object is not preventing the Kicker from retracting.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Kicker cylinder is still extended,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Kicker from retracting.
- Check that the directional valve is not stuck.



090 **Waiting for Horizontal Plunger reed switch to be on.**

Note: This code occurs after the Reset Bundle button has been pressed. After the machine has extended the Horizontal Plunger cylinder, the Horizontal Plunger reed switch should be lined up with the Horizontal Plunger magnets, which turns the switch on. This is what the machine is waiting for.

If the Horizontal Plunger cylinder is fully extended,

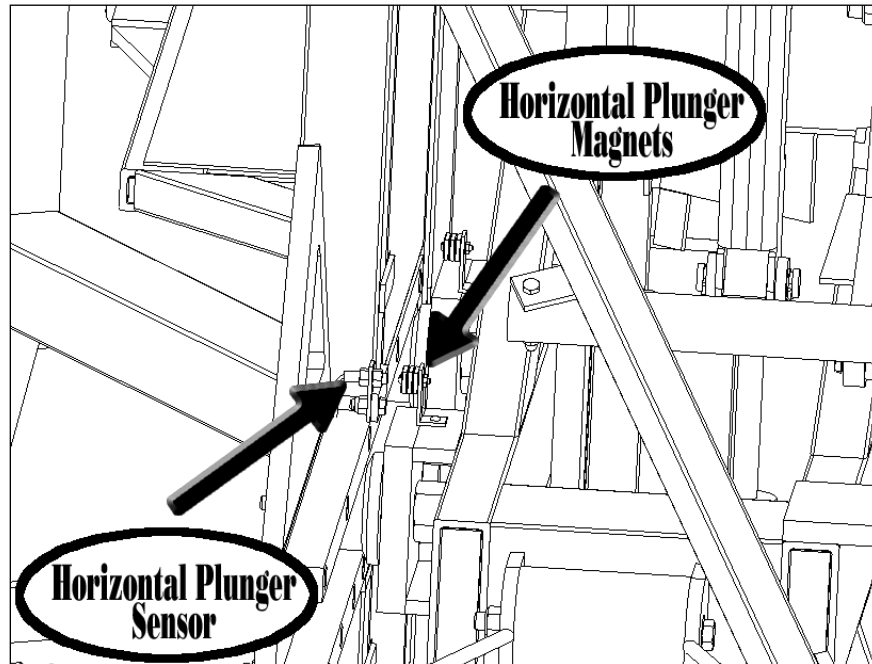
- Check the air gap distance between the Horizontal Plunger reed switch and the magnet. The distance should be a maximum of 3/8 inch (9 mm). If it is within the suggested range then the reed switch needs to be replaced.

If the Horizontal Plunger cylinder is partially extended,

- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from extending.
- Hydraulic power or hydraulic return has been disconnected or shut off from machine. This circuit has a 2-position valve and cannot be partially extended unless power or return has been disconnected or shut off.

If the Horizontal Plunger cylinder is still retracted,

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale or foreign object is not preventing the Horizontal Plunger cylinder from extending.
- Check that the directional valve is not stuck.



091 Communication from Band Computer

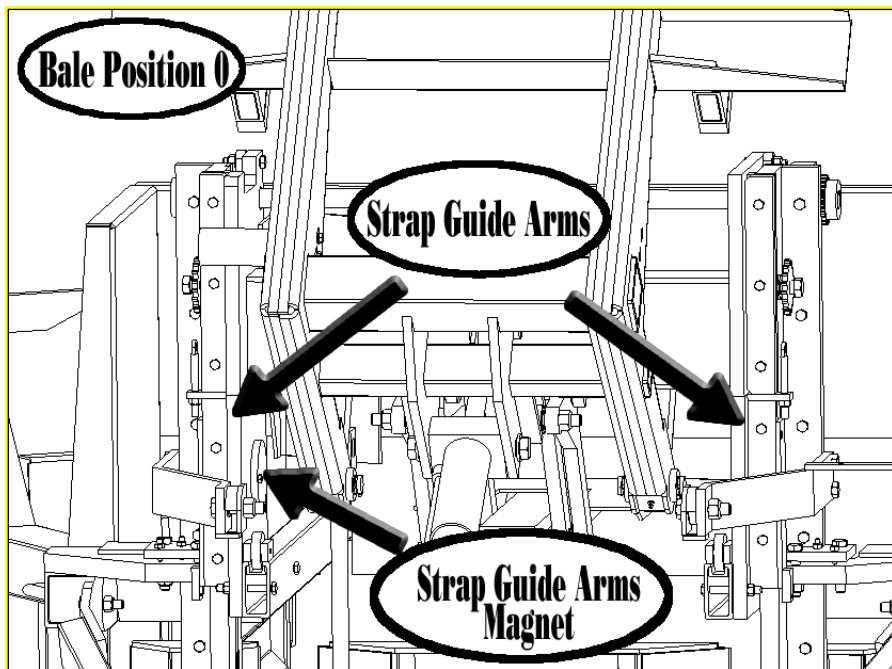
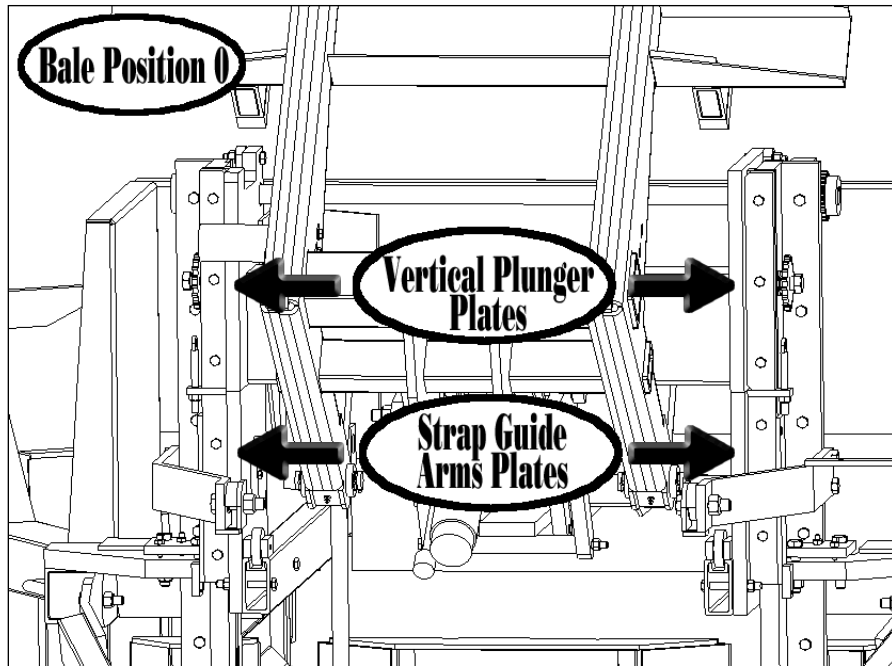
- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

092 Waiting for Strap Guides to be at top position.

Note: The machine has turned on the Strap Guide Arms motor and sent them up. When the Strap Guide Arms reach Bale Position 0, the machine stops the motor. The machine is waiting to reach the Bale Position 0.

- Check that Strap Guide Arms are in time with each other. They should be the same height. If their heights vary $\frac{1}{2}$ inch (12.5 mm) or greater then they are at least one gear tooth out of time. A quick way to check their heights is to compare the distance between the Vertical Plunger plates to the Strap Guide plates. The right side should be the same distance as the left side. In order to prevent the Strap Guide arms from getting out of time, keep their chains tight.

- Check that hydraulic power is still on to the machine and that return line is still connected.
- Check that a bale, excess hay or foreign object is not preventing the Strap Guide Arms from rising.
- Check that the directional valve is not stuck.



093 Communication from Band Computer

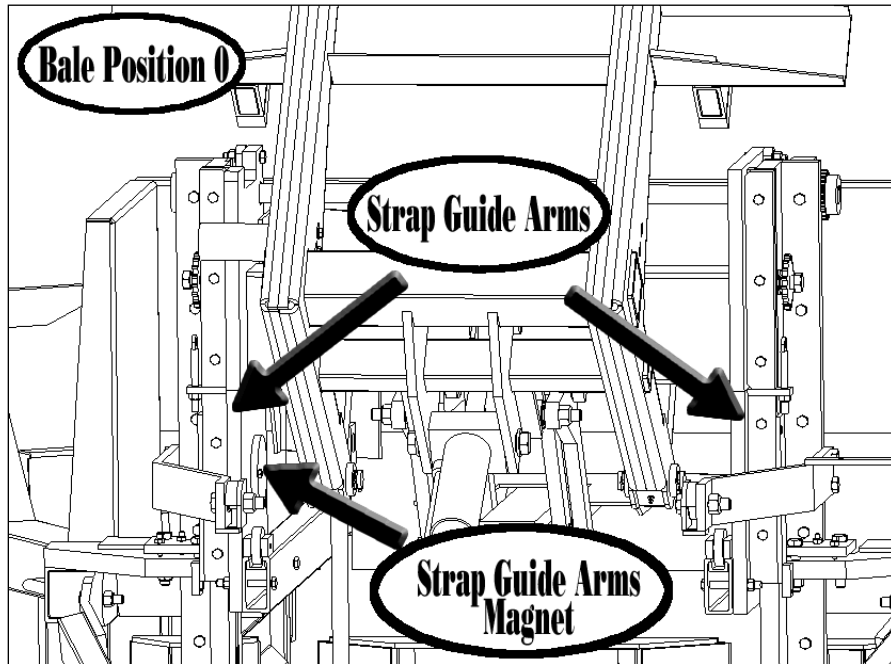
- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait

approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

094 Bale Position 0 sensor stuck on.

Note: Before the machine will raise the Strap Guide Arms, it does a safety check on Bale Position 0. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation.

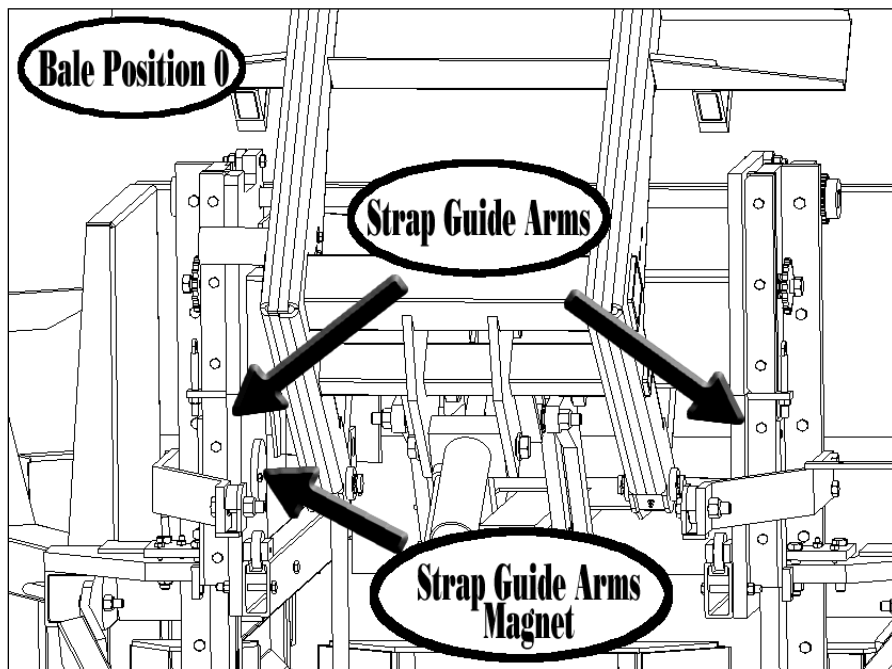
- Follow the re-calibrate procedure



095 Bale Position 1 sensor stuck on.

Note: Before the machine will lower the Strap Guide Arms, it does a safety check on Bale Position 1. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation.

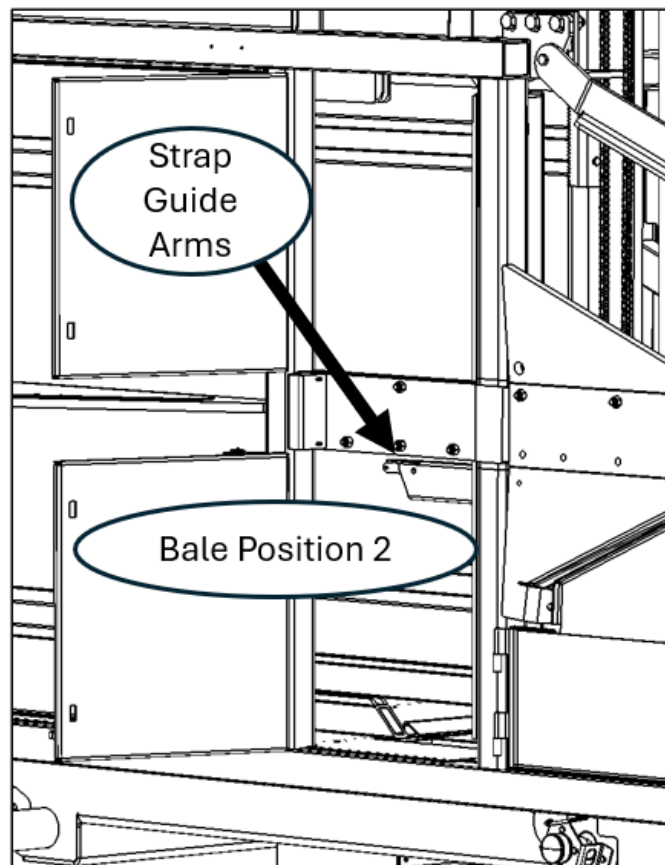
- Follow the re-calibrate procedure



096 Bale Position 2 sensor stuck on.

Note: Before the machine will lower the Strap Guide Arms, it does a safety check on Bale Position 2. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation.

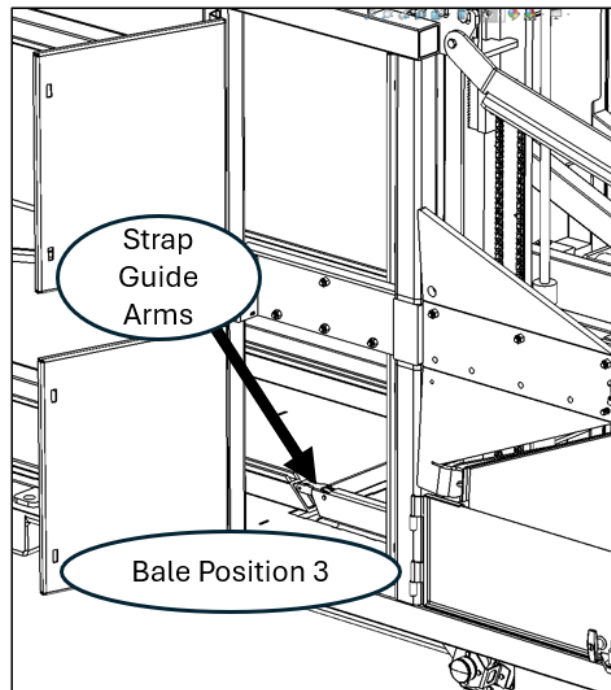
- Follow the re-calibrate procedure.



097 Bale Position 3 sensor stuck on.

Note: Before the machine will lower the Strap Guide Arms, it does a safety check on the Bale Position 3. It checks to see if the sensor is stuck on. If it is, it will wait until the sensor is off before continuing the operation.

- Follow the re-calibrate procedure



098 Computer Error

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power. If this doesn't change the "098" code, then take out all bales in front chamber by opening the side doors. Once the bales are out, press the Reset Bundle button.

099 Out of Strapping

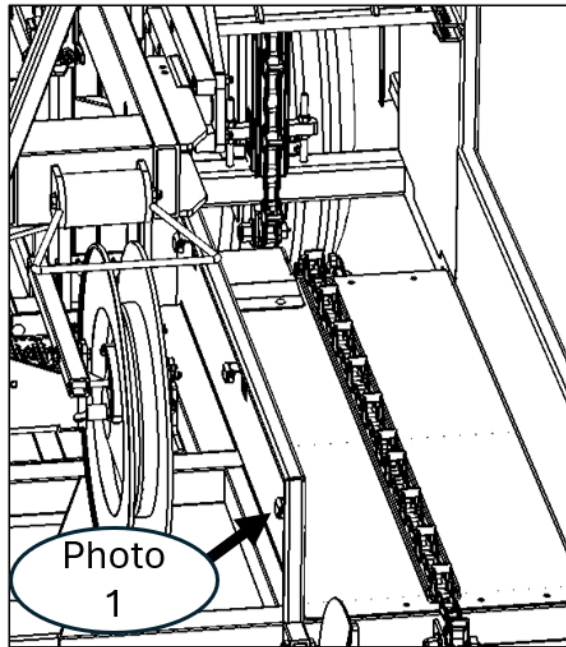
- The computer's bundle count has reached 0 bundles left on the current 2 rolls of strapping. In order for the machine to continue operating the Reset Banding button needs to be pressed, which is located in the Banding box. By pressing the Reset Banding button, the computer then thinks that 2 new rolls of strapping has been threaded into the machine. The bundle display count is reset to 122 and will begin down counting as soon as the first bale enters the machine.

100 Photo 1 Ready, Waiting for a Bale

- The machine is waiting for the baler to place a bale at Photo 1 located at the mouth of the elevator.

-Elevator will have the following state:

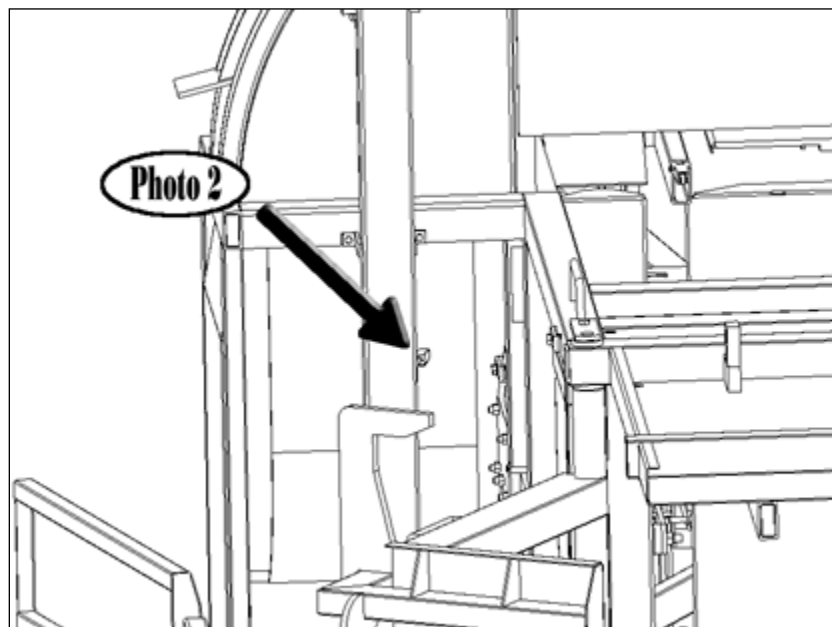
- Horizontal and Vertical elevator will be off.



200 Photo 2 Ready, Waiting for the Bale

- The machine is waiting for the elevator to move the bale at Photo 1 to Photo 2.
- If Photo 1 was tripped prematurely this will be displayed until a bale enters the machine and trips Photo 2. The horizontal & vertical elevator will both be running but nothing needs to be done to fix this. As soon as the next bale enters the machine it will clear out the false reading at Photo 1. This will not affect the bale count in any way. Be sure to wipe clean Photo 1 so that this premature reading ends. Check the indicator light on top of Photo 1 to see that it is sensing properly.

- Elevator will have the following state:
 - Horizontal and Vertical elevator will be on.



300 Photo 3 Error, Unplug power and clean Photo 3

- The machine has stored the bale at Photo 2 and is waiting for Photo 3 sensor to be 'off'. Photo 3 is 'off' when a bale or foreign object is blocking the view of the photo sensor. Occasionally, chaff or dust can cause this error to occur. Disconnect the main electrical and hydraulic power. Once the main electric cord has been disconnected, open the banding box lid and remove any chaff or dust from the view of Photo 3. Once this has been done, reconnect electrical and hydraulic power. The elevator will then turn on, moving the bale from Photo 2 to Photo 3 and the machine will continue operation.

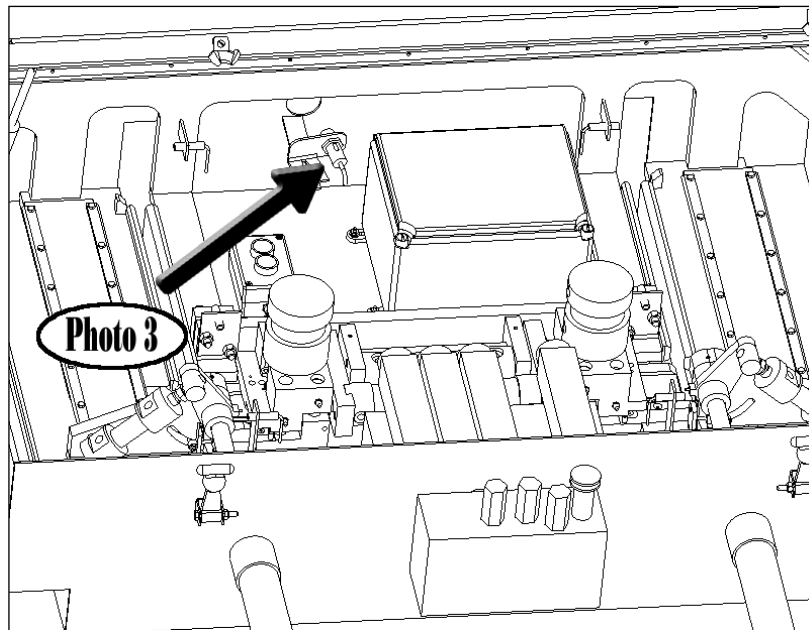
Note: If you do not disconnect the main electrical power prior to clearing the view of the photo eye, you will 'false' trip Photo 3 and the machine will miss count by one bale.

-Elevator will have the following state:

- Horizontal and Vertical elevator will be off.

Things that could cause a 'false' trip:

- A lens that was at one time wet with dew or hydraulic oil and collected dust.
- A piece of chaff being continuously in front of the lens.



400 Photo 3 Ready, Waiting for the Bale

- The machine is waiting for the elevator to move the bale at Photo 2 to Photo 3.
- If this message is shown and there is no bale at Photo 2 to move to Photo 3, then the lens on Photo 2 needs to be cleaned. If the lens of Photo 2 is partially covered by dirt or chaff or if Photo 2 was prematurely tripped by a foreign object, the bale at Photo 1 would not have had enough time to move to Photo 2 before the horizontal elevator chain shut off. Nothing needs to be done other than continue baling. The baler will continue to push the bales back and eventually the vertical elevator (which in this case, is continuously running) will take the next bale and clear out the false trip.

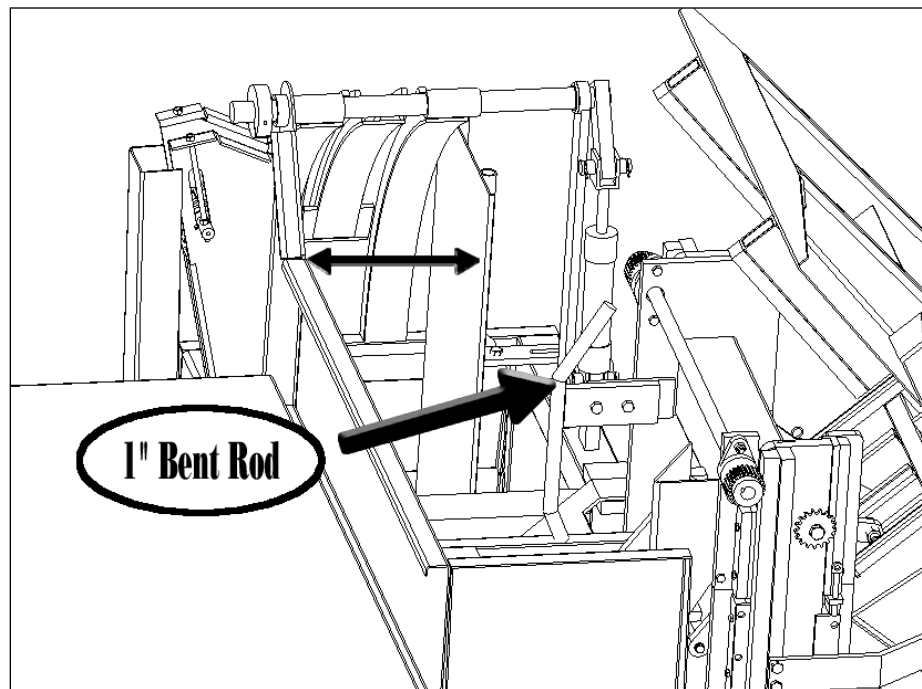
-Elevator will have the following state:

- Horizontal elevator will be off.
- Vertical elevator will on.

Things that could cause a 'false' trip:

- A lens that was at one time wet with dew or hydraulic oil and collected dust.

- A piece of chaff being continuously in front of the lens.
- The photo sensor's distance adjustment being set too far and reflecting off the pressure plate (Photo 2).
- If bale is stuck while going around the curve at the top of the hay elevator,
 - If bale is against the 1 inch (25 mm) bent rod attached to the vertical plunger,
 - Adjust the stop on the pressure plate to give less distance from pressure plate to elevator chain.
 - If bale is stalling out the elevator motor,
 - Adjust the stop on the pressure plate to give more distance from pressure plate to elevator chain.
- If elevator chain is tearing through the bale,
 - Tighten the spring tension on the pressure plate.



900 Resetting.....

- Bale Band-It is resetting, please wait.

901 Rebooting.....

- Bale Band-It is rebooting, please wait.

902 Back Floor Unloading

- Not an error code, just informative that the Back Floor is unloading the bundle. This occurs on Bale 12 of each bundle.

903 Banding Cycle, Leave Hydraulics On!

- Bale Band-It is compressing and tying the bundle. If hydraulics is removed during this time the bundle may or may not be strapped properly. If at all possible, leave hydraulic power on to the machine unless an emergency or machine failure.

904 Communication Delay

- Disengage hydraulic power and unplug main power cord. Wait for approximately 10 seconds, plug back in and engage hydraulic power.
- On Line 3 of Display Monitor, if the number after the dash is 0, then disconnect main electrical and hydraulic power. Open the plastic computer box in the banding box and unplug the two 10 amp fuses. Reconnect main electrical power only. Wait approximately 10 seconds and then reinstall the two 10 amp fuses at the same time. Recheck number on Line 3 after the dash, it should then be 1. Apply hydraulics.

Functional Troubleshooting

There are failures that the Bale Band-It cannot detect and therefore the monitor will not display that the failure occurred. Often these types of failures you see from finished bundles, or functional operations not performing properly. The following sections cover these areas.

****Important Disclaimer:***

All sections in the Function Troubleshooting portion of the manual are meant to be a helpful guide in checking, maintaining, adjusting, operating, etc. the Bale Band-It. This section of the manual only has functional concerns and directions. This section of the manual does not have any safety precautions, as they are outlined in the safety section. The operator must refer to and be aware of all the safety concerns when around the Bale Band-It. The operator must implement the appropriate safety concepts before and while performing all steps outlined in these sections.

Strapping Seal Troubleshooting (ST-###)

Diagnoses any bundles that have miss-ties

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ST-010	Strap not cut in two pieces.....	150

Manual Override Procedures (MOP-###)

Gives How To's, answers specific questions, and lays out detailed explanations of various methods to check and manipulate the Band-It.

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Bookmark not defined.

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MOP-023	Strapping Drum adjustments – Drum tight (Strapping tight).....	173
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MOP-025	Why my cylinder (hydraulic function) isn't moving.....	176

Bundle Troubleshooting (BT-###)

Practical concerns with handling, visual appearance, and misc.

BT-001	Strapping is cutting twine on bales.....	179
BT-002	Bundles are not tight.....	179

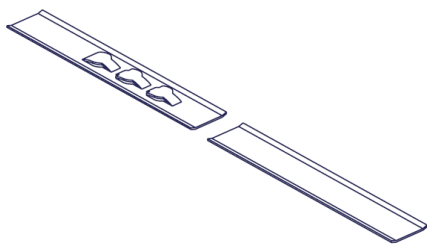
Strapping Troubleshooting

Getting Started

The following steps show you how to utilize the Strapping Troubleshooting section.

- Step 1. Must first inspect both ends of the failed strap.
- Step 2. Using the failed strap as a reference, find the corresponding symptom.
- Step 3. Under that symptom answer the series of questions to determine the problem.
- Step 4. Then take the course of action that the solution describes.

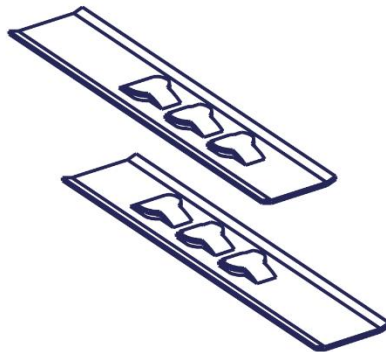
ST-001 *Crimped on one end but not on the other*



- 1) If end that is crimped is top strap & end that is not crimped is bottom strap
 - a) Is there an extra 4" – 6" piece of strap in the band box?
 - i) Is it located under or next to the carriage?
 - (1) Then follow step 3) "Determine when failure is occurring"
 - ii) Is it located in the gripper?
 - (1) Between rollers and new strap
 - (a) Then see MOP-011 "Zinc insert wear check"
 - (i) If not above, then see Fetcher Swing Cylinder Adjustment in the Adjustments section.
 - (2) Between gripper and new strap
 - (a) Then see MOP-015 "Gripper Stuck Open"
 - b) I can't find any pieces of strap
 - i) Bottom strap has end curl and gripper marks (looks normal, but no crimp)
 - (1) Mid band cylinder is not extending to hold the bottom strap
 - (a) Check PO Check valves on circuit for bypass
 - (b) Check cylinder for bypass
 - (c) Check directional valve shifting properly
 - (d) Check # 2 output circuit
 - ii) Bottom strap does not have end curl or gripper marks (appears to be cut off)
 - (1) Then follow step 3) "Determine when failure is occurring"
- 2) If end that is crimped is bottom strap & end that is not crimped is top strap
 - a) Is there strapping currently in the gripper?
 - i) No it needs rethreaded
 - (1) See MOP-010 "Check strap guide arm / fetcher relationship"
- 3) Determine when failure is occurring
 - a) On Bale 00 inspect the location of the end of the strap with respect to zinc plated insert.
 - b) Add 3 bales to the Band-It, so that you are on Bale 03.
 - c) Has the end of the strap moved?
 - i) If Yes, then perform MOP-021 "Strap Pull Test"
 - (1) Did machine pass strap pull test?

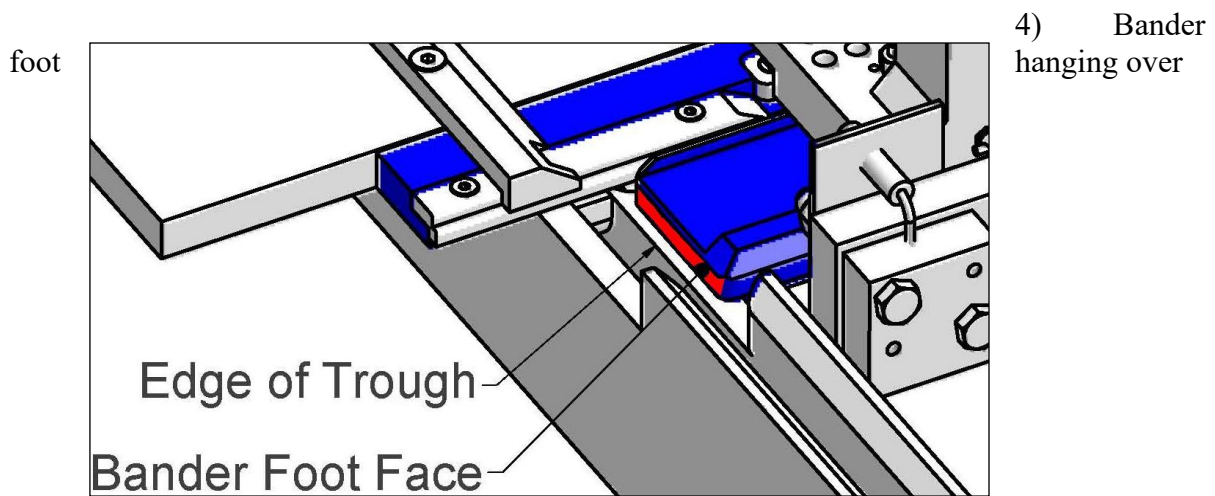
- (a) If No, then resolve this issue and cycle machine to see if this fixed problem
- (b) If Yes, then inspect / perform the following
 - (i) Fetcher Swing Cylinder Adjustment in Adjustments Section
 - (ii) Gripper Adjustment in Adjustments Section
 - (iii) Check gripper tooth quality
 - (iv) Red Handle Adjustment in Adjustments Section
- ii) If No, then problem is occurring in the tie cycle
 - (1) Refer to the following with the items at the top being the most likely
 - (a) MOP-015 “Gripper stuck open”
 - (b) MOP-014 “Gripper tip bent up”
 - (c) MOP-017 “Rough surface on carriage skid plate”
 - (d) MOP-012 “Clearance check under the Carriage Skid Plate”
 - (e) High arched strap can be caused by multiple items: See MOP-018 “Step through tie cycle – 3 basic steps” specifically looking at 6) → g) → i) → l)
 - (f) To visually verify this happening See MOP-018 “Step through tie cycle – 3 basic steps”
 - (i) Start at 1st step in procedure
 - (ii) Continue to work through tie cycle going through troubleshooting until arriving at answer

ST-002 *Both ends crimped in center, Crimps are correct, but seals do not stay together*



- 1) Cause – Banders are not allowed to go to full stroke. There is an obstruction.
 - a) See “Removal of Top Bander” in Yearly Maintenance
 - i) Perform General Maintenance Inspections - Step 4
 - ii) Upper knife showing dullness, causing strap to be pulled when cut.
- 2) Cause – Slack in strapping when sealing occurs
 - a) Concept – Strapping must be taut when sealed in Band-It. If strapping is not taut, there is nothing preventing strapping from going up with bander. This will cause the bands to separate
 - b) Determination
 - i) Watch to see if white banding drums turn during tie process. While baling you can watch from tractor when machine cycles bale 21. Look for the fetchers to come to the opening in the band box, swing out of the way, strap guide arms will then go into opening, and then watch the strapping being pulled through the strap guide arms. If white drums turn, due to the fetchers retracting, then that bundle tied with strapping being taut. If drums did not turn then strapping tied with slack and this is the problem.

- ii) Stop on bale 20. Back spin the white drums, removing all slack from the system. Put bale 21 in, let it tie. If you have slack at bale 20, this is your problem. Notice if every time you remove slack that it never fails.
 - (1) If either of above is true, then the strapping is not back-feeding through the strap guide arms as it should.
 - iii) If above step ii) does not eliminate miss ties then refer to MOP-011 “Zinc Insert Wear Check”
- 3) Cause - Strapping is stamped at slight angle
- a) Symptom – notch in lower portion of strapping that is left after a tie cycle
 - i) Cause - See MOP-007 “Check Bander Aligner 1-G-0027, 1-G-0028”
 - ii) Cause - Fetcher not in center of track, but rather towards center of machine, causing dowel pin of bander to hit side of strapping severely
 - (1) See “Fetcher Swing Cylinder Adjustment” in the Adjustments Section
 - iii) Cause – Bander coming too far towards outside of machine
 - (1) See “Full Band Out Cylinder Adjustment” in the Adjustments Section

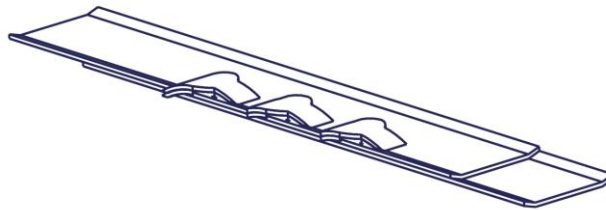


Bander Foot Face extend past Trough Edge	=	Bad
Bander Foot Face flush Trough Edge		= Good
Bander Foot Face recessed back from Trough Edge	=	Good (As shown in picture)

- a) If Bander Foot Face is extended past Trough Edge
 - i) Then strap can separate as it comes off the bander foot
 - ii) See “Full Band Out Cylinder Adjustment” in Adjustments Section
- 5) Cause - not adequate hydraulic pressure
- a) Hydraulics turned off during tie cycle
 - i) Did not allow hydraulic pressure to be applied for full required time period, and therefore did not allow banders to go full stroke.
 - b) Check hydraulic fluid level on tractor
 - c) Check pioneer fitting for wear
 - d) See Hydraulic Bypass Check in Yearly Maintenance
 - e) Check system with pressure gauge
- 6) Cause – Type of strapping. If current or previous strapping exhibits high tensile properties.
- a) Solutions
 - i) Change strapping type. See strapping requirements in Specifications
 - ii) Grease upper & lower dies with thin, graphite type lubricant
 - iii) Adjust bottom die

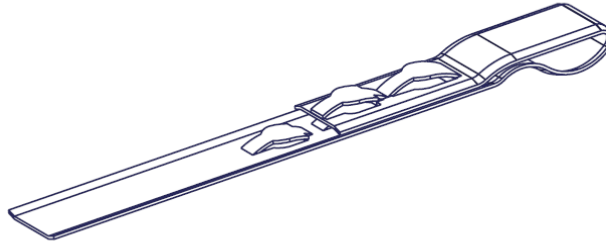
- 7) Items that can help this situation, but will not solve it
 - a) Back off the bundle tension valve, so that back gates will telescope out more.
- 8) If unable to determine, need to find when straps are coming apart
 - a) See MOP-018 “Step Through Tie Cycle – 3 basic steps” and watch machine go through tie cycle, specifically
 - i) Bander down
 - ii) Bander up (what does strap look like?)
 - (1) If coming apart at this step then refer back to Causes 1-4 above
 - iii) Bander pulled toward center of machine
 - (1) If coming apart at this step then refer back to Cause 5 above

ST-003	<i>Both ends crimped but not in center of strapping</i>
---------------	--



- 1) If only bottom strap is stamped off center
 - a) Then there is strapping wedged in insert
 - b) Remove Insert's two countersunk bolts (Item #5)
 - i) See Bale Band-It Parts Section 115 Page 4 and 5
 - c) Drive Insert towards outside of machine
 - i) Insert will slide under track
 - ii) If Insert is difficult to slide, confirms that strapping is wedged against insert
 - (1) Place punch against blank hole in insert (careful not to get in threads in bander foot) and using a hammer drive insert towards outside of machine
 - iii) Remove all strapping in insert area
 - d) Reinstall insert and two countersunk bolts
- 2) If only top strap is stamped off center
 - a) Then fetcher is not bringing strap back in the correct location
 - b) See “Fetcher Swing Cylinder Adjustment” in Adjustments Section.
- 3) If both straps are stamped off center
 - a) Most likely the bander is not coming over the correct distance when stamping
 - i) See “Full Band Out Cylinder Adjustment” in Adjustments Section
 - b) Then it is possible that a combination of the two above situations are causing this

ST-004 *Both ends crimped plus tail of bottom strap is also crimped (3 straps)*



- 1) When fetcher cylinder retracts, the bottom strap is catching on the carriage and bringing the end of the strap back to dies
- 2) Refer to the following with the items at the top being the most likely
 - a) MOP-015 “Gripper Stuck Open”
 - b) MOP-014 “Gripper tip bent up”
 - c) MOP-017 “Rough surface on Carriage Skid Plate”
 - d) MOP-012 “Clearance check under Carriage Skid Plate”
 - e) High arched strap can be caused by multiple items: See MOP-018 “Step through tie cycle – 3 basic steps” specifically looking at 6) → g) → i) → l)
 - f) To visually verify this happening, see MOP-018 “Step through tie cycle – 3 basic steps”
 - i) Start at 1st step in procedure
 - ii) Continue to work through tie cycle going through troubleshooting until arriving at answer

ST-005 *Both ends crimped and still together, bottom strap cut by knife*

Notice the upper and lower straps are cut at the same length (within a 1/16”). This is due to both straps being cut with the knife at the same time.

There is also a 1/4” long strap that is bent over itself

- 1) Refer to the following with the items at the top being the most likely
 - a) MOP-017 “Rough surface on carriage skid plate”
 - b) MOP-012 “Clearance check under Carriage Skid Plate”
 - c) High arched strap can be caused by multiple items: See MOP-018 “Step through tie cycle – 3 basic steps” specifically looking at 6) → g) → i) → l)
 - d) MOP-015 “Gripper Stuck Open”
 - e) MOP-014 “Gripper tip bent up”

ST-006 *Its crimping but taking the strapping back with the banders*

- 1) Cause – Banders are not allowed to go to full stroke. There is an obstruction.
 - a) See “Removal of Top Bander” in Yearly Maintenance
 - i) Perform General Maintenance Inspections - Step 4
 - ii) Upper knife showing dullness, causing strap to be pulled when cut.
- 2) Cause – Type of strapping. If current or previous strapping exhibits high tensile properties.
 - a) Solutions
 - i) Change strapping type. See strapping requirements in Specifications
 - ii) Grease upper & lower dies with thin, graphite type lubricant

- iii) Adjust bottom die
- 3) Cause – Slack in strapping when sealing occurs
 - a) Concept – Strapping must be taut when sealed in Band-It. If strapping is not taut, there is nothing preventing strapping from going up with bander. This will cause the bands to separate
 - b) Determination
 - i) Watch to see if white banding drums turn during tie process. While baling you can watch from tractor when machine cycles bale 21. Look for the fetchers to come to the opening in the band box, swing out of the way, strap guide arms will then go into opening, and then watch the strapping being pulled through the strap guide arms. If white drums turn, due to the fetchers retracting, then that bundle tied with strapping being taut. If drums did not turn then strapping tied with slack and this is the problem.
 - ii) Stop on bale 20. Back spin the white drums, removing all slack from the system. Put bale 21 in, let it tie. If you have slack at bale 20, this is your problem. Notice if every time you remove slack that it never fails.
 - (1) If either of above is true, then then the strapping is not back-feeding through the strap guide arms as it should.
- 4) Cause - Strapping is stamped at slight angle
 - a) Symptom – notch in lower portion of strapping that is left after a tie cycle
 - i) Cause - See MOP-007 “Check Bander Aligner 1-G-0027, 1-G-0028”
 - ii) Cause - Fetcher not in center of track, but rather towards center of machine, causing dowel pin of bander to hit side of strapping severely
 - (1) See “Fetcher Swing Cylinder Adjustment” in the Adjustments Section
 - iii) Cause – Bander coming too far towards outside of machine
 - (1) See “Full Band Out Cylinder Adjustment” in the Adjustments Section

ST-007 Strapping catching in lower die

This can happen and the bundle be functionally unaffected. Often strapping is still sufficiently strong even with one side pulled out.

- 1) See “Lifter Adjustment” in the Adjustments Section

ST-008 Strapping caught on rail in band box

- 1) Check if bale 19 of the bundle was busted, or strapping off the end of bale 19.
 - a) If strap pulls off to side and does not position itself on lower rail then will cause this failure because the strap goes down front of bundle at an angle.
- 2) Cause - Strapping coming too far in band box
 - a) Adjust strap guide arms protrusion in band box
 - b) Type of strapping. If current strapping exhibits high tensile properties it will cause the strapping to feed too far into band box. If gripper springs back into position and hits the side of the strap it will push the strap towards outside of machine also causing strapping to be off the fetcher rollers.

ST-009 Bander foot roughly cuts strap

- 1) When bale 21 is detected by photo eye 3, the mid band cylinder extends, moving the bander foot over the trough. Normally the strapping held in the gripper is lined up with the insert (tongue and groove) slot. Therefore, when the mid band cylinder extends, the strapping is shoved into the slot.
- 2) However, if strapping has received excess slack while finishing the bundle then a loop can develop, moving the strap out of line with the slot and in the way of the bander foot. When the mid band cylinder extends, the strapping is then bent, cut, and mangled by the bander foot.
- 3) Cause – Back gates retract late (on bale 18 or later) due to low hydraulic flow
 - a) Check tractor's hydraulic fluid output
 - b) Make sure the return line to the tractor is not clogged or otherwise obstructed

<i>ST-010 Strap not cut in two pieces</i>

- 1) Top and bottom strap are crimped but strap is not cut to release strapping around bundle
 - a) Not adequate hydraulic pressure
 - i) Place pressure gauge on lower bander hydraulic hose
 - ii) Place test sample strap in bander
 - iii) Use toggle switch to run bander down and hold down
 - iv) Check system pressure on gauge
 - (1) If pressure is less than 2500 psi then this is the problem
 - (2) If pressure is 2500 or greater, then this is not the problem
 - b) Obstruction preventing strapping from going down
 - i) See “Removal of Top Bander” in Yearly Maintenance
 - c) Top or bottom knife damaged or missing
 - i) See “Removal of Top Bander” in Yearly Maintenance

Manual Override Procedures

MOP-001 Back Gates closed on bundle

How do I get out of this situation?

- a) Refer to Operator's Manual page 24.
- b) Locate this manifold that is just outside the banding box.
- c) With a #2 Phillips (or straight) screwdriver, loosen and remove DIN connector #1 from coil.
- d) When Bale Band-It is powered up, the Back Gates will then open.
- e) Locate Back Floor switch on right (opposite elevator) side of Band-It.
 - o Turn switch, causing Back Floor to lower bundle to ground.
- f) Pull Bale Band-It forward or pull bundle off floor.
- g) Turn Back Floor switch to original location
 - o Back Floor will raise
- h) Connect and tighten DIN connector #1 back onto Back Gate coil
 - o Back gates will close

Back floor concept:

- On bale 12 the Back Floor drops
- On bale 14 the Back Floor raises
- On bale 15 the Back Gates close

Possible causes of failure:

1. Manually inserting bales in stationary type setting (no ground travel)
 - a. The Bale Band-It unloads on the go. When bales are manually placed in elevator, without the Band-It traveling in the field, it has no way of unloading the bundle.
2. Bundle did not slide out
 - a. Ground terrain in unique situation that bundle had little to no contact with the ground.
 - b. Higher moisture bales causing higher drag in machine.
3. Back floor didn't drop
 - a. Get machine in failed position (Bale 12 or 13, with the Back Floor still in the up position) and See MOP-024 Why my cylinder (hydraulic function) isn't moving, on 176

MOP-002 Back Gate Telescoping Cylinders not stroked in the same on Bale 15

1. Get machine on Bale 15 & leave hydraulics on
2. At this position the back gates should be closed and telescoped in completely
3. Did both gates telescope in completely?
 - a. If yes, then remove back gate DIN connector from coil (see Operator's Manual page 24). This causes the back gates to open.
 - i. Plug DIN back on coil. This causes the back gates to close.
 - ii. Repeat multiple times.
 - iii. If gates ever do not telescope in completely then refer to step 3.b.
 - iv. If gates telescope in completely every time then jump to step 4 General rule of thumb method
 - b. If no, then need to adjust bundle tension valve (see Operator's Manual page 24)

- i. Loosen jam nut
- ii. Slowly begin tightening (clockwise) the valve until the telescoping cylinders retract completely.
- iii. From this point tighten valve another half a turn
- iv. Tighten jam nut
- v. Remove back gate DIN connector from coil (see Operator's Manual page 24). This causes the back gates to open.
 1. Plug DIN back on coil. This causes the back gates to close.
 2. Repeat multiple times.
 3. If the gates ever do not telescope in completely then tighten adjustment valve a little more.
- vi. This pressure setting is the lowest pressure setting that will overcome the friction force of the back gate.

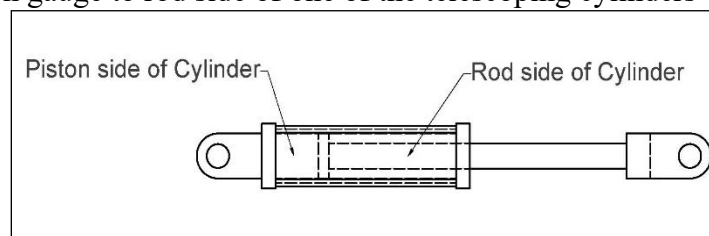
Back Gate Friction Force = drag on telescoping tubes + drag of telescoping cylinder

4. General rule of thumb method

- a. Try a few bundles see what happens
- b. See how much back gates telescope out during compression
 - i. We like to see around 4"
- c. If back gates are stroking out around or more than 4"
 - i. Then you do not have excess back gate friction force
 - ii. Adjust the adjustment valve as needed
- d. If not stroking out any and bundles are too tight,
 - i. We then know that the mechanical force of the hay is not able to overcome the back gate friction force + the pressure setting force
 1. Since the bundle is too tight, we know that the mechanical force of the hay is not small.
 2. So either the friction force is too great or the pressure setting is too great
 - ii. Then we need to perform the pressure gauge method to determine if it is a mechanical or pressure problem

5. Pressure gauge method

- a. Determines if mechanical problem or hydraulic problem
- b. Attach gauge to rod side of one of the telescoping cylinders



- c. Get machine on Bale 15 & leave hydraulics on
 - i. If back gate did not telescope in completely then adjust the valve until it does
- d. Remove back gate DIN connector from coil (see Operator's Manual page 24). This causes the back gates to open.
 - i. Plug DIN back on coil. This causes the back gates to close.
 - ii. While gates are telescoping in, what is the gauge measuring?

This is the required pressure to overcome the Back Gate friction forces

 1. If this pressure is greater than 500 psi then the Back Gate friction forces are too large

6. Unpin the yoke end of both telescope cylinders & hold them out away from machine so that they do not damage or pinch anything.
7. Cycle the gates in again, getting new Back Gate friction pressure reading
8. If the pressure is greater than 250 psi then there is an internal problem with one of your cylinders
9. The cylinder that retracts 1st is probably ok
10. The cylinder that retracts last is defective. Disassemble cylinder and check packing. Reassemble cylinder and refer to Check Cylinder on Test Stand.
11. If the pressure is less than 250 psi then one or both of the gates are exhibiting large drag forces.
12. Hook up one of the cylinders, while leaving the other cylinder free
13. Get friction pressure reading
14. Unhook the hooked up cylinder and hook up the cylinder that was free
15. Get friction pressure reading
16. The gate that had the greatest pressure reading has the most drag
17. How to decrease gate drag
18. Find scrape marks and remove burs that cause it
19. Flip or replace UHMW slide (1-M-0210)
20. Continue until retract pressure is 500 psi or less for both cylinder retracting both gates.
21. If this pressure is less than 500 psi then the Back Gate friction forces are acceptable
22. Once they go full stroke what is the pressure setting at?
23. This is the pressure setting of the adjustment valve
24. Factory setting of the PR10-36B is 700 psi
25. Remove back gate DIN connector from coil (see Operator's Manual page 24) This causes the back gates to open.
26. What is the pressure while the telescoping cylinders are extending?
27. Should be around 1200 psi or less
28. What is the pressure when the gates start to swing open?
29. Should be around 500 psi
30. What is the pressure when the gates stop moving?
31. Should be 0 psi

MOP-003 Back Gates telescope out but do not swing open

Normal Operation: After the 21 bale tie cycle is complete, the Back Gate telescoping cylinders fully extend and then the swing cylinders open the Back Gates.

Failed Operation: In this failed situation the telescope cylinders extend properly, but the swing cylinders fail to open the Back Gates.

In this situation there are three failures that can prevent the swing cylinders from opening:

1. Relief valve failure.
 - a. Locate relief valve on Back Gate Manifold (Operator's Manual page 24). It is between the Bundle Tensioning Valve and the Back Gate directional valve. It has a threaded stem that can be adjusted with an Allen wrench and has a hex jam nut to lock it in position.
 - b. Lower pressure setting of relief valve, in effort to get it to shift. With machine live and ready to operate, loosen jam nut. Using Allen wrench turn threaded stem counterclockwise until back gates open.
2. Hydraulic supply from tractor has insufficient pressure to shift relief valve. Relief valve requires 2,000 psi to shift. If supply from tractor is less than 2,000 psi then valve will not shift.
 - a. Short term fix – lower relief valve setting below the tractors max pressure. With machine live and ready to operate, loosen jam nut. Using Allen wrench turn threaded stem counterclockwise until back gates open. However, low system pressure makes all other Bale Band-It functions to work with less power as well. Critical items such as the Banders and Horizontal Plunger may be affected.
 - b. Proper fix – adjust detent setting on tractor.
 - c. Pressure to relief valve can be measured by installing pressure gauge to TP1 on Back Gate Manifold or to “T” a pressure gauge into the hose connection on the piston side of the telescoping cylinder.
3. Internal bypass in the Telescoping Cylinder does not allow pressure to build up in circuit to shift the relief valve. Check Telescoping Cylinders for internal bypass.

MOP-004 Both Elevator Chains run continuously

During normal operation both the Horizontal and Vertical Elevator Chains turn on when photo 1 has been tripped. If both chains run even though a bale has not yet entered the Horizontal Elevator, then photo eye 1 is being falsely tripped.

- First check the indicator lights on photo eye 1A, 1B, and 1C. The eye that is being falsely tripped will have its red indicator light on.
- Clean out any hay chaff in front of and below this photo eye. Wipe lens if needed.
- If red indicator light goes off, then you removed the obstruction.
- If red indicator light is still on, then adjust the photo eye as outlined in Photo Eyes (Operator's Manual page 28).
-

MOP-005 Horizontal Elevator Chain does not turn on

During normal operation both the Horizontal and Vertical Elevator Chains turn on when photo 1 has been tripped. When bale at photo 1 advances to the Vertical Elevator it trips photo 2 and the Horizontal Chain turns off while the Vertical Chain continues to advance the bale.

If bale never gets to the Vertical Elevator but the Horizontal Chain is already turned off, then photo eye 2 has been falsely tripped. (This can be confirmed if iPad or monitor says “Photo 3 Ready, Waiting for a Bale”)

- Remove obstruction in front of photo eye 2. Wipe lens if needed.
- On photo 2 if red indicator light is off, then it is still detecting a bale. If red indicator is off then adjust photo eye as outline in Photo Eyes (Operator’s Manual page 28).
- If photo 2 red indicator light is on and all obstructions are removed then continue baling.

If photo 2 has been falsely tripped, you can manually turn on the horizontal elevator and advance the bale on the horizontal elevator to the vertical elevator by pressing the red manual override button located on the horizontal elevator directional valve.

MOP-006 Bale Band-It operation has slowed down

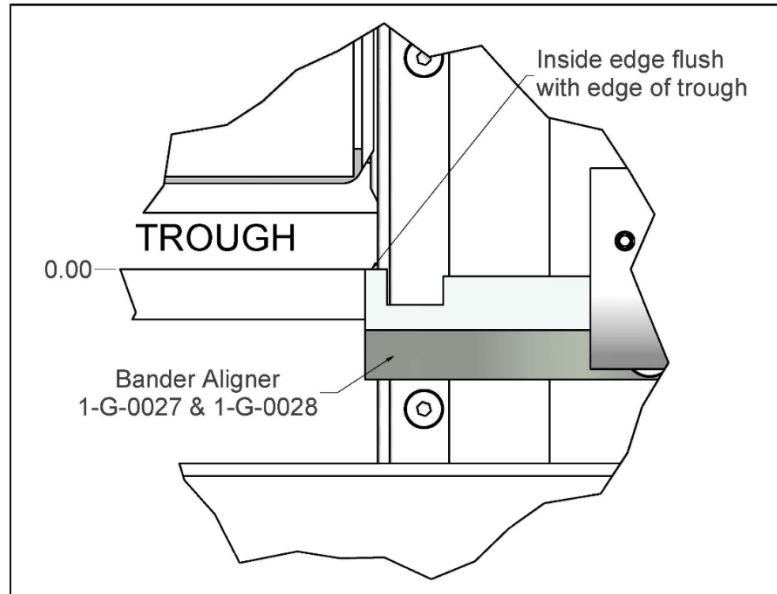
If the entire machine has slowed down then do the following:

- Check that remote flow on tractor is turned to max.
- Check hydraulic supply level and temperature.
- Check that hydraulic pressure line hose is connected to primary remote on tractor.
- Check that hydraulic return line hose does not return into the tractor’s remote but directly into the tractor’s tank.
- Replace Pioneer fitting that goes into remote.
- Inspect Filter, as outlined in the Yearly Maintenance section of manual.

If one specific function is slow then contact tech support to troubleshoot specific situation.

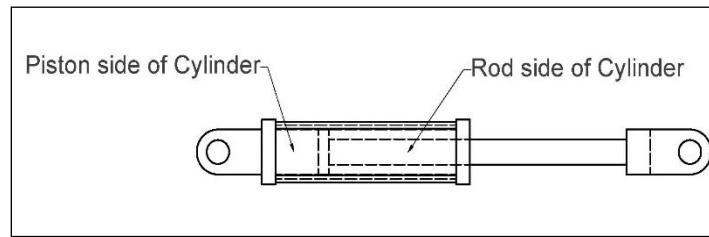
Refer to Bale Band-It Parts Section 115 Pages 8, 9

Bander aligner's inside edge should be flush with edge of trough as shown in picture.



- 1) If Bander Aligner is hanging over edge of trough then mark, remove, grind, and reinstall
 - a) Mark with a scribe a line directly above the trough edge
 - b) In order to remove Bander Aligner, the fetcher cylinder needs to be manually shifted forward. Refer to Operator's Manual Page 27
 - i) Turn hydraulics and electric on
 - ii) Remove DIN connector # 7
 - iii) Manually shift fetcher directional valve on the rear (#6) side
 - (1) Shift fetchers forward about halfway, enough to expose the hardware that holds down the Bander Aligner
 - c) Remove Bander Aligner
 - d) Grind to mark
 - e) Reinstall Bander Aligner
 - f) Check that Bander Aligner inside edge is flush with edge of trough
 - g) Plug DIN connector # 7 back on coil
 - i) This causes fetchers to fully retract
- 2) Complete

- 1) Attach pressure gauges to both Piston and Rod sides of the cylinder being tested



Checking for Drag

- While cylinder is Extending measure pressure on piston side
 - o If pressure is less than ($<$) 250 psi then cylinder is not dragging this direction
 - o If pressure is greater than ($>$) 250 psi then cylinder has significant internal drag in this direction of travel
- While cylinder is Retracting measure pressure on rod side
 - o If pressure is less than ($<$) 250 psi then cylinder is not dragging this direction
 - o If pressure is greater than ($>$) 250 psi then cylinder has significant internal drag this direction of travel
- If cylinder is dragging either direction of travel
 - o Disassemble cylinder, check packing, and determine cause of failure
- If cylinder is not dragging either direction of travel
 - o Cylinder passed Drag Test

Checking for Bypass

- After cylinder has fully extended, leave hydraulic pressure on and remove hose on rod end of cylinder
 - o If hydraulic oil comes out of cylinder port, then it has an internal bypass
 - o If hydraulic oil does not come out of cylinder port, then it does not have a bypass
- After cylinder has fully retracted, leave hydraulic pressure on and remove hose on piston end of cylinder
 - o If hydraulic oil comes out of cylinder port, then it has an internal bypass
 - o If hydraulic oil does not come out of cylinder port, then it does not have a bypass
- If cylinder has bypass either direction of travel
 - o Disassemble cylinder, check packing, and determine cause of failure
- If cylinder has no bypass either direction of travel
 - o Cylinder passed Bypass Test

MOP-009 Check if Vertical Plunger is IN/ OUT of time

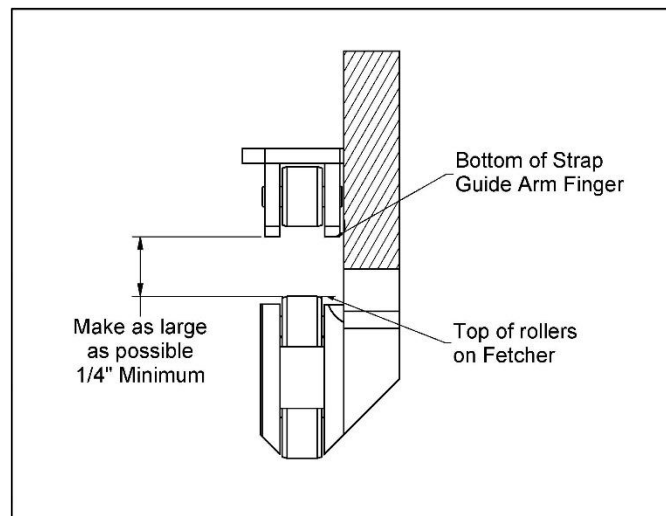
- 1) This check is easier if the vertical plunger is in the up position
- 2) Turn hydraulics off
- 3) Checking if in time
 - a) On the right side find the gear tooth that is the most engaged into the rack
 - i) Mark the valley of the rack at this position
 - ii) Counting down from the top of the rack, count how many valleys to the marked valley. Record this number
 - b) Repeat the above step to the left side
 - c) If left and right numbers are exactly the same
 - i) Then Vertical Plunger is in time (acceptable)
 - d) If difference between left and right is less than 1 tooth
 - i) Then verify keys are tight, no further adjustment can be made (acceptable)
 - e) If difference between left and right is 1 tooth or greater
 - i) Then Vertical Plunger is out of time (unacceptable)
 - (1) Then it can damage the gear and rack
 - (2) Prevent strap guide arms from going to top position
- 4) If Vertical Plunger is out of time
 - a) Create gap between Wear Discs and Nickel Plated Rail by loosening the 12 Point Bolts with the EZ-Lock Wrenches.
 - i) See Bale Band-It Parts Section 165 pages 1-4
 - ii) This allows the gear to disengage from the rack to get back in time
 - b) Move either the lower gear up or the higher gear down until the left and right sides are “in time”
 - c) Tighten the 12 Point Bolts, removing the slack.
 - d) Recheck Vertical Plunger timing
 - e) If Vertical Plunger timing is correct, then adjust the Vertical Plunger Wear Discs as outlined in the Weekly Maintenance section of the manual.
- 5) Things that can cause Vertical Plunger to come out of time
 - a) Wear Discs not adjusted soon enough and therefore wear allowed gear to separate from rack.
 - b) Extreme impact in conjunction with wear on Wear Discs.

MOP-010 Check Strap Guide Arm / Fetcher Height Relationship

Wear on the Strap Guide Arms can cause Fetchers to hit Strap Guide Arms and stop operation. Follow the instructions to check proper Strap Guide Arm height:

If you use the *iBand-It app* as a monitor, move the strap guide arms to the top position in the controls page of the app by selecting “Maintenance Mode” to “On”

- 1) Get the machine to bale 21. (With or Without Bales!)
- 2) Once the machine is at bale 21, the machine will bring the strap guide arms up to bale position 0 and stop.
- 3) Verify on the home screen that a Maintenance Mode icon is present and flashing
- 4) Disengage hydraulics and unplug main power cord from unit.
- 5) Reconnect the main power cord and engage hydraulics.
- 6) Inside the banding box, verify the location of the strap guide arms to the fetcher. See diagram below.
- 7) Once measurements and location are verified, plug the main power cord back in, and engage hydraulics. On the home screen press the maintenance mode icon to deactivate maintenance mode so that the machine will cycle through Fetcher extend, Fetcher Slides retracted



- 8) What is the distance between the top of the rollers on the Fetcher and the bottom of the Strap Guide Arm finger?
 - a) If distance is less than 1/4" (6.35mm)
 - i) Then failure can easily occur.
 - ii) To raise Strap Guide Arm up, adjust top setscrew in by turning clockwise.
 - iii) It is possible to tighten top setscrew too much. Refer to Strap Guide Arm Wear Discs in Monthly Maintenance to verify you have a minimum of 1/8" (3.2mm) 'up and down slack' in the correct position.
 - b) If distance is 1/4" (6.35mm) or greater
 - i) Then failure will not occur
 - (1) You may skip to "Finishing the cycle"
 - (2) If you want the best possible clearance
 - (a) Then the gap between the Finger and the Fetcher needs to be maximized. Refer to Strap Guide Arm Wear Discs in Monthly Maintenance to properly adjust the Wear Discs.

- 9) Finishing the cycle
 - a) Plug DIN Connector #8 back on. This will cause the Fetcher Slide Cylinders to retract.
 - b) If you have the app move strap guide arms back to the Proper bale position and you are done
 - c) Turn off hydraulics
 - d) Open the Front Relay Box and reconnect small brown wire onto Input #1.
 - e) When you apply hydraulics
 - i) Fetcher Slide Cylinders will extend, sliding under the Strap Guide Arm Fingers.
 - ii) Fetcher Cylinders will retract, bringing the strapping back to the home position.
 - iii) The rest of the tie cycle will continue and complete.
 - iv) Make sure all connections that were loosened for this test are secured back.

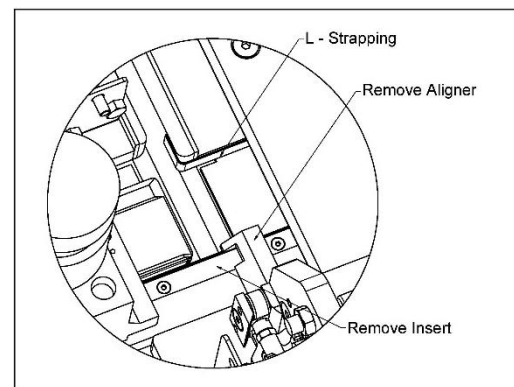
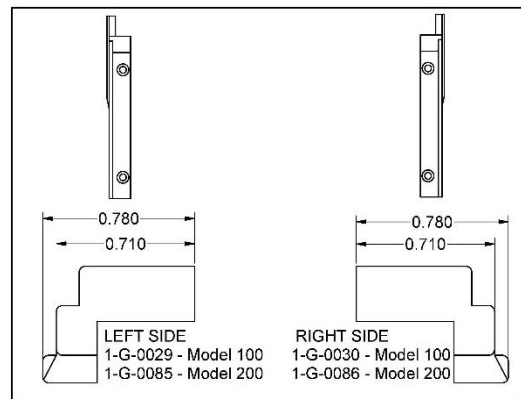
MOP-011 Zinc insert wear check

Refer to Bale Band-It Parts Section 115 pages 4 and 5 for 1-G-0085 & 1-G-0086

- 1) Get machine in bale position 00
- 2) Turn hydraulic and electric power on so machine is "Live"
- 3) Release red handle and remove strapping from gripper on side you want to test.
- 4) Use toggle switch if necessary to make Banders be in up position

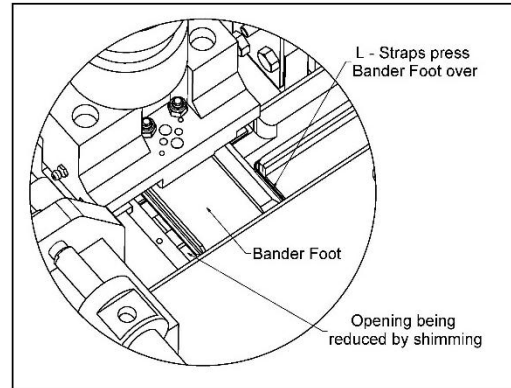
Refer to Operator's Manual page 23 (Inside Banding Box Manifold)

- 5) Unplug DIN connectors # 2, 3
- 6) Using a portion of strapping 6" long, position strap vertically in line with the slot of the tongue and groove insert
- 7) Plug DIN connector # 3 onto the # 2 location
 - a) This causes the mid band cylinders to extend, pushing the vertical strapping into the tongue and groove insert
- 8) Grab strap firmly and pull upwards
 - a) If strapping pulls through, then failure has occurred.
 - i) Remove insert on side of failure.
 - (1) Plug DIN connector # 3 back onto its original location. This retracts the mid band cylinder.
 - (2) Remove 2 flat head socket cap screws
 - (3) Slide insert towards outside of machine
 - ii) Measure insert and compare to nominal dimensions in drawing.
 - iii) If your part is smaller than nominal dim then insert is worn.
 - (1) Replace insert
 - iv) If your part is same as nominal dim then the lower Bander foot has spread.
 - (1) Leave insert out until specifically instructed to reinstall.
 - (2) Remove DIN connector #7
 - (3) Manually shift the #6 side of the fetcher valve causing the fetchers to extend.



- (4) Extend forward enough to access Aligner hardware.
- (5) Remove Aligner
- (6) Manually shift the #7 side of the fetcher valve causing the fetchers to fully retract.
- (7) Plug DIN connector #7 back on.
- (8) Take piece of strapping and bend a 90° “L” on one end.
- (9) Place strap in position as shown in the picture.

- (10) Plug DIN connector # 3 onto the # 2 location, extending the mid band cylinders.
- (11) Plug DIN connector # 4 onto the # 5 location, extending the full band cylinders.
- (12) This extending motion with the L-Strapping working as a shim, presses bander foot over and reduces the opening.

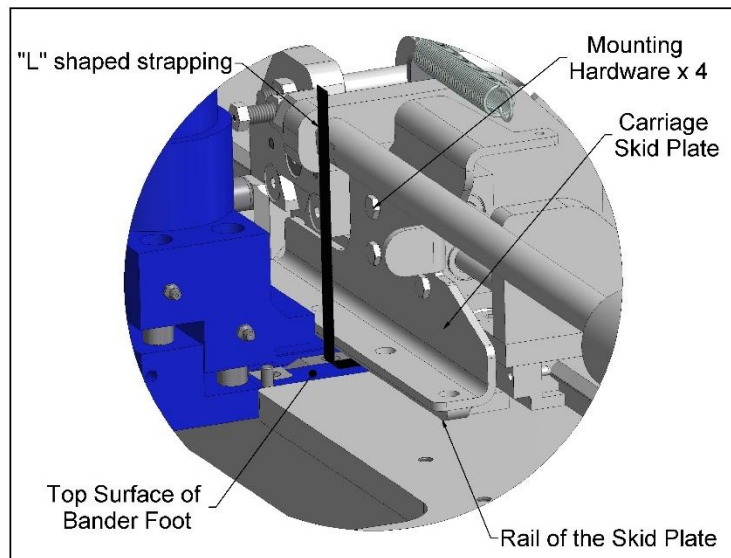


- (13) Retract cylinders, install insert, and test if strapping will pull through insert.
 - (14) If strapping pulls through then Bander foot is still spread. Remove insert and repeat procedure by adding an additional L-Strap thickness.
 - (15) It may take several L-Strap thicknesses in order to decrease opening to proper width.
 - (16) Remember when you are using the L-Strap to reduce the opening, the insert must be removed.
 - (17) When Bander foot is no longer spread, then reassemble and get all cylinders in the home position.
 - (18) Install Insert.
 - (19) Retract Mid and Full Band cylinders.
 - (20) Shift fetchers forward.
 - (21) Install aligner.
 - (22) Retract fetchers to home position.
 - v) If strapping does not pull through, then insert is not worn
 - (1) Replacement not needed
 - b) Getting machine back to original position
 - i) Plug and secure DIN connector # 2 and 3 back onto their original locations
 - ii) Remove vertical strapping
 - iii) Place strapping back in gripper
 - iv) Engage red handle
- 9) Complete

MOP-012 Clearance check under Carriage Skid Plate

If the Carriage Skid Plate is too low with respect to the Bander Foot, then it can pinch the strap and pull it rearward when the fetcher cylinder retracts, causing a miss tie. The following steps you through how to check this dimension.

- 1) Using an 8" long piece of strap, take 2" from the end and bend 90 degrees, making strap into an "L" shape.
- 2) This procedure should not be done during a tie cycle.
- 3) Manually shifting carriage over bander foot.
 - a) Turn hydraulic and electric power on.
 - b) See Operators Manual page 23 "Inside Banding Box Manifold".
 - c) Unplug DIN Connector # 7 (Fetcher Retracted).
 - d) Manually shift the Fetcher directional valve on the Extended (#6) side.
 - i) As you shift valve, one side will go faster than the other (that's normal).
 - ii) When the front part of the Carriage Skid Plate passes over the Top Surface of Bander Foot, stop shifting valve.



- 4) Check
 - a) Place short leg of "L" strapping on top of the Bander Foot and slide under the Rail of the Skid Plate.
 - b) Move strapping back and forth under this rail.
 - i) If strapping will not go under rail or strapping is tight (pinched).
 - (1) Then this Carriage Skid Plate fails the Clearance Check.
 - (2) The following steps will properly set the proper clearance:
 - (a) Loosen the Carriage Skid Plate's mounting hardware.
 - (b) Place 2 thicknesses of strapping (0.040") under both the leading and trailing ends of the Rail of the Skid Plate. You may have to pick up on the Carriage Skid Plate to do this.
 - (c) Tighten the mounting hardware in place.
 - (d) Remove the strapping that was just used to shim the Carriage Skid Plate.
 - (e) Check that the short leg of the "L" strapping has clearance for the whole length of the Carriage Skid Plate.
 - ii) If strapping does slide under rail and is not being pinched.

- (1) Then this portion of the Skid Plate passes the Clearance Check.
 - (2) Continue shifting the valve and continue checking this clearance for the whole length of the Carriage Skid Plate.
- 5) Getting back in position
- a) Manually shift Fetcher directional valve on the Retracted (#7) side, until Fetchers are fully retracted.
 - b) Plug DIN Connector # 7 back on its coil and tighten.
 - c) If strapping was release during this procedure, then pull slack in strapping and place strapping back in gripper as normally threaded.

MOP-013 Cycle Vertical Plunger Up and Down

This procedure is helpful to verify everything is working properly, throughout the vertical plunger's up and down cycle.

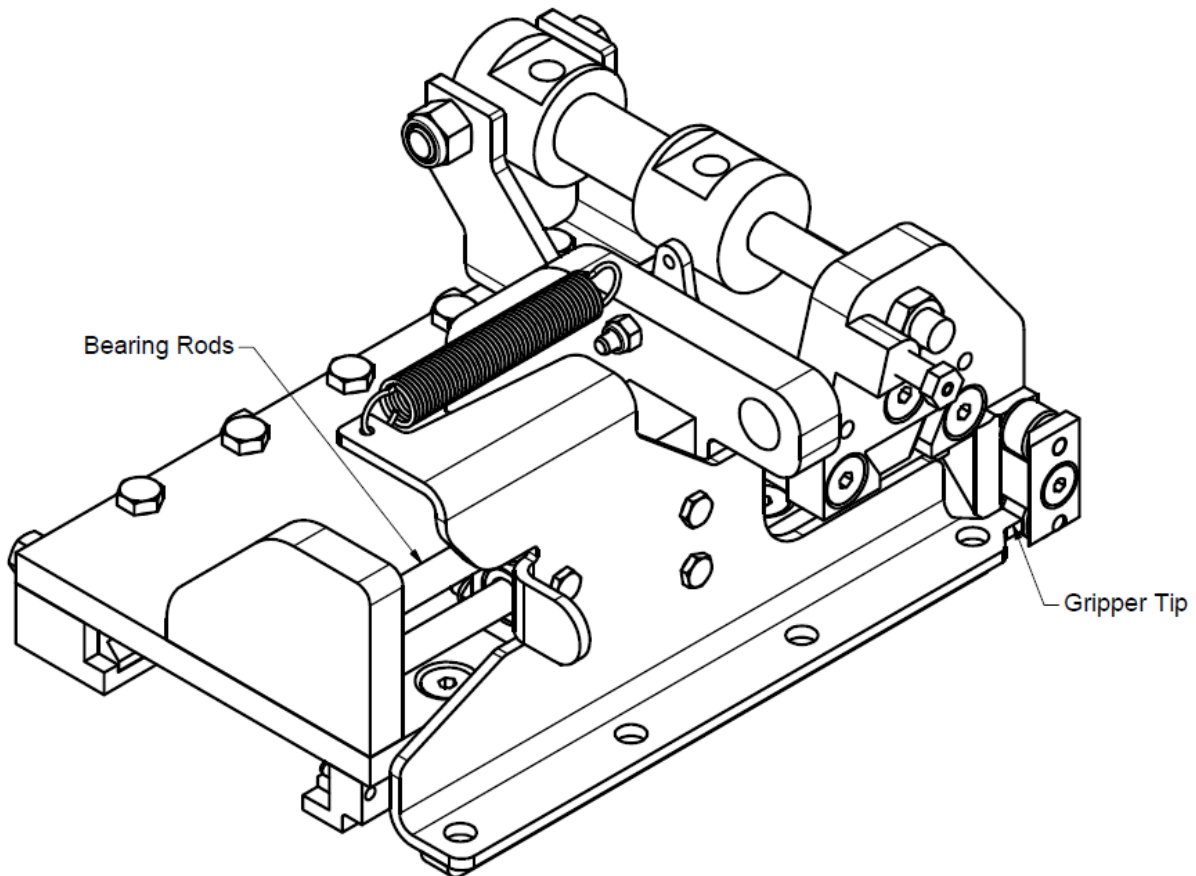
- 1) If Strap Guide Arms are in top position, they must be lowered
 - a) Refer to Operator's Manual page 22 (Front Manifold Layout)
 - b) Turn hydraulics and electric on so machine is live.
 - c) Manually shift front side (#5) of strap guide arm directional valve.
 - i) Continue to shift until arms go to floor
- 2) Vertical swing cylinder must be retracted (closed).
 - a) Refer to Operator's Manual page 22 (Front Manifold Layout).
 - b) Unscrew and unplug electrical connection labeled (2) Vertical Swing.
 - c) With machine live this will cause vertical swing to close.
- 3) Turn E-stop button off.
- 4) Manually shift front side of Vertical Plunger directional valve (3) and weight of vertical plunger will cause plunger to lower while you are shifting.
- 5) Pull out on E-stop button (turning on).
- 6) Vertical plunger will be powered back to the top.
- 7) Repeat lowering and raising vertical plunger multiple times.
- 8) Turn hydraulic power off.
- 9) Inspect
 - a) Gear and rack for interference, misalignment, etc.
 - b) Clearance is adequate for no contact between objects.
- 10) Getting machine back to original position (if applicable).
 - a) Plug and screw electrical connection labeled (2) Vertical Swing.
 - b) Turn hydraulics and electric on so machine is live.
 - c) Manually shift back side (#6) of strap guide arm directional valve.
 - i) Continue to shift until arms return to top position.
- 11) Complete

MOP-014 *Gripper Tip Bent Up*

The gripper tip on the carriage skid plate should be aligned with the center of the lower fetcher roller. In some circumstances the tip can become bent up, not allowing it to grip the strapping properly. If the tip is found to be bent it needs to be straightened. It is suggested that the gripper plate be removed from the machine for straightening, and that the bottom surface of the rail be checked for smoothness while it is removed from the machine.

Disassembly:

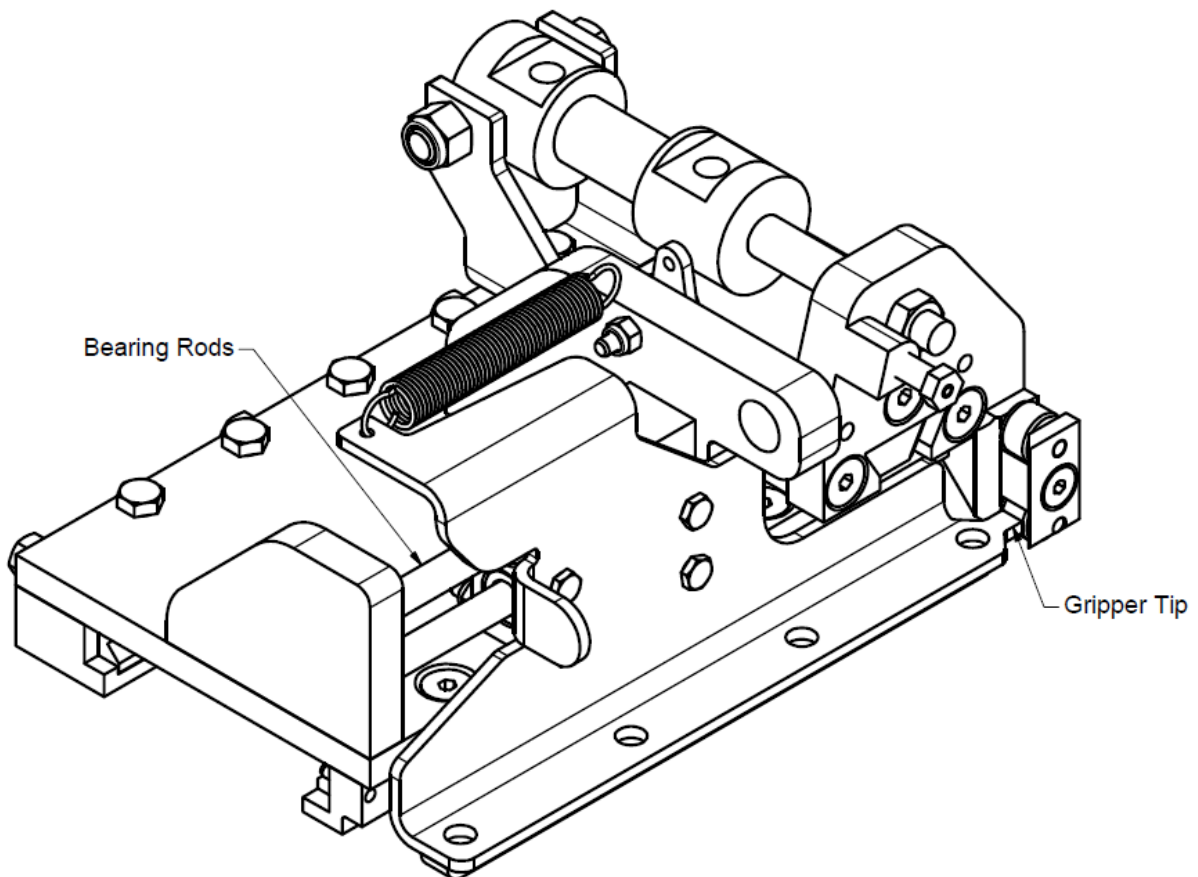
- 1) Remove spring (Item # 22)
- 2) Remove bolts (Item # 29)
- 3) Remove Plate (Item # 15)
- 4) Straighten the tip of the gripper
- 5) Inspect bottom side of plates, specifically looking at the bottom side of rail that's welded to plate
 - If rough then clean / sand until surface is smooth
- 6) Reassemble



MOP-015 Gripper Stuck Open

Determine if gripper is stuck open:

- 1) Release red handle
- 2) Pull gripper back by hand until it stops pulling back and release gripper quickly
- 3) If spring does not return gripper back against strap quickly and with force, then gripper is sticking open
 - a) Lubricate and remove any debris from the bearing rods.
 - b) Check for bent parts catching on things.
- 4) If spring returns gripper back against strap quickly and with force, then gripper is working properly. Nothing additional is needed.

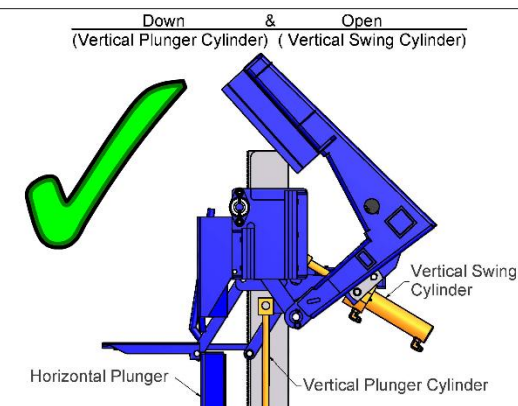
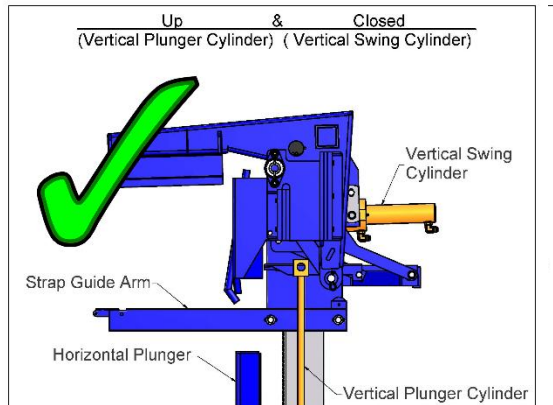


Why does the Power Up Problem exist?

Ans: When hydraulic pressure is removed from the Band-It, the hydraulic cylinders are allowed to seep to the easiest path.

Which situations cause the Power Up Problem?

Ans: The following illustrations give the four possible situations that the vertical plunger and vertical swing cylinders can be in. Notice only the “Down & Closed” situation causes a problem.



 : Apply hydraulic power. Band-It is safe to power up.



: Band-It is not safe to power up. Follow procedure:

1. Remove DIN #2 from vertical swing cylinder directional valve
 - a. (Refer to Operator's Manual page 22)
2. Apply hydraulics
3. Allow vertical plunger time to go to the top "Up" position
4. Plug DIN #2 back on coil
 - b. This will cause the vertical swing cylinder to "Open"
5. Band-It is ready for next bale

Why is this a problem?

Ans: The normal position the computer leaves the vertical plunger in is "Up and Open". If this position changes without the computer's knowledge, then there is no way for the computer to compensate. When hydraulics are turned on, the computer will maintain its "Up and Open"

position, causing the vertical swing to open in the down position before the vertical plunger has time to raise. This will then bend the swing plate against the horizontal plunger, and cause the top portion of the vertical plunger to hit the back of the chrome rail.

How can I prevent from getting in this situation again?

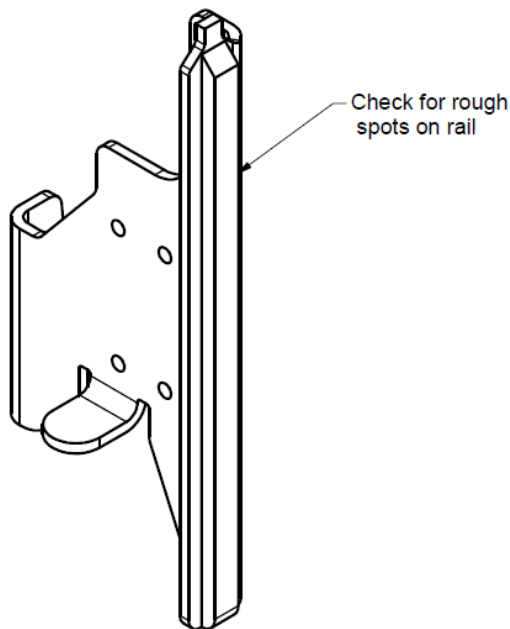
Ans: If the strap guide arms are all the way up and in bale position 0, then the vertical plunger cylinder is unable to seep into the down position. If the vertical plunger does not seep down, the vertical swing position is unimportant. Therefore you would have to stop the machine on bale positions 0, 3, 6, 9, 12, 15, or 18. Starting up at the beginning of the year this is easily prevented by following *Shutdown procedure – End of Year* in the Yearly Maintenance section. However, throughout a day of baling, if you shut things down, then there will be times when you must be aware of the position of the machine before applying hydraulics.

MOP-017 Rough Surface on Carriage Skid Plate

Refer to Section 115 Page 13 and 14.

In order to inspect these plates some disassembly is required

- 7) Remove spring (Item # 22)
- 8) Remove bolts (Item # 29)
- 9) Remove plate (Item # 15)
- 10) Inspect bottom side of plates, specifically looking at the bottom side of the rail that's welded to plate
 - If rough then clean / sand until surface is smooth
- 11) Reassemble



This procedure allows one to remove an electrical connection, go back to baling, and when it gets to the tie cycle the machine will stop accepting bales in the front, alerting you that it is ready for a tie cycle. By plugging and unplugging connectors, you can then cycle through the tie cycle, inspecting things at 3 different stages.

Note: If you are trying to determine the exact height relationship between the strap guide arms and fetchers, then this is not the best procedure to use. Use MOP-010 “Check Strap Guide Arm / Fetcher Height Relationship”. This is due to once the fetcher swings have tripped the sensor telling the machine that the fetcher is ready to retract and bring the strapping back, the strap guide arm motor is turned off, allowing the strap guides to sag down in the box.

- 1) Anywhere from Bale 00 to Bale 20, remove DIN connector #6 (fetcher extended) from the Inside Banding Box Manifold located on page 23 of the Operator’s Manual.
- 2) Add bales until you are on Bale 21
- 3) Let the machine cycle through until it stops on its own.
- 4) Remove DIN connector #7 (fetcher retracted) from the Inside Banding Box Manifold located on page 23 of the Operator’s Manual.
- 5) Inspect that
 - a) Strapping is still being held in the gripper and has not pulled short of the zinc plated insert.
 - i) If strapping has moved then refer to “Has the end of the strap moved?” in ST-001, step 3), c)
 - b) Strapping feeds off fetcher and directly down into trough.
 - c) Mid band cylinder is stroked out, wedging the strapping in the tongue and groove insert and bringing the banders over to mid position.
- 6) As soon as you complete this step
 - a) the fetchers are going to extend, releasing the strap held in the grippers down onto the bander foot and down into the trough.
 - b) Once the fetchers go full stroke, the small fetcher swing cylinders will also stroke out, rotating the fetchers out of the way.
 - c) The strap guide arms will then come up into the banding box, bringing new strapping with it.
 - d) The fetcher swing cylinder will then retract, swinging the fetcher under the strap guide arm finger.
 - e) The machine will then stop, because you have # 7 DIN (fetcher retracted) unplugged.
 - f) Plug DIN connector #6 (fetcher extended) back onto its coil to start this process.
 - g) Now that this has happened, inspect the following
 - i) Strapping is laid over bander foot, down into the trough and under the carriage.
 - (1) Is strap highly arched over bander foot? Look at picture to see normal.
 - (a) If Yes, then one of the following is happening
 - (i) Strapping material is exhibiting High Tensile properties
 - (ii) See MOP-Back gates are stroking out after compression
 - (iii) See MOP-Zinc insert wear check
 - (2) Is strapping no longer being held down under the skid plate?
 - (a) If Yes, then the strap has been pulled short one of the following ways.
 - (i) Gripper not holding strapping adequately. Refer to “Has the end of the strap moved?” in ST-001, step 3), c)
 - (ii) Back gates are stroking out after compression
 - (iii) The zinc insert may be worn out. See MOP-011 “Zinc insert wear check”

- (3) When strap was laid down, was it bent such that the strap is now rough or wants to turn and twist?
 - (a) Strapping material is exhibiting high tensile properties
 - (b) See MOP-007 “Check Bander Aligner 1-G-0027, 1-G-0028”
 - (c) Check Fetcher Swing Cylinder Adjustment
 - (4) If there are pieces of strapping laying where carriage normally covers up then refer to “Is there an extra 4”-6” piece of strap in the band box?” in ST-001, step 1), a).
 - ii) Fetcher swing cylinders have retracted, inline to grab the strap from the strap guide arms, and fetchers are ready to retract.
 - (1) Are the fetcher swing cylinders fully retracted?
 - (a) If the cylinders are fully extended, then
 - (i) Refer to MOP-024 “Why my cylinder (hydraulic function) isn’t moving”
 - (b) If the cylinders are partially retracted, then there is a mechanical stall out, and something is physically preventing the fetchers from moving into place.
 - (i) If fetchers hitting side of strap guide arms, then, refer to MOP-010 “Check Strap Guide Arm / Fetcher Height Relationship”
 - (c) If Yes, the cylinders are fully retracted then, go to next step
 - (2) Make sure the strapping is in line with the rollers on the fetcher. If necessary, adjust the strap guide arm side-to-side position by adding spacer washers between the strap guide arms and strap guide arm bases.
 - (3) Verify that the strap guide arm rollers protrude into the box approximately ¼” past the fetcher rollers
 - iii) If all items pass inspection then go to next step
- 7) As soon as you complete this step
 - a) the fetchers are going to retract
 - i) pulling the strapping from the strap guide arms and
 - ii) supplying the top strap of the seal and overlapping the bottom strap.
 - iii) The bottom strap should stay under the skid plate while the fetchers retract.
 - b) The full band cylinders will then extend, centering the dies with the strapping
 - c) The bander cylinder will then retract, both cutting and crimping the strap all in one stroke.
 - d) The bander cylinder will then extend, opening up and releasing the strap
 - e) The full band and mid band cylinders will then retract, releasing the strapping into the trough.
 - f) The back gates will open, allowing hay to expand, which then tightens and locks the strap.
 - g) Plug DIN connector #7 (fetcher retracted) back onto its coil to start this process.
 - h) Did strap get cut, seal, and stay sealed as it was pulled down into trough?
 - i) Yes it tied bundle properly. If failure you are experiencing is sporadic and this test did not expose problem then repeat process.

MOP-019 Strap Guide Arm Finger caught in opening of band box

This typically can only happen in non-automatic mode when the strap guide arms go to top position with strapping threaded through finger. Reset bundle or manually shifting the arms up can both do this.

- 1) Manually shift arms down
 - a) Refer to Operator's Manual page 22, Front Manifold Layout
 - b) Unplug DIN connector #6 (Strap Guide Arms Up)
 - c) Manually shift the front side of the Strap Guide Arm valve (#5) to make arms go down only a few inches to release
- 2) Back spin the white strapping drums to remove all strapping slack
 - a) This will cause the strapping fingers to fall down
- 3) Shift arms back up
 - a) Plug DIN connector #6 (Strap Guide Arms Up) back on
 - b) Strap guide arms will then go to top position without catching
 - i) If arms do not go to top on their own, then manually shift the back side of the Strap Guide Arm valve (#6) to make arms go up
- 4) Complete

MOP-020 Strap guide arms are stalled out

The Strap Guide Arms are geared to be quick with low power. If arms are stalled out, then release the arms to finish their function. Typically, nothing is damaged nor has to be replaced.

If you use the *iBand-It app* as a monitor, move the strap guide arms to the top position in the controls page instead of using the DIN connectors as described below.

Direction of travel

- 1) Strap Guide Arms are going up
 - Refer to the following with the items at the top being the most likely
 - a) Strapping
 - i) Pull strapping off white drums, so that there is slack at the large horizontal plunger rollers
 - ii) Verify strapping is not twisted or caught
 - iii) Apply hydraulics and if arms finish going up then this is the problem
 - (1) Refer to MOP-021 "Strap Pull Test" to resolve problem
 - b) Chunk of hay / straw hitting the end of the strap guide arm
 - i) Refer to Operator's Manual page 22, Front Manifold Layout
 - ii) Unplug DIN connector #6 (Strap Guide Arms Up)
 - iii) Manually shift the front side of the Strap Guide Arm valve (#5) to make arms go down enough to get away from chunk of hay / straw
 - iv) Remove chunk of hay / straw
 - v) Plug DIN connector #6 (Strap Guide Arms Up) back on
 - (1) Arms will finish cycle
 - c) Loose strap guide arm chain can cause chain to ball up around horseshoe plastic (Item #5 – 1-M-0151) Refer to Bale Band-It Parts Section 150 Page 6
 - i) Refer to Operator's Manual page 22, Front Manifold Layout
 - ii) Unplug DIN connector #6 (Strap Guide Arms Up)

- iii) Manually shift the front side of the Strap Guide Arm valve (#5) to make arms go down enough to release chain
 - iv) Tighten chain as per Strap Guide Arm Chains in the “Break in Period” of the Lube and Maintenance section
- 2) Strap Guide Arms are going down
 - a) Hay from previous stack of 3 has grown from main chamber into stacking chamber
 - i) Open side doors of stacking chamber to see if this is the problem
 - ii) If the long vertical plunger cylinder is fully retracted then proceed to next step
 - iii) Close side doors
 - iv) Manual green button labeled Horizontal Plunger is a momentary button
 - (1) When you depress the Horizontal Plunger will extend
 - (2) When you release the Horizontal Plunger will retract
 - (3) Press and hold green button very briefly, then release
 - (4) Continue to do this each time holding the green button a little longer each time
 - (5) Once the hay on the arms has pushed the bale back enough to release the arms, then the vertical plunger will go to the top and reset.
 - (a) At this point the machine is ready to accept more bales.
 - (b) The following items will cause this failure to occur
 - (i) Bale length of 44” and greater causes significant side drag
 - 1. Reduce bale length to maximum 42”
 - (ii) Back gates closed on bundle
 - 1. Stationary baling requires bundle to be removed on bale 12
 - b) Hay chaff buildup under strap guide arms (Operation Code 15)
 - i) Turn hydraulics off at the tractor remote. Turn tractor hydraulic remote back on in effort to surge the system. If the machine finishes its cycle then turn hydraulics back off once the strap guide arms get to the top and clean out the hay chaff buildup. If surging the hydraulics does not cycle the machine then follow remaining steps.
 - ii) Refer to Operator’s Manual page 22, Front Manifold Layout
 - iii) Unplug DIN connector #3 (Vertical Plunger Down)
 - iv) Unplug DIN connector #5 (Strap Guide Arms Down)
 - v) Manually shift the back side of the Strap Guide Arm valve (#6) to make arms go up enough to release the hay chaff.
 - vi) Turn hydraulics off, and remove chaff buildup
 - vii) Plug DIN connectors #3 & #5 back on their respective locations.
 - viii) Apply hydraulics.
 - c) Loose strap guide arm chain can cause chain to ball up around horseshoe plastic (Item #5 – 1-M-0151) Refer to Bale Band-It Parts Section 150 Page 6
 - i) Refer to Operator’s Manual page 22, Front Manifold Layout
 - ii) Unplug DIN connector #5 (Strap Guide Arms Down)
 - iii) Manually shift the back side of the Strap Guide Arm valve (#6) to make arms go up enough to release chain
 - iv) Tighten chain as per Strap Guide Arm Chains in the “Break in Period” of the Lube and Maintenance section
- 3) Can affect Strap Guide Arms going up or down
 - a) Cause: Excessive moisture
 - i) Refer to Bale Band-It Parts Section 150 Page 1
 - ii) If the Strap Guide Arm plastic slides (items #1, 2, and 3) have received significant moisture then they will swell, changing their dimensions and pinching the chrome rail.

- iii) Spray the slides with a penetrating fluid liberally
- iv) The more the up and down cycles the strap guide arms go through the better they will perform, and in a few minutes, you should be able to operate normally
- b) Cause: Lubrication on the chrome rail
 - i) During operation the chrome rail should NOT be lubricated, because the slides are self-lubricating
 - ii) If lubricated, the lubrication will buildup and stall out the strap guide arms
 - iii) Spray the wear strips with a penetrating fluid liberally
 - iv) The more the arms cycle the better it will perform, and in a few minutes, you should be able to operate normal

MOP-021 *Strap Pull Test*

This procedure determines if the strapping is pulling too hard from front of the Band-It. It also goes through the many items that can affect how hard the strap pulls off the front drums.

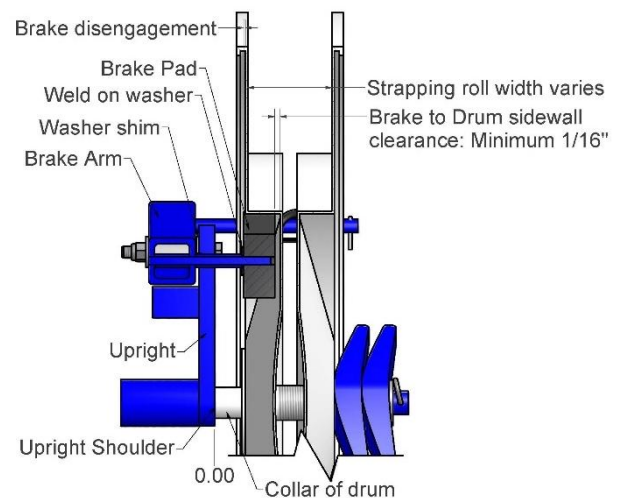
- 1) Stop the machine when the strap guide arms are in the top position. This can be on bale 0, 3, 6, 9, 12, 15, or 18.
- 2) Open the banding box lid
- 3) Grab strapping from the end of the strap guide arm finger and begin pulling strapping off front dispenser.
 - a. This may be difficult getting started if there is no slack in the strapping, preventing you from really getting a hold of it. If this is true then starting at the front of the machine work slack back to the end of the strap guide arm, so that you can put a good pull on it.
- 4) Once the pulling starts, make sure you pull out any slack that is in the system.
- 5) Need to verify that you are able to pull strapping from the end of the strap guide arm all the way through the system and to make the white drums turn and release the strapping.
 - b. If strapping pulls off front dispensers with a light to medium pull, then your machine passed the Strap Pull Test. You can skip all remaining steps.
 - c. If it is not possible or it is very hard to pull strapping off the front dispensers, then check the following: realizing that the easier you can get the strap to pull the better.
 - i. Verify that all threading matches the Threading Instructions
 1. While you are inspecting the location of the strap, notice how the strap comes in contact with the rollers, bearings, steel surfaces, etc. Look for bearings seized up, grooves in metal that could catch strap, buildup in openings, and damaged areas.
 - ii. Check *MOP-022 Strapping Drum adjustments – Drum tight (Strapping tight)*
 - iii. Recheck the force of the Strap Pull Test.

Note: The strap will pull harder if it is being beveled while you are pulling. If you back spin the drum and re-pull the same strap, you will be pulling pre-beveled strap and it should be easier to pull. There will be a difference between new strap never been beveled and pre-beveled strap.

 1. If the difference is extremely significant, then you may have
 - a. High tensile strapping
 - i. Remove upper bevel roller
 - ii. Recommend sourcing regular duty strapping from one of Pike Mfg. Corp's preferred suppliers.
 - b. Non standard size
 - i. Wider than ½" or thicker than 0.020"
 1. Replace with correct size strapping

MOP-022 Strapping Drum adjustments – Drum tight (Strapping tight)

- a) Pick up on brake arm, releasing the brake, and spin the white drum
 - a. If it spins freely, such that it makes a couple revolutions before stopping then skip the next step. This is not the problem.
 - b. If it stops spinning shortly after turning, then inspect the following
 - i. To improve drum to shaft interface
 - 2. Release clip pin and slide white drum off its shaft
 - a. May need to apply some slack in strapping (or unhook strapping completely) to do this
 - 3. Using a flap disc grinder wheel, remove all rust, paint, and rough places, but do not remove material from the shaft itself.
 - 4. Apply anti-seize liberally to shaft
 - 5. Place drum back on shaft & check how freely drum spins
 - 6. Repeat with other drum
- b) To check brake pad interface - Refer to figure below
 - a. Brake pad should press up against weld on washer of brake arm. If it doesn't check to see if there is a hole all the way through brake pad.
 - b. If brake pad is wore, then the weld on washer can contact strapping drum and cause excessive drag.
 - c. Tighten bolt that brake arm pivots about, so there is no side to side play
 - i. Check that brake arm pivots freely after being tightened
 - ii. If arm seizes up, then check that collar length is sufficient that washers are not binding on sides of brake arm.
 - d. Brake arm adjustment
 - i. Press and hold collar of drum tight against upright shoulder
 - ii. While holding this tight, check the brake to drum sidewall clearance.
 - 1. If the brake touches the sidewall then add washer shim(s) between brake arm and upright. This will space the brake arm away from the drum, giving you more sidewall clearance.
 - 2. If side wall clearance is excessive then you will start to see more brake disengagement. Keep brake disengagement to a minimum.
 - 3. It is best to use the same strapping drum on the same side of the machine. There will be some variance in one drum to the next, and therefore your adjustment may be different using one drum versus the other.
- c) Wingnut, washer, cotter pin adjustment
 - i. When collar of drum is tight against upright shoulder then there can be excessive slack between the cotter pin and the wingnuts.
 - 1. If this slack is not taken out then brake disengagement will increase
 - 2. Add a combination of spacers or washers to keep collar of drum fairly tight against upright shoulder.
 - 3. This may have to be changed a little each time strapping is changed, due to the strapping rolls varying in width.



4. It is best to use the same strapping drum on the same side of the machine. There will be some variance in one drum to the next, and therefore your adjustment may be different using one drum versus the other.
 - 5.
- d) Spring adjustment – Refer to Bale Band-It Parts Section 145 Page 1
- a. Adjust Spring (Item #6) so that the outermost points measure 7.5” when brake assembly is in relaxed state against drum (Item 1.2.2)
 - b. Spring pressure does not have to be excessive. Excessive spring pressure will greatly increase the amount of drag in the strapping.

General objectives:

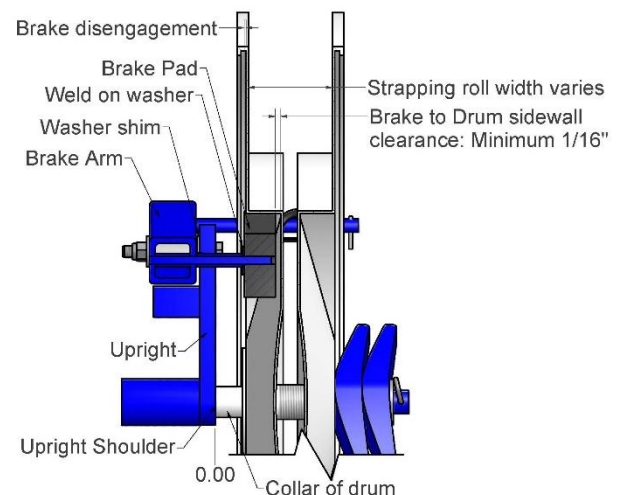
- The machine pulls strapping, the brake arm then raises releasing the brake and allows the strap to pull off drum.
 - o When brake arm is disengaged the drum should turn freely.
- The machine stops pulling strapping, the brake arm then drops engaging the brake and stopping the drum.
 - o When brake arm is engaged the drum should be difficult to turn

MOP-023 *Strapping Drum adjustments – Brakes not stopping*
(Strapping loose)

2. Brake pad maintenance
 - a. Over time brake pad can harden, decreasing its gripping potential.
 - i. Remove brake pad and soak in belt dressing, to increase its pliability.
 - b. Maintaining the condition of brake pad in the field
 - i. Apply 8” – 10” of pipe wrap tape (1-Y-0523) to drum
 1. Tape is 10 mil thick x 2” wide
 2. This keeps the chaff from accumulating on the brake pad, and conditions / cleans it while baling in the field.
 3. Reapply when you put on new rolls of strapping
 4. If other adjustments have been done and the brakes are still not stopping properly, then add more tape.



3. To check brake pad interface - Refer to figure below
 - a. Brake pad should press up against weld on washer of brake arm. If it doesn't check to see if there is a hole all the way through brake pad.
 - b. If brake pad is worn out, then the weld on washer can contact strapping drum and cause excessive drag.
 - c. Tighten bolt that brake arm pivots about, so there is no side to side play
 - iii. Check that brake arm pivots freely after being tightened
 - iv. If arm seizes up, then check that collar length is sufficient that washers are not binding on sides of brake arm.
 - d. Brake arm adjustment



- i. Press and hold collar of drum tight against upright shoulder
 - ii. While holding this tight, check the brake to drum sidewall clearance.
 - 1. If the brake touches the sidewall then add washer shim(s) between brake arm and upright. This will space the brake arm away from the drum, giving you more sidewall clearance.
 - 2. If side wall clearance is excessive then you will start to see more brake disengagement. Keep brake disengagement to a minimum.
 - 3. It is best to use the same strapping drum on the same side of the machine. There will be some variance in one drum to the next, and therefore your adjustment may be different using one drum versus the other.
4. Wingnut, washer, cotterpin adjustment
- i. When collar of drum is tight against upright shoulder then there can be excessive slack between the cotter pin and the wingnuts.
 - 1. If this slack is not taken out then brake disengagement will increase
 - 2. Add a combination of spacers or washers to keep collar of drum fairly tight against upright shoulder.
 - 3. This may have to be changed a little each time strapping is changed, due to the strapping rolls varying in width.
 - 4. It is best to use the same strapping drum on the same side of the machine. There will be some variance in one drum to the next, and therefore your adjustment may be different using one drum versus the other.
5. Spring adjustment – Refer to Bale Band-It Parts Section 145 Page 1
- a. Adjust the spring so that the outermost points measure 7.5” when brake assembly is in relaxed state against drum.
 - b. Spring pressure does not have to be excessive. Excessive spring pressure will greatly increase the amount of drag in the strapping.
 - c. With proper brake to drum interface and proper conditioning of brake surfaces, spring force can be low and still brake drum adequately.

General objectives:

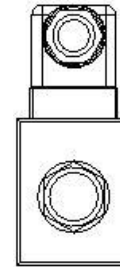
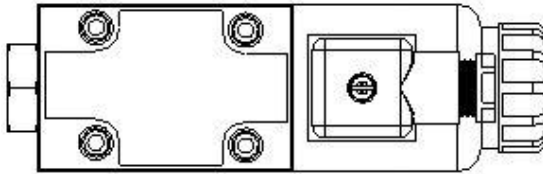
- The machine pulls strapping, the brake arm then raises releasing the brake and allows the strap to pull off drum.
 - o When brake arm is disengaged the drum should turn freely.
- The machine stops pulling strapping, the brake arm then drops engaging the brake and stopping the drum.
 - o When brake arm is engaged the drum should be difficult to turn

MOP-024 Why my cylinder (hydraulic function) isn't moving

If you have a cylinder that should either extend or retract but it is not doing so, then let's step through a series of checks to determine the problem. Note this can also work for the hydraulic motors as well.

**This is assuming that the operation code on the monitor is confirming that this cylinder should extend or retract. If the monitor is referring to another operation, follow the monitor and satisfy that operation and then the cylinder you think should move will probably follow suit.*

- 1) Locate your cylinder on Operator's Manual pages 22, 23, or 24.
 - a) These pages are the hydraulic manifold layouts.
 - b) They are a top down picture of what the hydraulic manifolds look like.
 - c) They tell you what each directional valve controls.
- 2) Determine if the directional valve that controls your circuit is a 2-position or a 3-position valve
 - a) 2 position directional valve

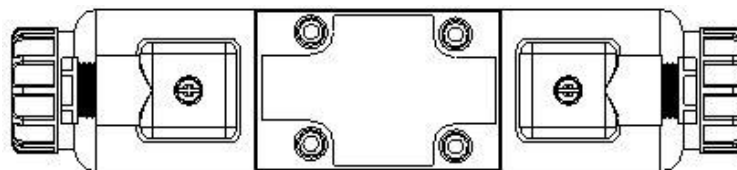


I. 2 - Position Sub

- i) Both valves above operate similarly
- ii) 2-position valves only have 1 electrical connection
- iii) There are only 2 positions (or states) that the hydraulic circuit can be in
 - (1) Energized state
 - (2) Non-Energized (spring) state
- iv) General rules of thumb
 - (1) If cylinder is hooked to 2-position circuit then that cylinder has hydraulic pressure on one side of the cylinder at all times. (Examples: kicker, vertical swing, vertical plunger)
 - (2) If motor is hooked up to 2-position circuit then the valve acts like a on off switch. Either has hydraulic pressure to motor or does not. (Example: Horizontal Elevator)

II. 2 - Position Cartridge Valve

- b) 3 position directional valve



3 - Position Sub Mount Valve

- i) 3-position valves have 2 electrical connections
 - ii) There are 3 positions (or states) that the hydraulic circuit can be in
 - (1) Energized state (one end)
 - (2) Energized state (other end)
 - (3) Non-Energized (spring) state
 - (a) Neutral state
 - iii) This allows operations like the strap guide arms to go down part way (Energized state #5) until it reaches a sensor on the sensor, then stop mid position (Non-Energized state), and after its done with a cycle the motor can then take the arms up (Energized state #6).
- 3) If your circuit is a 2-Position circuit, then (referring to Operator's Manual pages 22, 23, or 24)
- a) Is the action needed to be performed indicated by the red arrow?
 - i) If Yes, then this is the energized state of the valve
 - (1) Check for magnetism on end of coil
 - (a) Yes magnetism

There are a few possible causes

- (i) Not adequate hydraulic pressure or return
- (ii) Valve is sticking
 - 1. With machine "live" manually shift end of valve, trying to free it up
 - 2. If this does not work, valve will have to be removed and cleaned
- (iii) Mechanical stall out is preventing cylinder from moving
 - 1. If this is true then cylinder would be partial-stroke.
- (b) No magnetism, then open electrical box

The number on the hydraulic manifold layout page corresponds to the output number, fuse location, and green LED on the relay board. (ie. #2 DIN connector corresponds to output #2, fuse location #2, and green LED #2.)

- (i) Is the corresponding green LED on?
 - If Yes, then
 - 1. Check fuse at that location
 - 2. Check wire going into green plug at that location
 - 3. Check DIN connector wire going to coil is not pinched
 - 4. Recommend using voltmeter and finding where you have 12 volts and where you don't
 - If No, then
 - 1. Computer does not want this function to operate like this, check that operation code corresponds to cylinder function. (Most likely)
 - 2. Problem on board or computer (Less likely)
- ii) If No, then this is the De-Energized state of the valve
 - (1) Verify hydraulic pressure and return
 - (a) Pick an unrelated 2-position circuit that will not affect current operation (i.e. kicker)
 - (b) If unrelated circuit is currently in energized state then unplug DIN connector to make cylinder go in de-energized state
 - (i) If cylinder did not function, then you do not have both hydraulic pressure and return
 - (ii) If cylinder did function, then plug DIN connector back on and skip to step 2
 - (c) If unrelated circuit is currently in de-energized state then manually shift valve to make cylinder go in energized state

- (i) If cylinder did not function, then you do not have both hydraulic pressure and return
 - (ii) If cylinder did function, then skip to step 2
- (2) Going back to the circuit you are having problem with
 - (a) Manually shift and release valve
 - (i) Repeat multiple times

Realizing this is making valve go wrong direction, purpose is to work it back and forth to free up valve so that the spring will be able to return it to the de-energized position
 - (b) If circuit is not moving at all, then
 - (i) Directional valve is stuck
 - (ii) Turn off hydraulics and electric, release any pressure by putting remote in float position
 - (iii) Clean directional valve or replace
 - (c) If circuit is trying to move back and forth then skip to next step
- (3) Mechanical stall out
 - (a) If the electric and hydraulic systems are working properly, it is still possible for bales or parts to be in the wrong location, preventing a cylinder or circuit from completing its step
 - (b) Turn hydraulics & electric off
 - (c) Inspect area of travel for items in the way for circuit to complete its step
 - (d) Remove or move items
 - (e) Turn hydraulics and electric on and circuit should complete its function

Bundle Troubleshooting

BT-001 Strapping is cutting twine on bales

There are multiple reasons this could be occurring:

- 1) The twine used is too weak. Use minimum of 170 pounds (756.2 N) knot strength twine.
- 2) Strapping not threaded correctly. See Bale Band-It Threading Instructions on page 13.
- 3) Back gate hydraulic valve adjustment is set too high.
 - a) Locate relief valve on Back Gate Manifold (Operator's Manual page 24). It is between the Bundle Tensioning Valve and the Back Gate directional valve. It has a threaded stem that can be adjusted with an Allen wrench and has a hex jam nut to lock it in position.
 - b) Decrease the pressure setting of relief valve by loosening the jam nut and using an Allen wrench to turn threaded stem counter-clockwise one full rotation. Then re-tighten the jam nut.
 - c) Make another bundle and see if the problem is resolved. If not, repeat step 2.
- 4) Check all areas for excess drag on strapping.

BT-002 Bundles are not tight

Perform the following steps:

- 1) Locate relief valve on Back Gate Manifold (Operator's Manual page 24). It is between the Bundle Tensioning Valve and the Back Gate directional valve. It has a threaded stem that can be adjusted with an Allen wrench and has a hex jam nut to lock it in position.
- 2) Increase the pressure setting of relief valve by loosening the jam nut and using an Allen wrench to turn threaded stem clockwise one full rotation. Then re-tighten the jam nut.
- 3) Make another bundle and see if it is sufficiently tight. If not, repeat step 2.



End of

Operator's Manual

Model 220

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