



5250P Pickup Model



5250T Trail Model

Bale Baron®

Owner and Operator's Manual

Model 5250T and 5250P

Bale Baron 5250 Owner and Operators Manual

Issued December 2019

English

Item# 841011

Safety

Think Safety! Work Safely!

Refer to the safety section starting on page 12 of this document before operating or servicing the Bale Baron®.

Contents

This manual contains information to operate and service the Bale Baron® 5250. Refer to this manual for proper operation, service, and maintenance procedures. Failure to do so could result in personal injury or damage to equipment. This manual covers only Bale Baron® 5250 model.

Operator Manual Storage

This operators manual is intended to be kept with the Bale Baron® at all times, stored inside the operator manual holder. Do not remove this manual from the Bale Baron®.

Warranty

It is important to register your new Bale Baron® with the factory by completing the Warranty Registration found on page 3 of this document. The Warranty Registration must be completed and submitted to Marcrest Manufacturing Inc. by mailing a completed copy to: **Marcrest Manufacturing Inc. 45415 Perth Line 86, Listowel Ontario CAN, N4W 3G6** or by emailing a copy to **info@marcrestmfg.com** or by faxing a copy to **1-519-291-9914**. The Warranty Registration must be completed and submitted to Marcrest Manufacturing Inc. in order for the Warranty to be valid.

WARRANTY REGISTRATION

Bale Baron® Registration of Warranty

MARCREST MANUFACTURING INC.

45415 Perth Line 86

Listowel Ontario, CA N4W 3G6

Phone: 1-519-887-9910

Fax: 1-519-291-9914

Email: info@marcrestmfg.com

MACHINE MODEL: _____
SERIAL NUMBER: _____
INVOICE NUMBER: _____
PURCHASE DATE: _____
TRACTOR MAKE/MODEL: _____
TRACTOR HYDRAULIC FLOW - GPM or L/Min: _____

PURCHASER INFORMATION

NAME: _____ FARM/BUSINESS NAME: _____
ADDRESS: _____
CITY _____ STATE/PROVINCE _____ POSTAL/ZIP CODE _____
COUNTRY _____ PHONE NUMBER _____ EMAIL ADDRESS _____

DEALER INFORMATION

NAME: _____
ADDRESS: _____
CITY _____ STATE/PROVINCE _____ POSTAL/ZIP CODE _____
COUNTRY _____ PHONE NUMBER _____ EMAIL ADDRESS _____

DEALER

This machine was properly set up, adjusted and inspected before delivery in accordance with the pre-delivery checklist and/or the assembly instructions supplied with the machine.

The following items were explained to the purchaser:

1. How to operate the machine properly, as shown in the operator's manual.
2. The importance of safety precautions, safety equipment and preventative maintenance.
3. The applications and conditions of Marcrest Manufacturing Inc.'s limited warranty.

PRINT NAME: _____ SIGNATURE: _____
DATE: _____

PURCHASER

I have received and reviewed the Operator's Manual for the above machine and understand its proper and safe operation as well as the applicable limited warranty conditions outlined in my Operator's Manual. The machine was delivered to me in satisfactory condition.

PRINT NAME: _____ SIGNATURE: _____
DATE: _____

DEALER TO MAKE COPIES OF THIS DOCUMENT, RETAIN ONE FOR THEIR OWN RECORDS AND
SUBMIT ONE TO MARCREST MANUFACTURING INC.
THIS WARRANTY REGISTRATION FORM MUST BE RETURNED TO MARCREST MANUFACTURING TO VALIDATE THE
WARRANTY ON THIS MACHINE.

DEALER PRE-DELIVERY CHECK LIST

Dealer Machine Delivery Acknowledgment

MARCREST MANUFACTURING INC.

45415 Perth Line 86

Listowel Ontario, CA N4W 3G6

Phone: 1-519-887-9910

Fax: 1-519-291-9914

Email: info@marcrestmfg.com

MACHINE MODEL: _____

SERIAL NUMBER: _____

INVOICE NUMBER: _____

PURCHASE DATE: _____

Dealer Pre-Delivery and Delivery Inspection

All Models

- ___ Torque wheel bolts-rear-200 ft-lb, front-150 ft-lb.
- ___ Tires properly inflated-rear-35psi, front-90psi.
- ___ Brake fluid reservoir is full.
- ___ Brake lines do not leak.
- ___ Limit switches are torqued.
- ___ Railing set screws are torqued.
- ___ All chains properly aligned and adjusted.
- ___ All lubrication points are properly lubricated.
- ___ Light kit operates properly.

Ensure Stickers are all installed.

- ___ (See Safety Sign Locations on page 24.)
- ___ Red reflective tape strips: rear of frame (2), rear of twine boxes
- ___ Yellow reflective tape strips: front of twine boxes
- ___ Safety tape on platform and on top of chamber
- ___ Serial plate in place
- ___ SMV sign in place
- ___ Safety chain in place
- ___ Knottor reflectors straight (may be bent down from shipping)
- ___ All shields and guards in place and functioning properly
- ___ Load twine boxes with twine. **Do not operate before balls of twine are connected.** (Twine is tied off inside twine boxes for shipping and could result in damage to the needles)
- ___ Return line plumbed into low pressure tank return on tractor using supplied 1.25" flat faced coupler
- ___ Cab control operates properly.
- ___ Table speed set properly. 14 rpm **pg 48**
- ___ Knottor speed set properly at approximately 40 rpm. **pg 48**
- ___ Set program for proper baler – Inline for Hesston balers, Side feed for all other balers. **pg 62**
- ___ Set for proper bale size. 14" x 18" or 16" x 18" **pg 44-45**
- ___ Test Run - Including Auto Mode, Overload Indicator, Tie Indicator. **pg 68**
- ___ Check and adjust load sense bleed-off screw as required. **pg 49**

5250T Models and 5250P Models with Receiving Platform for Baler

- ___ Install bale guide kit including hoses and cables on baler. **pg 32 - 37**

- ___ Adjust baler hitch extension to proper setting. **pg 37**

5250P Models

- ___ All chains properly aligned and tightened
- ___ Pickup floating height set at 3" off the ground at the skid shoes. **pg 52**

- ___ Support for vertical roller well lubricated.
- ___ Conveyer belts track on center. **pg 53**
- ___ All shields and guards in place and working properly.

Power-Units

- ___ Check all fluid levels.
- ___ Start and run engine.
- ___ Throttle operates smoothly.
- ___ Ensure rotary screen pre-cleaner rotates

- ___ Bleed off located on load-sense line adjusted properly - pressure should snap up quickly when a function is pressurized and ramp down slightly slower when released
- Information Decals are all installed -
- ___ (See Information Decals on page 29.)

Dealer Review With Purchaser

- ___ Purchaser has received the appropriate Operator's Manual and has been instructed to read and understand it's contents fully before transporting or operating the machine.
- ___ The contents of the operator's manual has been explained and reviewed with the purchaser, with particular focus on the following points:
 - ___ Machine Preparation (tractor requirements, tractor attachment, proper location and operation of all shields and safety devices)
 - ___ Machine Maintenance and Lubrication (required for proper operation and long life of machine)
 - ___ Machine Operation and Adjustment
 - ___ Troubleshooting Instructions and Recommendations
- ___ Dealer reviewed with and explained to the purchaser the need to check all hardware for proper torque after initial use.
- ___ Dealer reviewed with and demonstrated to the purchaser the safe and proper operation of the machine.
- ___ Dealer explained to the purchaser Marcrest Manufacturing's limited warranty conditions that apply to the machine.

I acknowledge that the pre-delivery service was completed on this machine and that all items listed above were reviewed with the purchaser at the time of the delivery.

(Print name of authorized Dealership Representative)

(Print name of Purchaser)

(Signature of authorized Dealer Representative)

(Signature of Purchaser)

(Date Completed)

(Date Delivered)

I acknowledge that all items listed above were reviewed with me at the time of the delivery.
This document must be kept on file by the dealer for at least seven years or for any period required by applicable state or provincial law, whichever is longer.
DEALER TO MAKE COPIES OF THIS DOCUMENT, RETAIN ONE FOR THEIR OWN RECORDS AND ONE FOR THE PURCHASER.

WARRANTY DETAILS

LIMITED WARRANTY

Marcrest Manufacturing Inc. 45415 Perth Line 86, Listowel, ON Canada N4W 3G6 (hereinafter called “the Company”) warrants in accordance with the provisions below, to each retail purchaser of new Bale Baron® equipment from an authorized Bale Baron® dealer, that this equipment is, at the time of delivery to such purchaser, free from defects in material and workmanship, and that such equipment is covered under this Limited Warranty providing the machine is used and serviced in accordance with the recommendations in the Operator’s Manual Service Guide.

The Limited Warranty covers components, labour and travel time within a 100 mile radius of the authorized Bale Baron® dealer for a period of one year, and covers components only for an additional two years thereafter. The Limited Warranty expires after three years or 6000 bundles, whichever occurs first. The PLC only is warranted for five years or 12,000 bundles, whichever occurs first. Warranty period starts on the date the equipment is delivered to the retail purchaser. The date of invoice to the retail purchaser and the registration of the machine by the dealer are taken as evidence of delivery of the machine. Limited Warranty is not valid unless the Warranty Registration is submitted to the company.

Within the first year from the date of delivery to the retail purchaser, travel will be covered for a maximum 100 mile radius from the authorized Bale Baron® dealer to the customer. The customer will be responsible for and bear the cost of travel in addition to the first 100 miles and all travel expenses after the first year.

This Limited Warranty covers the reimbursement (or repair) of components as well as labour charges incurred, based on the Company warranty labour rate and allowable time for repair.

• These conditions are subject to the following exceptions.

- Components of the machine not manufactured by Marcrest Manufacturing Inc., such as engines, hydraulic components, tires, etc. are not covered by this Limited Warranty, but are subject to the warranty of the original manufacturer.
- Warranty claims applying to these types of components must be submitted in the same way as if they are components manufactured by Marcrest Manufacturing Inc.. However, compensation will be paid in accordance with the warranty agreement of the manufacturer concerned, in as much as the latter justifies such a claim.
- This Limited Warranty does not apply to failure through normal wear and tear, to damage resulting from negligence or from a lack of inspection, from misuse, from lack of maintenance and/or if the machine has been involved in an accident, lent out or used for purposes other than those for which it was intended by the Company.
- This Limited Warranty will not apply to any product that has been altered or modified in any way without the express permission of the Company, or if components and/or equipment not approved by Marcrest Manufacturing Inc. are used on a machine manufactured by the Company and/or if the repairs have been carried out by anyone other than an authorized Bale Baron® dealer.
- The Company shall not be responsible for any damage to the machine or its equipment in transit or handling by any common carrier, within or without the Warranty period. Machines, equipment and components are transported at owner’s risk.
- The Company cannot be held responsible for any claims or injuries to the owner or to any third party, nor to any resulting responsibility.
- Also, on no account can the Company be held liable for incidental or consequential damages (including loss of anticipated profits) or for any impairment due to a failure, a latent defect or a breakdown of the machine.

• The customer will be responsible for and bear the costs of:

- Normal maintenance such as greasing, maintenance of oil levels, minor adjustments, etc.
- Transporting machines, equipment or components to the repair site and returning them to the user site.
- Parts defined as normal wearing items such as, but not limited to belts, seals, etc. that are not covered by the Limited Warranty.

TABLE OF CONTENTS

Table Of Contents

Preface	1
Warranty Registration	3
Dealer Pre-Delivery Check List	5
Warranty Details	7
Table Of Contents	8
Introduction.	11
Safety	12
A Word To The Operator	13
General Safety	14
Equipment Safety Guidelines.	15
Safety Training	16
Safety Signs	17
How To Install Safety Signs	17
Preparation	18
Maintenance Safety	19
Operating Safety	20
Storage Safety	21
Transport Safety	21
Hydraulic Safety	21
Tire Safety	21
Big Bale Handling Safety	22
Big Bale Transportation Safety	23
Summary	23
Safety Sign Locations	24
Information Decals	29
Preparing The Baler	32
Electrical Connection	38
Cab Control Panel (Non Isobus)	38
Isobus Connection (Tractor Isobus).	39
Isobus Monitor (Optional From Marcrest®)	39

TABLE OF CONTENTS

Hydraulic Connection	40
Hydraulics Specifications	40
Hydraulic Requirements	40
Bale Baron® Setup	42
Select Program	42
Bale Size	42
Spacer Bar Adjustment	43
End Gates	43
Bale Setup Position 14" X 18"	44
Bale Setup Position 16" X 18"	45
Chamber Top Release	46
Twine	47
Twine Installation	47
Adjustable Valves	48
Knotter Speed Flow Control	48
Table Speed Flow Control	48
Load Sense Bleed Off Valve	49
Optional Endgates	50
9/18 Bale Bundle Mode	50
21 Bale Bundle Mode	50
Expeller Roller Kit	51
Top Roller Adjustment	51
Lower Expeller Roller	51
Pickup Setup 5250P	52
Pickup Height Adjustment	52
Pickup Belt Adjustment	53
Using The Bale Baron®	54
Control Panel Layout	54
Display Panel Options	55
Function Switches	63
Vertical Stack Count	66
Horizontal Stack Count	67

TABLE OF CONTENTS

Operation Of Tie Cycle (Auto Mode)	68
Overload Indicator System.	68
Command Messages.	69
Alarm Sounds	71
Alarm Messages	71
Troubleshooting	73
Alarm Messages Troubleshooting	73
Limit Switch Test Procedure.	73
Safety Switch Alarm Messages Troubleshooting	74
Alarm Messages Troubleshooting	76
Pressure Test Procedure (For Load Sensing)	81
Endgate Linkage Alignment	82
Limit Switch Adjustment.	83
Knotter Tie Sensors	90
Bale Baron® Service Guide	91
Access Panels	98
Electrical Circuit	102
Hydraulic Circuit	103
Hydraulic Troubleshooting	106
Knotter Manual Index	108
Knotter Manual	110
Knotter Maintenance.	126
Knotter Parts Breakdown	150
Knotter Troubleshooting.	170
Index	178
Notes	180

INTRODUCTION

Congratulations on the purchase of your Bale Baron® Stacker. This Owner and Operator's Manual was designed to provide you with information that will help you operate and maintain this machine. By using this manual as your guide, you should enjoy many years of dependable service from this machine.

The Bale Baron® 5250T Stacker, is designed to be hitched to a baler, pulled behind a roll over protected system (ROPS) equipped tractor with a minimum 120 hp rating. The Bale Baron® 5250P Stacker is designed to be pulled behind a roll over protected system (ROPS) equipped tractor with a minimum 120 hp rating. The Bale Baron® Stacker collects, stacks and bales 14" and 16" small square bales into 9, 12, 18 or 21 bale large square packs. No other use is intended.

We recommend that you carefully read this entire manual before operating the Bale Baron® Stacker. Please do not assume you know how to operate and maintain your machine before reading this manual carefully. Keep this manual available for reference. Call your authorized dealer or the manufacturer if you need any assistance or more information.

For **service videos** and **parts books** visit us online at
www.marcrestmfg.com



5250T



5250P

SAFETY

Take Note: The Safety Alert Symbol identifies important safety messages on the Bale Baron® Stacker and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

This symbol means:

**ATTENTION
BE ALERT
YOUR SAFETY IS INVOLVED**



Why is SAFETY important to you?

3 Big Reasons

**Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided**

Signal Words:

Note the use of the signal words **DANGER**, **WARNING**, and **CAUTION** with safety messages. The appropriate signal word for each message has been selected using the following guidelines:

THINK SAFETY! WORK SAFELY!

DANGER: Indicates an imminent hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

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

CAUTION: Indicates a potentially hazardous situation that, if not avoided may result in minor or moderate injury. It may also be used to alert against unsafe practices

A Word To The Operator

It is **YOUR** responsibility to read and understand the safety section in this book before operating the Bale Baron® Stacker. **You** must ensure that you and anyone else who is going to use, maintain or work around the Bale Baron® Stacker be familiar with the use, maintenance procedures and related **safety information** contained in this manual. Remember that **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Most accidents can be prevented. **Do not risk injury or death by ignoring good safety practices.**

1) Study the features in this book and make them a working part of your safety program. Keep in mind that this safety section is written only for the Bale Baron® Stacker.

2) Bale Baron® Stacker owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57

3) The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these.

4) A person who has not read and understood all directive and safety instructions is not qualified to use the Bale Baron® Stacker. An untrained operator exposes himself and by standers to

possible serious injury or death.

5) Practice all other usual and customary safe working precautions and above all **REMEMBER - SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.**

6) This safety section is intended to point out some of the basic safety situations that can be encountered during the normal operation and maintenance of the Bale Baron® Stacker, and to suggest possible ways of dealing with these situations. This section is **NOT** a replacement for other safety practices featured in other sections of this book.

THINK SAFETY! WORK SAFELY!

SAFETY

General Safety

- 1) Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or cleaning the Bale Baron® Stacker.
- 2) All equipment has a limit. Make sure you understand the speed, brakes, steering, stability and load characteristics of the Bale Baron® Stacker and your tractor before you start.
- 3) Make sure the tractor is in proper operating condition as stated in the tractor Operator Manual. The tractor must have enough weight and braking capacity, especially when operating on uneven terrain.

WARNING: Only use a tractor with a ROPS cab and seat belt.



- 4) Have a first-aid kit available for use should the need arise and know how to use it.
- 5) Have a fire extinguisher available for use should the need arise and know how to use it.
- 6) **NEVER** allow riders. Keep others away from your work area.
- 7) Wear appropriate protective gear. This list includes but is not limited to:
 - Protective shoes with slip resistant soles
 - Protective glasses
 - Heavy gloves
 - Hearing protection
 - Respirator or filter mask

- 8) Install and secure all guards before starting.
- 9) Wear suitable ear protection for prolonged exposure to excessive noise.
- 10) Turn machine off, stop and disable engine, remove ignition key and place in your pocket and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
- 11) Clear area of people, especially small children, before using the unit.
- 12) Review safety related items annually with all personnel who will operate or maintain the Bale Baron® Stacker.
- 13) Where possible avoid operating the Bale Baron® Stacker near roads, ditches, embankments or holes. Reduce speed when operating on rough, slippery, or muddy surfaces and when turning or crossing slopes. Stay off slopes too steep for proper operation.
- 14) Beware of the machine size and have enough space to allow for operation. Never operate the Bale Baron® Stacker at high speeds in crowded places.
- 15) Do NOT use attachments unless the attachments are approved optional equipment.
- 16) Securely fasten your seat belt before operating the machine. Always remain seated when operating the machine.

Equipment Safety Guidelines

1) Safety of the operator and bystanders is one of the main concerns in designing and developing equipment. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.

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

3) Replace any safety sign or instruction sign that is not readable or missing. Location of such safety signs are indicated in this manual.

4) Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment. Consult your doctor about using this machine while taking prescription medications.

5) Under no circumstances should young children be allowed to work on this equipment. Do not allow persons to use or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how the machine

works. Review the safety instructions with all users annually.

6) This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person, familiar with machinery and trained in this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.

7) Never exceed the limits of a piece of machinery. If its ability to do a job, or to do it safely, is in question - **DON'T TRY IT.**

8) In addition to the design and configuration of this implement, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transportation, maintenance, and storage of the machine.

THINK SAFETY! WORK SAFELY!

SAFETY

Safety Training

1) Safety is the primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.

2) In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transportation, maintenance and storage of this equipment.

3) It has been said, "The best safety feature is an informed, careful operator." We ask that you be that kind of operator. It is the operator's responsibility to read and understand **ALL** safety instructions in the manual and follow them. Accidents can be avoided.

4) Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or use, to acquaint yourself with the machine. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to using:

- a) Reads and understands the operator's manual
- b) Is instructed in safe and proper use.

5) Know your controls and how to stop the engine and machine quickly in an emergency.

6) Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all the safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.

THINK SAFETY! WORK SAFELY!

Safety Signs

- 1) Keep safety signs clean and legible at all times.
- 2) Replace safety signs that are missing or have become illegible.
- 3) Replaced parts that displayed a safety sign should also display the current sign.
- 4) Safety signs displayed in Safety Sign Locations each have a significant purpose and need to be cleaned or replaced when necessary.
- 5) Safety signs are available from your authorized distributor or dealer parts department or from the manufacturer.

How to Install Safety Signs

- Be sure that the installation area is clean and dry.
- Be sure the temperature is above 10 C (50 F).
- Determine the exact position of the new safety sign before removing the paper backing.
- Align the sign over the specific area, carefully press the sign on, slowly peeling away the backing paper while smoothing the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using a piece of sign backing paper.

SAFETY

Preparation

1) Never use the Bale Baron® Stacker until you have read and completely understand this manual and each of the safety messages found on the safety signs on the Bale Baron® Stacker.

2) Personal protection equipment including safety glasses, safety shoes and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, cleaning or moving the unit. Do not allow long hair, loose fitting clothing or jewelry to be around equipment.

3) **Prolonged exposure to loud noise may cause permanent hearing loss!** Power equipment with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80 db. Noise over 85 db on a long-term basis can cause severe hearing loss. Noise over 90 db adjacent to the Operator over a long term basis may cause permanent, total hearing loss.

Note: Hearing loss from loud noise (from tractors, chain saws, radios and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

4) Clear working area of obstacles that might be hooked or snagged, causing injury or damage.

5) Use only in daylight or good artificial light.

6) Be sure machine is properly maintained, adjusted and in good operating condition.

7) Ensure that all safety shielding and safety signs are properly installed and in good condition.

8) Never ride anywhere on the Bale Baron® Stacker while setting up or troubleshooting problems.

9) Although the Bale Baron® Stacker is collecting light small square bales **NEVER** forget that the end product must be treated with the same amount of respect that is given to a large heavy square bale. The size and weight is very similar.

THINK SAFETY! WORK SAFELY!

Maintenance Safety

- 1) Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- 2) Follow good shop practices.
 - Keep service area clean and dry
 - Be sure electrical outlets and tools are properly grounded
 - Use adequate light for the job at hand
- 3) Never attempt to service hydraulic accessories while pressurized or with engine running.
- 4) Never work under equipment unless it is blocked securely.
- 5) Always use personal protection devices such as hand, eye and hearing protectors, when performing any service or maintenance work.
- 6) Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by the use of unapproved parts and/or accessories.
- 7) A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- 8) Periodically tighten all bolts, nuts, and screws and check that all electrical connections are properly secured to ensure unit is in a safe condition.
- 9) Before doing any maintenance or service work on the Bale Baron you must:
 - Park machine on a solid, level surface
 - Disengage the hydraulics and tractor PTO
 - Put the tractor transmission in PARK or apply the tractor parking brake
 - Turn off the Bale Baron® cab control
 - Stop the tractor engine and power unit (if so equipped) and take the key with you
 - Look and Listen! Make sure all the moving parts have stopped
 - Always lock the tractor brakes and block the wheels before working on or under the machine
 - After lubricating, servicing or adjusting the Bale Baron®, make sure all tools and equipment have been removed
- 10) Never check or lubricate the roller chains while the machine is running.
- 11) When completing maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

SAFETY

Operating Safety

1) Please remember it is important that you read and heed the safety signs on the Bale Baron® Stacker. Clean or replace all safety signs if they cannot be clearly read and understood. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to **YOU**, the operator.

2) All things with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes potential hazards and follows reasonable safety practices. The manufacturer has designed the Bale Baron® Stacker to be used with all its safety equipment properly attached, to minimize the chance of accidents. Study this manual to make sure you have all safety equipment attached.

3) Close and secure all guards, deflectors and shields before starting and operating.

4) Read and understand the Owner and Operator's Manual before starting. Review safety instructions annually.

5) Personal protection equipment including hearing protection, hard hat, safety glasses, safety shoes and gloves are recommended during operation, adjustment, maintaining or repairing. Do not allow long hair, loose-fitting clothing, or jewelry to be around moving parts.

6) Never place any part of your body where it could be in danger if movement should occur during assembly, installation, operation, maintenance,

repairing, unplugging or moving.

7) **Turn tractor and power unit (if so equipped) off, remove ignition key and place in your pocket, and wait for moving parts to stop** before servicing, adjusting, repairing or unplugging.

8) Never use alcohol or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.

9) Do not allow riders on the Bale Baron® Stacker at any time. **There is no safe place for any riders even for troubleshooting issues.**

10) Never allow children or unauthorized people to operate or be around the Bale Baron® Stacker.

11) Keep the working area clear of people and other machines to prevent accidents.

12) Do not exceed a safe travelling speed when transporting.

13) Always use extra caution when turning around corners or in tight areas.

14) Utmost care must be taken when handling the end product of the Bale Baron® Stacker. Bales are large and very heavy.

Storage Safety

- 1) Store the Bale Baron® Stacker in an area away from human activity.
- 2) Do not allow children to play on or around the Bale Baron® Stacker.
- 3) Store the Bale Baron® Stacker in a dry, level area.

Transport Safety

- 1) Comply with state and local laws governing safety and transporting of machinery on public roads.
- 2) Do not exceed a safe travel speed. Slow down on rough terrain and while cornering.
- 3) Never allow riders on the machine.

Hydraulic Safety

- 1) Make sure that all components in the hydraulic system are kept in good condition and are clean.
- 2) Before applying pressure to the system, make sure that all components are tight, and that lines, hoses and couplings are not damaged.
- 3) Do not attempt any makeshift repairs to the hydraulic lines, fittings, or hoses by using tapes, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

4) Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.

5) If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

6) Relieve pressure on the hydraulic system before maintaining or working on the system.

Tire Safety

1) Failure to follow proper mounting procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

2) Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

3) Have a qualified tire dealer or repair service perform required tire maintenance.

4) When replacing worn tires, make sure they meet the original tire specifications.

THINK SAFETY! WORK SAFELY!

SAFETY

Big Bale Handling Safety

Much hay is now harvested as large bales. Adoption of big package haying systems has been very rapid, largely because of the major labour savings it provides. Along with the big bale benefits come a number of hazards. The equipment used for large bale formation and handling harbours familiar dangers that are associated with all farm machinery. Large bales do feature some unique hazards, and the horsepower involved is usually greater than was required with more traditional, small square baling systems. However the biggest risk - and the one responsible for most of the serious injuries and deaths - is the physical nature of the bales themselves. A compact package of hay or straw weighing from 500 pounds to 1.5 tons (225 kg - 1300 kg) definitely poses some threat to human life and limb at every stage of handling.

1) Serious accidents can occur while handling large square bales when improperly secured bales roll down the arms of front end loaders. It is strongly recommended that tractors used to handle large square bales be equipped with 4 post rollover protective structures (ROPS) AND have a properly designed bale handling device with a high back/support guard to prevent bales from rolling down the front end loader arms.

2) The loader tractor being used must be large enough and equipped with sufficient counterweight to handle bales safely.

3) Try to avoid steep slopes and rough terrain when conveying bales with a loader especially while the loader is raised.

4) If it is impossible to avoid sloping land, approach bales from the downhill side.

5) Avoid sudden starts, stops or changes of direction. Always keep the bale as low as possible for maximum stability. A one ton bale puts the centre of gravity at a precarious level when a loader is raised high. The risk of a bale breaking free is also greater when the loader is raised. Be extremely cautious, and travel only at low speeds.

6) Insist that other workers and bystanders stay well clear of bale handling operations.

7) Use good judgement when stacking bales in storage. High stacks mean more efficient use of available space, but subsequent removal could be very hazardous.

**Remember safe bale handling is
YOUR RESPONSIBILITY.**

**You can pay for an accident where a large
square bale is involved with your life.**

THINK SAFETY! WORK SAFELY!

Big Bale Transportation Safety

A tremendous variety of wagons, truck frames, etc. have been developed for conveying loads of large bales. Some of these are quite sophisticated, with provision for automated loading and unloading. Such purpose-designed equipment is much safer for transporting round bales. It is very important for large bales to be well secured on a flat rack. They should be tied down if the load is to be transported on a public roadway. There has been a scenario where an innocent bystander was killed by a falling bale that was jolted loose at the top of a hill on a country road.

- 1) The load being pulled should be no heavier than the tractor pulling it.
- 2) Inspect the transporting unit before going on a public roadway.
- 3) Take advantage of engine braking. Use the same gear going down a hill as you do going up. Keep in mind that most tractors only have 2 wheel brakes.
- 4) Wagons used to haul bales should be of sufficient width and have end racks to prevent bales from moving off either end during transportation.
- 5) Hitching should be secure. Use a top quality draw pin and safety chain.
- 6) Make sure you can signal your intention to turn on the road way. Comply with state and local laws governing farm equipment turn signals and lighting.

7) An SMV sign must be clearly visible on the rear of the wagon.

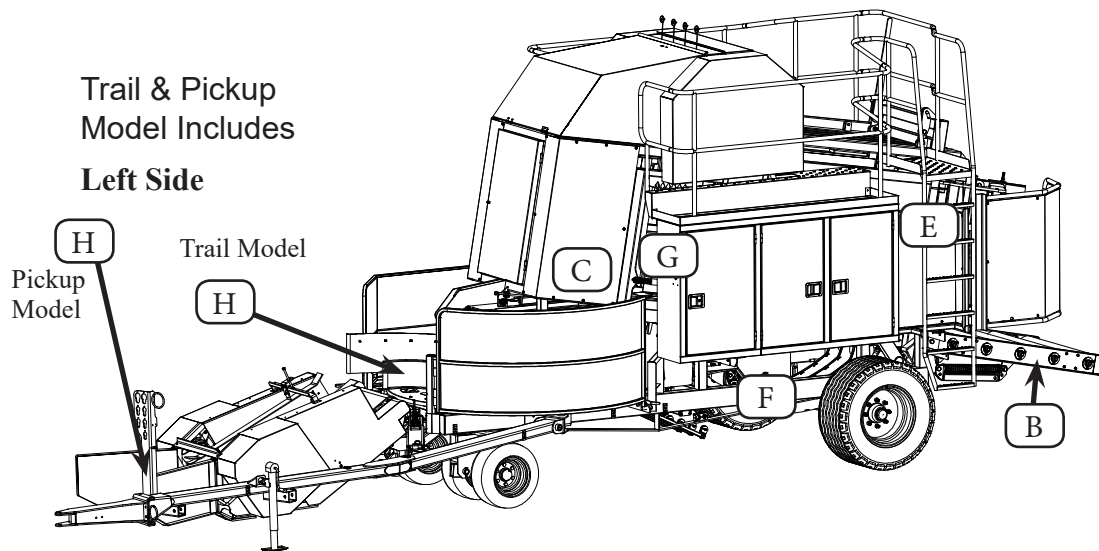
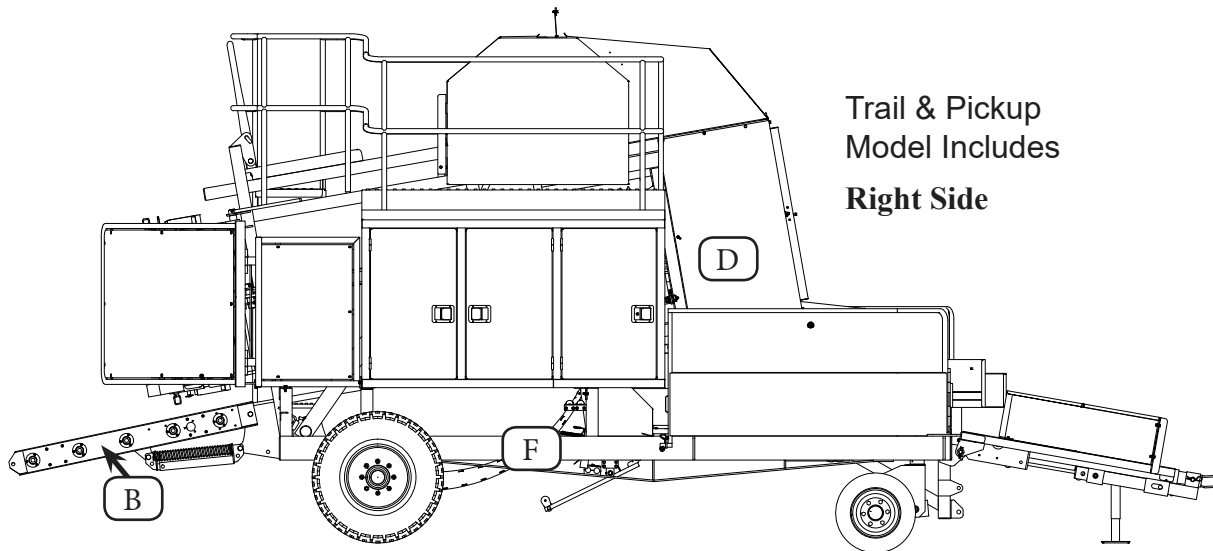
8) Never carry a large bale on the front end loader while pulling a loaded wagon.

Summary

- Good maintenance and timely lubrication minimize the breakdowns that can lead to frustration and carelessness.
- Never attempt to unplug a baler or carry out adjustments or repairs with power engaged.
- Bale handling equipment should be large enough and properly counterweighted.
- When handling or transporting bales, use properly designed equipment that incorporates restraining devices. Avoid sudden motions and travel at low speeds.
- Always carry bales as low as possible with a tractor.
- Bystanders and other workers should stay well clear of all big bale operations. And remember, **NO RIDERS!**
- The best instructions for safe, efficient use of equipment can be found in this manual. Every operator should be familiar with it.

SAFETY SIGN LOCATIONS

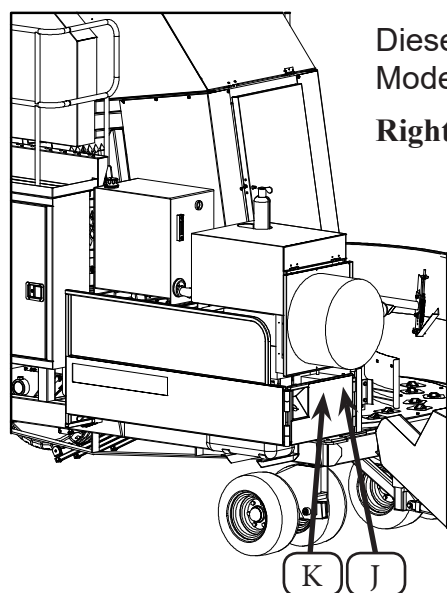
The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires SAFETY AWARENESS. This requires that you familiarize yourself with the safety signs, the types of warning and the area, or articular function related to that area. THINK SAFETY! WORK SAFELY



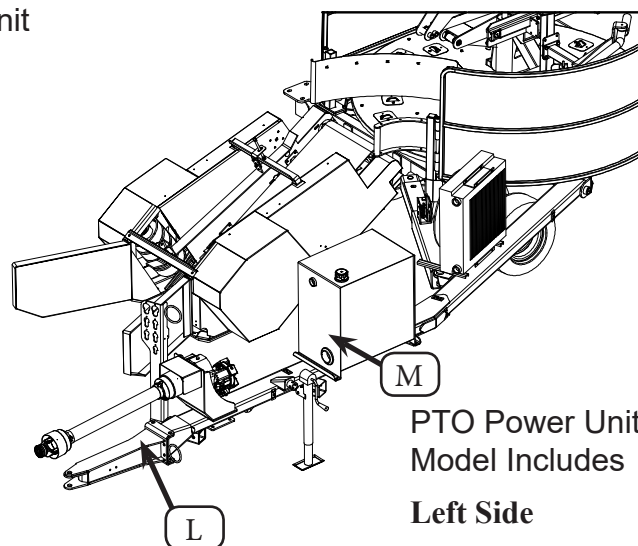
EXAMPLES ONLY

Actual decals may differ in text and graphic representation

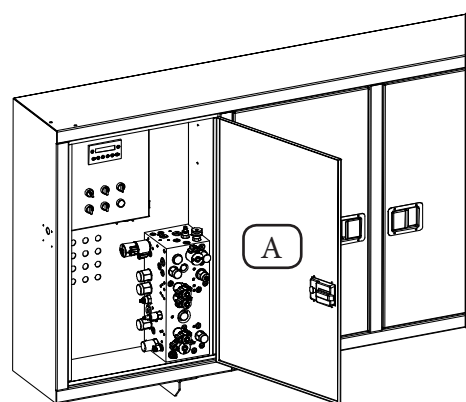
SAFETY SIGN LOCATIONS



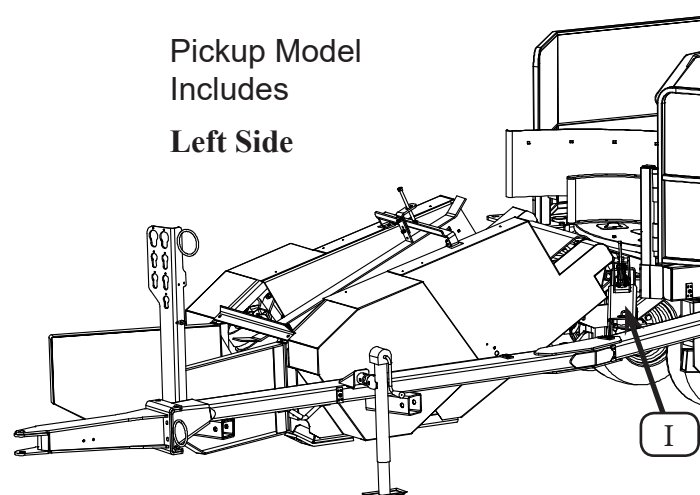
Diesel Power Unit
Model Includes
Right Side



PTO Power Unit
Model Includes
Left Side



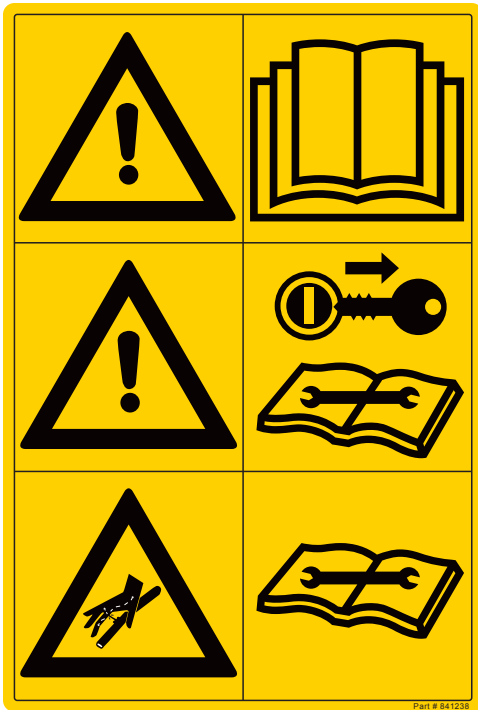
Twine Box



Pickup Model
Includes
Left Side

Remember If safety signs have been damaged, removed, become illegible or parts have been replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

SAFETY SIGN LOCATIONS



Decal A — # 841238

Top Panel - Operator should read the Owners / Operators manual before using the Bale Baron® for your personal safety. Failure to do so could result in serious injury or death.

Middle Panel - Tractor or power unit depending on the model of your machine must be shut off before doing any service to your Bale Baron®. Failure to do so could result in serious injury or death.

Service or repairs should only be done by qualified individuals who have been trained to service your machine.

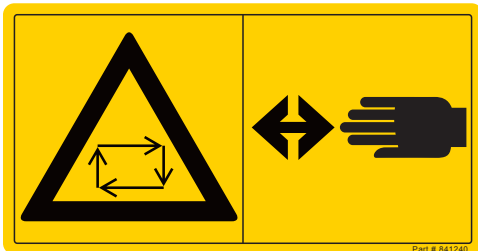
Bottom Panel - Do not attempt to find hydraulic leaks using your hands. The hydraulic pressure used by your Bale Baron® is sufficient to puncture the skin even while wearing leather gloves.

Detection of leaks and their repair should only be done by qualified individuals who have been trained to service your machine.



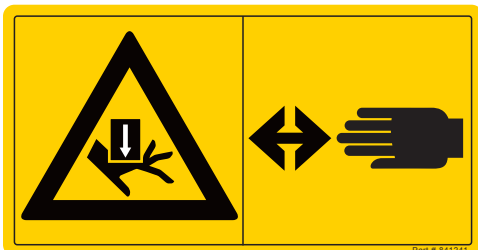
Decal B — Decal # 841239

The roller conveyor on the back of your Bale Baron® is not meant to be walked on under any circumstances. Serious injury or death could occur if you try.



Decal C — Decal # 841240

Your Bale Baron® will start automatically unless it has been switched to MANUAL MODE. If a switch is accidentally activated on the machine, the result could be serious injury or death. Please refer to your Owners/ Operators manual on how to deal safely with any machine malfunctions requiring operator intervention while the machine is operating.



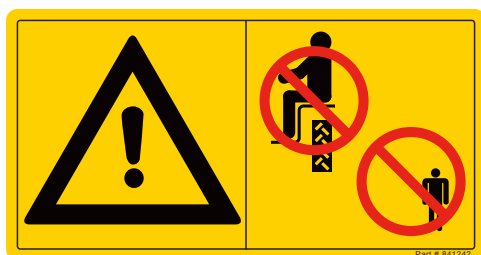
Decal D — Decal # 841241

Do not allow anyone to be near your Bale Baron® while it is operating. It has many dangerous moving parts which could cause serious injury or death

EXAMPLES ONLY

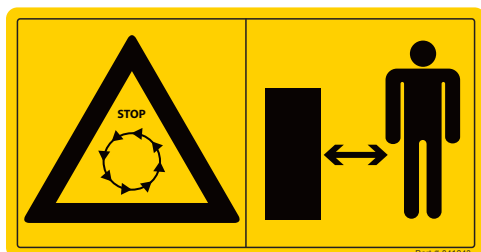
Actual decals may differ in text and graphic representation

SAFETY SIGN LOCATIONS



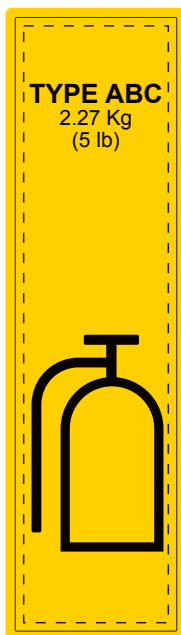
Decal E — Decal # 841242

Your Bale Baron® was not designed to transport people. Do not allow adults or children to ride on the machine under any conditions. Serious injury or death could occur.



Decal F — Decal # 841243

This part of your Bale Baron® has dangerous moving parts which can cause serious injury or death to the operator. Keep your hands and body out of this area of the machine. Refer to your Owner/Operators manual (Knotter section) on safe procedures for dealing with machine malfunctions in this area.



Decal G — Decal # 841247

This is the location Bale Baron® recommends a 2.27 Kg. (5 lb) ABC fire extinguisher be mounted on your machine for safe access in case of a fire.



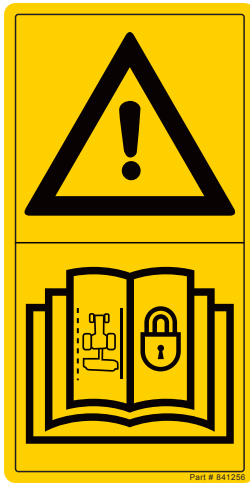
Decal H — Decal # 841250

Left Hand Panel - This is the electrical hook up diagram for the cable to operate the running lights on your Bale Baron®. The tow vehicle used to transport the machine must have a connector hook up compatible with this electrical hook up. It must be connected to your tow vehicle if the machine is transported on public roadways.

Right Hand Panel - The towing or transporting of this machine requires a tow vehicle rated to handle a load of 4175 KG. (9200 lbs.) to 4625 KG. (10200 lbs.) depending on model and features. This machine is not designed to be towed or transported under any conditions at speeds exceeding 40 Km/hr. (24 mph) on public roadways. Sharp abrupt turns should be avoided. Failure to follow these instructions could lead to loss of control resulting in serious injury or death.

Remember If safety signs have been damaged, removed, become illegible or parts have been replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

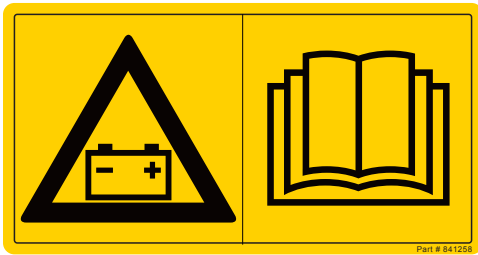
SAFETY SIGN LOCATIONS



Decal I — Decal # 841256

This label will be present if your Bale Baron® model number ends with “P”. The tongue transport lock pin must be fully engaged prior to transporting pick up models of the machine on public roadways. This requires that the locking pin not be sticking out more than 5 mm.

Failure to do so will result in the machine reverting to its operational width unexpectedly, which will exceed the lane width of the road way. This could lead to contact with vehicles on the other side of the road way resulting in serious injury or death to the machine tow vehicle operator and others using the road.



Decal J — Decal # 841258

This label will only be present if your model of Bale Baron® has a power unit installed.

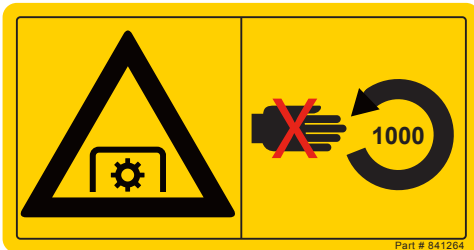
Remove the battery with the machine electronics OFF if the machine will be exposed to temperatures below freezing or is being stored. Make a diagram of battery connections and secure to the battery tray.

Store the battery in a dry warm place off the ground. Recharge before installing back in the machine to avoid problems per your diagram.



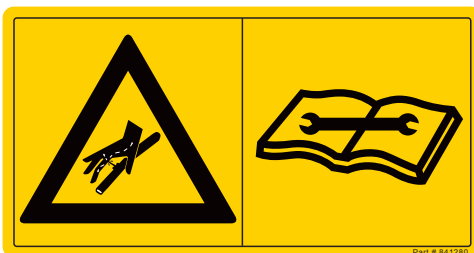
Decal K — Decal # 841260

This label will only be present if your model of Bale Baron® has a power unit installed. The engine used on your machine will only run on diesel fuel with low or ultra low sulphur content. Use of other fuels will lead to premature failure of the engine.



Decal L — Decal # 841264

This label will only be present if your model of Bale Baron® has a PTO power unit installed. Do not open or remove safety shields from the PTO shaft while it is engaged and turning. Serious injury or death could occur if your clothing or hands become caught in it.



Decal M # 841280

This label will only be present if your model of Bale Baron® has a PTO power unit installed. Beware of the potential for the operator to being exposed to high pressure hydraulic oil leaks from the hoses coming from the hydraulic pump on the machine tongue. Do not attempt to find hydraulic leaks using your hands. The hydraulic pressure used by your Bale Baron is sufficient to puncture the skin even while wearing leather gloves.

Detection of leaks and their repair should only be done by qualified individuals who have been trained to service your machine.

INFORMATION DECALS



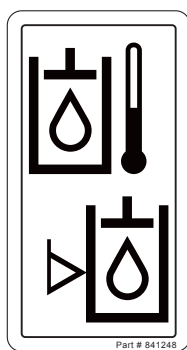
Decal # 841245

Grease these “A” locations (8) daily. Bale Baron® recommends you use a Calcium Sulfonate multi-purpose, extreme pressure, corrosion prevention grease of a brand available from your dealer or lubricant supplier.



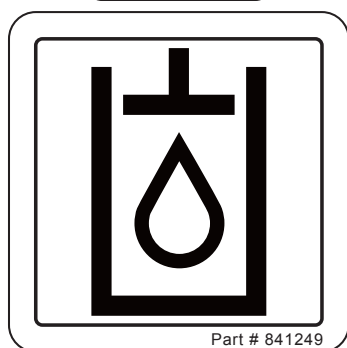
Decal # 841246

Grease these “B” locations every 250 bundles. There are (5) locations on a “T” model and (7) locations on a “P” model. Bale Baron® recommends you use a Calcium Sulfonate multi-purpose, extreme pressure, corrosion prevention grease of a brand available from your dealer or lubricant supplier.



Decal # 841248

This label will only be present if your model of Bale Baron® has a power unit installed. It refers to the combination gauge, which measures the temperature and level of the hydraulic oil in the hydraulic oil reservoir. The cold level of the hydraulic oil in the reservoir must be kept between the HIGH mark and the LOW mark on the gauge.



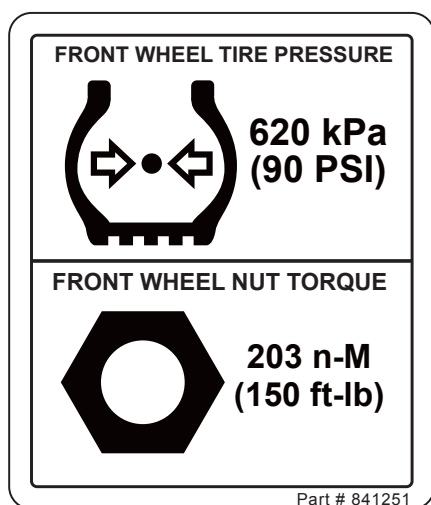
Decal # 841249

This label will only be present if your model of Bale Baron® has a power unit installed. It indicates this tank is the hydraulic oil reservoir for the machine. It should only be topped up as required using the hydraulic/transmission fluid meeting or exceeding DIN 51524 standard with a viscosity rating of ISO VG 46 for moderate temperature climate and ISO VG 68 for high temperature climate.



Decal # 841254

This label indicates the location where Bale Baron® has put the Operators Manual for your machine at the time of manufacture.

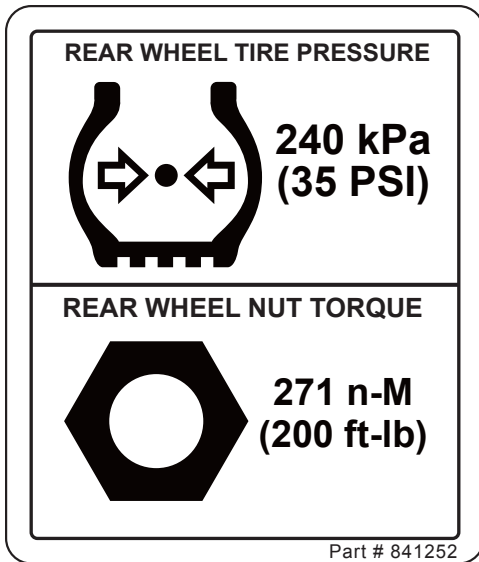


Decal # 841251

Top Panel - For the safe operation of your Bale Baron®, it is recommended that the tire pressure of the four front tires be set for the tire pressure indicated on the label at the start of the season and checked daily prior to operating or transporting the machine to another location. Not following these instructions could lead to premature tire failure and unsafe machine operation.

Bottom Panel - For the safe operation of your Bale Baron®, it is recommended that the wheel nut torque of the nuts on all four front wheels be checked at the start of the season plus any time the machine will be transported on public roadways and tightened as required to the specification on the label. Not following these instructions could lead to rim failure and unsafe machine operation.

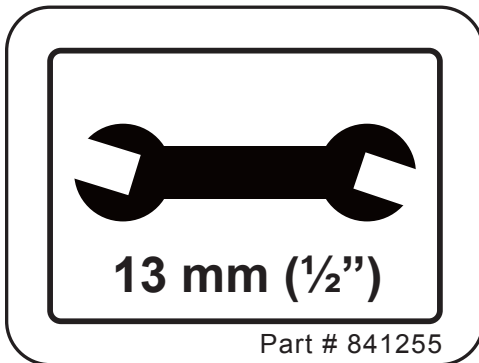
INFORMATION DECALS



Decal # 841252

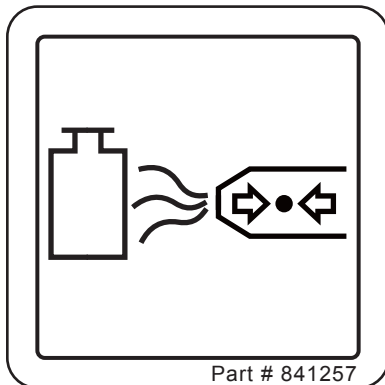
Top Panel - For the safe operation of your Bale Baron®, it is recommended that the tire pressure of the two rear tires be set for the tire pressure indicated on the label at the start of the season and checked daily prior to operating or transporting the machine to another location. Not following these instructions could lead to premature tire failure and unsafe machine operation.

Bottom Panel - For the safe operation of your Bale Baron®, it is recommended that the wheel nut torque of the nuts on two rear wheels be checked at the start of the season plus any time the machine will be transported on public roadways and tightened as required to the specification on the label. Not following these instructions could lead to rim failure and unsafe machine operation.



Decal # 841255

These labels indicate that a 13 mm (1/2") open end wrench is required to open these covers. A tool is not required to close them.



Decal # 841257

This label will only be present if your model of Bale Baron® has a power unit installed. It requires that the operator blow out the front (diesel engine) and rear (hydraulic pump) radiators of the power unit with low pressure compressed air (not to exceed 205 KPa. (30 PSI)) daily to remove any debris sucked into the radiators from operation of the machine.

Failure to follow these instructions can lead to overheating and premature failure of the diesel engine and hydraulic pump.

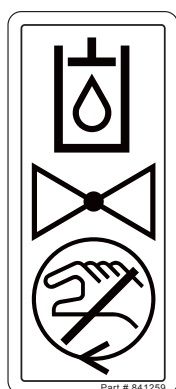
Do not use a pressure washer, it will damage the radiators cooling fins.

Remember If safety signs have been damaged, removed, become illegible or parts have been replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

EXAMPLES ONLY

Actual decals may differ in text and graphic representation

INFORMATION DECALS



Decal # 841259

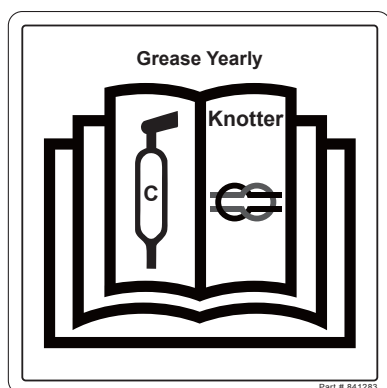
This label will only be present if your model of Bale Baron® has a power unit installed. The hydraulic shutoff valve should not be turned off while the machine is operating or premature failure of the hydraulic pump will occur. It should only be shut off when the diesel engine is turned off for repairs to the machine hydraulics by a qualified service technician. It should never be touched by the machine operator.



Decal # 841261

Your Bale Baron is equipped with a central lubrication block located inside the front door of your machine. 32 pumps of a hand grease gun into the grease fitting on the bottom of the block will be required every time 250 bundles of bales have been processed.

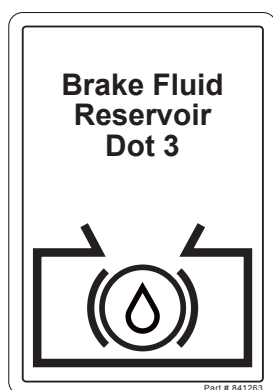
Bale Baron® recommends you use a Calcium Sulfonate multi-purpose, extreme pressure, corrosion prevention grease of a brand available from your dealer or lubricant supplier.



Decal # 841283

Please refer to your Bale Baron® Owner/Operators manual on what parts of the knotter assembly should be greased.

Bale Baron recommends you use a Calcium Sulfonate multi-purpose, extreme pressure, corrosion prevention grease of a brand available from your dealer or lubricant supplier.

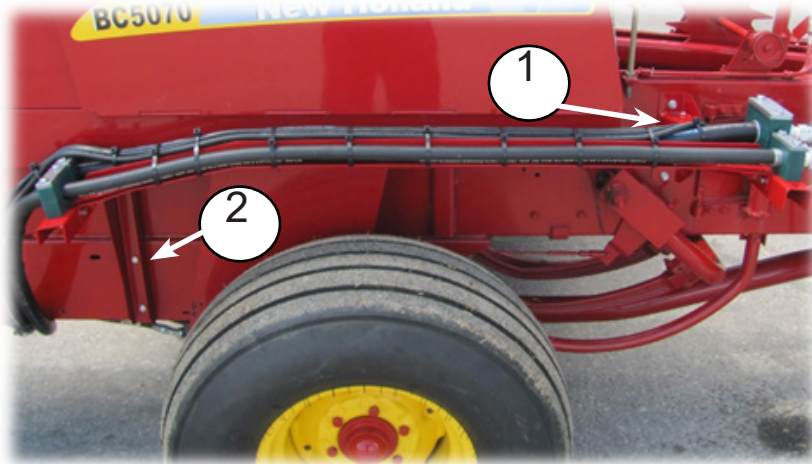


Decal # 841263

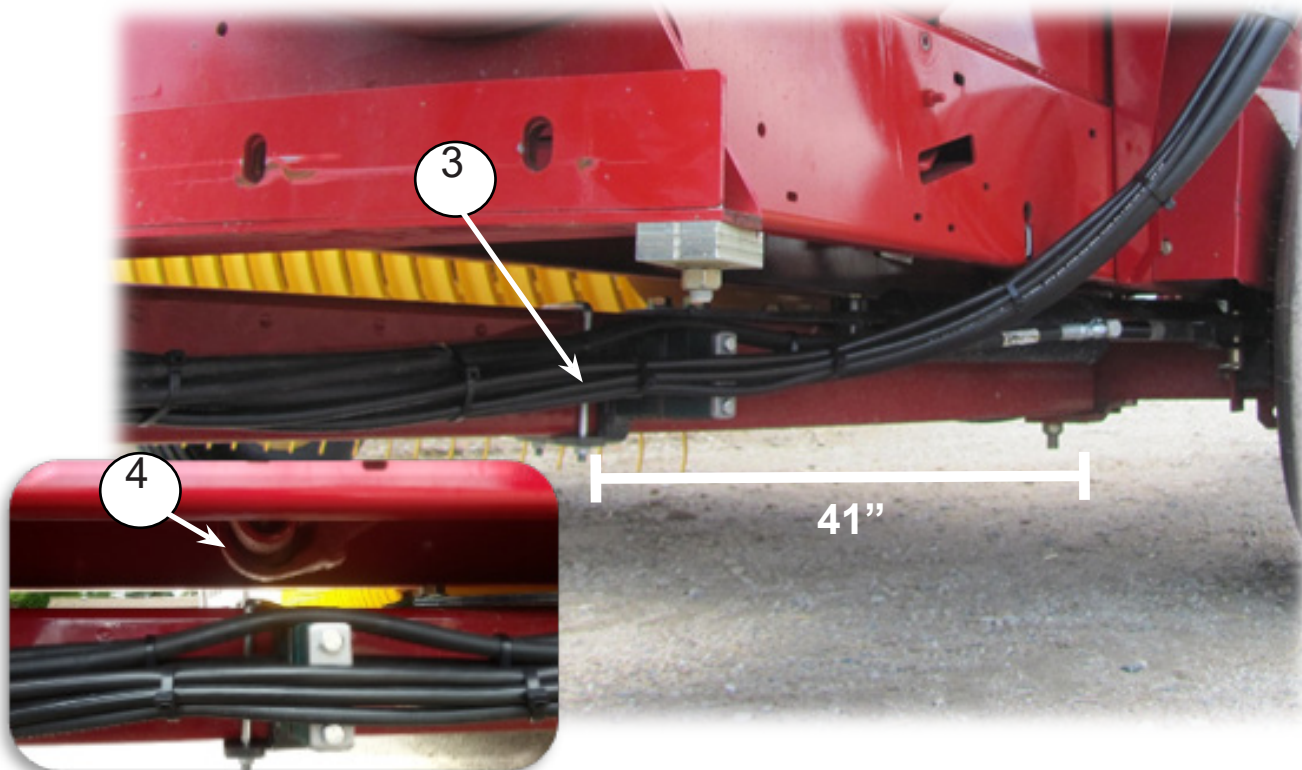
This label will only be present if you have a surge braking system on your model of Bale Baron®. Surge brakes are standard on model numbers ending in T and optional on model numbers ending in P. It is located on the inside of the cover over the brake fluid reservoir cap in the floor of the input chute in front of the turn table. It requires the operator to only top up the brake fluid reservoir using DOT 3 brake fluid as required.

PREPARING THE BALER

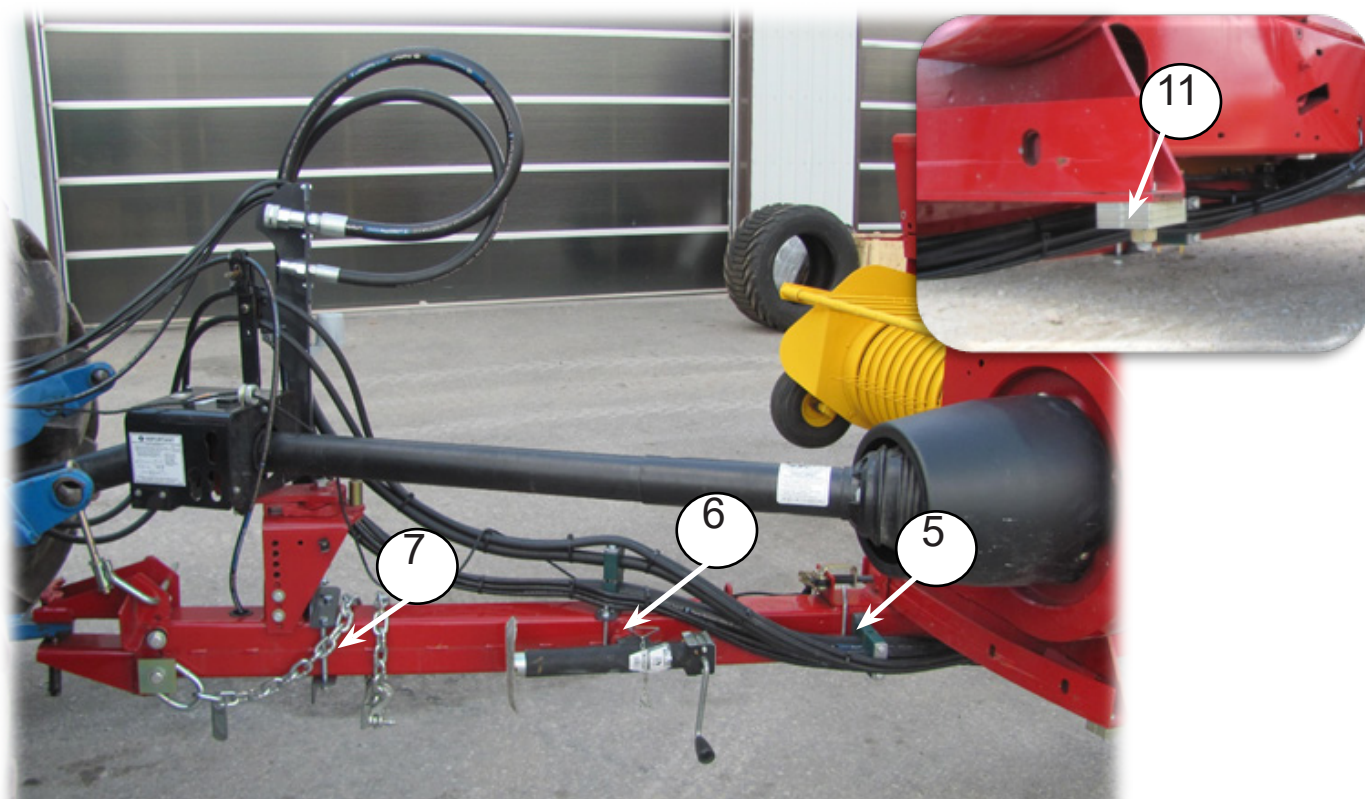
New Holland Hose Kit Installation 5250T



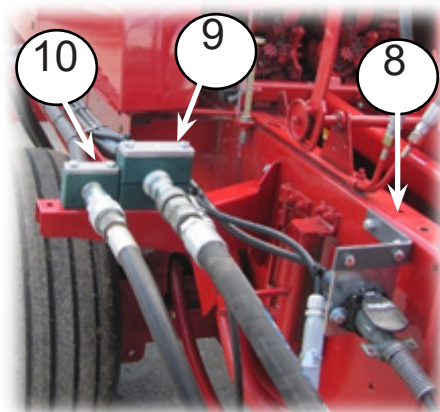
1. Fasten bracket to baler chamber with carriage bolts, then assemble remaining two parts.
2. Keeping bottom of bracket flush with bottom of baler channel, drill (2) 3/8 holes in side of baler to match bracket & install bolts.
3. Attach clamps to hitch, measuring 41" from rear of baler hitch tube to center of first clamp.
4. **Warning! Before proceeding:** Be sure that when tongue is in mid-swing position, plunger connecting arm cannot hit U-bolt.



PREPARING THE BALER

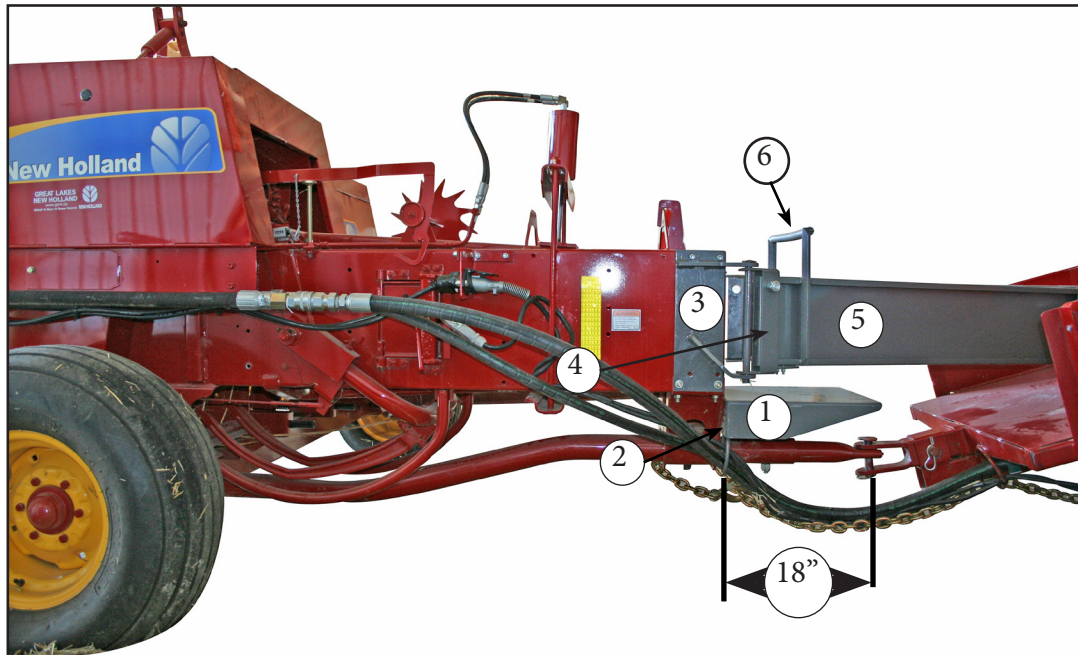


5. Place U-bolt over channel.
6. Place U-bolt in front of jack collar.
7. Angle can be placed forward against PTO bracket.
8. Attach NH light cord bracket here.
9. Be sure baler tongue is in transport position, then route hoses and cords. When routing hoses, start by clamping metal crimp ends inside plastic Stauff clamps for stability, then work forward.
10. Use provided plastic ties, one per notch along rail, then use balance of ties along the remainder of hose routing.
11. Warning! Do not route hoses in a fashion which could allow them to be cut by bolt when swinging hitch. For further diagrams please refer to parts book.



PREPARING THE BALER

Baler Hardware for bale chamber when connecting a baler to a 5250T



- Install pan (1) to baler hitch frame with 3/4" x 1-1/2" hex bolts (On 570 & 575 NH balers the pan mounts directly on). If using chamber extension on NH balers or mounting to any other make of baler, weld or bolt angle mounting bracket (2) to end of baler chute, then install pan onto this angle mounting bracket.
- Install L.H. and R.H. bale guide hinges (3) to chamber using 3/8" x 1-1/2" carriage bolts.
- Bolt other half of hinge (4) to guide (5) using 3/4" x 2-1/2" hex bolt and locknut. Do not over tighten so that guide can raise in the event that the baler wheels go through a low spot, resulting in the guide coming in contact with the chute. Fasten this assembly to hinge on baler with 3/4" x 12" pins.
- Install spring (6) to left and right guides.

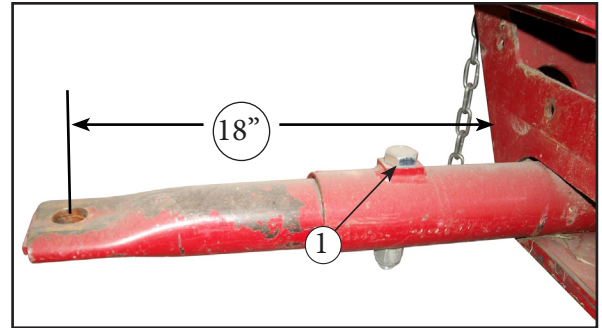
Baler Drawbar

- Drawbar must be 18" from back of baler chamber to center of draw pin hole

PREPARING THE BALER

Rear Baler Drawbar Setup

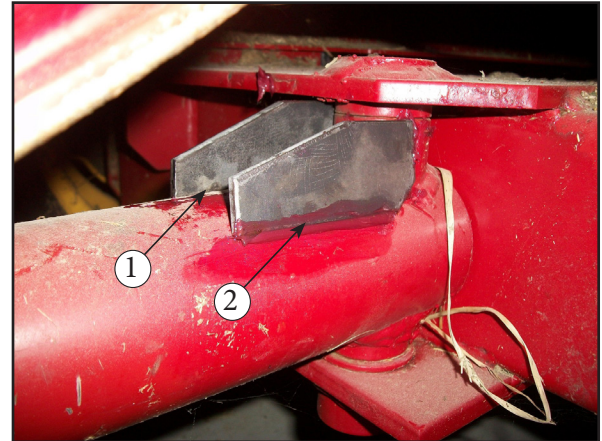
Drill hole for pin (1) out to 3/4" diameter and install bolt. (supplied)



New Holland: Weld two gussets (1) and (2) onto rear drawbar similar to picture.

Hesston: Install drawbar extension. (supplied)

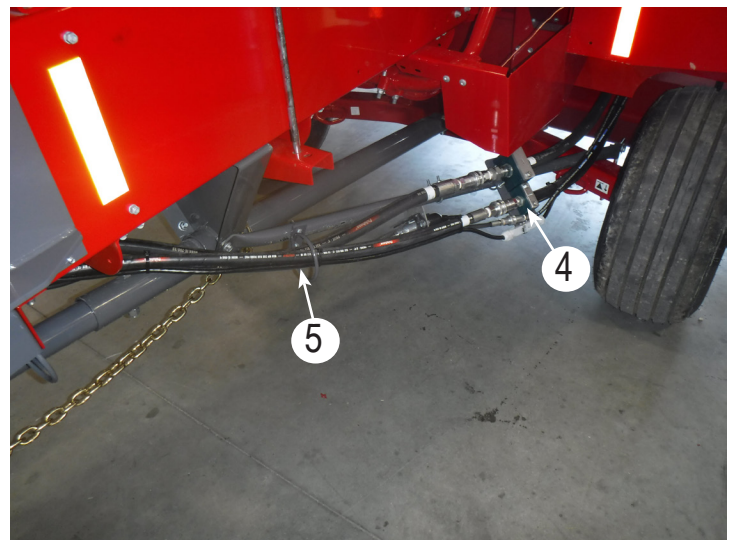
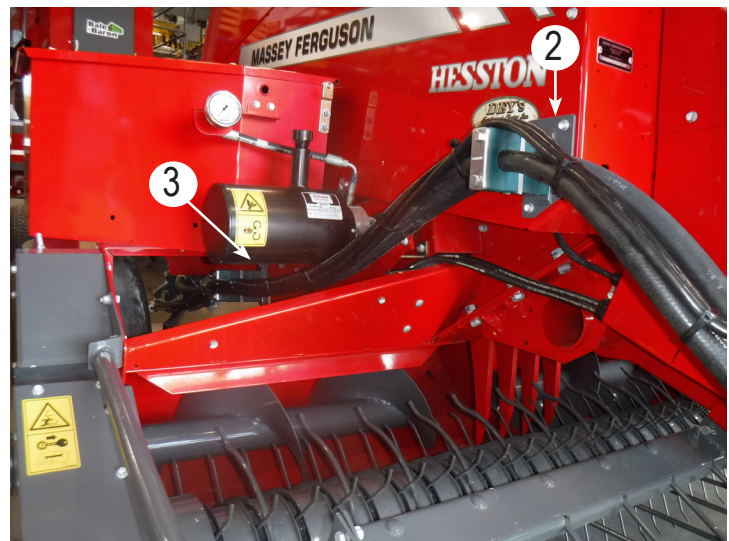
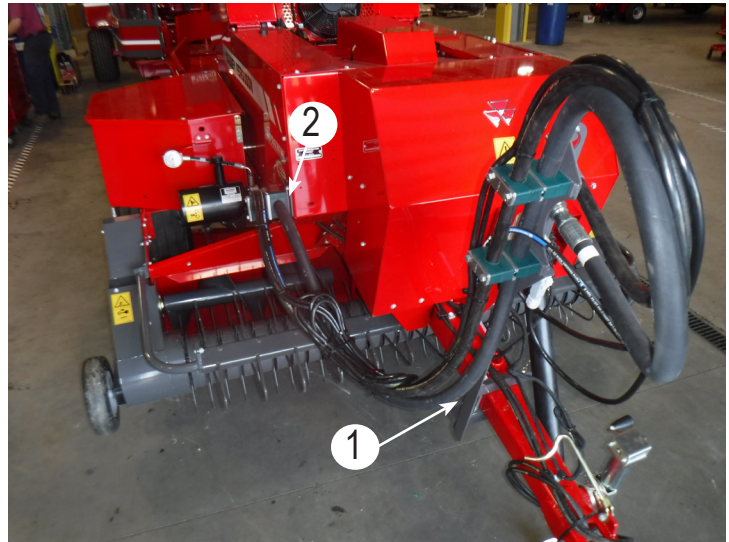
Other Makes: Reinforce rear drawbar as deemed necessary.



PREPARING THE BALER

Hesston Hose Kit Assembly Installation 5250T

- Install hose suspension bracket (1) onto baler tongue. Slide the bracket as far back as possible to provide clearance for the baler's PTO shaft
- Install hose clamp mount (2) to the front bottom corner of the baler frame using existing baler bolts
- Install hose clamp bracket (3) onto bottom of twine box
- Install rear hose clamp bracket (4) on left hand hitch support with u-bolt.
- Route wires along hose and affix with supplied cable ties.
- Mount hose support ring (5) to right hand hitch support with u bolt.



PREPARING THE BALER



Hitch on Bale Baron® 5250T

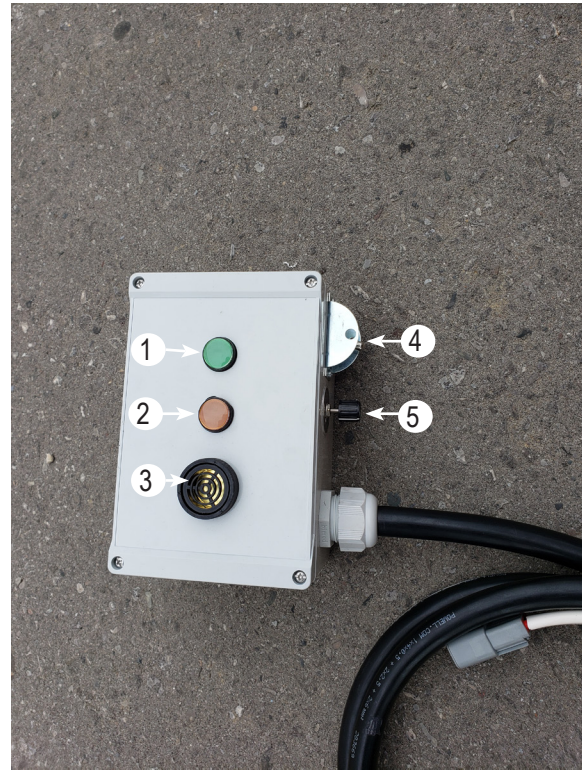
Ensure the telescoping hitch (6) is set to the shortest setting for operating.

ELECTRICAL CONNECTION

Cab Control Panel (non Isobus)

- Mount the basic control panel in the tractor cab in a convenient location.
- Route the power cord to the tractor battery
- Black wire is negative -
- Red wire is positive +

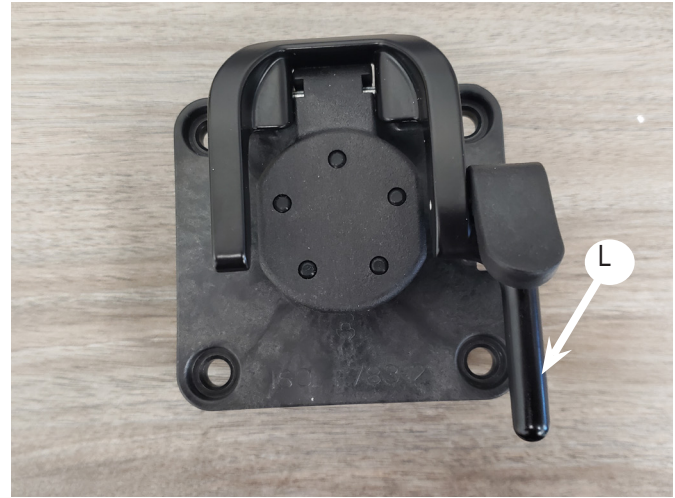
1. Power On - Green light indicates power is on.
2. Alarm - Amber light will come on in conjunction with buzzer when any one of the functions on the Bale Baron® fails. The display on the control panel will say what it is (See Alarm Messages.) and (See Alarm Sounds.)
3. Audio Alarm- works in conjunction with amber light.
 - Also indicates tie cycle – 1 set of 2 long intermittent beeps
 - Also indicates overload – a continuous fast intermittent beep
 - Also indicates a knotter miss-tie – slow continuous intermittent beep
 - (See Overload Indicator System)
4. Power On/Off Switch.
5. Volume control for audio alarm and beeper.
6. Plug to connect optional isobus monitor



ELECTRICAL CONNECTION

Isobus Connection (tractor Isobus)

- Plug the Bale Baron® main power cord into the Isobus connection on the tractor.
- The Isobus connection has adequate power wires to operate the Bale Baron®
- Lock the plug in place by rotating the locking lever (L) down until the plug is held firmly in place
- The cab control panel is not required



Isobus Monitor (optional from Marcrest®)

- Mount the Isobus monitor in the tractor cab in a convenient location, mounted rigid
- Connect the power cord from the monitor into the power plug(6) of the cab control box.



HYDRAULIC CONNECTION

Hydraulics Specifications

Your Bale Baron® is set up with load sensing as a standard feature. Your Bale Baron® can also be set up for a closed center hydraulic pump. Most late model tractors with sufficient hydraulic flow are equipped with load sensing hydraulic pumps. It is thus highly recommended to utilize this feature. A power beyond/load sensing coupler kit may have to be installed on your tractor.

When installing a power beyond kit it is essential that the connections to the power beyond are 1". Power beyond kits come in multiple different configurations. If hoses are required to connect the couplers to the power beyond kit, 1" hoses must be used.

The Bale Baron® 5250 series uses flat faced ISO16028 Compatible quick couplers.



Pressure: 1" Flat Faced
Return: 1.25" Flat Faced

Hydraulic Requirements

A minimum hydraulic flow of 40gpm (150LPM) is recommended on a 5250 series Bale Baron®.

Model #	Double Acting Tractor Remote Valves Required
Bale Baron® 5250T	0
Bale Baron® 5250T Power-Unit or PTO Pump Kit	0
Bale Baron® 5250P	2
Bale Baron® 5250P with Power-Unit or PTO Pump Kit	2

HYDRAULIC CONNECTION

Load Sensing System Setup

- For the load sensing to function properly the load sense bleed off screw may have to be adjusted. Install pressure gauge (supplied by manufacturer and stored in spare parts box) on test port. Pressurize the system by manually actuating plunger out and watch hydraulic pressure reading. Pressure should ramp up quickly to full pressure, and when releasing switch, pressure should drop slightly slower to a standby pressure of approx. 400 psi. To adjust, turn the adjustment screw on the load sense bleed off valve counter clockwise until above parameter is reached. Normally, very little adjustment is required. Re tighten jam nut. Recheck as screw can move when tightening jam nut. **DO NOT OPEN BLEED OFF SCREW MORE THAN 3/4 ROUND FROM CLOSED!**

Closed Center System Setup

- The Bale Baron® comes standard set up to be operated as a closed center system.
- When in use as a closed center system the load sense bleed off screw must be turned in all the way (clockwise). Do not over tighten. Ensure that jam nut is tight after adjusting.

BALE BARON® SETUP

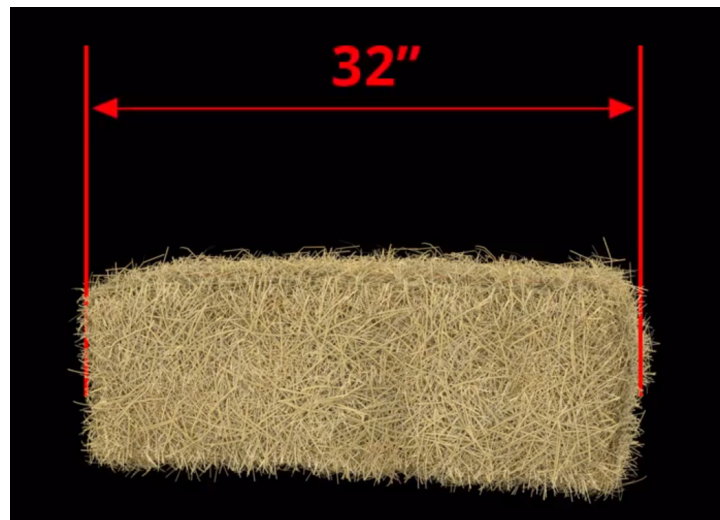
DO NOT OPERATE BEFORE TWINE IS INSTALLED AND CONNECTED! (Twine is tied off for shipping and could result in damage to needles.)

Select Program

- Select either Side feed or Inline. (see Operation of Display Panel)
- Bales made with inline balers may be $\frac{1}{4}$ " taller than bales made with side feed balers. You must choose the appropriate program to match with the bale size. (See Operation of Display Panel) The side feed is the preferred choice if possible as it has a faster tie cycle. The difference between the two programs is when the end gates close. In the side feed program the end gates close before the seventh stack of three bales is inserted. In the inline program the end gates close after the seventh stack of three bales is inserted. If you use the side feed program with an inline baler, when the end gates close the bales are pushed ahead further resulting in insufficient room for the seventh stack of three bales to be inserted.

Bale Size

- Use the bale length gauge supplied with your new Bale Baron®. Each bale length gauge must be transferred to the balers to be used by the baler operators.
- Set baler to make actual bale length of 32" long maximum. The Bale Baron® will not perform as well if the bales are too long.
- Once the stack is compressed these bales will fill out to the 35" chamber width.



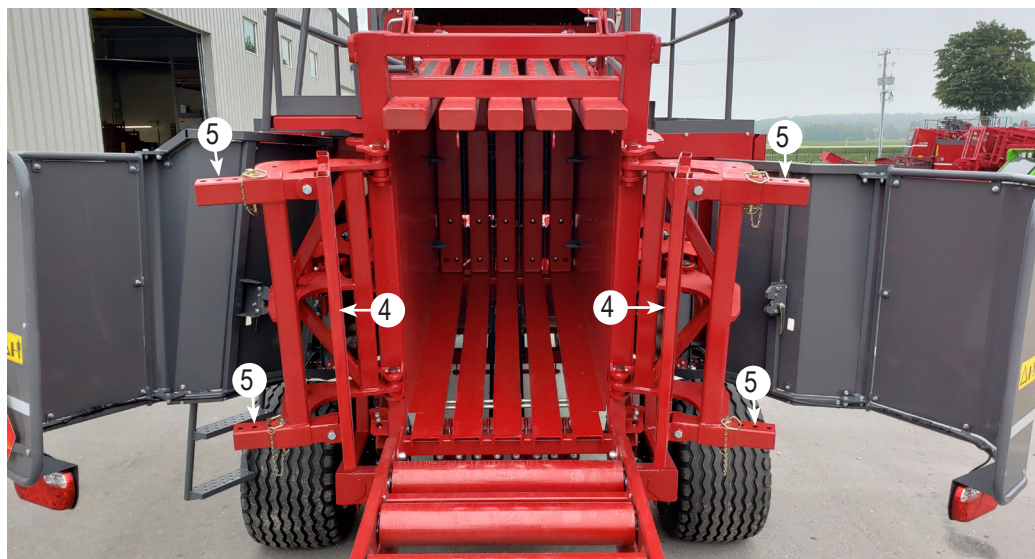
Spacer Bar Adjustment

- Adjust height (3) of front shoe (1) and spring tension (2) accordingly to match bale size, weight and density.



End Gates

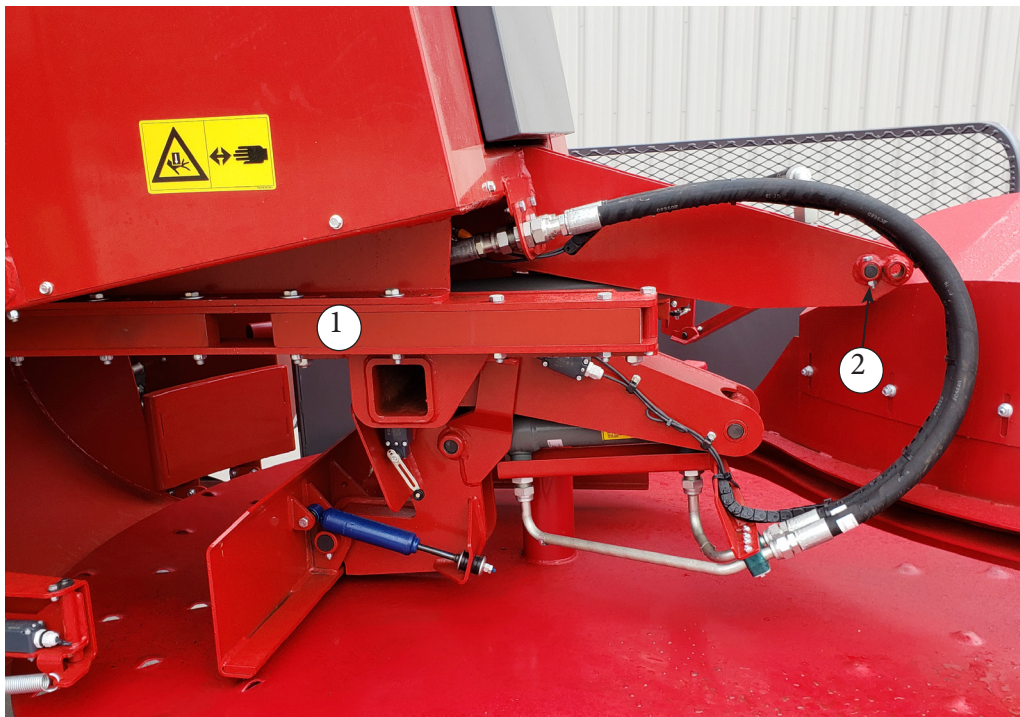
- End gate panels (4) can be adjusted to achieve the desired length of stack. Begin with 2nd tightest setting(5).
- You may have to adjust accordingly to the type of material such as straw. Straw or a mature, stemmy material will not compress as much, therefore you may have to set end gates out farther.
- Adjust end gates as tight as possible. Tighter bundles handle easier and fit into van trailers better.
- Picture below shows gates in **Loosest** available setting.



BALE BARON® SETUP

Bale Setup Position 14" x 18"

- Injector rails (1) right side and left side bolted in rear-most position
- Top injector cylinder (2) pinned in rear-most position
- Spacer bar assembly (4) mounted in lower position
- Set program on Bale Baron® display panel to 14" x 18" bale setting
- Reset end gate adjustment as necessary



BALE BARON® SETUP

Bale Setup Position 16" x 18"

- Injector rails (1) right side and left side bolted in foremost position
- Top injector cylinder (2) pinned in foremost position
- Spacer bar assembly (4) mounted in upper position
- Set program on Bale Baron® display panel to 16" x 18" bale setting
- Reset end gate adjustment as necessary
- Bolts 5 and 6 are on slotted holes. This allows the rails to slide to the 16" bale setting without completely removing the rails from the machine.
- Plunger face extensions (7) removed



BALE BARON® SETUP

Chamber Top Release

The Bale Baron® has a floating chamber top. This feature allows the pressure to be released from the chamber for easy removal of a bundle.

Always lock the chamber top in the down position and secure with pins(1) while operating the Bale Baron®. If the machine is operated with the chamber top in the release position (up), the bundles being produced will be loose.

1. Lock Pins
2. Tension Release Lever



BALE BARON® SETUP

Twine

When selecting twine for the Bale Baron® there are important features to be aware of. Always use premium twine within the correct knot strength parameters.

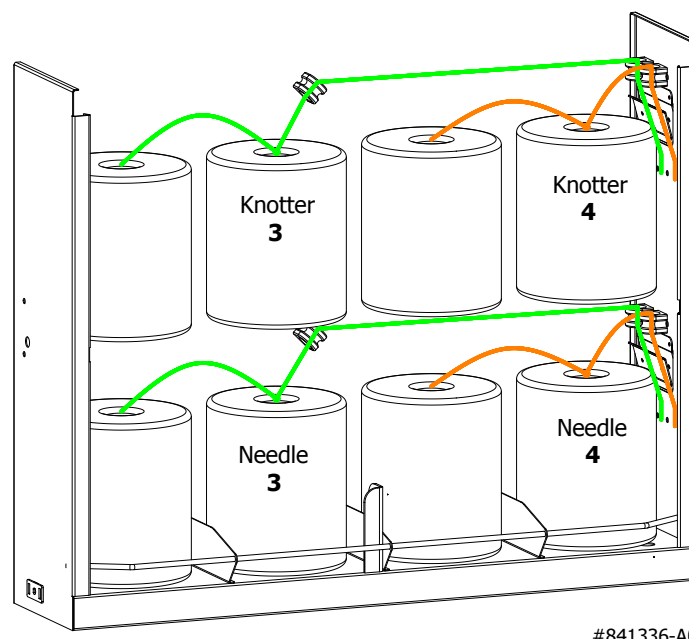
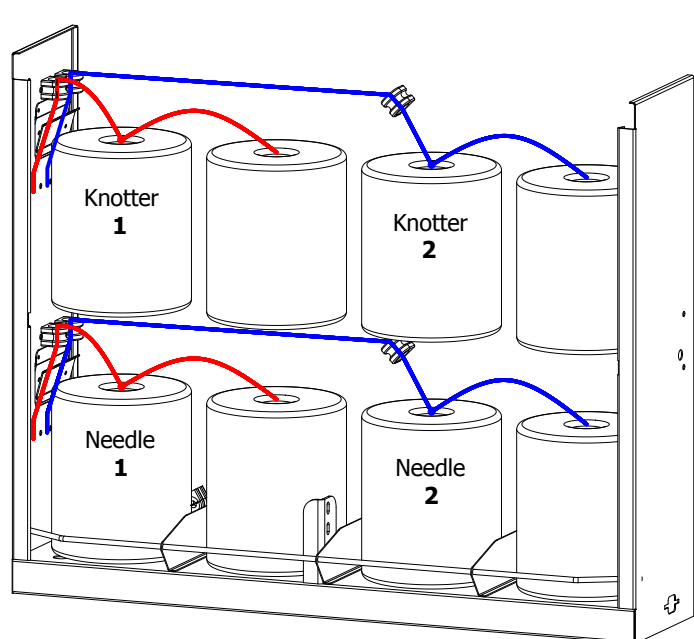
- Minimum knot strength of 180lb (250 m/kg) is required for use on the small square bales.
- 350lb (150 m/kg) knot strength is required for use in the Bale Baron® (Recommended)
- Maximum knot strength twine for use in the Bale Baron® 450lb.

Twine quality and parameters play a very important roll in knotter performance.

Twine Installation

Install 8 balls of twine in each twine box. The top twine balls feed the knotter, and the bottom twine balls feed through the needles.

Each knotter requires twine to be fed from the top and bottom. There are four knotters total. Four twine balls are required per side allowing for two twine balls to be tied together for longer lasting twine.



Refer to the twine installation section later in this document for complete details on routing the twine.

BALE BARON® SETUP

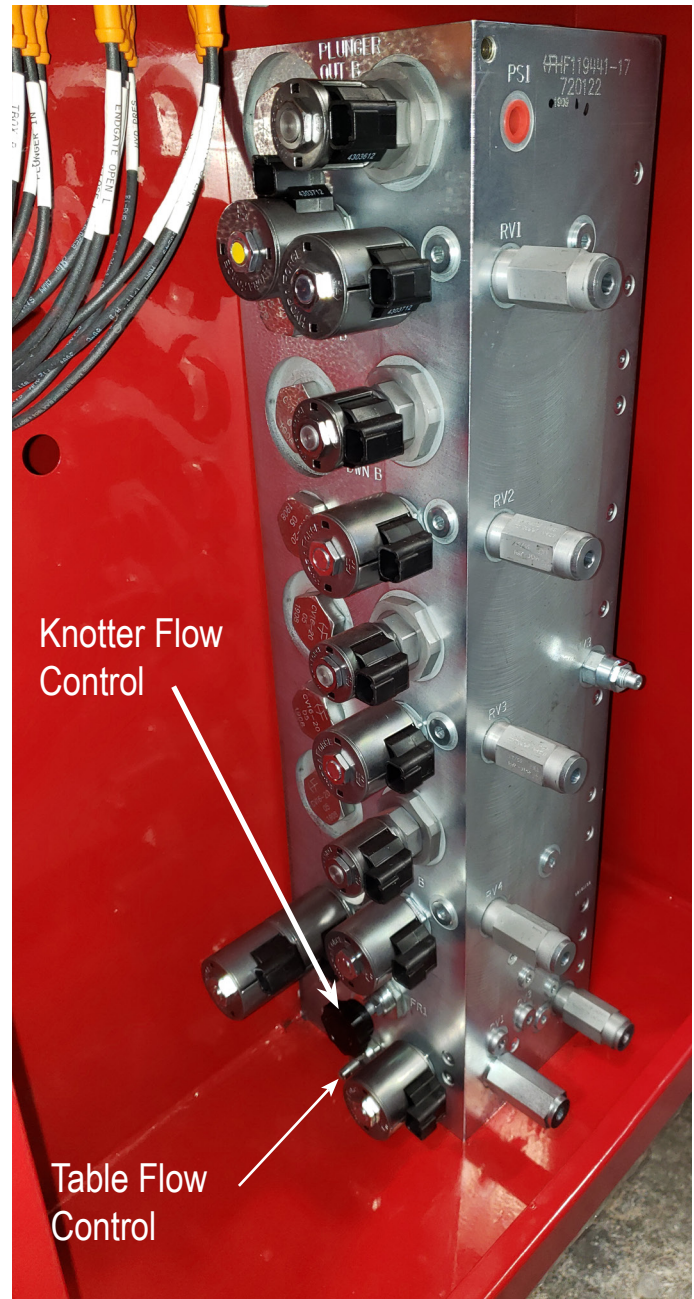
Adjustable Valves

Knotter Speed Flow Control

- Located inside control panel box.
- Normal Operation- set speed control at 40 RPM - normally wide open.
- To set speed, hold knotter switch to run position and count revolutions per minute of knotter sprocket.
- Can be slowed down for service work such as in knotter setup.

Table Speed Flow Control

- Run at 14 RPM.
- Do NOT run full speed.
- To set speed, make mark on table, run and count revolutions per minute.
- Speed control valve is located inside control panel box.



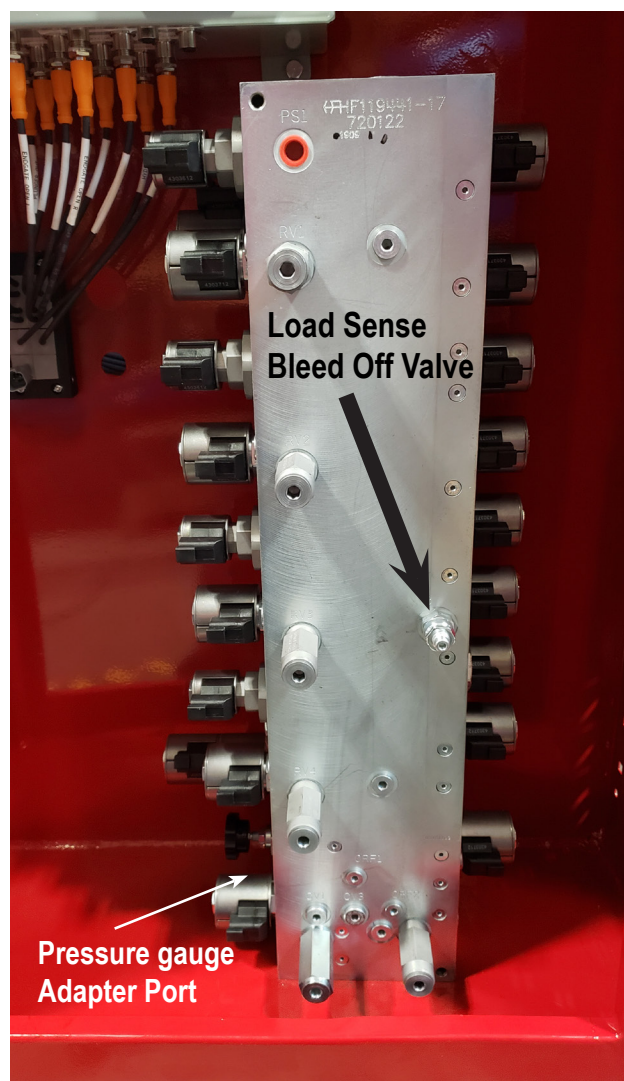
BALE BARON® SETUP

Load Sense Bleed Off Valve

The load sense bleed off valve may need to be adjusted depending on the hydraulic source supplying the Bale Baron®. Refer to the “Hydraulic Connection” section of this document for details.

Normally the load sense bleed off valve should be all the way closed (clockwise).

Do not over tighten the load sense bleed off valve.



Pressure Test Procedure

Note: A pressure gauge for testing purposes is provided in the spare parts box. Do not leave on test port for normal operation

- Install pressure gauge on test port
- Start tractor and engage hydraulics
- Standby pressure should be between 300-600 psi
- Select Manual Mode
- Activate and hold plunger out function button
- Pressure should quickly ramp up to full system pressure of approximately 2900 psi (depending on tractor setting)
- Release function button
- Pressure should slowly drop to standby pressure (within 2-3 seconds)

BALE BARON® SETUP

Optional Endgates

The telescoping endgate option gives an operator the ability to produce different sized bundles with little work required in modifying the machine.

Safety Warnings

WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine and power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.

WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

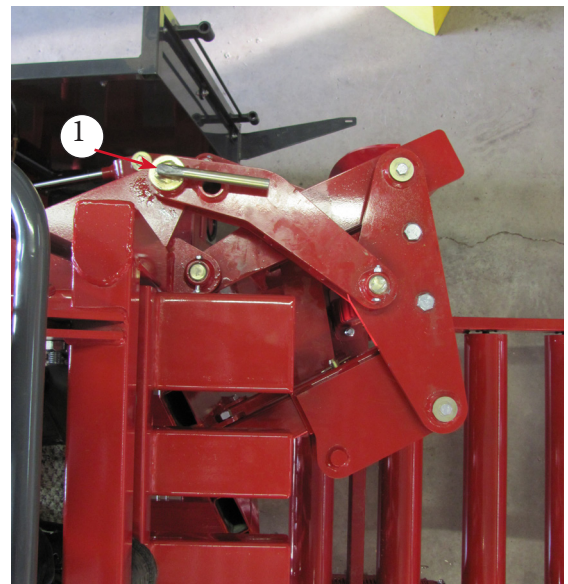
WARNING: All shields and guards must be in position before operating the Bale Baron®.

9/18 Bale Bundle Mode.

Ensure endgates are fully open before relocating pins to facilitate alignment of holes. Install all 4 adjustment pins on the adjustment arms to the mounts on the frame of the Bale Baron®(1).

After the pins have been moved to the 9/18 bale bundle selection, the correct program must be selected to determine the bundle size. Refer to program settings.

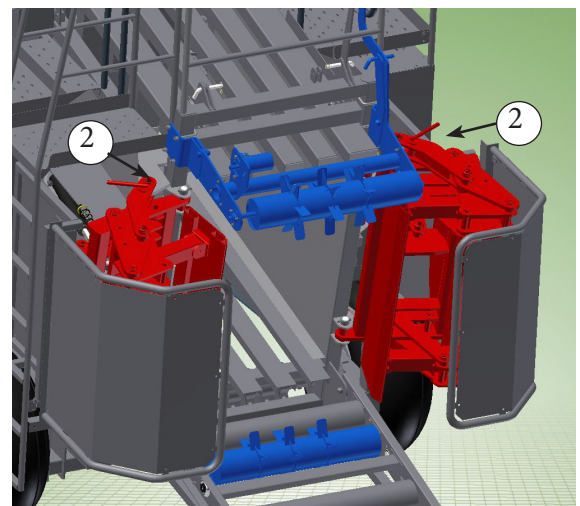
All 4 adjustment pins must be on the same setting, or catastrophic damage will occur.



21 Bale Bundle Mode.

Ensure endgates are fully open before relocating pins to facilitate alignment of holes. Install all 4 adjustment pins on the adjustment arms to the frame of the endgate(2). After the pins have been moved to the 21 bale bundle selection, the program must be changed to the 21 bale bundle selection. Refer to program settings.

All 4 adjustment pins must be on the same setting, or catastrophic damage will occur.



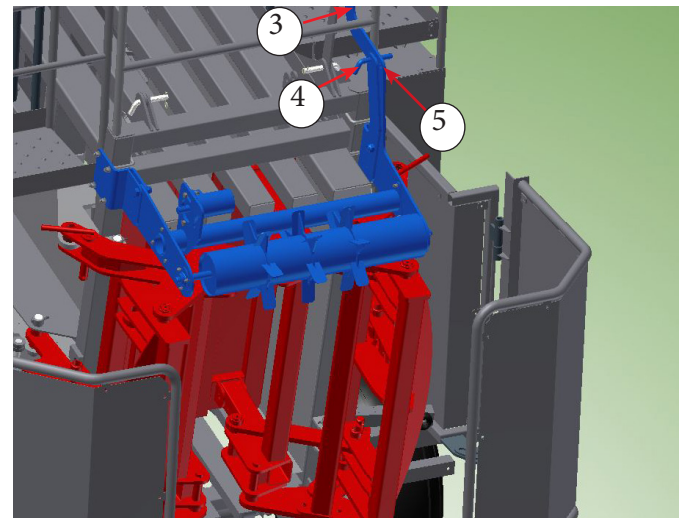
BALE BARON® SETUP

Expeller Roller Kit

If a Bale Baron® has optional endgates for 9 pack bundles, an expeller roller kit will be installed to help extract the produced bundle from the machine during operation. The rollers automatically turn on during auto mode when needed. The rollers free wheel as the bundle is being produced to allow for smooth operation.

Top Roller Adjustment.

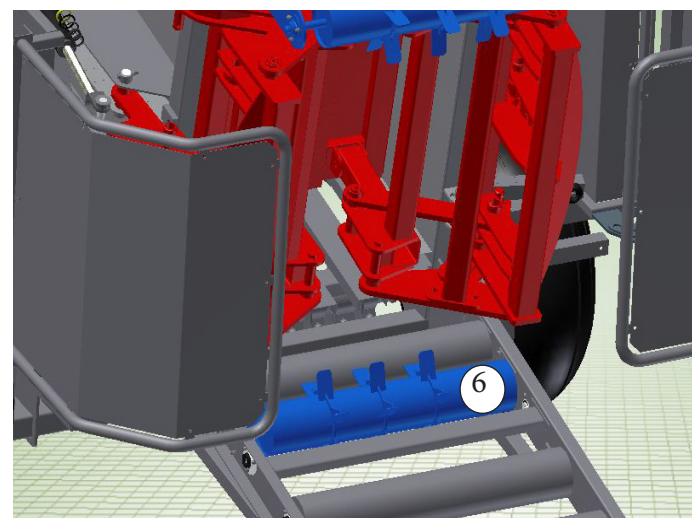
The top roller is adjustable allowing an operator to lift the roller up out of the way so the spikes do not engage into the bundle. While holding firmly onto the handle(3) remove the pin(4). Lift the handle and reinstall the pin into the upper adjustment hole(5).



Lower Expeller Roller

The lower expeller roller(6) is not adjustable. When in auto mode the roller will turn on one horizontal stack prior to the tie cycle regardless of the bundle size. This is programmed into the software.

The lower expeller roller(6) has valving that allows it to free wheel with the bundle as the bundle is being produced. This way the roller does not need to operate until just prior to the tie cycle. The speed of the roller is faster than the plunger to extract the bundle so the endgates will clear the bundle when they close.



BALE BARON® SETUP

Pickup Setup 5250P

Safety Warnings

WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine and power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.

WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

WARNING: All shields and guards must be in position before operating the Bale Baron®.

Pickup Height Adjustment

1. Park the tractor and the Bale Baron® on a hard level surface.
2. Lower the pickup with the tractor's hydraulic system and measure the distance between the ground and the front of the skid shoe on the pickup (1). The pickup should be approximately 3" off the ground.



To Adjust:

1. Set the pickup on blocks and remove the pin on the lift cylinder (2). Loosen the clamp bolt (1) on the cylinder clevis. Rotate the cylinder clevis clockwise to lower the pickup and counter-clockwise to raise the pickup. Rotating the clevis 1 turn will raise or lower the pickup approximately 3/8".
2. Insert the cylinder pin and install the retaining clip.
3. Tighten the cylinder clevis clamp bolt.



BALE BARON® SETUP

Pickup Belt Adjustment

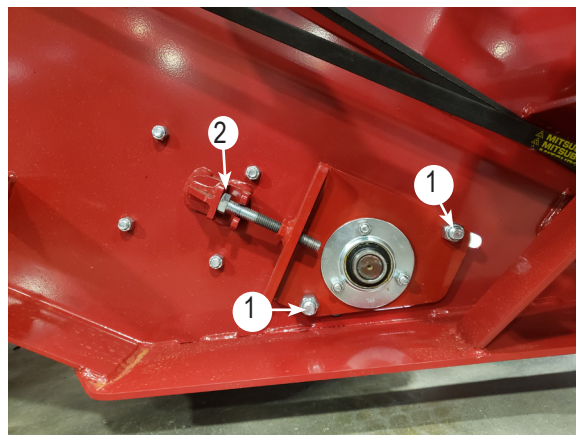
1. Before performing this operation, safely support the pickup with a block.
2. Observe the distance between the pickup belt and the front cross tube(5). The belt should hang within a 1/4 inch from contacting the tubing.
3. Do not over-tighten as this will cause premature wear of belt lacing.
4. If the belt is overtightened the belt will walk left and right. Premature failure of the belt lacing will occur.



To Adjust:

Adjust the front roller to change belt alignment and tension.

1. Loosen the locking bolts (1) on the adjuster plates on both sides.
2. Turn the adjuster bolts (2) counter-clockwise to tighten the belt.
3. Turn the adjuster bolts (2) clockwise to loosen the belt.

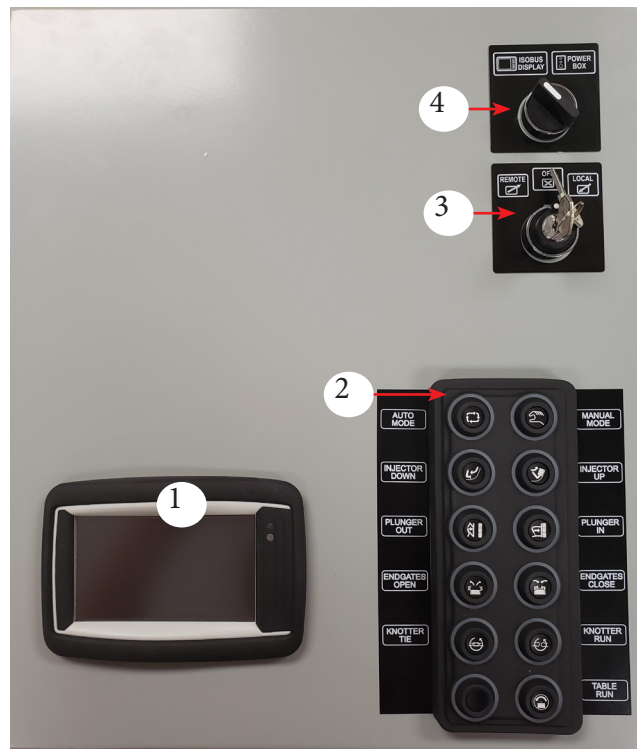


4. Turn the bolts equal amounts unless the belt does not run in the center or moves to one side.
5. To track the belt in the center, make adjustments on the front roller.
 - To move the belt to the opposite side turn adjuster bolt counter-clockwise.
 - To move the belt to the side you are adjusting turn the adjuster bolt clockwise.
 - After adjustment recheck belt tension.
 - Tighten locking bolts (1).

Note: *It may be difficult to have the belt track on dead center. It is OK to have the belt track slightly off center as long as it doesn't rub on the sides. A walking belt indicates over tightened.*

USING THE BALE BARON®

Control Panel Layout



1. Display

- Shows all program selections
- Shows all command and alarm messages

2. Function Switches

- Used to operate individual components in manual mode

3. Remote/Local Selector Switch

- Select Local to operate machine from control panel
- Select Remote to operate machine from in cab display

4. Isobus Selection switch

- For use without an isobus monitor in the tractor

USING THE BALE BARON®

Display Panel Options

Home Screen



1. Menu

- Select to access menu page

2. Vertical Stack Increase

- Press to increase the vertical stack count. The value will increase by one every press

3. Vertical Stack Decrease

- Press to decrease the vertical stack count. The value will decrease by one every press

4. Batch Counter

- Resettable counter for keeping track of individual jobs. Press and hold to reset to zero

5. Horizontal Stack Decrease

- Press to decrease the horizontal stack count. The value will decrease by one per press

6. Horizontal Stack Increase

- Press to increase the horizontal stack count. The value will increase by one per press

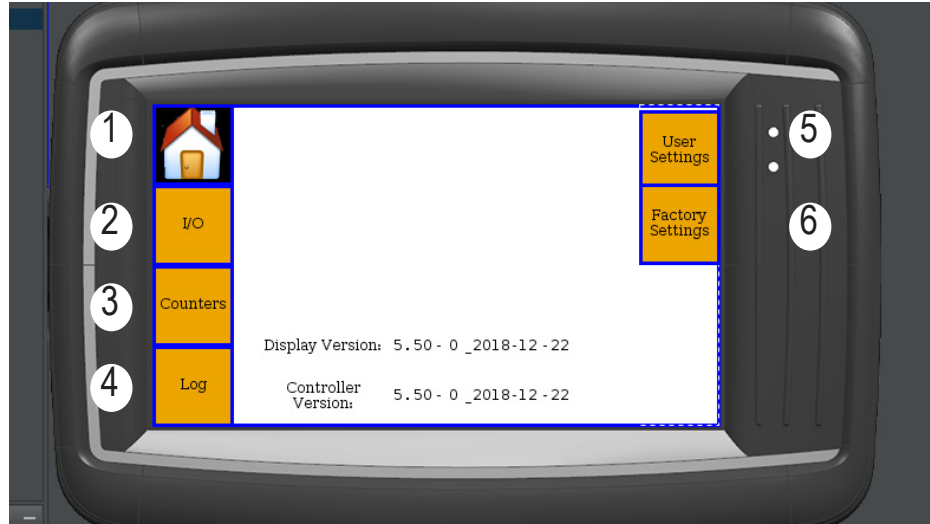
7. Alarm Silence

- Press to clear an alarm

USING THE BALE BARON®

Display Panel Options

Menu Screen



1. Home Button

- Press to return to the home screen

2. Input/Output Page Selection

- Press to select the inputs and outputs page

3. Counters

- Press to access counters page

4. Log

- Press to access service log

5. User Settings

- Press to access adjustable settings

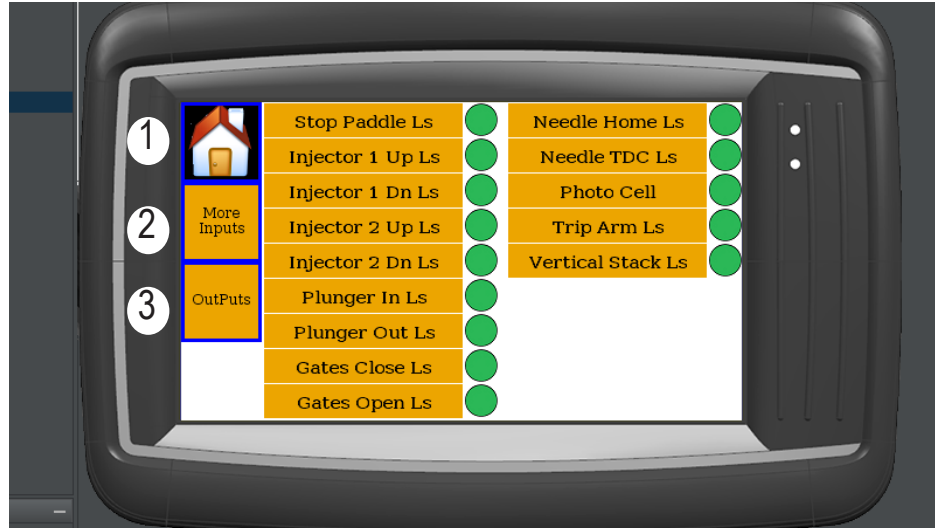
6. Factory Settings

- Press to access factory settings.
- Factory settings are password protected

USING THE BALE BARON®

Display Panel Options

Inputs Screen



The Inputs screen displays which limit switches are active in real time. The status indicator shows solid green if an input is active. The indicator will be blank if an input is inactive.

1. Home Button

- Press to return to the home screen

2. More Inputs button

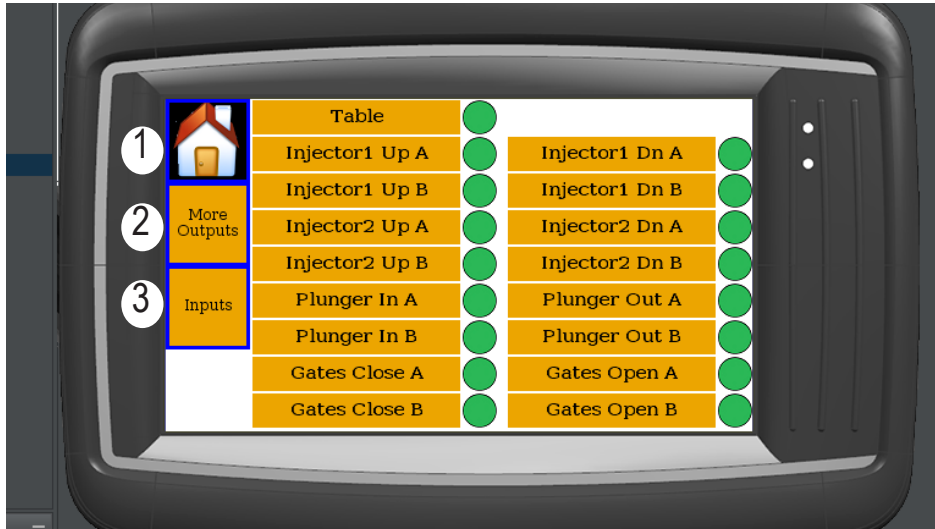
- Press to access the next inputs page

3. Outputs Button

- Press to access the outputs page

USING THE BALE BARON®

Outputs Screen



The Outputs screen displays which solenoids are active in real time. The status indicator shows solid green if an output is active. The status indicator will be blank if the output is inactive.

1. Home Button

- Press to return to the home screen

2. More Outputs Button

- Press to access the next outputs screen

3. Inputs Button

- Press to access the inputs page

USING THE BALE BARON®

Counters Screen



The counters screen allows an operator to keep track of four separate jobs at the same time. Each counter can be turned on or off allowing an operator to pause a counter for a specific job. The counters display total bundles.

1. Home Button

- Press to return to the home screen

2. Menu Button

- Press to return to the menu screen

3. More Counters Button

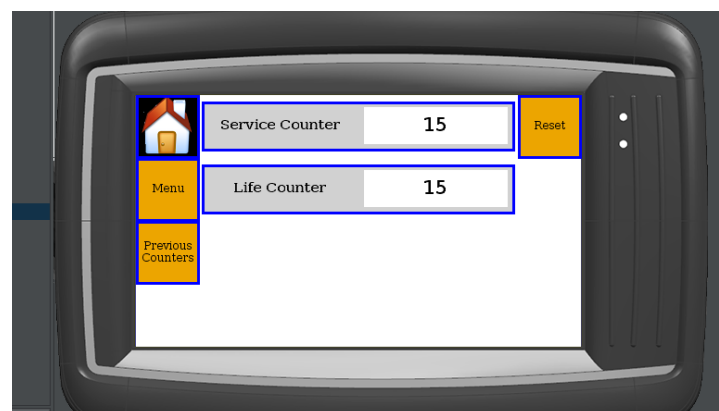
- Press to access the next counter screen

4. Reset Button

- Press to reset the counter to 0

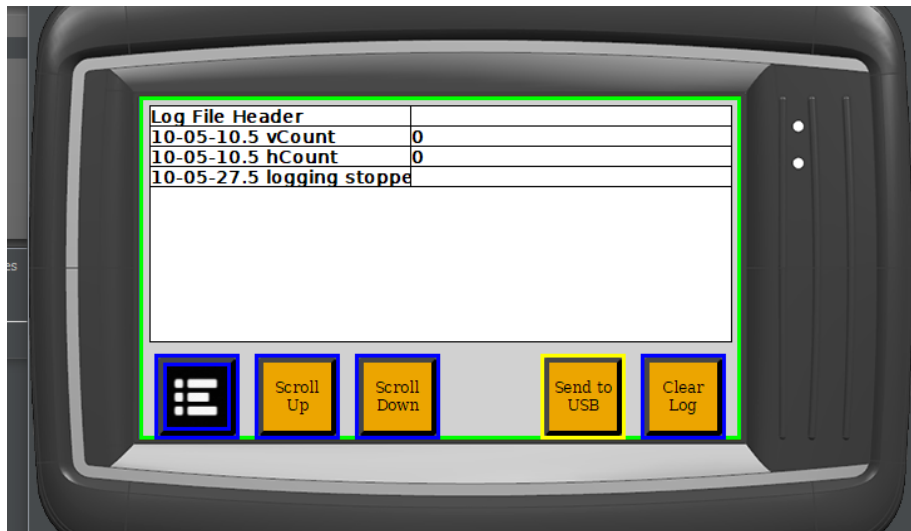
5. On/Off Button

- Press to start and stop a counter



USING THE BALE BARON®

Log Screen



The Log Screen displays the last one hundred actions the Bale Baron® has done. This includes all actions in Auto and Manual modes as well as any manual actions.

1. Menu Button

- Press to return to the menu screen

2. Scroll Up

- Press to scroll up through the log list

3. Scroll Down

- Press to scroll down through the log list

4. Send To USB

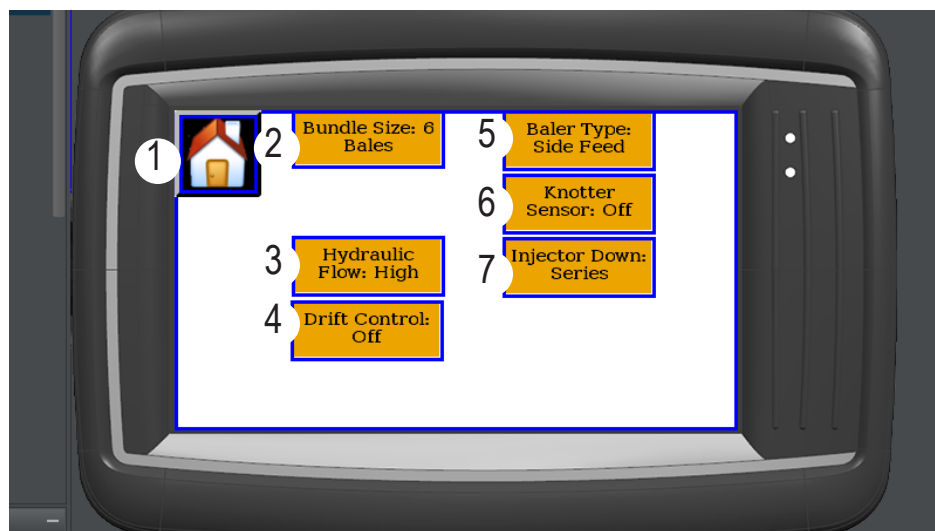
- This will allow you to record the log to a USB drive.

5. Clear Log

- Press to clear all actions from the log

USING THE BALE BARON®

User Settings Screen



1. Home Button

- Press to return to the home screen

2. Bundle Size

- Press to change the quantity of bales in the bundle
- When modifying bale quantity, optional telescoping endgates must be installed, when using 14"x18" bales (See "Optional Endgates" on page 50). Telescoping endgates are not required for 16"x18" bales

3. Hydraulic Flow

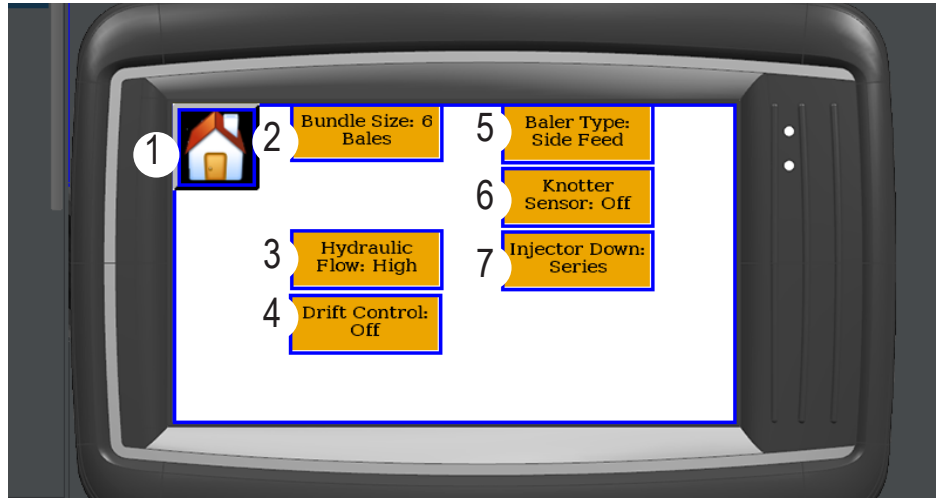
- Select high flow if the Bale Baron® is supplied with a minimum 27 GPM.
- High flow setting will open the endgates during the tie cycle to gain time
- If in doubt select standard flow, the endgates will wait to open until knotter cycle is completed

4. Drift Control

- Drift control will automatically home components every 15 seconds when no bales are being inserted
- Normally the drift control should be turned off

USING THE BALE BARON®

User Settings Screen Continued...



5. Baler Type

- **Inline setting** - Endgates will wait to close until 21 bales are in the chamber
 - Bales produced by inline balers are 1/4 inch taller than those produced by a side feed baler. Therefore the endgates need to wait to close to prevent bale feeding problems on the last 3 bales.
- **Side feed setting** - Endgates will close after 18 bales are in the chamber
 - The side feed setting is the preferred setting. Closing the gates after 18 bales (one stack before the tie cycle) saves time during the bundling process.

6. Knotter Sensors







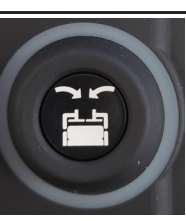

- Knotter alarms should be set to on for normal operation
- Knotter alarms can be turned off individually if needed

7. Injector Down

- Series - injector stage two cylinder will fully retract and then stage one will retract
- Parallel - Both injector cylinders will retract at the same time. This is the fastest option but may pinch waiting bale if crowding the Bale Baron® too hard.

USING THE BALE BARON®

Function Switches

<p>Auto Button</p> <ul style="list-style-type: none"> • Press to engage auto mode 	
<p>Manual Button</p> <ul style="list-style-type: none"> • Press for manual operation. • Function switches will only operate in manual mode. 	
<p>Injector Down</p> <ul style="list-style-type: none"> • Moves injector down. • Will only operate in Manual mode 	
<p>Injector Up</p> <ul style="list-style-type: none"> • Moves injector to the up position. • Used to Manually insert bales behind the plunger • Will only operate in Manual mode 	
<p>Plunger Out</p> <ul style="list-style-type: none"> • Moves the Plunger to the Out position • Will only operate in manual mode 	
<p>Plunger In</p> <ul style="list-style-type: none"> • Moves the plunger to the In position • Use to manually insert a vertical stack of three bales into the chamber. • Will not operate if needle the yoke is not in home position. • Will not move in if the injector is not in up position. 	
<p>Endgates Closed</p> <ul style="list-style-type: none"> • Closes the endgates • Will only operate in manual mode 	
<p>Endgates Open</p> <ul style="list-style-type: none"> • Open the endgates • Endgates can be opened to assist with tying a pack that has incorrect volume of bales • Will only operate in manual mode 	

USING THE BALE BARON®

Knotter Run

- Run selection will not trip knotter (mainly used for knotter service work).
- Will not run unless plunger is in and injector is down all the way.



Knotter Tie

- Tie selection will successfully complete one tie cycle.
- Will not run unless plunger is in and injector is down all the way.
- To tie - hold tie switch until knotter has completed a cycle and the clutch has disengaged
- During a manual tie, both Horizontal and Vertical stack counts are automatically set to zero.
- **Note:** It is **not** mandatory to have endgates closed for tying.



Table Button

- Press to manually turn rotary table



Local/Off/Remote Switch

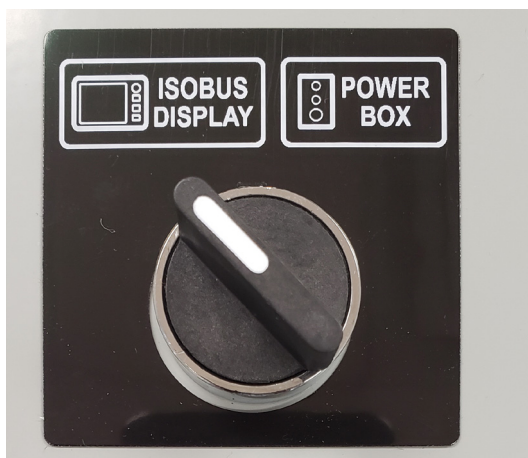
- Local selection will allow an operator to control the Bale Baron® from the panel function switches
- Remote selection will allow an operator to control the Bale Baron® from the cab monitor
- Off selection allows an operator to turn off the Bale Baron® and remove the key.



USING THE BALE BARON®

Isobus Selector Switch

- Select “Isobus display” when the Bale Baron is being operated with an Isobus Monitor
- Select “Power Box” when the Bale Baron® is being used without an Isobus Monitor



Indication Lights

The manual buttons on the Bale Baron® control panel are back lit indicating the status of each function. The color of the light indicates the status of the function

- **Blue Light** - The corresponding limit switch is activated.



- **Green Light** - The function is active



- **Red Light** - There is an error with the function

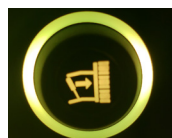


Override Feature

In the event that the needles are not in the home position and the plunger is not in the “in” position, the machine can be put in override.

Hold Manual button for 10 seconds until the light turns yellow. Continue holding the manual button, and press plunger in. The plunger will move in.

Warning: Check to ensure the needles are free from the plunger before using the override feature. The plunger has enough force to damage the needles in the event they would be caught on the plunger.



USING THE BALE BARON®

Vertical Stack Count

The Vertical Stack Count indicates how many bales are immediately behind the plunger. The Vertical Stack Count can be 0, 1 or 2. As the injector injects bales behind the plunger the Vertical Stack Count automatically changes to indicate the correct amount. To verify what the Vertical Stack Count is, you can look through the sight windows in the metal side plate just behind the plunger (fig.1).

To modify the vertical stack count, press “vertical stack increase” or “vertical stack decrease” until the correct amount is displayed.

In the event of a bale jam while in auto mode, where the injector must be manually moved to finish inserting a bale, the vertical stack count will automatically increase upon activation of injector up limit switch.

Other than above, the Bale Baron® does not count in manual mode. If inserting extra bales in manual mode, the vertical stack count must be modified.

Note: The Vertical Stack Count cannot be modified to 3. If there are 3 bales in the vertical stack, the stack becomes a horizontal stack and must be manually plunged.



Fig. 1

USING THE BALE BARON®

Horizontal Stack Count

The Horizontal Stack Count indicates how many complete stacks of 3 bales are in the chamber. As the plunger cycles inserting a complete stack, the horizontal stack count automatically increases by one value. The horizontal stack count can be a value of 0 - 6. It can not be modified to 7 as this indicates a complete bundle and it must be tied.

Verify the Horizontal Stack Count by checking how many stacks are beyond the center line of the endgates(down arrow). In the picture below, the horizontal stack count is two(fig.2).

To modify the horizontal stack count, press “horizontal stack increase” or “horizontal stack decrease” until the correct value is displayed.

In the event of a bale jam while in auto mode, where the plunger must be manually moved to finish inserting a horizontal stack, the horizontal stack count will automatically increase upon activation of plunger in limit switch.

Other than above, the Bale baron® does not count in manual mode. If inserting extra stacks in manual mode, the horizontal count must be modified.

Note: The Horizontal Stack Count cannot be modified to 7. If there are 7 stacks in the chamber, this indicates a complete bundle and the bundle must be tied manually.



Fig. 2

USING THE BALE BARON®

Operation of Tie Cycle (Auto Mode)

The tie cycle takes extra time causing the rest of the system to perhaps have to wait until the tie cycle is complete. Therefore, if you are running at full capacity, you will have to shift down to match speed accordingly. Failure to slow down may cause overload on rotary table resulting in jammed bales. To prepare you to slow down, you will receive 1 set of 2 long intermittent beeps from the audio alarm on the cab control and the message “three bales until tie cycle” as an advance notice of the tie cycle. At this point there are still three bales to be added to the bundle. When the tie cycle is initiated you receive another set of 2 long intermittent beeps with the message “tie cycle in progress”. This indicates when you are to watch the flags above knotter. The behavior of the flags indicates whether the knotters have tied properly. If a bale is against the stop paddle, the table and pickup will stop, waiting for the tie cycle to complete. Slow down, or momentarily stop at this time. Resume to normal speed again after the table resumes.

NOTE: How much you slow down is dependent upon the speed you are traveling. For example, at 5 MPH you may only have to shift down one gear, but at 2 MPH such as with a very heavy windrow of straw, you may choose to disengage the clutch for 3 to 5 seconds until the tie cycle is complete.

Overload Indicator System

The Bale Baron® is equipped with an Overload Indicator System, which consists of a photo cell sensor. An overload condition is indicated when a bale sits in front of the photo cell for longer than a specified time. The message of the overload condition is indicated via the audio alarm beeper on the cab control, which consists of continuous fast intermittent beeps and the message “table is full”. This Overload Indicator System monitors the speed of which the Bale Baron® can take the bales. It also eliminates the need for the operator to constantly watch the Bale Baron®. When you get an overload indication, check if bales are still moving on rotary table. If so, slow down to match your traveling speed with the Bale Baron’s capacity. If bales are stopped and/or jammed, stop forward travel, wait to see if bales start moving again. If bales start moving again resume operation. If bales remain jammed shut off tractor and power unit, if so equipped and remove offending bales. The Overload Indicator will stop beeping and reset itself.

USING THE BALE BARON®

Command Messages

Command messages are messages that are displayed when an operator attempts to select a feature or operate a function and all corresponding conditions are not met. These messages are to assist an operator. The program is setup that if a function is attempted and conditions are not met, the machine will not move and the command message will display explaining the reason, and what to do to allow the function.

Command Message	Cause	Course of Action
Stop Paddle Is Active! Move Bale From Stop Paddle	The stop paddle is activated by a bale when the injector is attempting to move up with 3 bales in the vertical stack	Remove bale from table, to avoid inserting a fourth bale.
Injector Powered Out! Finish Inserting Last Bale In Manual	There was a time out error in a previous injector cycle, injector having failed to activate INJECTOR UP limit switch. This is most often caused by a bale that is too long.	Switch machine to manual mode and move injector up completely until INJECTOR UP limit switch is activated, move injector down to home position then select Auto mode, message should clear.
Plunger Powered Out! Finish Compressing Last Stack In Manual	There was a time out error in a previous plunger cycle, plunger having failed to activate PLUNGER IN limit switch.	Switch machine to manual mode and move plunger in completely until PLUNGER IN limit switch is activated, select auto mode, message should clear.
Change Prohibited Tie Off Bundle First	A program change of bundle size or bale size has been requested and denied, indicating a partial bundle in the chamber.	Manually tie off bundle. Proceed with program change.
Plunger Must Be In The In Position	This condition must be met before KNOTTER TIE function can be performed.	Manually move PLUNGER IN completely. Manually move INJECTOR DOWN. Proceed with KNOTTER TIE if desired.
Plunger Must Be In The Out Position	This condition must be met before INJECTOR UP function can be performed.	Manually move PLUNGER OUT completely. Proceed with INJECTOR UP.
Gates Must Be In The Open Position	This condition must be met before PLUNGER OUT function can be performed.	Manually move ENDGATES OUT completely. Proceed with PLUNGER OUT.
Injector Must Be In The Down Position	This condition must be met before KNOTTER TIE function can be performed.	Manually move INJECTOR DOWN completely. Proceed with KNOTTER TIE.
Injector Must Be In The Up Position	This condition must be met before PLUNGER IN function can be performed	Manually move INJECTOR UP completely. Proceed with PLUNGER IN.

USING THE BALE BARON®

Command Messages

Command Message	Cause	Course of Action
Needles Must Be In The Home Position	This condition must be met before the plunger can be moved in or out, or the injector can be moved up	Finish the tie cycle by selecting knotter run, then move desired component
Tie Cycle Was Interrupted! Finish Tie In Manual Mode	The machine was shut down during a tie cycle.	Finish the tie cycle by selecting knotter run.
Vertical Stack Count = 3! Compress Last Stack In Manual Mode	Auto mode was selected but the plunger did not finish its previous cycle.	Finishing inserting the plunger in manual mode. Return to auto
Vertical Stack Limit Is Active! Compress Last Stack In Manual	There are 3 bales in front of the plunger, and the plunger is in the out position.	Finish cycling the plunger in auto mode, inserting the three bales.
Station Must Be In Local position	The keyed selector switch on the panel is not in the local position and a function is being attempted at the panel	Switch the selector switch to Local
Station Must Be In Remote Position	The keyed selector switch on the panel is not in the remote position and a function is being attempted from the tractor panel	Switch the selector switch to Remote.

USING THE BALE BARON®

Alarm Sounds

- Continuous alarm indicates any system malfunction.
- Fast continuous, intermittent beep indicates a system overload.
- 2 long beeps indicates tie cycle in advance and tie cycle in operation. (See Operation of Tie Cycle (Auto Mode))
- Slow continuous intermittent beep indicates mis-tie alarm

Alarm Messages

In the event of any system malfunction any one of the following messages may be on the display panel as follows:

1. Hyd Pressure Switch not Active
2. Table Shield Safe Switch not Active
3. Emergency Stop Switch not Active
4. Remote/Local Switch not Active
5. Hydraulic Pressure Circuit A not Active
6. Hydraulic Pressure Circuit B not Active
7. Table Shield Circuit A not Active
8. Table Shield Circuit B not Active
9. Emergency Stop Circuit A not Active
10. Emergency Stop Circuit B not Active
11. Remote & Local Selector Switches both Active
12. Local Selector Switch not Active
13. Remote Selector Switch not Active
14. Remote/Local Switch not Active
15. Right Table Shield Switch not Active
16. Right Table Shield Circuit A not Active
17. Right Table Shield Circuit B not Active
18. Left Twine Box Safety Switch not Active
19. Left Twine Box Safety Switch Circuit A not Active
20. Left Twine Box Safety Switch Circuit B not Active
21. Right Twine Box Safety Switch not Active
22. Right Twine Box Safety Switch Circuit A not Active
23. Right Twine Box Safety Switch Circuit B not Active
24. Remote/Local Switch not Active
25. Needle Up Limit not Acting
26. Early Gate Open Time to Long
27. Regen Switch not Acting
28. Needle Home Switch not Active! Check Needle Position
29. Injector Up Limit Switches not Active
30. Injector stage 1 Up Limit Switch not Active
31. Injector stage 2 Up Limit Switch not Active! Finish Inserting Last Bale In Manual Mode
32. Injector Down Limit Switches not Active
33. Injector stage1 Down Limit Switch not Active
34. Injector stage 2 Down Limit Switch not Active
35. Injector stage 1 up and down limit switches active
36. Injector stage 2 up and down limit switches are active
37. Plunger Out Limit Switch not Active
38. "Plunger In Limit Switch not Active! Finish Compressing Last Stack In Manual Mode")
39. Plunger In and Out switches active
40. Gate Close Limit Switches not Active
41. Gate Open Limit Switches not Active
42. Gate open and close limit switches active
43. Vertical Stack Limit Switch Active
44. Needle Home Limit Switch not Active
45. Knotter Mistied
46. No Twine Feed
47. Knotter Trip Limit Switch not Active
48. Knotter Trip Limit Switch not Deactivating
49. Needles not Leaving Home Position
50. Stop Paddle Alarm! Check Stop Paddle & Switch
51. Tie Cycle Interrupted due to Plunger In Limit Switch DeActivating!

USING THE BALE BARON®

Alarm Messages

Which ever message is shown will pinpoint where the problem is.

- Problem must be rectified before the message can be erased.
- If desired, you can silence audio alarm by pressing the alarm silence button, until you have corrected the problem. The message will still appear.
- After the problem has been corrected and all functions returned to home limits, press alarm cancel button to clear alarm message. Most messages will clear automatically when conditions are met.
- **IMPORTANT!** Check bale counts before continuing in auto mode.
- Possible causes could be:

1. Broken bale pinched or jammed, stalling machine
2. Limit switch arm out of adjustment

NOTE: Above are the two most common possible causes.

3. Limit switch malfunctioning

- Poor seal allowing water in, causing short
- Worn contacts

4. Broken wire or poor connection

5. If needles stop mid cycle, the most common cause is an improperly inserted last bale or broken last bale causing material from that bale to be in the path of the needles

- In this event shut power off, including tractor
- Pull needle yoke back with chain and tractor
- Remove offensive material
- Finish tying manually

Alarm Messages Troubleshooting

SAFETY WARNINGS

WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine or power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.

WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

WARNING: All shields and guards must be in position before operating the Bale Baron®.

Limit Switch Test Procedure

1. Move switch lever from the deactivated position to the activated position and listen for a soft clicking sound. When the lever is completely in the activated position, release the lever and it should spring back to its normal position. If there is no clicking sound the switch is malfunctioning. If it doesn't spring back to its normal position it may possibly be repaired by dis-assembling the head of the switch and lubricating internally.
2. Check continuity of limit switch circuit by activating the switch and verifying that the corresponding input activates on the inputs page. If corresponding input doesn't illuminate check for loose connection, pinched or broken wire or faulty limit switch.

TROUBLESHOOTING

Safety Switch Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Hydraulic Pressure Switch Not Active	1. The Source of hydraulic pressure has been turned off, or PTO disengaged	1. Engage PTO or source of hydraulic supply
	2. A hydraulic supply line has come disconnected	2. Check and reconnect hydraulic hoses. Check connections along baler
Hydraulic Pressure Circuit Not Active A or B	1. Loose or faulty wires in the pressure switch circuit	1. Check wires and repair
	2. Faulty pressure switch	2. Replace pressure switch
Left Table Shield Safe Switch Not Active	1. The table shield is opened	1. Close the table shield
	2. The table shield sensor is out of adjustment	2. Adjust the sensor. Set for 3mm clearance between sensor and actuator
	3. Faulty wiring in the table shield sensor	3. Check the wires going to the sensor for damage, repair or replace.
Right Table Shield Safe Switch Not Active	1. The table shield is opened	1. Close the table shield
	2. The table shield sensor is out of adjustment	2. Adjust the sensor. Set for 3mm clearance between sensor and actuator
	3. Faulty wiring in the table shield sensor	3. Check the wires going to the sensor for damage
Left Table Shield Circuit A or B Not Active	1. The left table shield sensor is not in line with the actuator when the shield is closed	1. Close the left table shield and check sensor adjustment
	2. The Wiring is damaged	2. Repair or replace sensor wire
	3. The sensor is faulty	3. Replace the sensor
	4. Fuse 25 B is Blown	4. Replace Fuse
Right Table Shield Circuit A or B Not Active	1. The right table shield sensor is not in line with the actuator when the shield is closed	1. Close the right table shield and check sensor adjustment
	2. The Wiring is damaged	2. Repair or replace sensor wire
	3. The sensor is faulty	3. Replace the sensor
	4. Fuse 25B is blown	4. Replace fuse
Emergency Stop Switch Not Active	1. The Emergency stop button has been pushed in	1. Rotate the button clockwise to reset.
	2. Faulty wires in the Estop circuit	2. Check wiring to the Emergency stop
	3. Faulty Emergency stop switch	3. Replace emergency stop switch
	4. Dirty contacts in Estop switch	4. Clean contacts in switch
Emergency Stop Circuit A or B Not Active	1. Loose connection or faulty wiring in the estop circuit	1. Check wiring in the emergency stop circuit
	2. Faulty Emergency stop button	2. Replace the Emergency stop switch

TROUBLESHOOTING

Safety Switch Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Remote/Local Switch Not Active	1. The keyed remote/local switch is in the off position	1. Turn key to desired selection. Local allows operation from panel only. Remote allows operation from tractor only.
	2. Faulty switch block on switch	2. Clean switch block or replace.
Remote & Local Selector Switches Both Active	1. A contact switch block is jammed on the selector switch	1. Switch to opposite selection, if code clears, clean contact switch block
Left Twine Box Safety Switch Not Active	1. The left twine box is open	1. Close the left twine box
	2. The left twine box sensor is out of adjustment	2. Close the left twine box and adjust the sensor, centered with 3mm clearance
	3. Faulty wiring or sensor	3. Fix wiring or replace sensor
Left Twine Box Safety Switch Circuit A or B Not Active	1. The sensor on the left twine box is out of adjustment	1. Close the twine box and adjust the sensor, centered with 3mm clearance
	2. Faulty wiring to the switch	2. Repair wiring to the switch
	3. Faulty switch	3. Replace the safety sensor
	4. Fuse 25B is blown	4. Replace fuse
Right Twine Box Safety Sensor Not Active	1. The right twine box is open	1. Close the right twine box
	2. The right twine box sensor is out of adjustment	2. Close the twine box and adjust the sensor, centered with 3mm clearance
	3. Faulty wiring or sensor	3. Fix wiring or replace sensor
Right Twine Box Safety Switch Circuit A or B Not Active	1. The sensor on the right twine box is out of adjustment	1. Close the twine box and adjust the sensor, centered with 3mm clearance
	2. Faulty wiring to the switch	2. Fix wiring to switch
	3. Faulty switch	3. Replace the switch
	4. Fuse 25B is blown	4. Replace fuse

Note: Fuse number 25 B supplies power to all safety circuits. If a safety switch will not recognize, check fuse 25B in the main control panel.

TROUBLESHOOTING

Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Stop Paddle ALARM! CHECK STOP PADDLE & SWITCH	1. Limit switch is out of adjustment	1. Adjust as required
	2. Paddle mechanism is not releasing switch	2. Test free movement of the stop paddle.
	3. Paddle switch arm is bent preventing it to move freely	3. Perform the switch test instruction given at the beginning of this guide.
	4. Paddle switch is malfunctioning.	4. Replace paddle switch
Injector Up Limit Switches Not Activated	1. The injector valves are activated but there is no or not enough hydraulic power to move the injector.	1. Check all hydraulic connections and verify pressure
	2. Limit switch is out of adjustment when injector is at full stroke	2. Adjust as required NOTE: Do not over adjust up limit switch as this can cause incomplete insertion of bale!
	3. Injector has tried to insert 4th bale.	3. Remove 4th bale and insert last stack manually.
	4. Faulty cylinder or valve seals	4. Replace damaged seals
Injector Stage 1 Up Limit Switch Not Active	1. A long bale has jammed in the loading chamber	1. Finish inserting bale manually and shorten bale length as necessary
	2. The limit switch is out of adjustment	2. Adjust the stage one up limit switch
	3. Faulty cylinder or valve seals	3. Replace damaged seals
Injector Stage 2 Up Limit Switch Not Active! Finish Inserting Last Bale In Manual Mode	1. A long bale has jammed in the loading chamber	1. Finish inserting bale manually and shorten bale length as necessary
	2. The limit switch is out of adjustment	2. Adjust the stage 2 up limit switch
	3. Faulty cylinder or valve seals	3. Replace damaged seals
Injector Down Limit Switches Not Active	1. Limit switch is out of adjustment when injector is fully retracted	1. Adjust as required
	2. Faulty cylinder or valve seals	2. Replace damaged seals
Injector Stage 1 Down Limit Switch Not Active	1. The limit switch is out of adjustment	1. Readjust limit switch
	2. Faulty cylinder or valve seals	2. Replace damaged seals
Injector Stage 2 Down Limit Switch Not Active	1. The limit switch is out of adjustment	1. Readjust limit switch
	2. Faulty cylinder or valve seals	2. Replace damaged seals
Injector Up & Down Switches Active 1 and 2	One of the injector limit switches are not releasing. (both are active)	Test free movement of the injector limit switches.

TROUBLESHOOTING

Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Plunger In Switch Not Activated! Finish Compressing Last Stack In Manual Mode	1. The plunger valves are activated but there is not enough hydraulic power to move the plunger.	1. Check all hydraulic connections and verify hydraulic pressure.
	2. Limit switch is out of adjustment, when plunger cylinder is at full stroke	2. Adjust limit switch as required
	3. If this happens on compressing last stack, bales may be higher density and or moisture causing plunger to power out	3. Endgates can be backed off to make more room. (not recommended) See #4 below.
	4. Bales may be 35" long and/or high density, leaving no room for displacement of material causing plunger to power out	4. Shorten bales to 32" long
Plunger Out Switch Not Activated	1. The plunger valves are activated but there is not enough hydraulic power to move the plunger.	1. Check all hydraulic connections and verify hydraulic pressure.
	2. Limit switch is out of adjustment, when plunger cylinder is fully retracted.	2. Adjust limit switch as required
Plunger In & Out Switches Active	One of the plunger limit switches are not releasing	Perform the switch test instruction given at the beginning of this guide
Gates Open Limit Switches Not Active	1. The end gate valves are activated but there is insufficient hydraulic power to move the gates.	1. Check all hydraulic connections and verify hydraulic pressure.
	2. Limit switch is out of adjustment	2. Adjust limit switches as required
Gates Close Limit Switches Not Active	1. The end gate valves are activated but there is insufficient hydraulic power to move the gates.	1. Check all hydraulic connections and verify hydraulic pressure.
	2. Limit switch is out of adjustment	2. Adjust limit switches as required
	3. The gates have closed pinching a bundle do to improper horizontal stack count	3. Tie the bundle in the machine in manual mode. This will reset the counts to 0. Continue in auto mode.
Gates Open And Close Limit Switches Active	One of the gate limit switches is not releasing.	Perform the switch test instruction given at the beginning of this guide.
Vertical Stack Limit Switch Active	1. The third bale count switch is malfunctioning, or the lever is stuck	1. Check the limit switch setup and ensure the lever moves freely.
	2. The vertical stack count is incorrect	2. Visually inspect to see how many bales are in the vertical stack. Readjust count if necessary.
	3. The limit switch on the third bale count lever is out of adjustment	3. Readjust the limit switch as necessary

TROUBLESHOOTING

Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Needle Home Limit Switch Not Active! Check Needle Position	1. The needles are stalled out or have taken too long to finish the cycle. The Needles could be jammed on hay.	1. Switch machine to manual mode and finish the cycle with the (knotter run) selector switch. CAUTION: If the knotter motor stalls out and cannot release the needles, turn hydraulic power off before prying needles free from knotter.
	2. Needle yoke limit switch is malfunctioned.	2. Perform the switch test instruction given at the beginning of this guide.
	3. Limit switch is out of adjustment	3. Adjust the limit switch as required
Needles Not Leaving Home Position	1. The trip arm is not tripping because of sticky valve or bad seals	1. Clean and check the seals on the trip arm valve.
	2. The three bolts on the taper lock sprocket of the knotter motor are broken	2. Install new bolts.
	3. The knotter motor valve is stuck	3. Check the valve and clean or replace as necessary
Needle Up Limit Not Acting	1. The needle up limit switch is out of adjustment or faulty wiring	1. Perform the switch test instruction given at the beginning of this guide.
Knotter # 1, 2, 3, or 4 Mistied	1. One or more of the knots of the previous bundle are caught on the knotter and not releasing.	1. Select manual mode to clear alarm and turn off hydraulic power before removing dislocated twine. Release knot from obstruction.
No Twine Feed	1. One or more of the top twine tension arms are in the up position, resulting from a failed or broken knot, or out of twine.	1. Select manual mode to clear alarm and turn off hydraulic power. Re-thread and tie off the broken or missing twine.
Tie Cycle Interrupt Due To Plunger In Limit Switch Deactivating!	1. The plunger has drifted out of the in limit switch during a tie cycle	1. Replace the seals in the plunger cylinder. Test for cylinder blow by
	2. The plunger in limit switch needs adjustment	2. Put machine in override and move plunger in. If Plunger does not move, adjusting the switch may be necessary. See "Manual Override pg 65"
Table Is Full (Audible Beeper Pulses)	1. The machine is overloaded and it is indicating to slow down.	1. Slow down, Match your ground speed with the speed of the machine.
	2. The photo sensor above the turn table is dirty and is activated.	2. Clean dust and chaff off front of sensor with a soft clean cloth.
	3. The sensor is sensing the table shield.	3. Bend the sensor mount on an angle to adjust.

TROUBLESHOOTING

Alarm Messages Troubleshooting

Alarm Message	Possible Areas Of Cause(s)	Recommended Course Of Action
Plunger Regen Timed Out	1. The plunger Regen valve is not acting.	1. Check the solenoid valve
	2. Faulty wiring to the Regen valve.	2. Inspect and repair wiring as necessary
	3. Long bales	3. Shorten bale length as necessary
Knotter Trip Limit Switch Not Active	1. The trip arm valve is faulty	1. Repair or replace the valve
	2. The limit switch is out of adjustment	2. Readjust the limit switch
Knotter Trip Limit Switch Not Deactivating	1. The trip arm valve is faulty	1. Repair or replace the valve
	2. The limit switch is out of adjustment	2. Readjust the limit switch

TROUBLESHOOTING

Problems (Symptoms)	Possible Areas Of Cause(s)	Recommended Course Of Action
No functions operate Oil flow and electrical power has been verified.	A fuse has blown in the control panel.	Inspect the fuses in the control panel. Replace fuses as necessary.
Pressure fails to build up or builds up slowly on most or all functions	1. Bleed off valve may be open too far	1. Adjust bleed off valve (see load sensing setup)
	2. A load sense check valve may be stuck open with contamination	2. Clean or replace check valve
	3. Problem in tractor hydraulic system	3. Repair tractor hydraulics
	4. A seal may be blown on a load sense check valve	4. Replace seal
Pressure fails to build up or builds up slowly on only one function	1. A seal may be blown on one of the valves or cylinders	1. Replace seal
	2. A seal may be blown on a load sense check valve	2. Replace seal
Any or all functions will slow down or even stop, especially when cylinder is retracting	Restriction on return line most often caused by a coupler that is too small for oil flow and has malfunctioned causing blockage	Replace with large coupler, supplied by manufacturer
Pressure to manifold but nothing works	Return line coupler disconnected	Reconnect coupler
Cylinder moves slowly under pressure or drifts excessively when not activated	Seal blown in either cylinder or one of the valves	Replace seals
Knotter motor doesn't turn	1. Conditions not met	1. Injector must be down and plunger must be in. Follow instructions on display
	2. If conditions are met and still doesn't turn, speed control set to slow	2. Open speed control valve
Knotter motor turns, but trip arm doesn't engage	Seal blown in cylinder or trip arm control valve	Replace seals

Pressure Test Procedure (for load sensing)

Note: A pressure gauge for testing purposes is provided in the spare parts box. Do not leave on test port for normal operation

- Install pressure gauge on test port
- Start tractor and engage hydraulics
- Standby pressure should be between 300-600 psi
- Select Manual Mode
- Activate and hold plunger out function button
- Pressure should quickly ramp up to full system pressure of approximately 2900 psi (depending on tractor setting)
- Release function button
- Pressure should slowly drop to standby pressure (within 2-3 seconds)

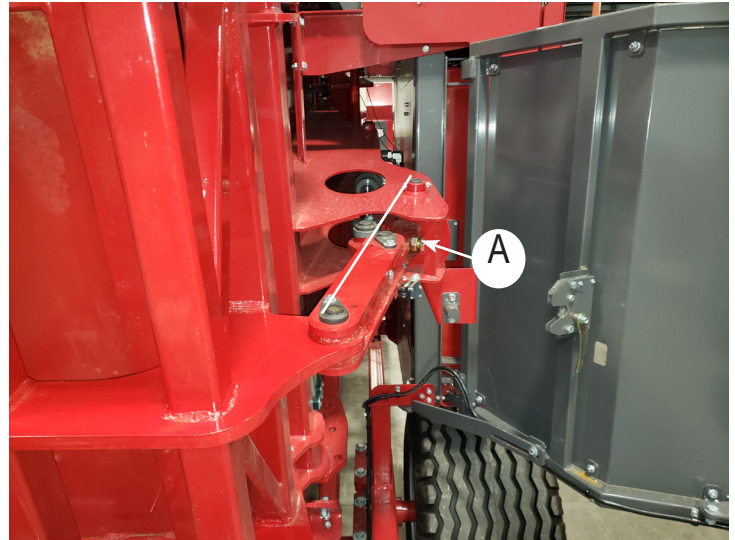
ENDGATE LINKAGE ALIGNMENT

Endgate Linkage Alignment

The linkage on the endgates are designed in such a manor that they create a lock when the gates are closed. This allows extreme pressure to be applied to the endgates from the plunger. In order for the lock to operate properly, there is an adjustment bolt to fine tune the linkage alignment.

To Set: Close the endgates completely. Use a straight edge and ensure the three linkage pins are in line with each other. Adjust the bolt (A) as necessary for proper alignment. When alignment is achieved, lock the jam nut.

Note: If the adjustment bolt is too far out of adjustment, the endgate may lock closed after a tie cycle.



LIMIT SWITCH ADJUSTMENT

Limit Switch Setup

The Bale Baron® uses mechanical limit switches to indicate where components are. The purpose of a limit switches is not to limit the travel of a function, but rather indicate that the function has reached its maximum position.

If a limit switch is not properly set up, you will hear a soft clicking sound when you pull the lever away from the function that is activating it.

To adjust a limit switch.

- Position function to the end of its stroke so that the limit switch should be activated.
- Shut off tractor and power unit, if so equipped (source of hydraulic power supply) and take the key with you.
- Check if limit switch is activated. (Listen for soft clicking sound)
- If limit switch is not activated, move function away from the limit switch so that it is not touching the limit switch.
- Shut off tractor and power unit, if so equipped (source of hydraulic power supply) and take the key with you.
- Loosen screw (1) and rotate the lever (2) one notch on the splined shaft of the limit switch (do not adjust more than one notch at a time). Tighten screw.
- Position function at the end of its stroke so that the limit switch should be activated.
- Shut off tractor and power unit, if so equipped (source of hydraulic power supply) and take the key with you.
- Check if limit switch is activated. If it is not, repeat the above procedure until limit switch is activated.



NOTE: It is imperative that the limit switch does not activate too soon as it will limit the stroke of the function, causing improper performance.

LIMIT SWITCH ADJUSTMENT

Injector Limit Switches

The injector has four limit switches. Two limit switches for the stage one cylinder, and two limit switches for the stage two cylinder.

Limit switch A - Injector stage 1 down

Limit switch B - Injector stage 1 up

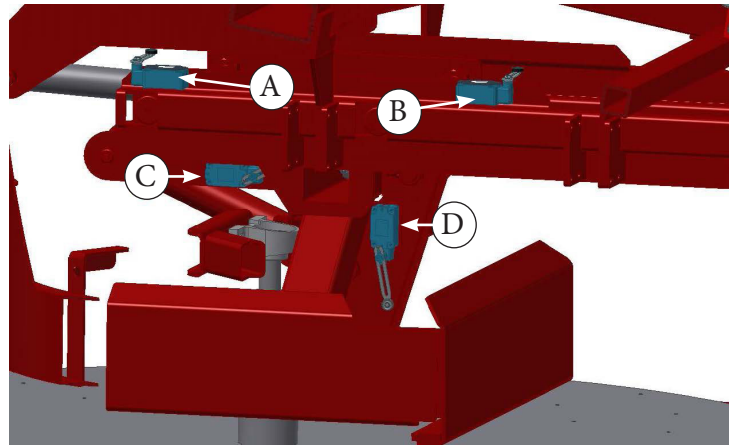
Limit switch C - Injector stage 2 down

Limit switch D - Injector stage 2 up

Injector down (home) position. Both limit switches A and C need to be activated when the injector is in the home position. If the injector is at home and one of the switches is not activated, an alarm will be displayed, telling the operator which limit switch is malfunctioning. Refer to **Limit Switch Setup** for making adjustments to the switches.

Injector up position. When the injector is traveling to the up position, the stage one cylinder extends first. When the stage one cylinder has reached the end of its stroke, limit switch B is activated. At this point the stage 2 cylinder will extend, activating limit switch D, when reaching its full stroke. Refer to **Limit Switch Setup** for making adjustments to the switches.

Note: if limit switch B is not activated during the injector Up movement, the stage 2 cylinder will not extend. An error code will display, alerting the operator that limit switch B is malfunctioning.



LIMIT SWITCH ADJUSTMENT

Plunger Limit Switches

Access the plunger limit switches by opening plunger access door (A).

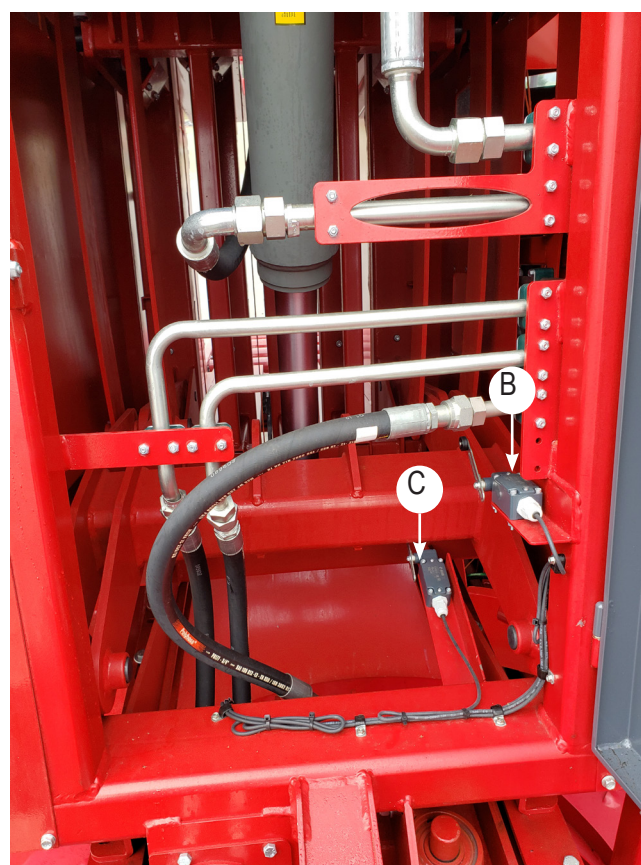
Limit switch B - Plunger out

Limit switch C - Plunger in

If plunger out limit switch (B) is malfunctioning or out of adjustment, an error message will alert the operator. Refer to **limit switch setup** for proper adjustments of the limit switch.

If plunger in limit switch (C) is malfunctioning or out of adjustment, an error message will alert the operator. Refer to **limit switch setup** for proper adjustments of the limit switch.

Note: A plunger in alarm will occur if the plunger powers out before reaching the limit switch, due to long bales. Do not adjust the switch unless it has been determined that the limit switch is at fault.



LIMIT SWITCH ADJUSTMENT

Endgate Limit Switches

Access the endgate limit switches by opening the endgate shields (A).

Limit switch B - Endgate open

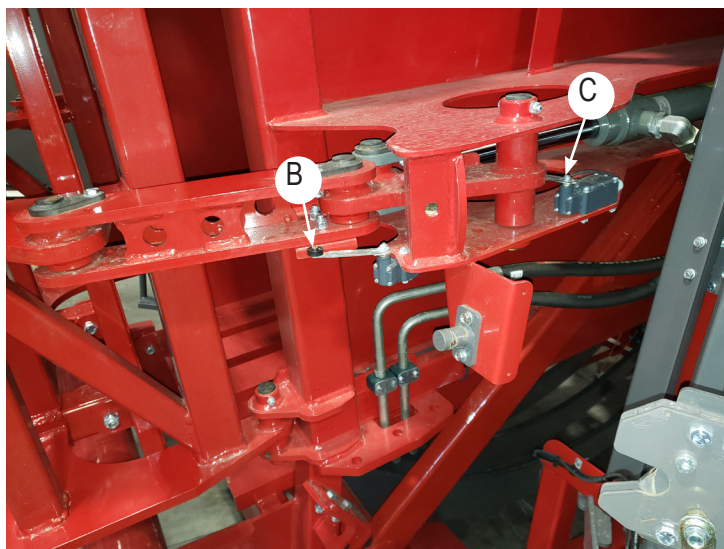
Limit switch C - Endgate closed

Endgate Open Limit Switches. There are two limit switches per endgate. Open limit switches (B) on both endgates need to be activated in order for the Bale Baron® to recognize that the endgates are open. If either open limit switch (B) is malfunctioning an alarm message will alert the operator. Refer to **Limit Switch Setup** for proper adjustments of the limit switch.

Note: The Bale Baron® cannot determine which limit switch is malfunctioning between the left endgate and the right endgate. This must be determined manually.

Endgate Close Limit Switches. There are two limit switches per endgate. Close limit switches (C) on both endgates need to be activated in order for the Bale Baron® to recognize that the endgates are closed. If either close limit switch (C) is malfunctioning an alarm message will alert the operator. Refer to **Limit Switch Setup** for proper adjustments of the limit switch.

Note: The Bale Baron® cannot determine which limit switch is malfunctioning between the left endgate and the right endgate. This must be determined manually.



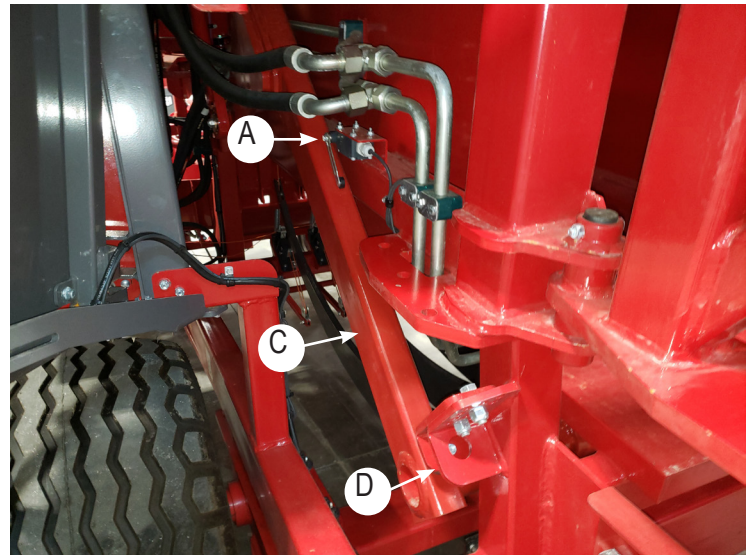
LIMIT SWITCH ADJUSTMENT

Needle Yoke Home Limit Switch

The needle yoke home limit switch (A) can be accessed by opening the endgate shield (B).

When the needle yoke (C) is at home against the rubber stops (D), the needle yoke home limit switch (A) will be activated.

If the needle yoke (C) is in the home position, and the limit switch is not activated, the switch will need to be adjusted. Refer to **Limit Switch Setup** for proper adjustments to this switch.

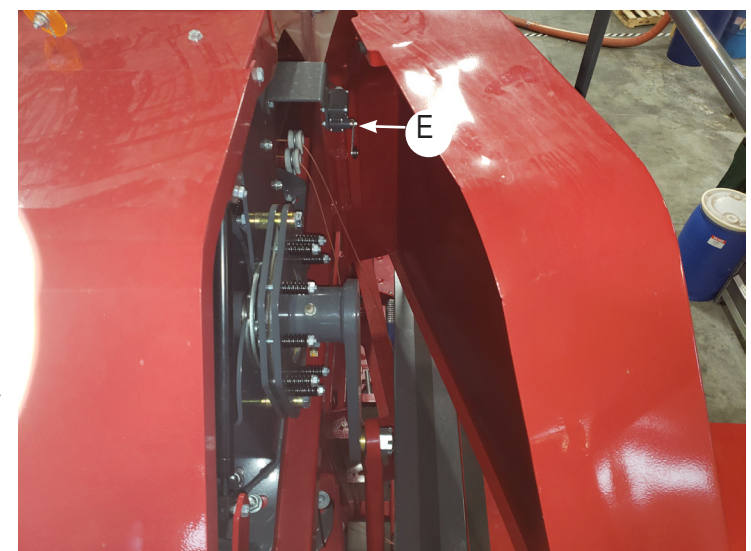


Knotter Upper Limit Switch

The knotter upper limit switch (E) will activate during the tie cycle to indicate when the first knot has been completed. When this limit switch gets activated, the endgates open to gain time during the tie cycle.

If the limit switch is out of adjustment and the endgates open prematurely, the knotter could miss tie, or the pack being tied will be loose.

Note: If the knotter up limit switch activates too late, or malfunctions, the machine will operate normally, with a slower tie cycle.



LIMIT SWITCH ADJUSTMENT

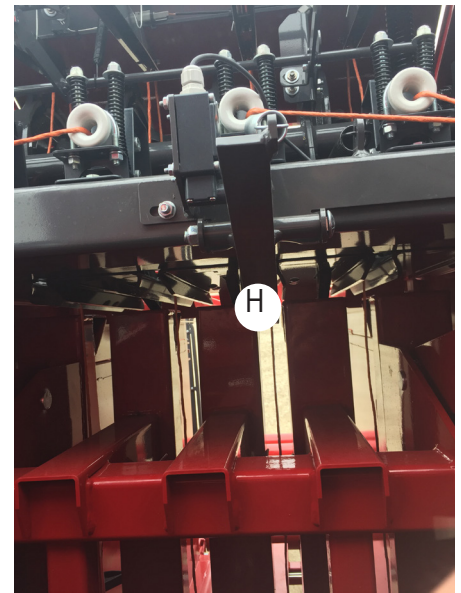
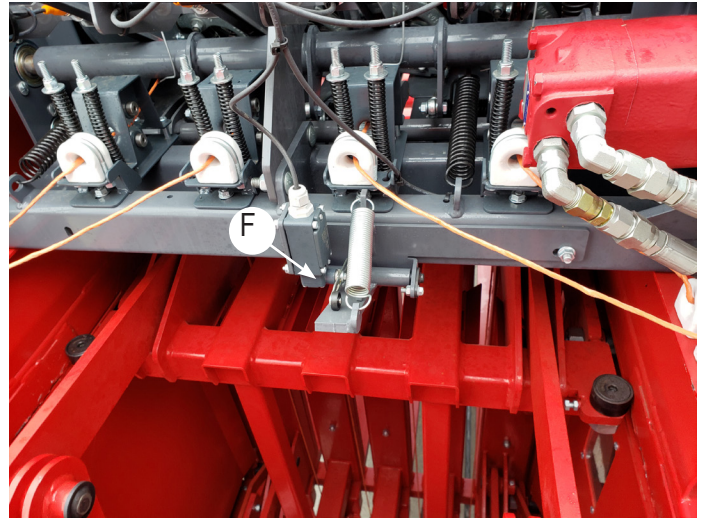
Third Bale Count Limit Switch

The third bale count switch (F) is activated when there are three bales vertically in front of the plunger. This lever prevents an operator from inserting a fourth bale into the vertical stack.

If the lever becomes stuck and stays activated when the plunger reaches the IN limit switch, an alarm will alert the operator.

When a bale makes contact with the lever at point H, the lever is pushed up, activating the switch. If the switch malfunctions, an error alarm will alert the operator.

As the lever is pushed up at point H, the limit switch activates. When the lever moves back down to home position, the limit switch deactivates. If the lever on the limit switch has loosened off and come out of adjustment, the switch will not deactivate when the lever returns to home. The limit switch lever should then be lengthened to fix this problem.

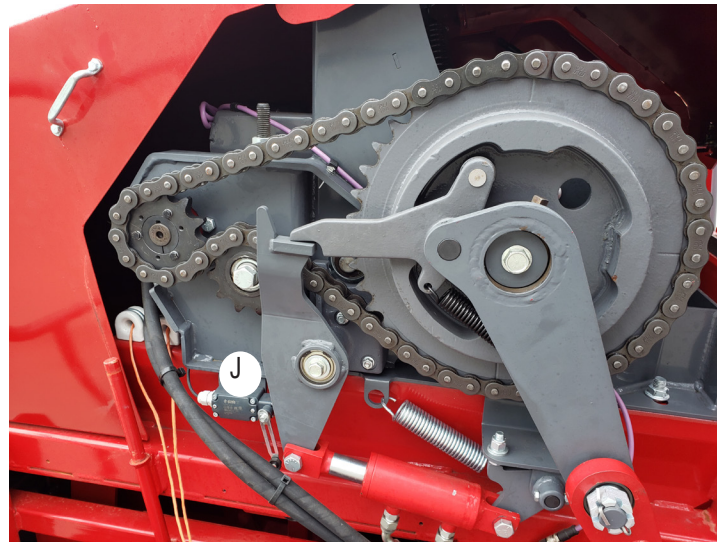


LIMIT SWITCH ADJUSTMENT

Trip Arm Limit Switch

The trip arm limit switch indicates to the Bale Baron® PLC what position the trip arm is in. This will help determine any issues caused from the trip arm not resetting properly.

The limit switch (J) is activated when the trip arm is in the set position (vertical). The limit switch will deactivate when the trip arm is in the trip position.



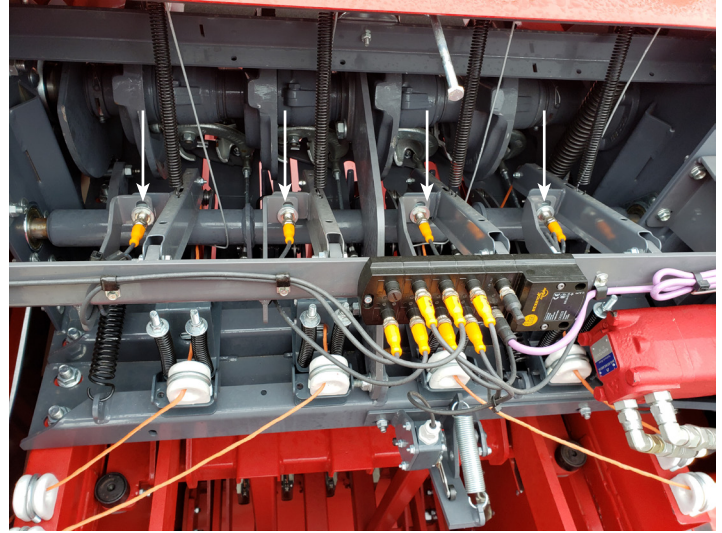
KNOTTER TIE SENSORS

Tie Alarm Sensors

The knotter is equipped with a sensor for each knotter. This allows for the machine to monitor each knotter individually and accurately determine when a knotter has miss tied.

The sensors read the movements of the top slacker arms. Based on the movements, the PLC will determine a miss tie, shut the machine down, and show an alarm “Knotter miss tied”.

Each sensor has LED lights that turn orange when sensing the metal tab on the slacker arm. When diagnosing a sensor, move the slacker arm into the path of the sensor. The lights will illuminate orange when sensing the tab.



BALE BARON® SERVICE GUIDE

SAFETY WARNINGS

WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

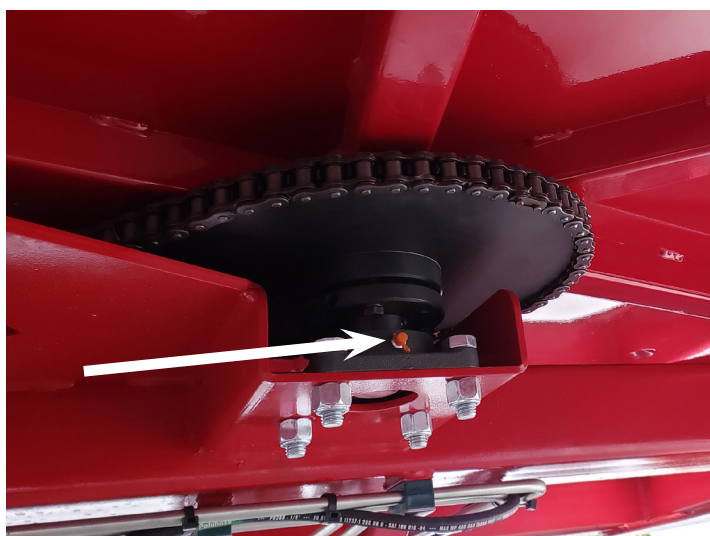
- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine or power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.

WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

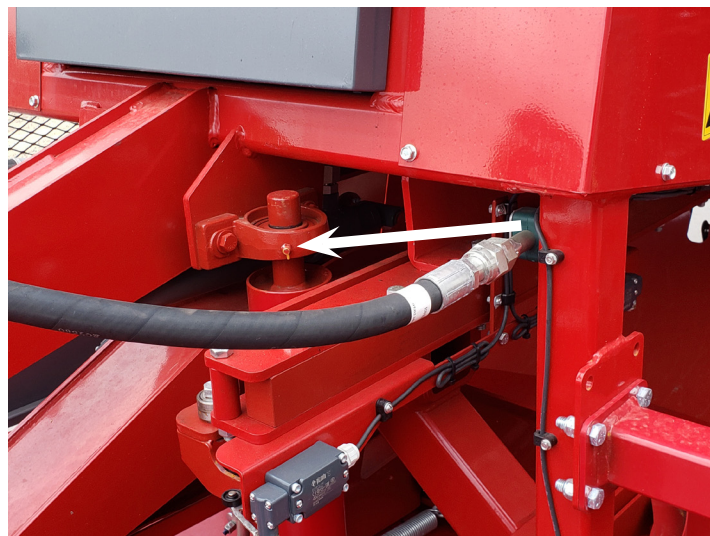
WARNING: All shields and guards must be in position before operating the Bale Baron®.

Service Yearly

Oil knotter drive chain and rotary table drive chain



Rotary table bottom bearing

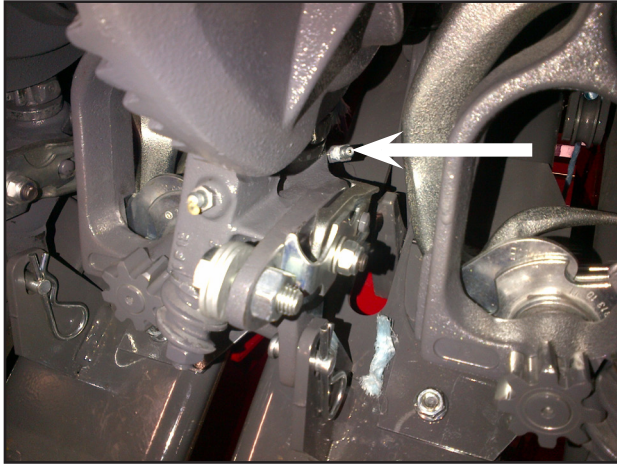


Rotary table top bearing

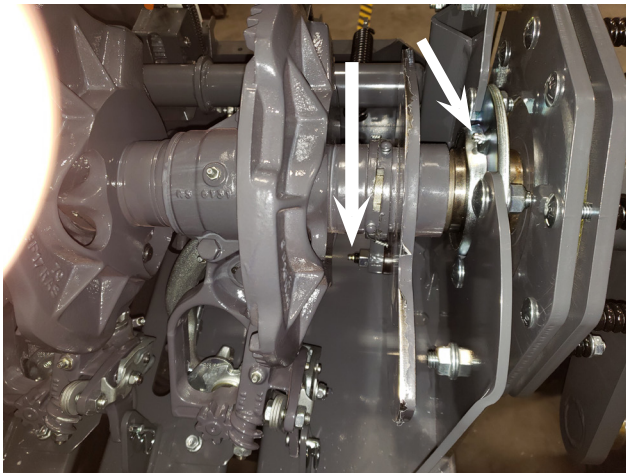
BALE BARON® SERVICE GUIDE

Grease Yearly

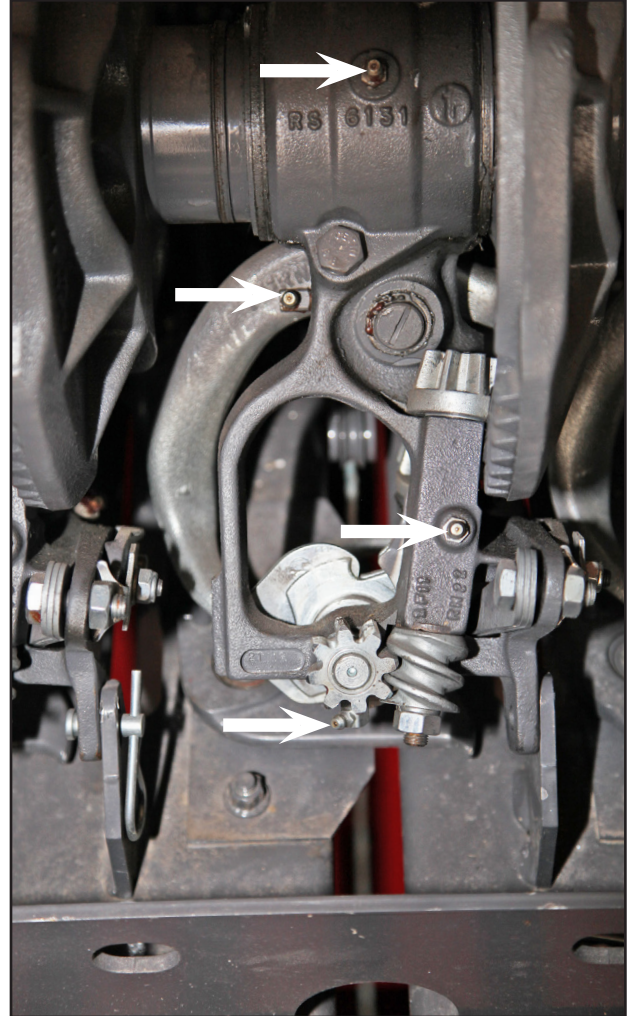
Your Bale Baron® is equipped with a low maintenance knotter. All moving parts on the knotter are sealed to keep out contamination. Lubrication is therefor only needed once per year on most parts.



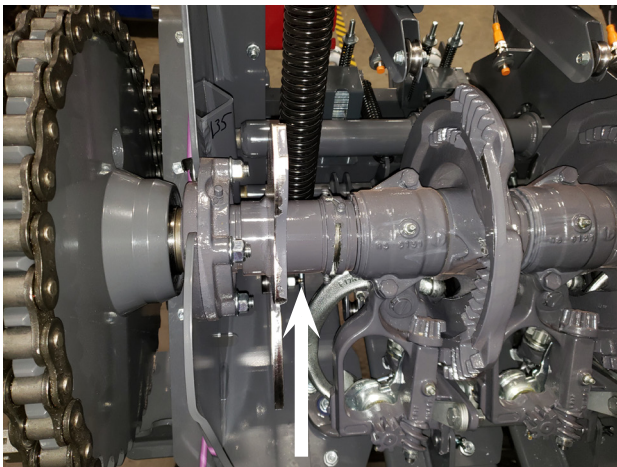
Bill Hook (1x4)



Knotter Tucker Arm Roller and main bearing(Right Side)



Knotters (4 x 4)



Knotter Twine Finger Roller and main bearing (Left Side)

BALE BARON® SERVICE GUIDE

Brake Adjustment Weekly

Check brake fluid level

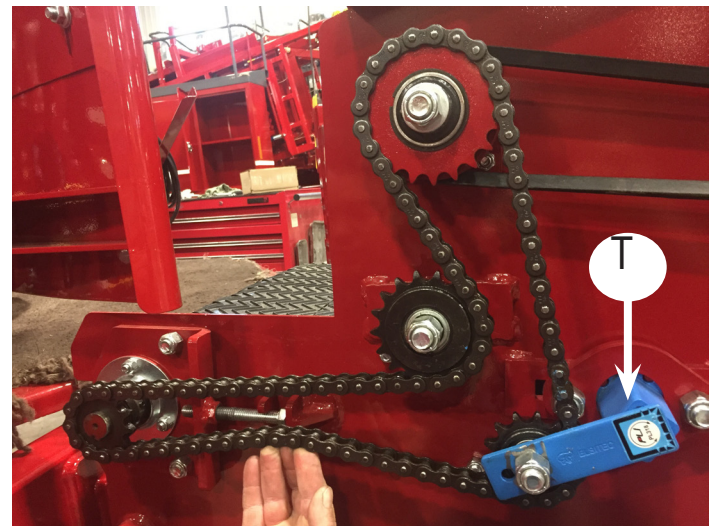


Pickup Chain Tension

Check the tension of the drive chains on the pickup chute. Chain should not be loose. Tension should be applied to the chain from the tensioner (T) with some movement available. (Not all the way tight)

Move the tensioner (T) to obtain ideal tension. Loosen the mounting bolts and move as required forward or back.

If tension cannot be obtained with moving tensioner with the slotted adjustment, disassemble the tensioner and rotate the tensioner on mounting slots (S).



BALE BARON® SERVICE GUIDE

Brake Adjustment Yearly

Lift one side of machine and set on axle stands.

Remove hub with brake drum attached.

Inspect brake drums and brake shoes for wear.

Replace any worn parts with new ones from your dealer and reassemble.

Brake Adjustment

Block opposite wheel as is being lifted.

Lift one side of the machine and set on axle stands.

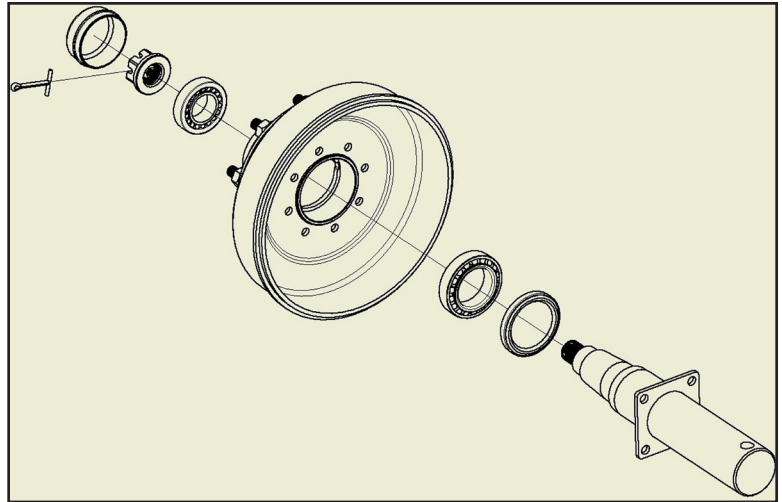
Remove plug (1) toward the front of the machine.

Use the brake adjuster tool (2) (supplied in the spare parts kit located in the front of the right-hand twine box) to rotate the star wheel inside the hole.

Push the handle of the brake adjuster tool down to tighten the brakes. Tighten the brakes until the tire cannot be rotated by hand. Loosen the star wheel by lifting the handle of the brake adjuster tool until there is only a slight drag of the brakes when you rotate the wheel.

Install the plug.

Right-hand side shown, use same procedure for left hand side.



BALE BARON® SERVICE GUIDE

Service every 30,000 bundles

Wheel bearings should be cleaned and repacked with the proper lubricant.(fig.1)

Service as required

The rotary table and knotter drive chain tensions should be adjusted.

Tire Pressures

Rear tires 19/45-17 BKT AW708 10 ply - 35 PSI / 240 kPa

Front tires 205/65-10 Loadstar 10 ply - 90 PSI / 620 kPa

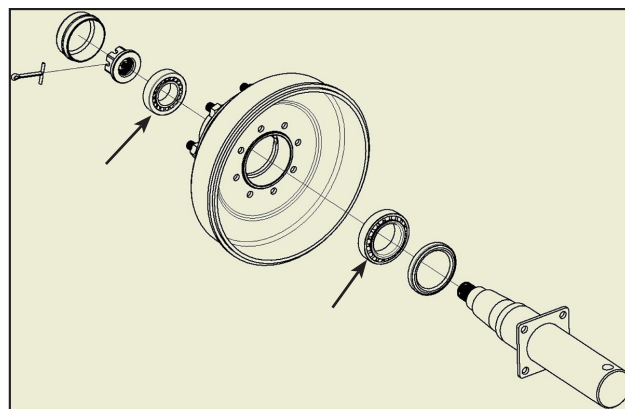


Fig. 1

BALE BARON® SERVICE GUIDE

Diesel Power Unit

Some machines come equipped with a 42 horse power, Kubota diesel power unit. The operators manual that is supplied with these engines is very detailed for any and all service. Refer to this operators manual for details pertaining to **engine service**.

Hydraulic Radiator

Blow the hydraulic radiator out with compressed air daily.(1.)

Engine Radiator and Rotary Screen

Blow the engine radiator clean with compressed air daily.(2.) Ensure the rotary screen is clean and rotating freely.(3.)

Hydraulic Filter

Change the hydraulic filter every 5000 bundles, or once per year.(5.)

Hydraulic filter part number

MP FILTRI CSG-150-A10A

Hydraulic Oil

Change the hydraulic oil every 25,000 bundles, or once every 5 years. Use 052 hydraulic transmission fluid.

When filling the tank with new oil fill 1/2 to 3/4 way up the sight gauge.(6.)

Diesel Fuel Fill

Fill with low sulfur diesel fuel only through fuel fill location(4.).



BALE BARON® SERVICE GUIDE

PTO Pump Kit

Hydraulic Radiator

Blow the hydraulic radiator out with compressed air daily. (1.)

Hydraulic Filter

Replace the hydraulic oil filters every 5000 bundles or once per year.(2.)

Hydraulic filter part number

MP FILTRI CSG-150-A10A

Hydraulic Oil

Change the hydraulic oil every 25,000 bundles, or once every 5 years. Use 052 hydraulic transmission fluid.

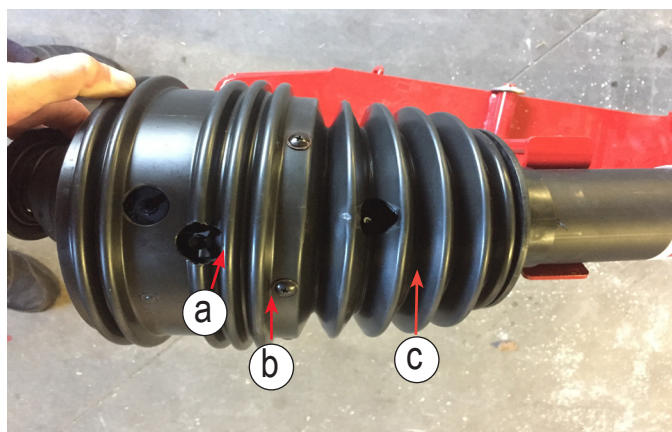
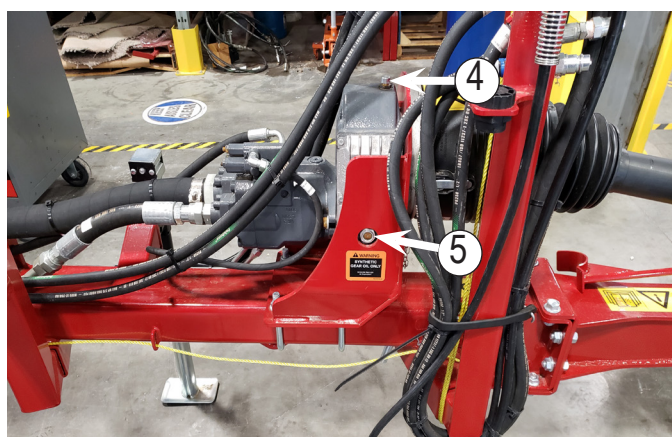
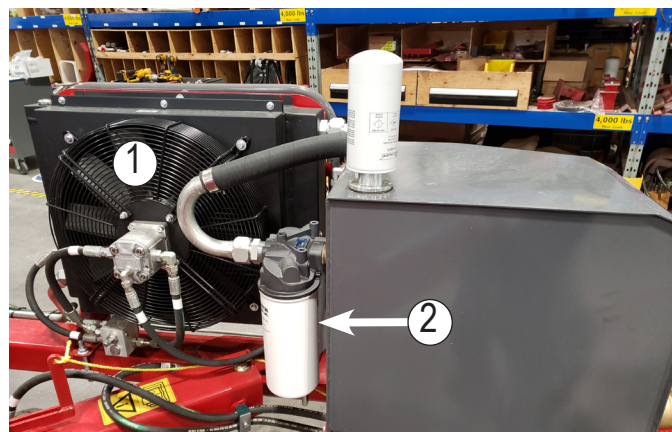
When filling the tank with new oil, fill until the float reaches the top of the sight gauge. (3.)

Gear Oil

Change the gear box oil every 50,000 bundles, or once every 10 years. Replace oil with 320 grade synthetic gear oil. Fill through the air breather cap (4).Fill to the top of the sight gauge.(5).

PTO Shaft

Grease the continuous velocity joints on the PTO shaft every 1000 bundles. Grease zerks are in access holes on both ends of the shaft (a b c) totaling 6 grease zerks per shaft.



ACCESS PANELS

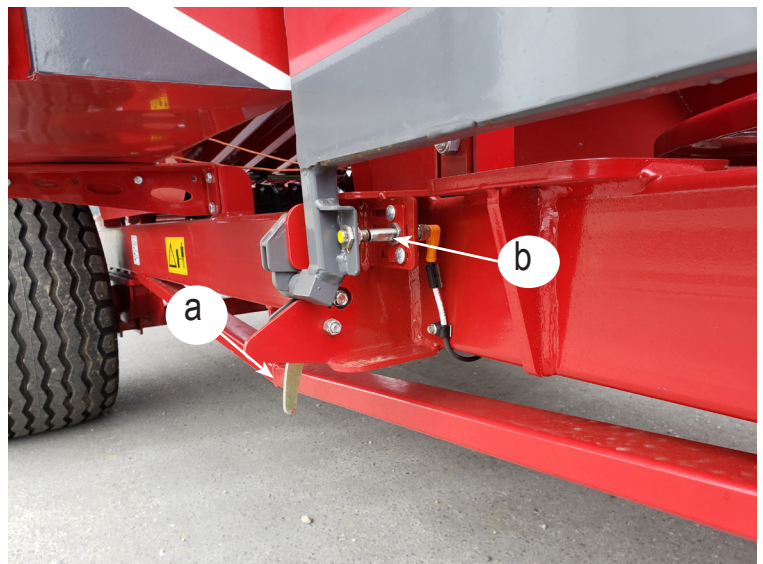
Rotary Table Shields

The Rotary table has safety shields on the left and right hand sides. Each of the shields is equipped with a safety sensor that determines if the shield is open or closed.

Both shields must be closed in order to operate any function on the Bale Baron®.

To open the shield, pull on the handle (a) and swing the shield open.

Each shield has a safety sensor (b) that senses if the shield is open or closed. The shield must be closed for the machine to operate.



ACCESS PANELS

Twine Box Access

The Bale Baron® has twine boxes on both sides of the machine. To access the twine boxes, open the twine box doors.

The twine boxes are hinged to allow for access into the machine. Pull on the handle (h) located at the rear of the twine box. The boxes hinge open toward the front of the machine.

Each twine box is equipped with a safety sensor (s) that indicates whether the box is open or closed. The machine will not operate with the twine box open.

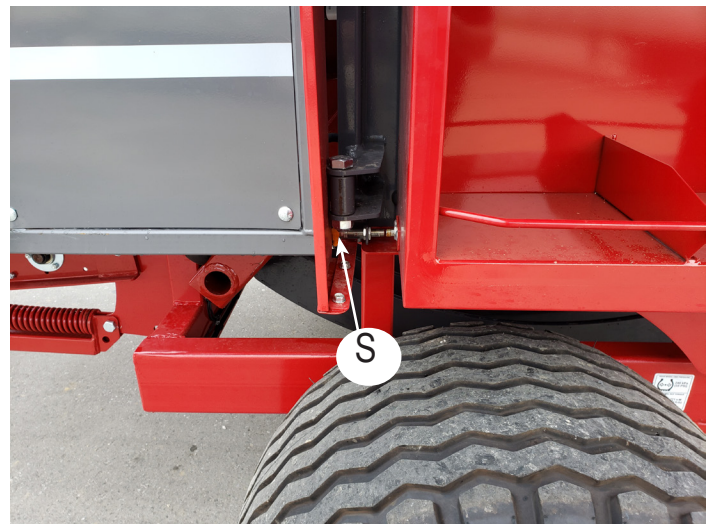


ACCESS PANELS

Rear Shields

The rear shields swing open to allow access to the endgates on the Bale Baron®. Press up on the latch tab (L) and pull the shield open. The shield has a slide bar (w) that falls in place to hold the shield in the open position. To close the shield, lift on the slide bar (w) and swing the shield closed until latched.

There is a safety switch (s) on each rear shield that will prevent the machine from operating when the shield is open.



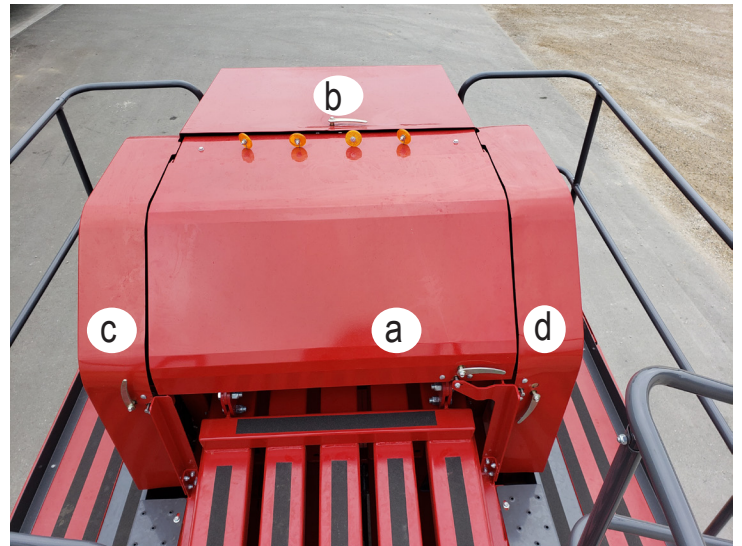
ACCESS PANELS

Knotter Shields

There are a total of four knotter shields on the Bale Baron®. The main knotter access shield (a) is primarily opened for greasing and knotter maintenance.

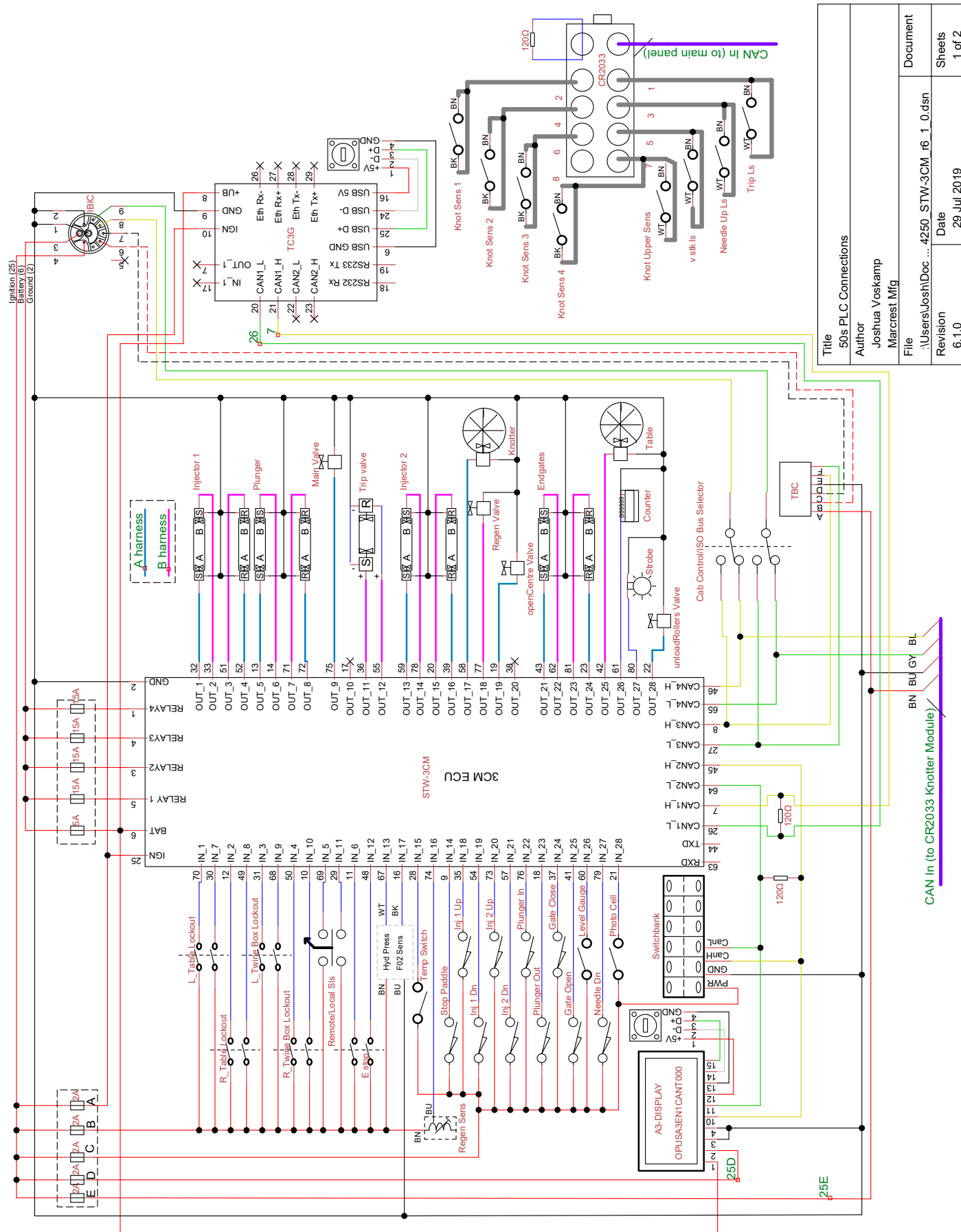
The front hood (b) is opened for rerouting twine.

The two side shields (c) and (d) are opened for accessing the knotter drive chain and knotter brake.



Note: Do not operate the machine with any knotter shield open.

ELECTRICAL CIRCUIT



HYDRAULIC CIRCUIT

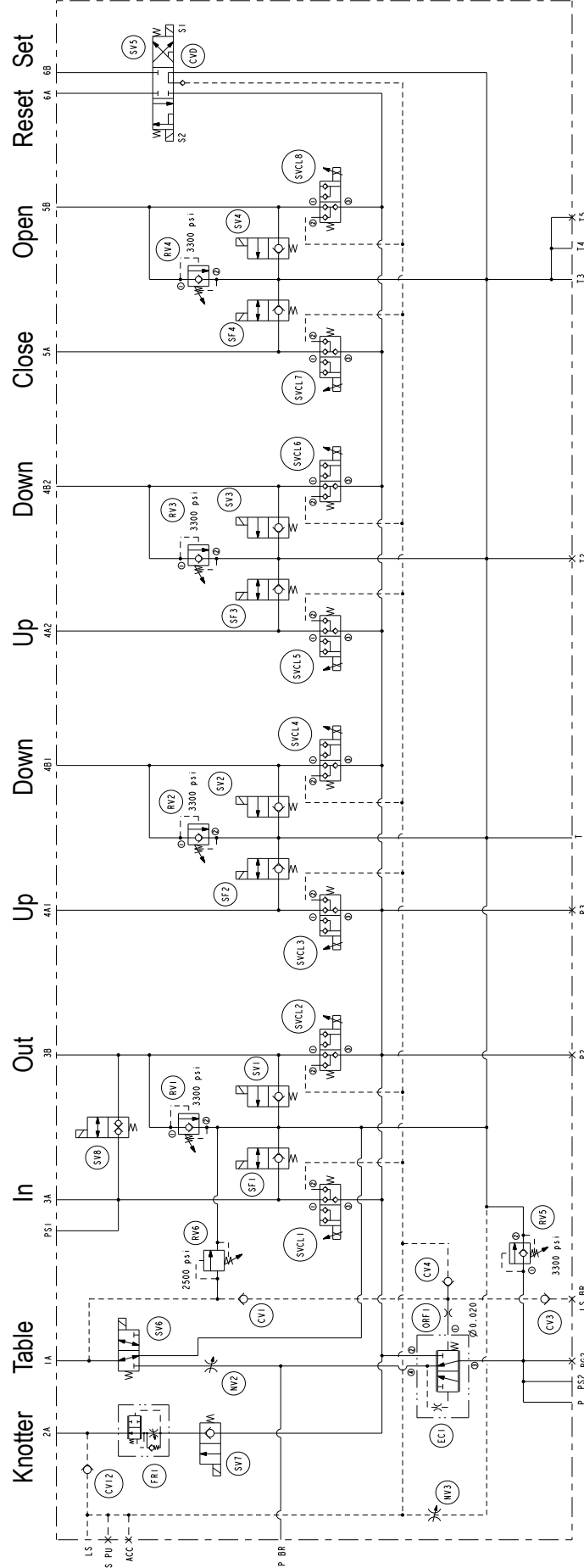
Trip Arm

Endgates

Injector Stage 2

Injector Stage 1

Plunger

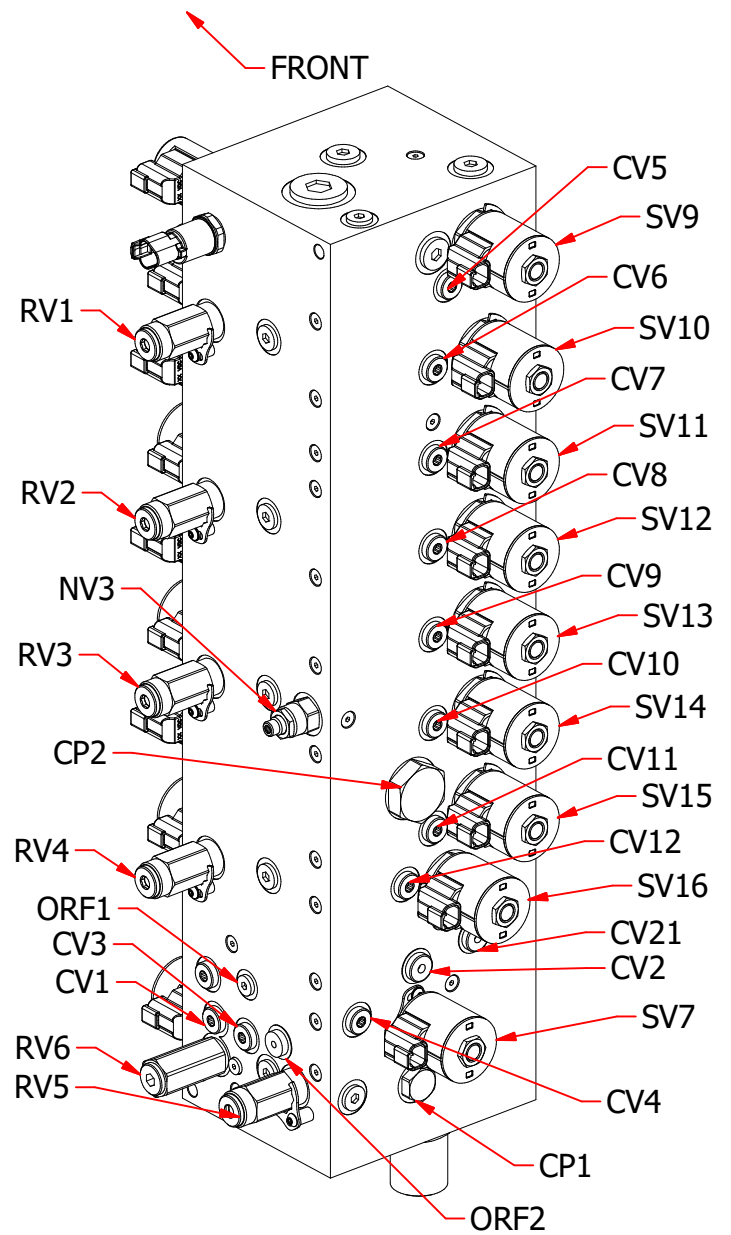
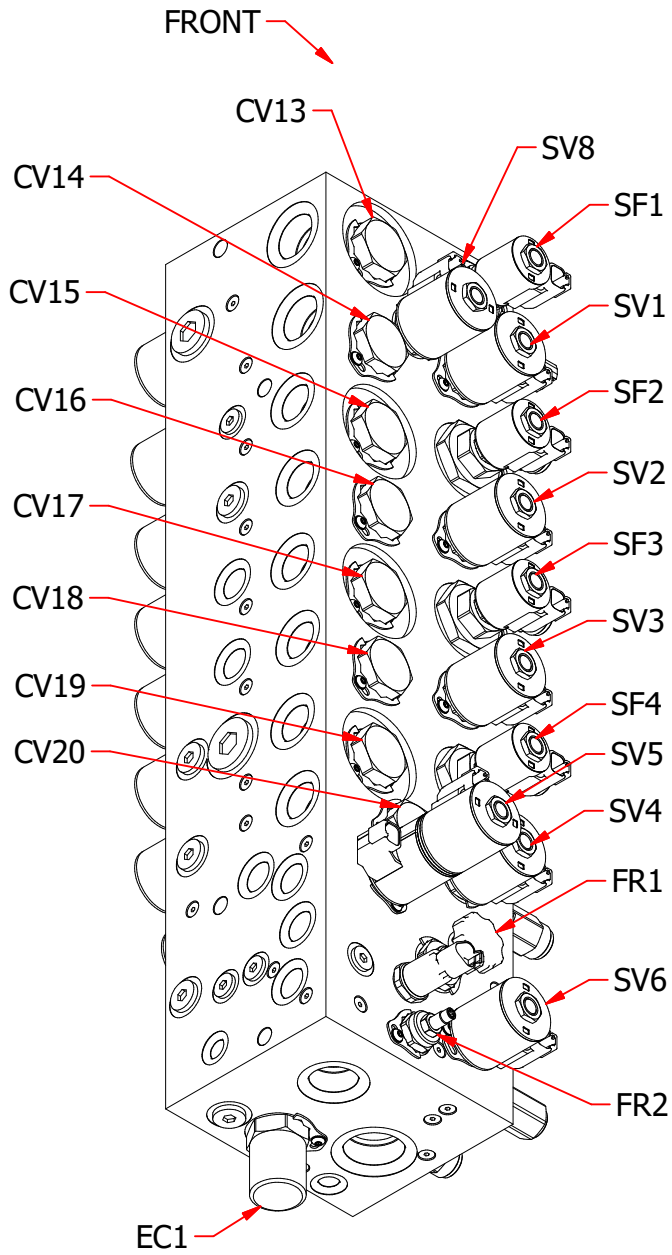


HYDRAULIC CIRCUIT

Item	Part #	Function
CP1	CP08-20-P	
CP2	SP16-21	Main Soft Start Valve
CV1	HCV06-20-0-U-05	Table Load Sense Check Valve
CV2	HCV06-20-0-U-05	Knotter Load Sense Check Valve
CV3	HCV06-20-0-U-05	Brake Load Sense Check Valve
CV4	HCV06-20-0-U-05	Table Priority Load Sense Check Valve
CV5	HCV06-20-0-U-05	Plunger In Load Sense Check Valve
CV6	HCV06-20-0-U-05	Plunger Out Load Sense Check Valve
CV7	HCV06-20-0-U-05	Injector Stage 1 Up Load Sense Check Valve
CV8	HCV06-20-0-U-05	Injector Stage 1 Down Load Sense Check Valve
CV9	HCV06-20-0-U-05	Injector Stage 2 Up Load Sense Check Valve
CV10	HCV06-20-0-U-05	Injector Stage 2 Down Load Sense Check Valve
CV11	HCV06-20-0-U-05	Endgates Closed Load Sense Check Valve
CV12	HCV06-20-0-U-05	Endgates Open Load Sense Check Valve
CV13	CV16-20-0-P-05	Plunger In Check Valve
CV14	CV16-20-0-P-05	Plunger Out Check Valve
CV15	CV16-20-0-P-05	Injector Stage 1 Up Check Valve
CV16	CV16-20-0-P-05	Injector Stage 1 Down Check Valve
CV17	CV16-20-0-P-05	Injector Stage 2 Up Check Valve
CV18	CV16-20-0-P-05	Injector Stage 2 Down Check valve
CV19	CV16-20-0-P-05	Endgates Close Check Valve
CV20	CV16-20-0-P-05	Endgates Open Check Valve
CV21	HCV06-20-0-U-05	Trip Arm Load Sense Check Valve Set and Reset
EC1	EC16-42-0-P-150	Table Priority Valve
FR1	FR12-23E-0-P-/16	Knotter Speed Flow Control
FR2	FR50-28A-0-P-/	Table Speed Flow Control
NV3	NV08-23A-0-P	Load Sense Bleed Off Valve
ORF1	6112020	Orifice Fitting For Table Priority Valve Behind Plug
ORF2	6112025	Orifice Fitting Table Load Sense Bleed Off
RV1	RV10-28H-0-P-35/33	Plunger Pressure Relief Valve
RV2	RV10-28H-0-P-35/33	Injector Stage 1 Pressure Relief Valve
RV3	RV10-28H-0-P-35/33	Injector Stage 2 Pressure Relief valve

Item	Part #	Function
RV4	RV10-28H-0-P-35/33	Endgates Pressure Relief Valve
RV5	RV10-28H-0-P-35/33	Supply Pressure Relief Valve
RV6	RV08-20H-0-P-33/25	Table Pressure Relief Valve
SF1	SF20-22-0-P-00	Plunger Out Solenoid Valve B
SF2	SF20-22-0-P-00	Injector Stage 1 Down Solenoid Valve B
SF3	SF20-22-0-P-00	Injector Stage 2 Down Solenoid Valve B
SF4	SF20-22-0-P-00	Endgates Open Solenoid Valve B
SV1	SV12-20-0-P-00	Plunger In Solenoid Valve B
SV2	SV12-20-0-P-00	Injector Stage 1 Up Solenoid Valve B
SV3	SV12-20-0-P-00	Injector Stage 2 Up Solenoid Valve B
SV4	SV12-20-0-P-00	Endgates Close Solenoid Valve B
SV5	SV10-58C-0-P-00	Trip Arm Solenoid Valve
SV6	SV10-34-0-P-00	Table Solenoid Valve
SV7	SV10-20-0-P-00	Knotter Solenoid valve
SV8	SV12-28-0-P-00	Plunger Regen Solenoid Valve
SV9	SV16-20-0-P-00	Plunger In Solenoid Valve A
SV10	SV16-20-0-P-00	Plunger Out Solenoid Valve A
SV11	SV16-20-0-P-00	Injector Stage 1 Up Solenoid Valve A
SV12	SV16-20-0-P-00	Injector Stage 1 Down Solenoid Valve A
SV13	SV16-20-0-P-00	Injector Stage 2 Up Solenoid Valve A
SV14	SV16-20-0-P-00	Injector Stage 2 Down Solenoid Valve A
SV15	SV16-20-0-P-00	Endgates Close Solenoid Valve A
SV16	SV16-20-0-P-00	Endgates Open Solenoid valve A

HYDRAULIC CIRCUIT



HYDRAULIC TROUBLESHOOTING

Problems (Symptoms)	Possible Areas Of Cause(s)	Recommended Course Of Action
Pressure fails to build up or builds up slowly on most or all functions	1. Bleed off valve may be open too far	1. Adjust bleed off valve (see load sensing setup)
	2. A load sense check valve may be stuck open with contamination	2. Clean or replace check valve
	3. Problem in tractor hydraulic system	3. Repair tractor hydraulics
	4. A seal may be blown on a load sense check valve	4. Replace seal
Pressure fails to build up or builds up slowly on only one function	1. A seal may be blown on one of the valves or cylinders	1. Replace seal
	2. A seal may be blown on a load sense check valve	2. Replace seal
Any or all functions will slow down or even stop, especially when cylinder is retracting	Restriction on return line most often caused by a coupler that is too small for oil flow and has malfunctioned causing blockage	Replace with large coupler, supplied by manufacturer
Pressure to manifold but nothing works	Return line coupler disconnected	Reconnect coupler
Cylinder moves slowly under pressure or drifts excessively when not activated	Seal blown in either cylinder or one of the valves	Replace seals
Knotter motor doesn't turn	1. Conditions not met	1. Injector must be down and plunger must be in. Follow instructions on display
	2. If conditions are met and still doesn't turn, speed control set to slow	2. Open speed control valve
Knotter motor turns, but trip arm doesn't engage	Seal blown in cylinder or trip arm control valve	Replace seals

Pressure Test Procedure (for load sensing)

Note: A pressure gauge for testing purposes is provided in the spare parts box. Do not leave on test port for normal operation

- Install pressure gauge on test port
- Start tractor and engage hydraulics
- Standby pressure should be between 300-600 psi
- Select Manual Mode
- Activate and hold plunger out function button
- Pressure should quickly ramp up to full system pressure of approximately 2900 psi (depending on tractor setting)
- Release function button
- Pressure should slowly drop to standby pressure (within 2-3 seconds)

HYDRAULIC TROUBLESHOOTING

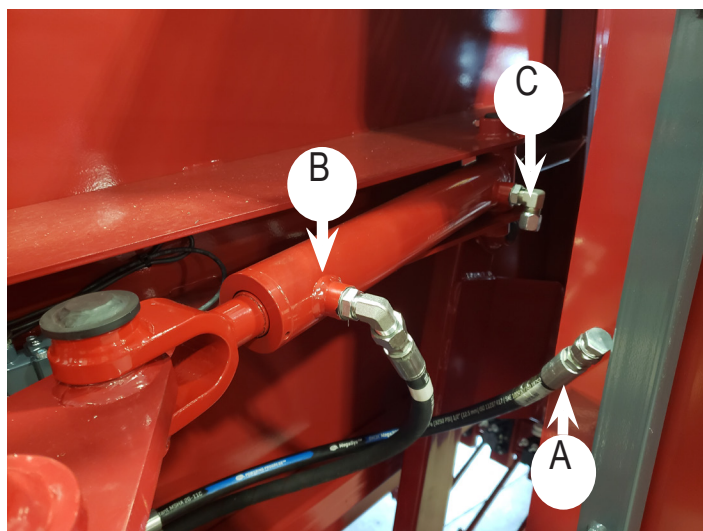
Cylinder Pressure Testing

Testing a cylinder for blow by can save valuable time when troubleshooting hydraulic issues on the Bale Baron®.

To pressure test a cylinder:

1. Fully retract the cylinder.
2. Remove the hose (A) from the barrel end of the cylinder (extend) and cap the hose with a metal hydraulic cap.
3. Cap the fitting on the cylinder (C).
4. Activate the function to supply oil to the rod side (B) of the cylinder (retract).
5. If the cylinder extends, there will be damaged seals on the cylinder internally.
6. Remove the cylinder and replace the seals.

Note: If the cylinder does not extend, the seals on the piston will still be good, eliminating the possibility of faulty seals in the cylinder.



Cylinder in fully retracted position



Example of a cylinder that has extended indicating a faulty seal on the piston

KNOTTER MANUAL INDEX



KNOTTER MANUAL INDEX

Safety Warnings	110
Description	111
How The Double Knotter System Works.	111
Knotter Operations	112
Twine Installation.	116
Twine Installation	116
Twine Specifications	116
Twine Storage Boxes.	116
Twine Ball Installation	116
Threading The Lower Twine Tensioners	118
Threading The Lower Slacker Arms	118
Routing The Twine To The Needles.	119
Routing The Knotter Twines Into The Knotter Area On The Left Hand Side	120
Routing The Knotter Twines Into The Knotter Area On The Right Hand Side	120
Twine Box Tensioners For Needles	121
Threading The Knotters	122
Tying The Needle And The Knotter Twines.	123
Twine Threading Diagram - Left Side	124
Knotter Maintenance.	126
Safety Warnings	126
General Information	126
Causes Of Tying Failure	127
Twine Tension	128
Twine Box Twine Tensioner Adjustment	128
Twine Tension	128
Lower Twine Tensioner	129
Twine Guide Adjustment.	129
Billhook & Billhook Cam Adjustment.	130
Billhook Installation	131
Twine Knife	134

KNOTTER MANUAL INDEX

Twine Disc Adjustment	137
Twine Holder Adjustment	139
Needle Installation And Adjustment	140
Twine Finger Adjustment	144
Tucker Arm Adjustment	146
Knotter Brake Adjustment	148
Cam Lobe Wear	149
Knotter Parts Breakdown	150
Main Assembly	150
Clutch	152
Brake	154
Main Shaft Assembly	156
Knotter Head Assembly	158
Knotter Head Assembly (Cont'd)	160
Twine Finger - Tucker Arm	162
Twine Tensioners	164
Twine Tensioner Assembly	166
Knotter Setup Overview	168
Knotter Troubleshooting	170

GENERAL

SAFETY WARNINGS



WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine and power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.



WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

WARNING: All shields and guards must be in position before operating the Bale Baron®.

WARNING: Serious injury or death can result from threading the needles or adjusting the twine tensioners with the Bale Baron® running.

- The needle frame could possibly move while the Bale Baron® is running
- Disengage tractor PTO and hydraulics, stop tractor and power unit (if so equipped) and take key with you before threading the needles or adjusting the twine tensioners.

DESCRIPTION

Your Bale Baron® is equipped with a low maintenance Raspe knotter with a double knot system. All moving parts on the knotter are sealed to keep out contamination. Lubrication is therefore only needed once per year on most parts.

HOW THE DOUBLE KNOTTER SYSTEM WORKS

The size of the large rectangular bales requires the bales to be tied with four twines. Each twine around the bale is actually two twines, a top twine and a bottom twine, that are tied together at each end of the bale. The two knots tied in each twine require the use of a double knotter system.

The top twine is fed from a twine ball to an upper twine tensioner at the top of the baler and then extends down into the bale chamber. The top twine is NOT held by the twine disc in the knotter. This eliminates twine disc pullout in severe conditions. The bottom twine is fed from a twine ball through a lower twine tensioner to a needle at the bottom of the baler and then extends up into the bale chamber. When the baler is used for the first time the two twines are tied together by hand in the bale chamber.

As the bundle is being formed the top twine is pulled along the top of the bundle. The bottom twine, which is already fed down the rear of the bundle, is pulled along the bottom of the bundle. As the bundle is finished, the needle extends to feed the bottom twine up across the front end of the bundle. The bottom twine and the top twine come together at the top edge of the bundle. The knotter ties the two twines together to make the first knot in the double knotter cycle. The knotter then cuts the two twines and ties the two loose twines together to make the second knot in the double knotter cycle. The needle retracts and feeds the bottom twine down across the rear of the next bale. See Knotter Operations for a complete description of how the knotter operates.

FIG. 1: Twine Hook

- (1) Bottom Twine
- (2) Twine Balls
- (3) Plunger
- (4) Top Twine
- (5) 2nd knot of Double Knotter cycle is at the rear of the bundle being formed
- (6) 1st knot of Double Knotter cycle is at the front end of the bundle.
- (7) On the first bale made, the knots some where on the rear end of the bundle are hand tied.

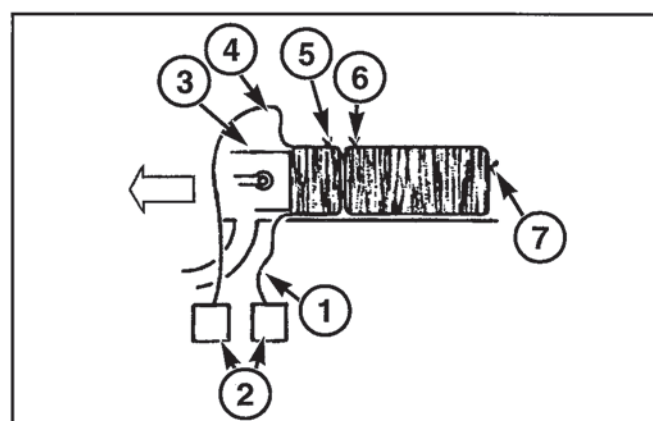


FIG. 1

KNOTTER MANUAL

KNOTTER OPERATIONS

The double knotter works on the same principle as a single knotter. The difference is in the knotter cam gears which have two sets of teeth and two cam lobes. The two sets of teeth cause the billhook, twine disc, and stripper arm to operate twice during one cycle to tie the two knots. The following is a description of one complete cycle of the double knotter system.

The top twine and the bottom twine have been tied together at the rear of the bundle during the tying cycle before. As the plunger compresses the hay in the bale chamber, the bundle that is being formed is pushed rearward. The moving bundle pulls the twine through the tensioners at the top and the bottom of the bale chamber. The top twine is fed from a twine ball through the twine tensioner, under the twine finger shaft, over the slacker arm roller, and under the tucker arm roller. The top twine then goes into the bale chamber and along the top of the bundle. At the rear edge of the bundle the top twine is tied to the bottom twine.

Fig. 3: Upper Twine Tensioner

- (1) Twine Centering Ring
- (2) Twine Tension Rollers
- (3) Twine Finger Shaft
- (4) Slacker Arm Roller
- (5) Twine
- (6) Tucker Arm Roller

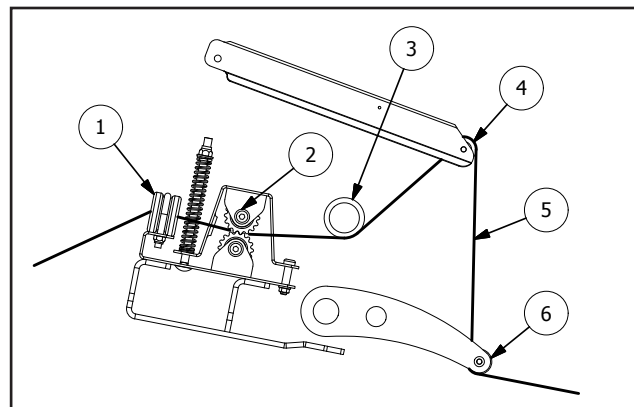


FIG. 3

KNOTTER MANUAL

Fig. 4: Lower Twine Tensioner

- (1) Top Roller
- (2) Bottom Roller
- (3) Needle
- (4) Twine
- (5) Slacker Arm Roller
- (6) Slacker Arm
- (7) Twine Tension Rollers
- (8) Twine Centering Ring

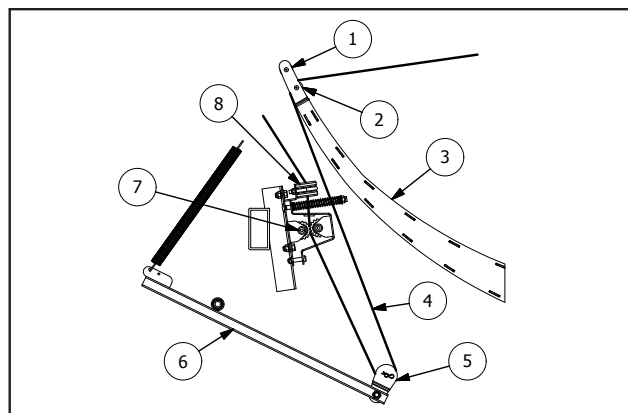


FIG. 4

FIG: 5: The needle (1) moves up through the bale chamber and the plunger putting the bottom twine up across the front of the bundle. The twine finger moves away from the needle slot. The tucker arm (2) moves up to get out of the way of the needle. The needle continues up, picking up the top twine (3) from the tucker arm roller so the top twine is on the tip roller of the needle. The needle then pushes the top twine into the slot in the stripper arm. The needle also pushes both twines across the billhook, and into the recess in the twine disc. The twine finger takes the bottom twine from the back of the needle and moves the bottom twine rearward into the slot in the stripper arm and into the route of the billhook.

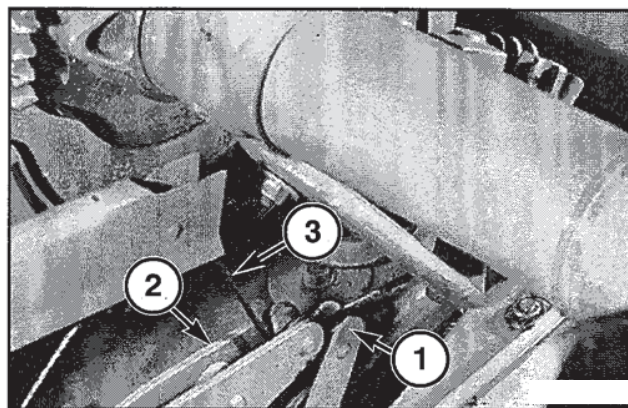


FIG. 5

FIG: 6: Needle

- (1) Twine Disc
- (2) Twine Finger
- (3) Stripper Arm
- (4) Billhook

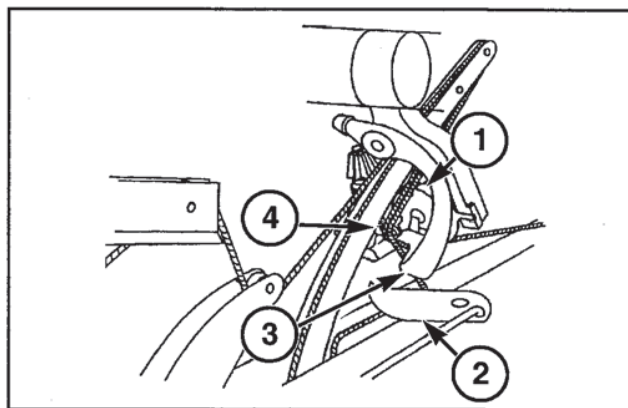


FIG. 6

FIG: 7: The top slot of the twine disc (1) starts to rotate down. The billhook (2) then starts turning, picking up the two twines.

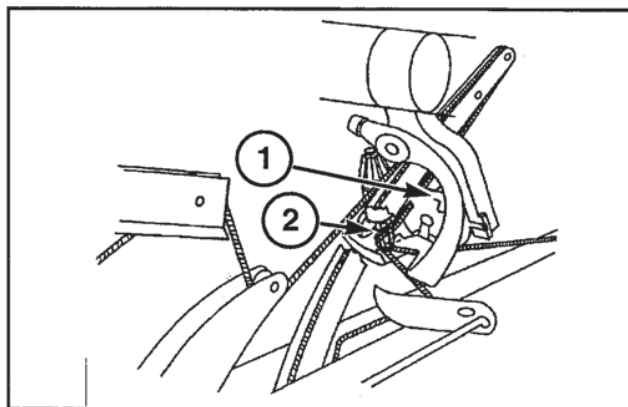


FIG. 7

KNOTTER MANUAL

FIG: 8: The billhook continues to rotate approximately 180 degrees while the billhook tongue (1) raises to receive the twine ends. The needle begins the down stroke, putting both twines in the next twine disc recess where the twines will be held for the second knot. The twine disc has finished the rotation and the twine is in position to be cut by the twine knife (2). as the needle moves down past the twine disc, the upper slacker arm (3) moves up. The upper slacker arms keep tension on the top twine, so the top twine will be in position for the second knot to be formed.

NOTE: The movement of the slacker arm is monitored by the baler control console and by the monitoring flags (reflectors) above the knotters.

FIG: 9: The billhook closes to hold the twines (1) and the twine knife advances, cutting both twines. The billhook holds the cut ends of the twines (2) as the loop is stripped off the billhook by the stripper arm (3), forming the knot. This completes the first knot of the tying cycle which ties off the bundle. The needle continues to move downward to the home position while the knotter starts the second knot. The twine finger moves forward, away from the twine. As soon as the needle retracts past the tucker arm (4), the tucker arm moves downward to put the top twine in the path of the twine finger.

FIG: 10: The twine finger (1) moves in for the second time, picking up the two twines being held by the twine disc (2). The twine finger moves the two twines into the route of the billhook (3) for the next billhook rotation.

FIG: 11: The twine disc (1), which is holding the loose ends of both twines, starts to rotate down. The billhook (2) starts turning for the second rotation, picking up the two twines.

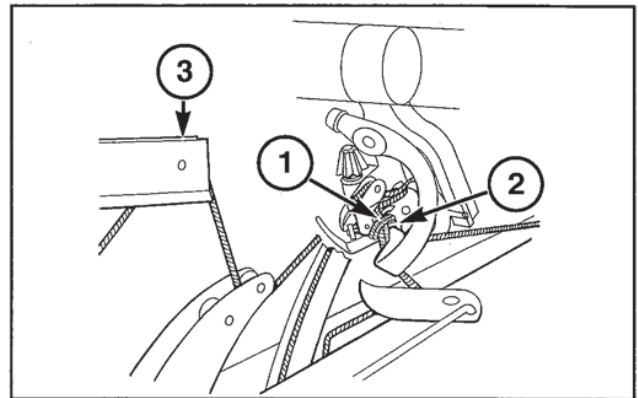


FIG. 8

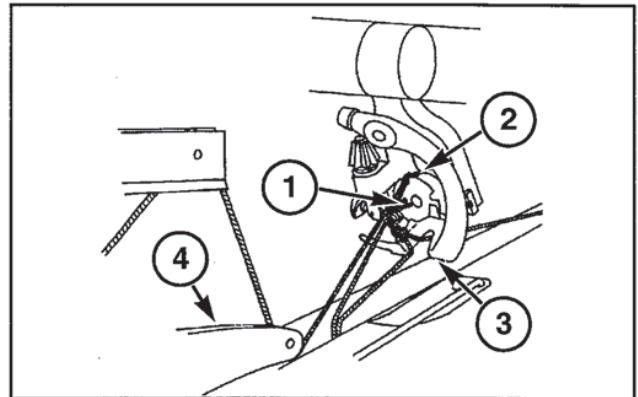


FIG. 9

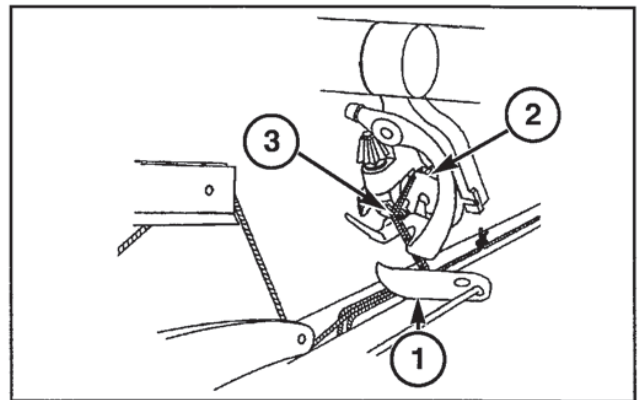


FIG. 10

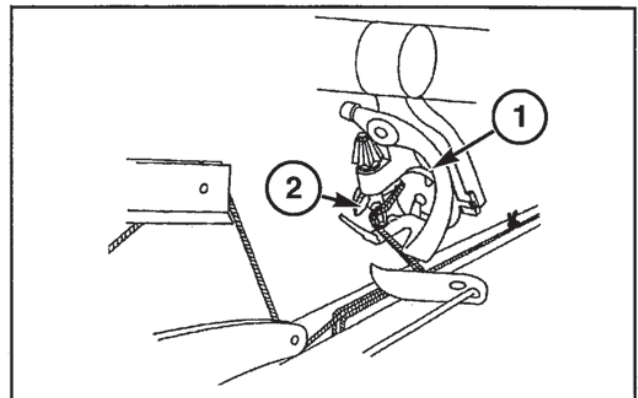


FIG. 11

KNOTTER MANUAL

FIG: 12: The billhook continues to turn approximately 180 degrees while the billhook tongue (1) raises to receive the twine ends. The twine finger (2) retracts to supply twine for the knot. The twine disc finishes the rotation and the twine is in position to be cut by the twine knife (3).

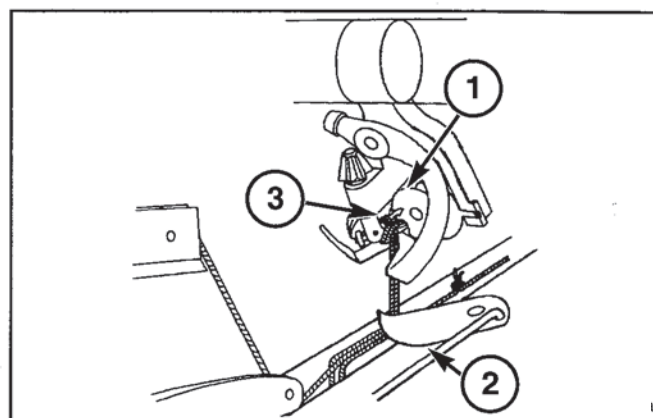


FIG. 12

FIG: 13: The billhook tongue closes to hold the twines (1) and the twine knife moves forward, cutting both twines. The twine finger moves (2) rearward to tighten up the twines and to aid in removing the twines from the billhook. The billhook holds the cut ends of the twines as the loop is removed from the billhook by the stripper arm (3), forming the knot. This finishes the second knot of the tying cycle.

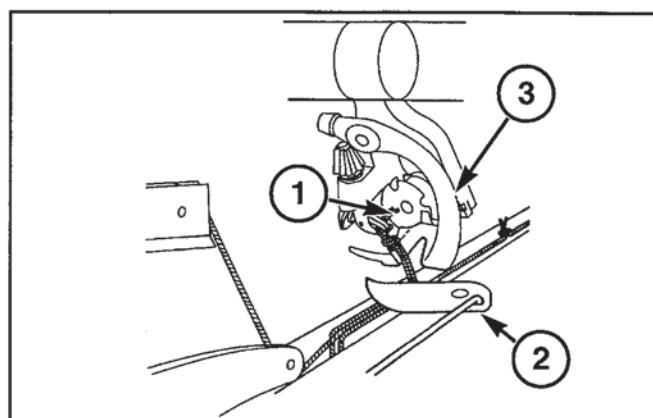


FIG. 13

FIG: 14: The slacker arm (1) moves up to remove slack from the twine as the second knot (2) is removed from the billhook.

NOTE: Monitoring flags are fastened to the slacker arms. When the slacker arms are in the raised position, the monitoring flags are up, showing the second knot has been tied. As the next bale is formed, the slacker arms and the monitoring flags will move to the down position. The slacker arms are monitored by the Bale Baron® PLC. If any slacker arm remains up to long, the Bale Baron® PLC will activate the mistie alarm. This condition normally occurs when there is no twine in the knotter or when there is a missing tie. The monitoring flags will remain down if the knot does not release from the billhook.

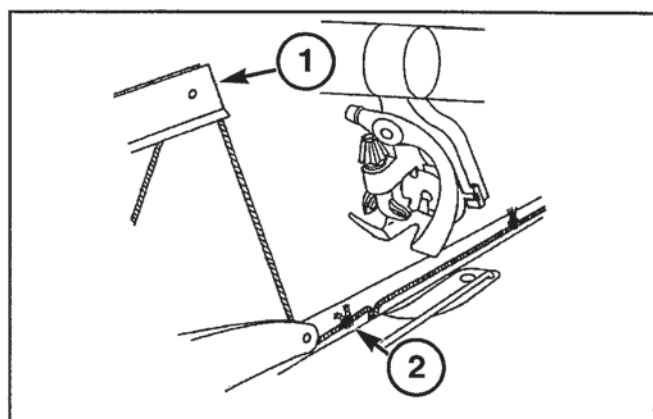


FIG. 14

KNOTTER MANUAL

TWINE INSTALLATION

TWINE INSTALLATION

TWINE SPECIFICATIONS

Plastic Twine

Use only high quality twine specifically made for use on high density large square bales. The twine must have a minimum knot strength of 1550 N (350 lb), and a maximum knot strength of 2000 N (450 lb). There are many characteristics required of twine for correct operation of the knotters and for handling and storage of the large bales. Correct twine for baling must be strong, flexible and not easily damaged by the sun. Twine that is not made for use in large square balers will not work correctly in the knotters.

TWINE STORAGE BOXES

Fig. 15: The Bale Baron® has two twine storage boxes, one mounted on each side of the Bale Baron®. Each twine storage box holds 8 balls of twine, each in a separate compartment. Four of the twine balls in a storage box are threaded into the Bale Baron® and the remaining four are used for backup. Approximately 1220 m (4000 ft) of twine is required to make 40 bundles.

Two twine balls are needed for each twine on a bale. One twine ball feeds twine up to a knotter, supplying twine for the top strand on the bale. The other twine ball feeds twine down to a needle, supplying twine for the bottom and end strands on the bale.

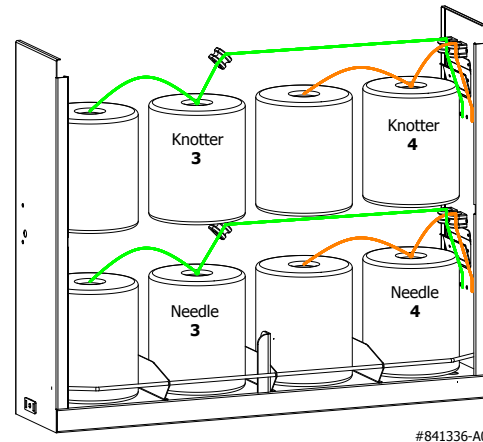
The left-hand twine storage box supplies twine for the knotters and the needles on the left-hand side of the Bale Baron®. The right-hand twine storage box supplies twine for the knotters and the needles on the right-hand side of the Bale Baron®. The top rows of twine balls in both twine storage boxes supply the knotters. The bottom row of twine balls supply the needles.

NOTE: The twine ball that supplies the needle is used at approximately twice the rate of the twine ball that supplies the knotter.

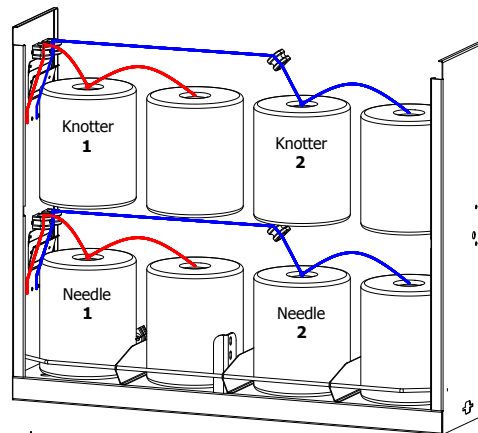
TWINE BALL INSTALLATION

There are two twine compartments for each of the twines that are being fed into the Bale Baron®. Twine is fed into the Bale Baron® from a feed ball in either of the two twine compartments. A backup ball is tied to the feed ball. By checking the twine storage boxes from time to time and adding new backup balls as the feed balls are used up, threading the Bale Baron® can be avoided. Approximately 1220 m (4000 ft) of twine is required to make 40 bundles.

Do not remove the plastic covers from the twine balls. Put the twine balls in the twine storage box so the feed end of the twine ball is facing up. Pull the feed end of the twine up from the center of the twine balls. DO NOT install the twine balls with the feed end facing down. DO NOT feed the twine from the bottom of the twine balls. If the twine is fed from the bottom of a twine ball, the twine will twist and not feed correctly, causing the knotter to not work correctly.



#841336-A0



#841335-A0

KNOTTER MANUAL

FIG. 19: To connect the backup ball to the feed ball, pull the feed end of the twine up from the center of the backup ball. Pull the tail end of the twine from the outside of the feed ball. Tie the twines together in a square knot. Pull the twines as shown to make sure the knot is as small and tight as possible. Cut off the loose ends of the twines to a length of 50 to 100mm (2 to 4 in).

NOTE: The twine balls that supply the needles are used at approximately twice the rate of the twine balls that supply the knotters.

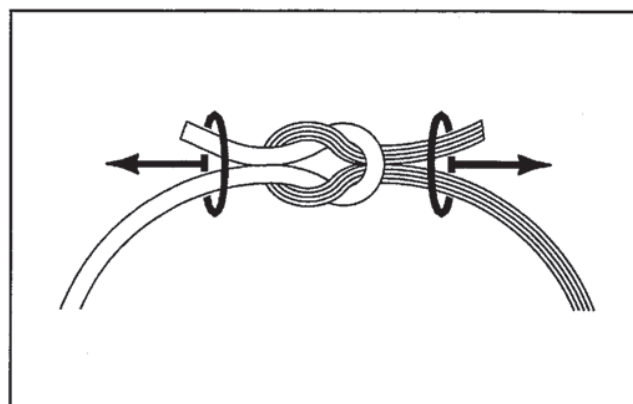


FIG. 19

Fig. 20: Upper Twine Tensioner

- (1) Twine Centering Ring
- (2) Twine Tension Rollers
- (3) Twine Finger Shaft
- (4) Slacker Arm Roller
- (5) Twine
- (6) Tucker Arm Roller

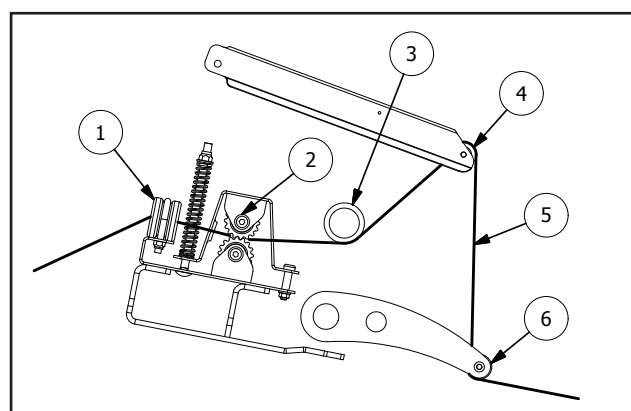


FIG. 20

Fig. 21: Lower Twine Tensioner

- (1) Top Roller
- (2) Bottom Roller
- (3) Needle
- (4) Twine
- (5) Slacker Arm Roller
- (6) Slacker Arm
- (7) Twine Tension Rollers
- (8) Twine Centering Ring

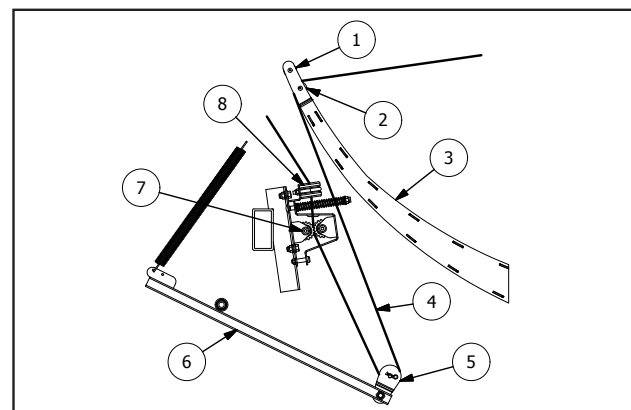


FIG. 21

FIG. 22: Upper Twine Routing-Top View

- (1) No. 1 Knotter
- (2) No. 2 Knotter
- (3) No. 3 Knotter
- (4) No. 4 Knotter

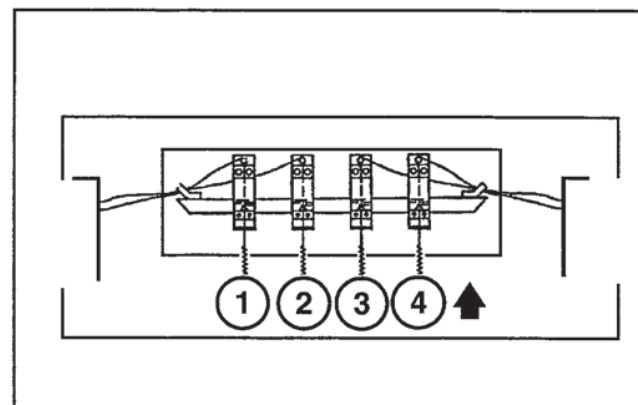


FIG. 22

KNOTTER MANUAL

THREADING THE LOWER TWINE TENSIONERS AND LOWER SLACKER ARMS

FIG. 28: Make sure the twine guides (1) in the twine tensioners (2) are located on the right-hand set of holes for needles one and two and on the left-hand set of holes for needles three and four.

The twine guides must be located correctly to keep the twine centered in the lower twine tensioner rollers. This figure shows the guide located on the right-hand side for use with the needles on the left-hand side of the Bale Baron®.

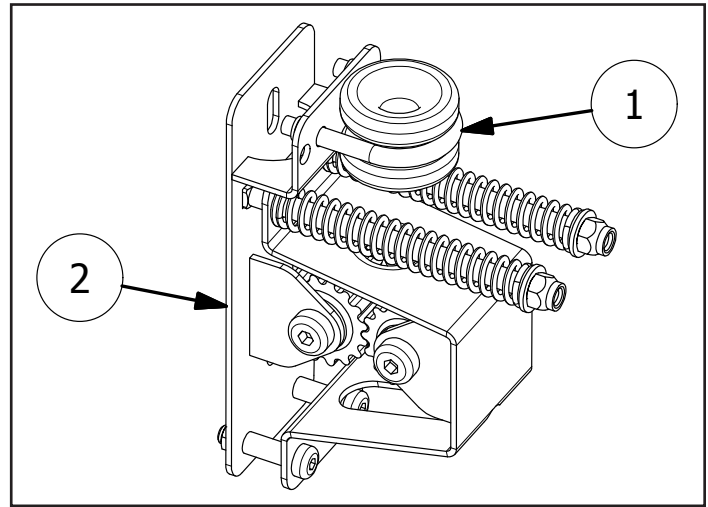


FIG. 28

THREADING THE LOWER SLACKER ARMS

FIGS. 29-30: Needle twines three and four come in through two guides (1) on the right-hand side. Needle twines one and two come in through two guides on the left-hand (2) side. The needle twines come across and go down through the lower twine tensioners (3) to the lower slacker arms (4). Springs on the lower slacker arms keep the correct tension on the needle twines during the knotter cycle.

NOTE: The lower twine tensioners, lower slacker arms, and needles are counted from the left-hand side of the Bale Baron®.

IMPORTANT: Make sure each twine does not wrap around any other twine between the twine boxes and the twine guides of the lower twine tensioners.

Each twine goes down to a lower slacker arm roller, around the roller and back up toward a needle.

Check each twine label as you thread the twine. Make sure each twine is going to the correct needle.

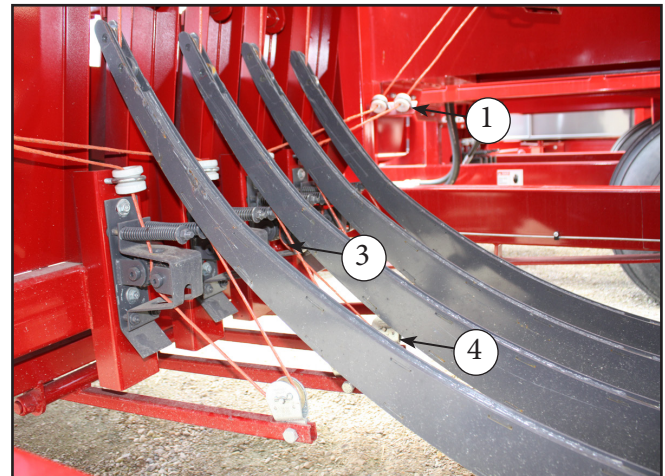


FIG. 29

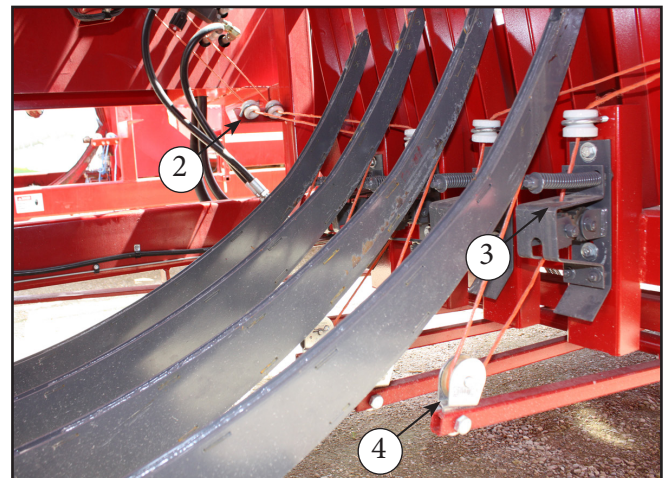


FIG. 30

KNOTTER MANUAL

ROUTING THE TWINE TO THE NEEDLES

FIG: 31: Each twine goes up from a lower slacker arm (1), between tension springs (2), and to a needle (3). Each twine goes over a lower roller (4), through the tip of a needle, and on up into the bale chamber. The large arrow (A) points to the front of the baler.

Pull twine number 1 into the bale chamber and tie to the twine from knotter one.

See Threading the Knotters in this section for information on how to thread the twine through the knotters.

Check each twine label. Make sure the correct twine is threaded to the correct needle.

Repeat these steps to thread needles two through four. Make sure the twine is not wrapped around another twine between the twine boxes and the twine tensioner twine guide (4).

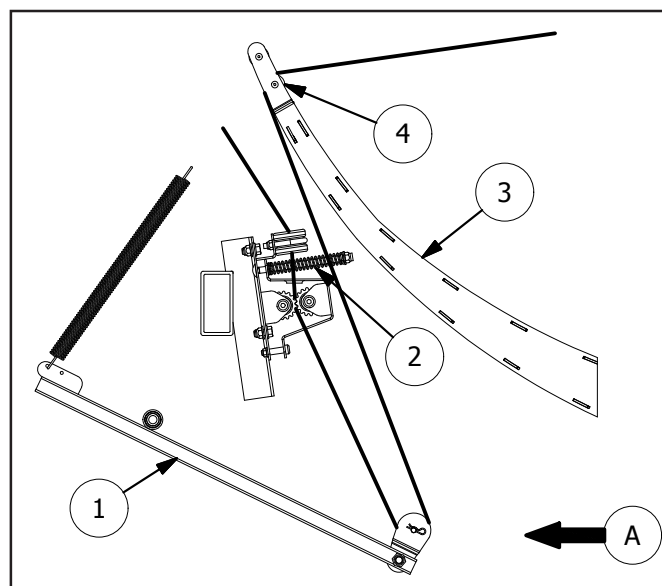


FIG. 31

KNOTTER MANUAL

ROUTING THE KNOTTER TWINES INTO THE KNOTTER AREA ON THE LEFT HAND SIDE

FIG. 34: The knotter twines on the left hand side, for knotters one and two, come out of the left hand twine box and into the knotter area of the Bale Baron®.

IMPORTANT: Make sure each twine does not wrap around any other twine between the left hand twine box and the twine guides of the twine tensioners.

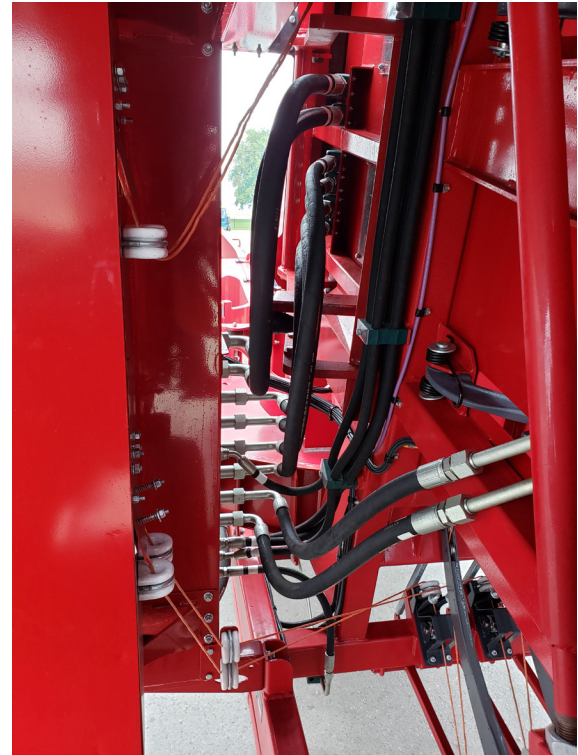


FIG. 34

ROUTING THE KNOTTER TWINES INTO THE KNOTTER AREA ON THE RIGHT HAND SIDE

FIG. 35: The knotter twines on the right-hand side, for knotters three and four, come out of the right-hand twine box and into the knotter area of the Bale Baron®.

IMPORTANT: Make sure each twine does not wrap around any other twine between the right hand twine box and the twine guides of the twine tensioners.



FIG. 35

TWINE BOX TENSIONERS FOR NEEDLES

FIGS. 36-37: The knotter twines on the left-hand side go through a tensioner (1) on the back side of the twine box, on the left-hand side.

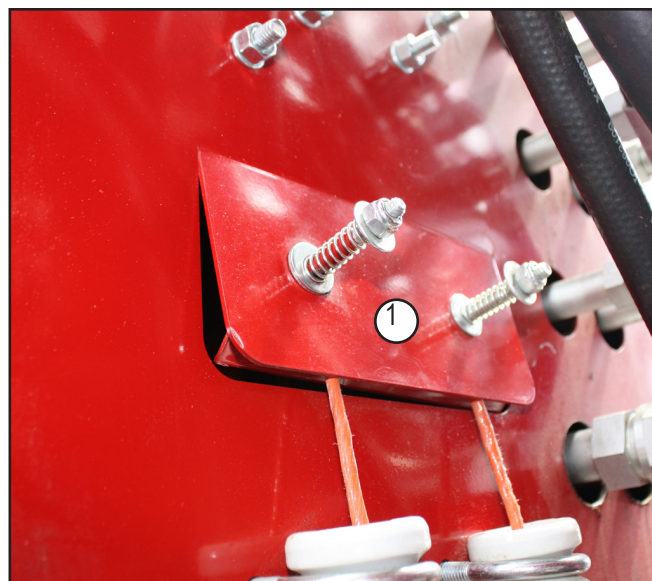


FIG. 36

The knotter twines on the right-hand side go through a tensioner (2) on the back side of the twine box, on the right-hand side.



FIG. 37

KNOTTER MANUAL

THREADING THE KNOTTERS

FIG. 38-39: The large arrow points to the front of the Bale Baron®.

Make sure the upper twine tensioner twine guides are located in the right-hand hole for knotters one and two and in the left-handed hole for knotters three and four. The upper twine guides must be located correctly to keep the twine centered in the tensioner rollers.

Twines for the right-hand knotters, three and four, go in through the right-hand side of the Bale Baron®. The twine from the front porcelain guide (1) goes to the upper twine tensioner three (2). The twine from the rear porcelain guide (3) goes to the upper twine tensioner four (4).

Next, thread upper twine tensioners one (5), and two (6).

Thread the twines up, and under, the finger shaft (7). Route the twines up and over the roller (8) in each upper slacker arm (9).

Route the twines from the upper slacker arms, down to, and through the tucker arms and around the roller in the end of the tucker arms.

Check each twine label as you thread the twine. Make sure each twine is going to the correct knotter.

Route the twines from the knotter area into the bale chamber to meet the twines from the needle area.

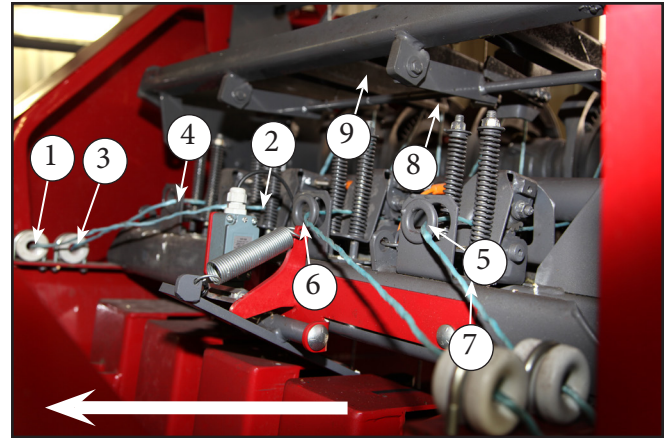


FIG. 38

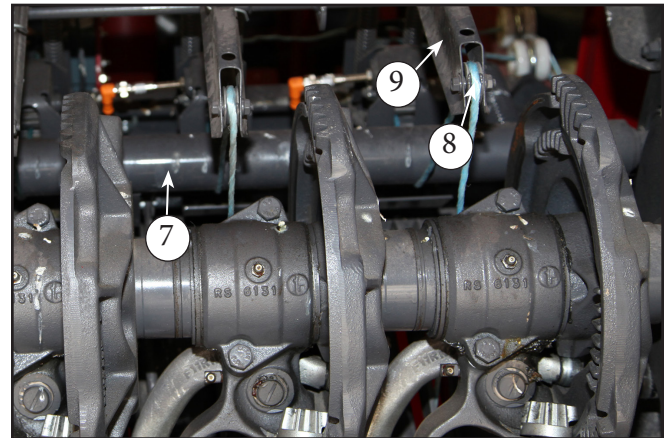


FIG. 39

TYING THE NEEDLE AND THE KNOTTER TWINES

FIG. 40: Route the twines (1) from the needles up through the bale chamber. Tie the needle twines to the twines from the knotter area. Check each twine to make sure the correct twines are tied each time.

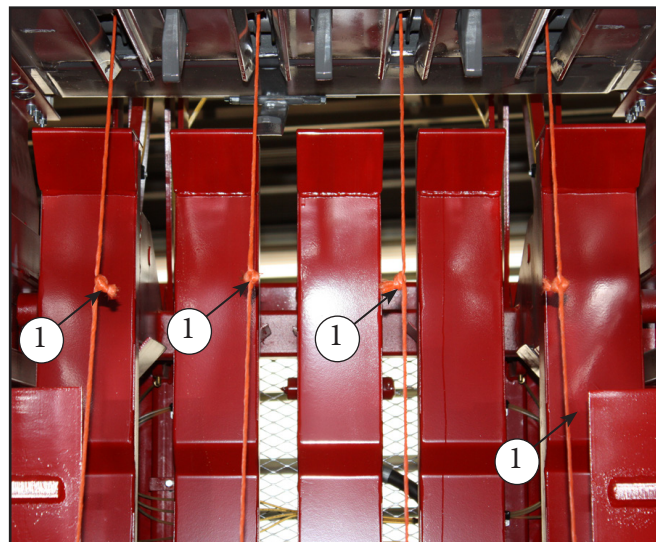
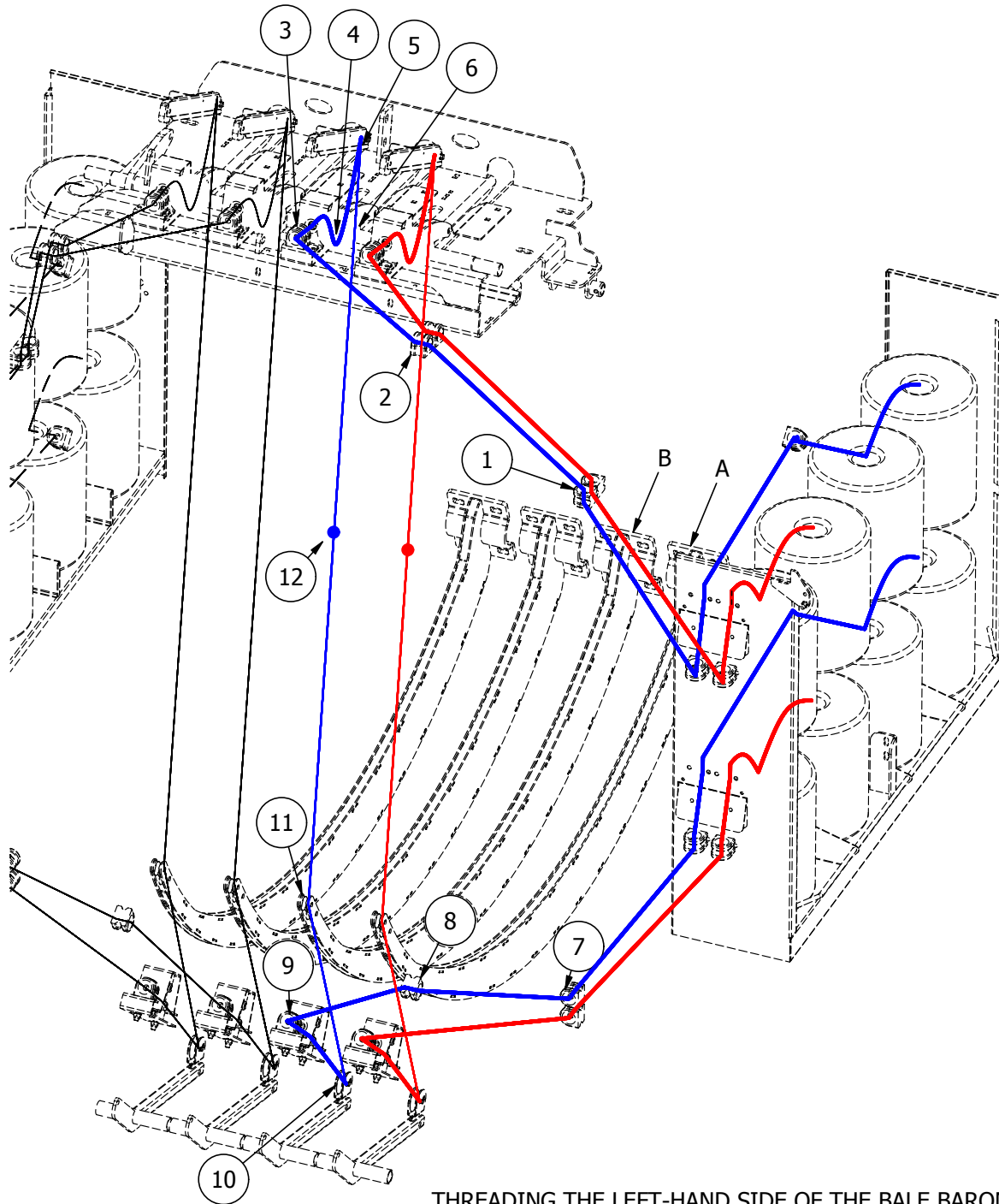


FIG. 40

KNOTTER MANUAL

TWINE THREADING DIAGRAM - LEFT SIDE

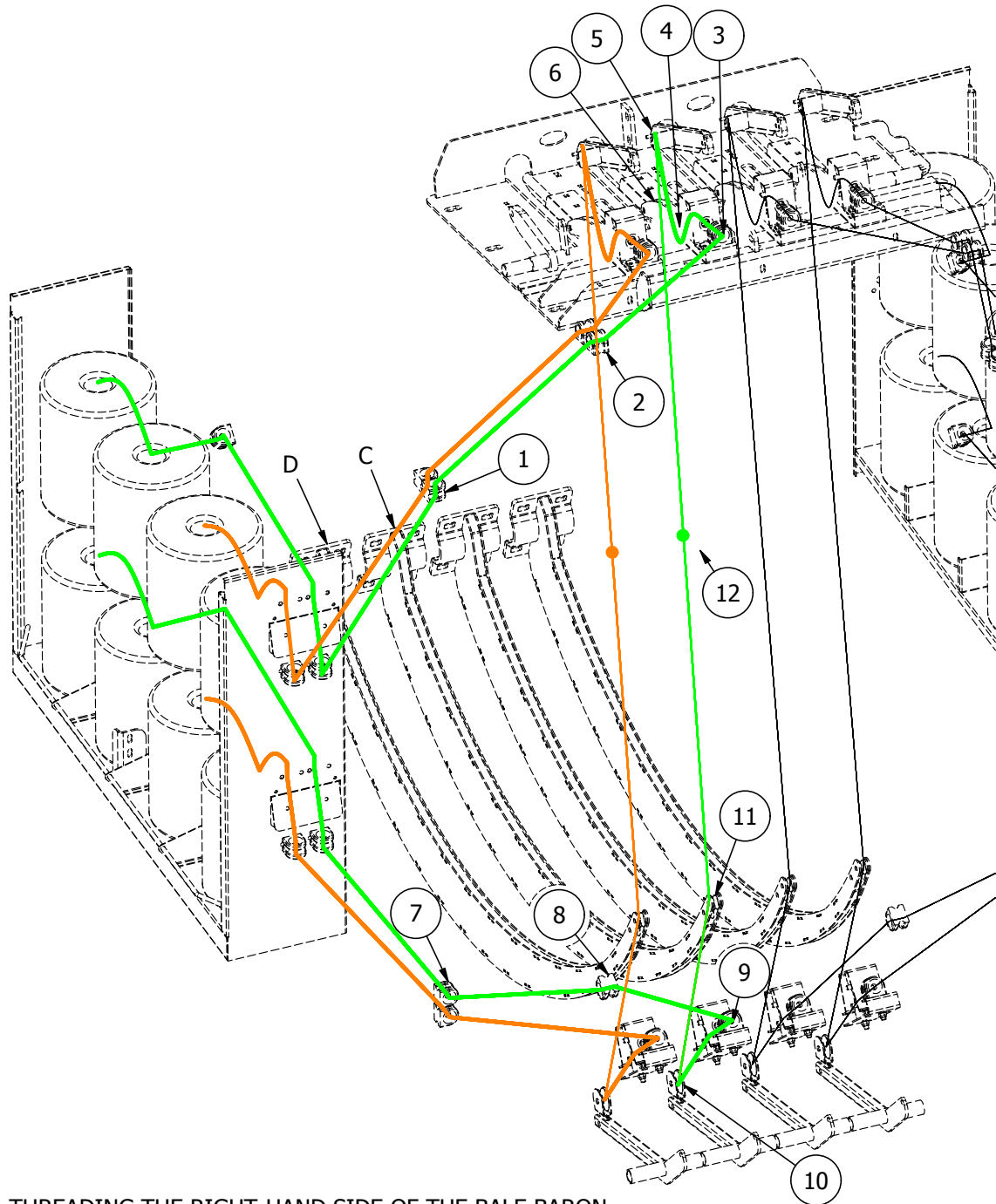


THREADING THE LEFT-HAND SIDE OF THE BALE BARON

- | | |
|---------------------------|--|
| A. Needle 1 | 6. Through Tucker Arm |
| B. Needle 2 | 7. Ceramic Twine Guide |
| 1. Ceramic Twine Guide | 8. Ceramic Twine Guide (skip on needle 1) |
| 2. Ceramic Twine Guide | 9. Bottom Twine Tensioner |
| 3. Top Twine Tensioner | 10. Bottom Slacker Arm Pulley |
| 4. Under Tucker Arm Shaft | 11. Between Needle Pulleys |
| 5. Top Slacker Arm Pulley | 12. Top And Bottom Twines Tied Together In Chamber |

#841328-A0

TWINE THREADING DIAGRAM - RIGHT SIDE



THREADING THE RIGHT-HAND SIDE OF THE BALE BARON

- | | |
|---------------------------|--|
| C. Needle 3 | 6. Through Tucker Arm |
| D. Needle 4 | 7. Ceramic Twine Guide |
| 1. Ceramic Twine Guide | 8. Ceramic Twine Guide (skip on needle 4) |
| 2. Ceramic Twine Guide | 9. Bottom Twine Tensioner |
| 3. Top Twine Tensioner | 10. Bottom Slacker Arm Pulley |
| 4. Under Tucker Arm Shaft | 11. Between Needle Pulleys |
| 5. Top Slacker Arm Pulley | 12. Top And Bottom Twines Tied Together In Chamber |

#841329-A0

KNOTTER MAINTENANCE

GENERAL MAINTENANCE

SAFETY WARNINGS



WARNING: Before doing any maintenance or service work on the Bale Baron® you must:

- Park machine on a solid, level surface.
- Disengage the hydraulics.
- Put the tractor transmission in PARK or apply the tractor parking brake.
- Turn off the Bale Baron® cab control.
- Stop the tractor engine and power unit (if so equipped) and take the key with you.
- Look and Listen! Make sure all moving parts have stopped.



WARNING: After lubricating, servicing, or adjusting the Bale Baron®, make sure all tools and equipment have been removed.

WARNING: All shields and guards must be in position before operating the Bale Baron®.

WARNING: Serious injury or death can result from threading the needles or adjusting the twine tensioners with the Bale Baron® running.

- The needle frame could possibly move while the Bale Baron® is running
- Disengage tractor PTO and hydraulics, stop tractor and power unit (if so equipped) and take the key with you before threading the needles or adjusting the twine tensioners.

GENERAL INFORMATION

Be careful when checking and making adjustments to the knotters and the needles. Refer to Troubleshooting in this section before doing any adjustments. Also see Description in this section for a description of how the knotter system works. To locate knotter system problems, the knotter must be operated at slow speed, while another person looks at the operation of the mechanism.

The knotter mechanism is properly adjusted and tested before leaving the factory. The knotter on a new Bale Baron® will normally operate without doing any adjustments. If the Bale Baron® is missing ties with a small number of bales at the beginning, do not adjust the knotter immediately. The problem can be caused by paint or by knotter parts that are rough. Operate the Bale Baron® until the action of the twine has had time to smooth the parts. If the Bale Baron® continues missing ties, see the Knotter Troubleshooting Guide in this section for more information.

Most problems in the knotter are the result of the needles, tucker arm and twine fingers not being adjusted correctly. Check the needle, tucker arm, and the twine finger adjustments before changing any other knotter adjustments. After determining the cause of the problem, make the necessary adjustments and then check the operation of the Bale Baron® for the next bales.



Note: to bring the knotter to slow speed, turn the speed control for the knotter on the manifold (see image above) clockwise

KNOTTER MAINTENANCE

CAUSES OF TYING FAILURE

The most common causes of tying failures are found below:

- Twine tensioners not adjusted correctly.
- Twine twisted in the twine storage compartment or the twine tensioner.
- Rough edges or rust on the billhook, stripper arm, or twine finger.
- Tucker arm adjustment not correct.
- Needle adjustment not correct.
- Twine finger adjustment not correct.
- Twine disc adjustment not correct.
- Twine finger shaft sticking.
- Tucker arm shaft sticking.
- Twine tensioners in bottom of twine box not adjusted correctly.
- No spring tension on slacker arms or crop deposit on lower slacker arms.
- Sticking in lower slacker arm from dirt deposit in slacker arm pivots.
- Worn, broken, or missing twine rollers and tensioners.
- Dull, broken, or damaged twine knife.

KNOTTER MAINTENANCE

TWINE TENSION

See the safety warnings at the beginning of this section and follow the procedures.

TWINE BOX TWINE TENSIONER ADJUSTMENT

FIG. 69: Twine Tensioners At Twine Box

The lower twines pass under a tension clip when leaving the twine box. Adjust the spring for a very slight tension to prevent free fall of the twine. Too much tension can cause excessive wear and cause knotter malfunction.

Twine Tension

When the twine tension settings are not correct, several malfunctions can occur. Check the twine tension setting from time to time. Variations or differences in twine can vary the tension setting. Also, the tension can change after the break in of components. Any time the twine tension setting is adjusted, the knotter billhook and twine holder adjustments must be checked.

Figs: 56-57: Twine tension is controlled by the upper twine tensioner, shown in the first figure, and by the lower twine tensioner, shown in the second figure. To increase the twine tension, rotate the tension adjustment nut (1) toward the spring (2) to compress the spring. To reduce the twine tension, rotate the twine adjustment nut away from the spring. Do not increase the tension to much. Too much tension can cause excessive wear and cause the knotter to malfunction.

Adjust the upper twine tensioners so a force of 80 N (18 lbs) is required to pull the twine through the twine tensioner. To increase the length of the tail on the second knot, increase the tension.

Adjust the lower twine tensioners so a force of 93.5 N (21 lbs) is required to pull the twine through the twine tensioner. To increase the length of the tail on the second knot, increase the tension.

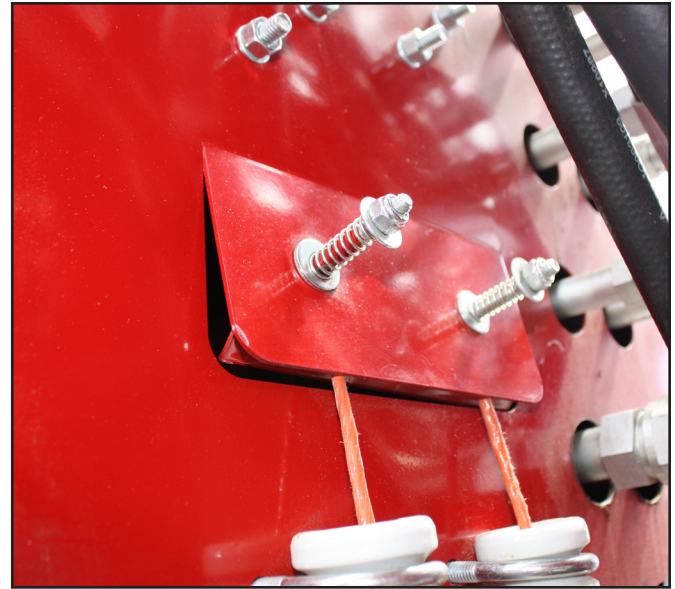


FIG. 69

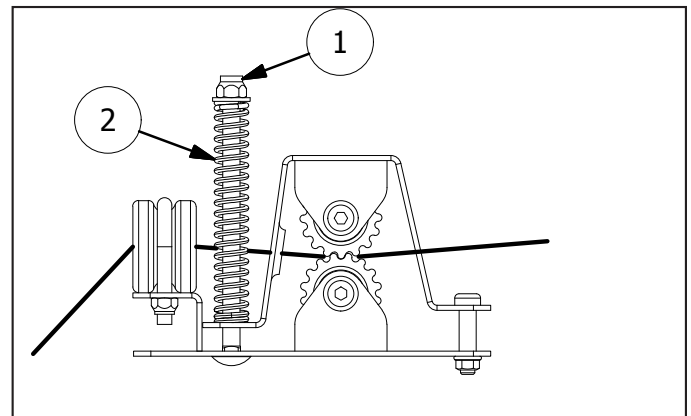


FIG. 56

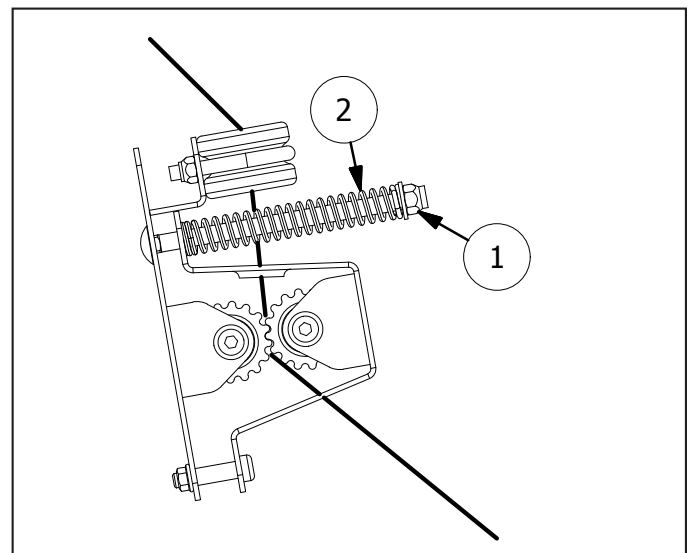


FIG. 57

KNOTTER MAINTENANCE

LOWER TWINE TENSIONER

Fig. 55: Lower Twine Tensioner

- (1) Top Roller
- (2) Bottom Roller
- (3) Needle
- (4) Twine
- (5) Slacker Arm Roller
- (6) Slacker Arm
- (7) Twine Tension Rollers
- (8) Twine Centering Ring

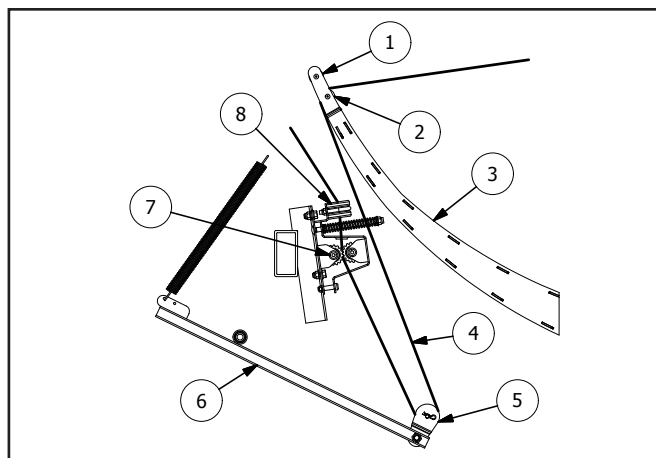


FIG. 55

TWINE GUIDE ADJUSTMENT

Fig. 58: Adjust the twine guide so the twine goes through the center of the tensioner rolls. Remove the nuts (1) on the ubolt (2) and put the ubolt for the twine guide in either the left-hand or right-hand set of holes. The side of the guide the twine is following around must be to the center of the tensioner (3).

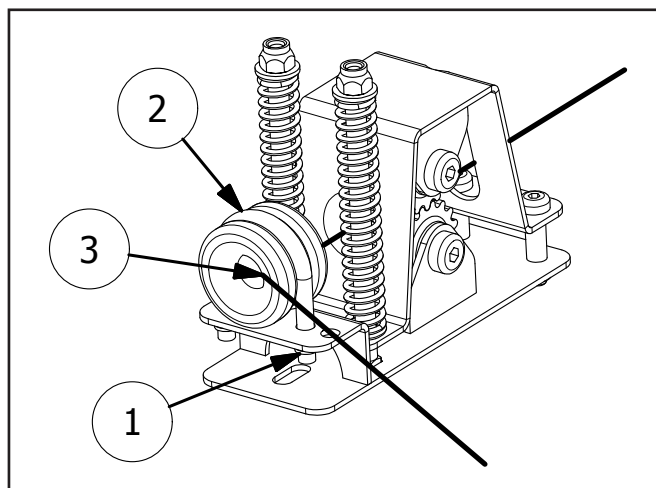


FIG. 58

KNOTTER MAINTENANCE

BILLHOOK & BILLHOOK CAM ADJUSTMENT

See the safety warnings at the beginning of this section (pg 74) and follow the procedures.

FIG. 59: Billhook Adjustments

- (1) Billhook
- (2) Billhook Cam Spring
- (3) Adjusting Nut
- (4) Billhook Cam
- (5) Tie string at this location

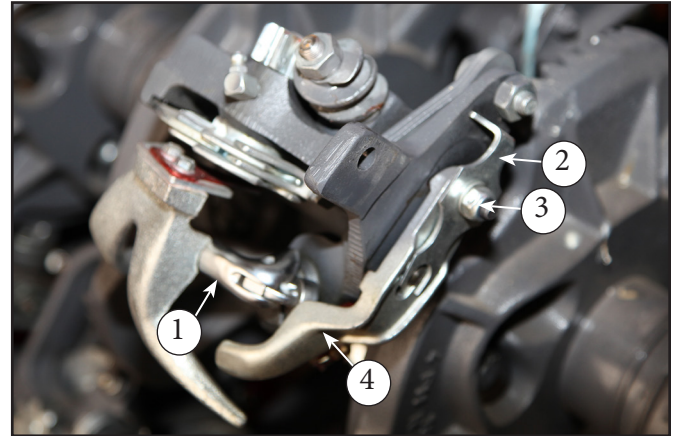


FIG. 59

FIG: 60: The billhook (1) makes a knot by forming a loop in the twine and threading the ends through the loop as the loop is pulled off the billhook by the stripper arm.

Rough edges and surface damages to the billhook can cause the knot to stick on the hook or cause the fibers in the twine to be cut. If the twine fibers are cut, the knot will be weak. All rough edges and surface damage must first be removed with a file, then made completely smooth with emery cloth.

The billhook cam (2) operates under spring tension to apply pressure on the billhook tongue when the knot is being tied. Rotate the knotter head so the roller on the billhook is under the billhook cam. Tie a string to the billhook tongue (3) and connect a spring scale to the string.

Tighten the lock nut (4) at the billhook cam spring (5) until 22 to 45 N (5 to 10 lbs) pull is required to open the billhook 3 mm (1/8").

If a spring scale is not available, tighten the lock nut until the upper end billhook cam spring can be moved with only a slight amount of pressure, approximately 0.45 to 1.4 kg (1 to 3 lbs).

If the knot comes loose or is tied so loose that the knot can be pulled loose, tighten the adjusting nut slightly, 1/6 turn at a time. If the knot sticks on the billhook, loosen the adjusting nut slightly 1/6 turn at a time.

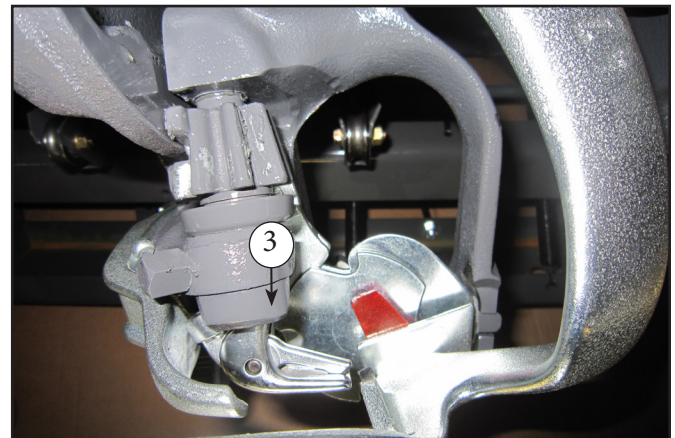


FIG. 60

KNOTTER MAINTENANCE

BILLHOOK INSTALLATION

See the safety warnings at the beginning of this section and follow the procedures.

FIG. 72: Remove the hairpin and the clevis pin that fasten the knotter assembly to the knotter frame.

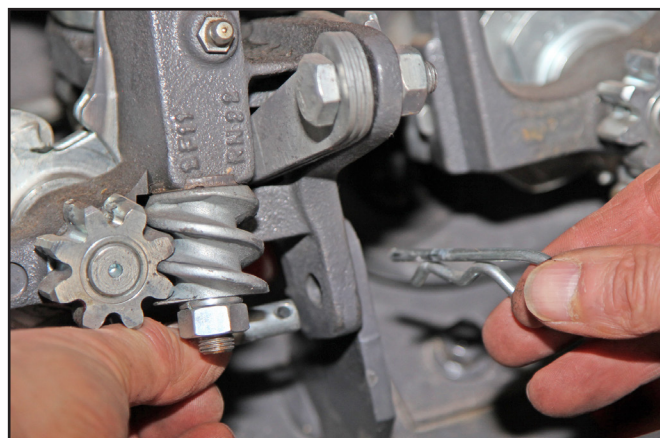


FIG. 72

FIG. 73: Raise the knotter assembly by lifting the knotter mounting tab. Be careful not to touch any of the moving parts.

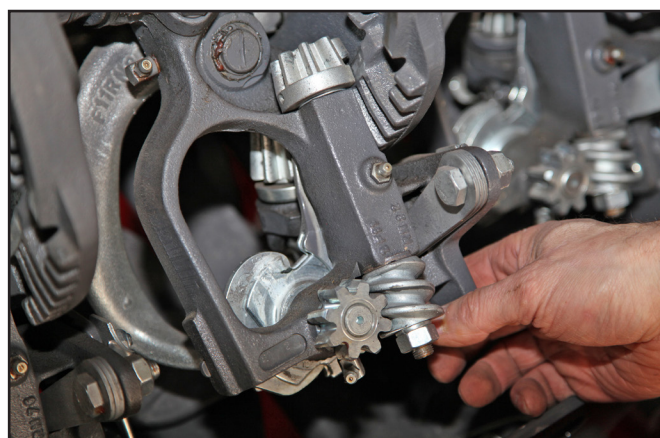


FIG. 73

FIG. 74: Raise or lower the knotter assembly to rotate the billhook pinion gear (1) for access to the groove pin. Drive the groove pin from the billhook pinion gear.

Rotate the billhook so the roller on the billhook is not under the billhook cam. Remove the billhook and the billhook pinion gear.

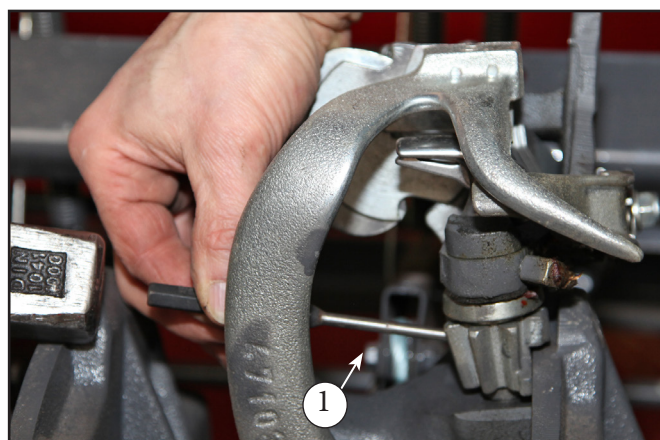


FIG. 74

KNOTTER MAINTENANCE

FIG. 75: Billhook Assembly

- (1) Groove Pin
- (2) Billhook Pinion Gear
- (3) Flat Area
- (4) Needle Guide Roller
- (5) Shim Washers
- (6) Knotter Head Frame
- (7) Replacement Wear Bushing
- (8) O-Ring Seals For Billhook Shaft
- (9) Billhook
- (10) Billhook Roller
- (11) Billhook Cam

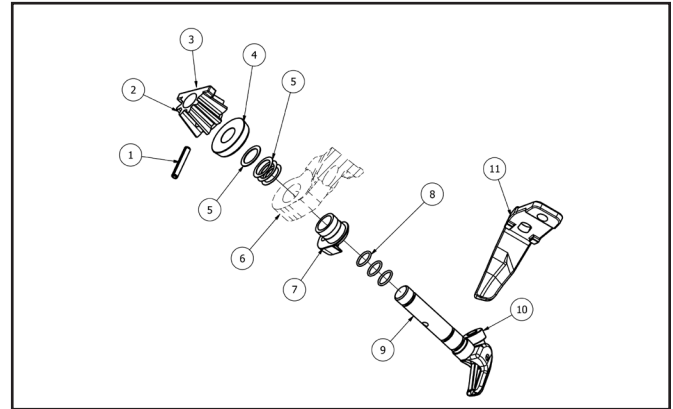


FIG. 75

Put the billhook pinion gear in position in the knotter head frame. The flat area on the billhook pinion gear must be toward the knotter cam gear.

FIG. 76: Install the billhook in the knotter head frame and the billhook pinion gear.



FIG. 76

FIG. 77: Align the holes in the billhook pinion gear and the billhook. Rotate the billhook so the roller is under the billhook cam. Drive the groove pin into the pinion gear until the end of the groove pin is even with the edge of the hole.



FIG. 77

FIG. 78: Lower the knotter assembly by pushing down on the knotter mounting tab. Be careful not to touch any of the moving parts.

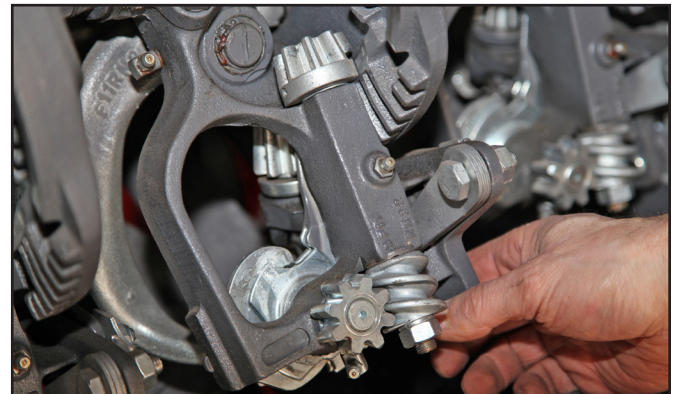


FIG. 78

KNOTTER MAINTENANCE

FIG. 81: Install the clevis pin and hairpin.

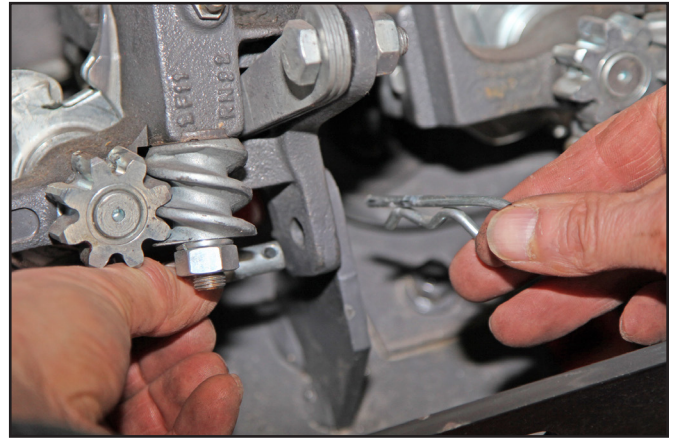


FIG. 81

KNOTTER MAINTENANCE

TWINE KNIFE

See the safety warnings at the beginning of this section and follow the procedures.

A dull or damaged knife can cause knotter problems. Always check the knife for chips and dull or rolled edges.

The twine knives must be sharp for use on plastic twine. If a twine knife is no longer sharp, the twine knife must be replaced or sharpened. The twine knife must be removed from the stripper arm to be sharpened. The twine knife is made from high carbon hardened steel and must be sharpened with a stone.

FIG. 82: Remove the hairpin and the clevis pin that fasten the knotter assembly to the knotter frame.

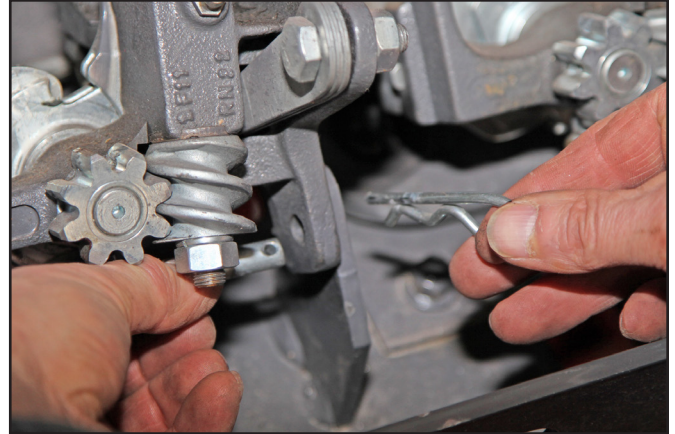


FIG. 82

FIG. 83: Raise the knotter assembly by lifting the knotter mounting tab. Be careful not to touch any of the moving parts.

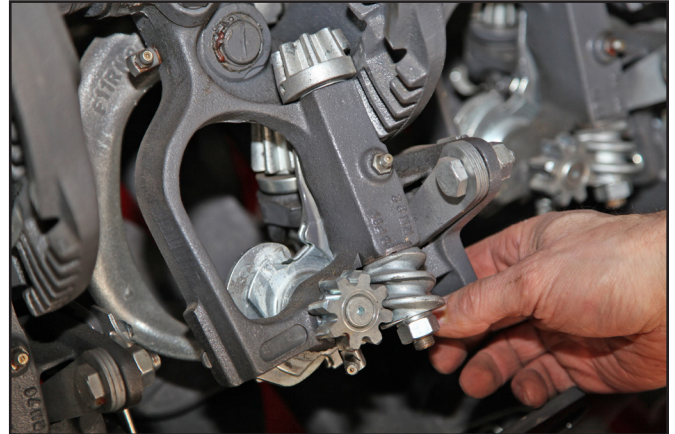


FIG. 83

FIG. 84: The stripper arm can be removed for better access to the twine knife by removing the lock nut and washer, and then the stripper arm from the stripper arm shaft. Remove the cap screws, lock washers, twine knife, and knife base.

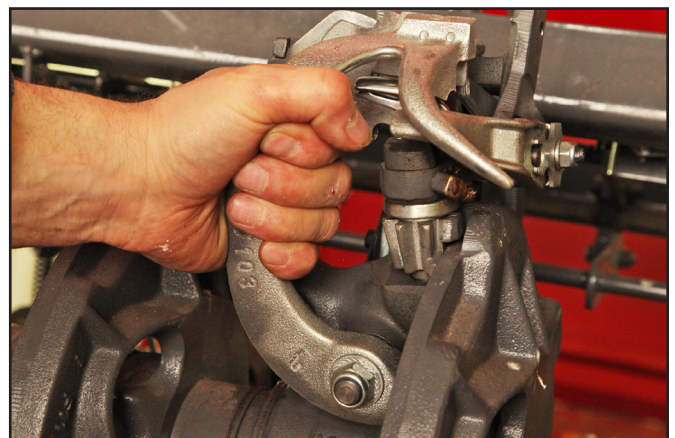


FIG. 84

KNOTTER MAINTENANCE

FIG. 85: Stripper Arm Assembly

Install the knife base (13) and twine knife (14). Install the cap screws (16) and lock washers (15). If the stripper arm (12) was removed, install the stripper arm (12), washer (11) and lock nut (10) on the stripper arm shaft (6). Lower the knotter assembly by pushing down on the knotter mounting tab. Be careful not to touch any of the moving parts. Install the clevis pin and the hairpin.

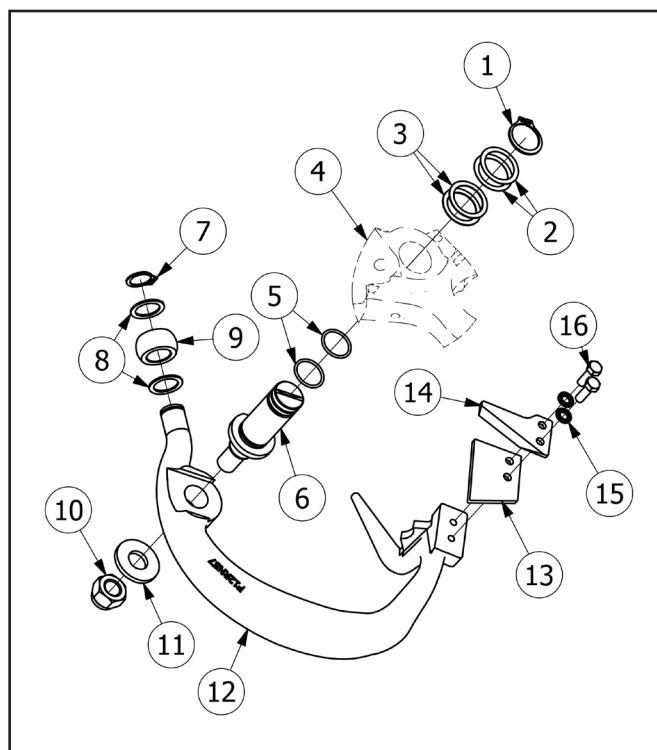


FIG. 85

KNOTTER MAINTENANCE

STRIPPER ARM ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

When the stripper arm is actuated, the half circle shape notch in the stripper arm flange will rub against the heel of the billhook. The stripper arm removes the twine loops from the billhook, while the billhook tongue is holding the two ends of the twine in forming the knot. When the notch does not rub against the heel of the billhook, the twine loops will not be removed correctly and a bad knot is made.

FIG: 86 : Stripper Arm Adjustments

- (1) Billhook
- (2) Half Circle Notch in Stripper Arm Flange
- (3) Stripper Arm
- (4) Minimum Travel

To check the stripper arm travel and fit with the billhook, remove the clevis pin, and swing the knotter head up. The force needed to swing the knotter head will increase slightly as the stripper arm rubs tightly across the billhook.

The half circle shape notch must be centered over the billhook. If adjustment is necessary, bend the stripper arm with a hammer, pry-bar, or wrench. The stripper arm can also be removed and bent in a vise that has wide jaws.

Adjust the stripper arm to rub tightly across the billhook by bending the stripper arm. The adjustment is correct when 36 to 54 N (8 to 12 lb) is required to move the stripper arm across the billhook. If only a slight adjustment is necessary, it is possible to bend the stripper arm with a hammer, pry-bar, or adjustable wrench without removing any parts of the knotter. When more adjustment is required, it is necessary to completely remove the stripper arm from the knotter and bend the stripper arm with a wide jaw vise. The stripper arm can be removed by removing the lock nut and washer and pulling the arm from the stripper arm shaft. See the Knotter Head Assembly illustration.

FIG: 86: During the tying cycle, the flange of the stripper arm (3) must have a minimum travel (4) of 10 mm (.4 in) beyond the end of the billhook (1). The travel will normally be 20 to 22 mm (.79 to .87 in). If there is not enough travel, check for a worn or damaged roller on the stripper arm. Also check for a bent stripper arm. Check both lobes on the cam gear as necessary. The lobes can be repaired by filling the low areas with weld.

NOTE: If weld is added to the cam gear, make sure the roller has clearance in the groove of the cam gear. Maximum travel for the stripper arm is approximately 22 mm (.87 in) beyond the end of the billhook. Make sure there is clearance between the stripper arm and the other parts.

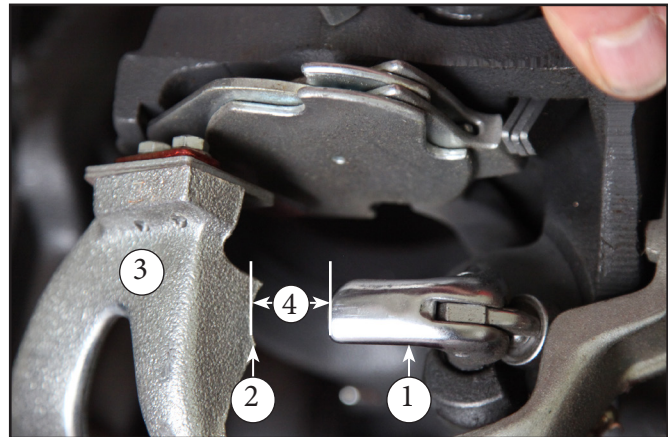


FIG. 86

KNOTTER MAINTENANCE

TWINE DISC ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

FIG: 89: The needle puts the twines in the notch of the twine discs on the up stroke for the first knot. The twine disc rotates 1/4 of a turn, pulling the twine between the twine holder and the twine disc to hold the twines while the knots are being tied. Twine is held in the twine holder only while the knots are being tied. Refer to Knotter Operation for instructions and illustrations on operation of knotter components.

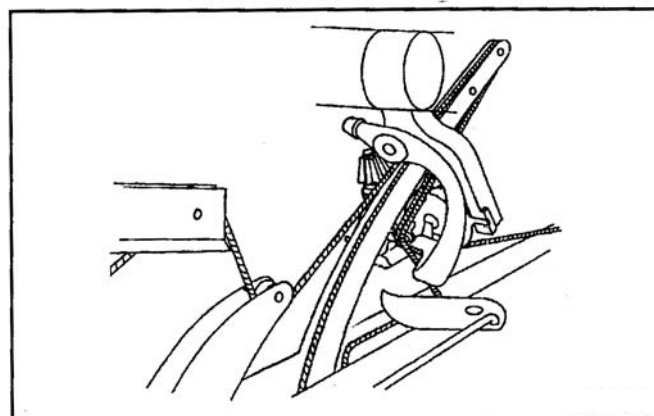


FIG. 89

FIG: 90: Twine Disc Adjustment

- (1) Twine Disc
- (2) Disc Cleaner
- (3) Twine Holder
- (4) Worm Gear Nut
- (5) Worm Gear
- (6) Push disc cleaner toward cam gear
- (7) Measure this distance when adjusting the twine disc initial setting 3 to 4 mm (.118 to .157 in)
- (8) Advance
- (9) Worm Pinion Gear

The twine disc setting is determined by the position of the notch in the twine disc compared to the disc cleaner. Make sure the disc cleaner is pushed toward the cam gear when checking the adjustment. To receive the two twines from the needle, the notch in the twine disc must be opened as shown in the following photo. This setting will permit the twines to pass between the disc cleaner and twine holder. If the notch in the twine disc is rotated clockwise (advanced) too far, the twine disc will not pick up twine from the needle. Rotating the notch too far counterclockwise (retard) can cause the twine to wrap on the billhook shaft or permit the billhook tongue to not catch the twines.

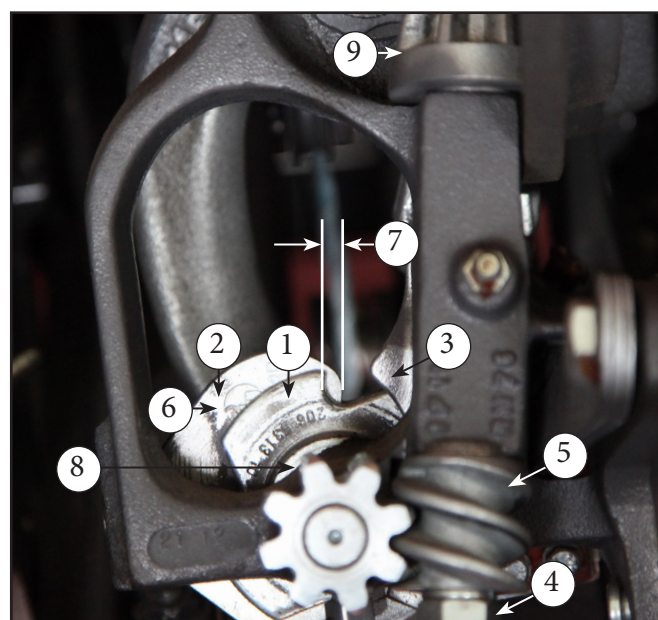


FIG. 90

KNOTTER MAINTENANCE

FIG: 91: When timing the twine disc, the adjustment must be made with twine in the twine holder (3) after at least two knots. To change the position of the notch in the twine disc (1), remove the clevis pin and swing the knotter head up. Loosen the worm gear nut (4). Tap the nut end of the worm gear shaft lightly to loosen the worm gear (5) from the taper on the worm gear shaft. Turn the twine disc to the position shown in the photo (7). When properly adjusted, 3 to 4 mm (.118 to .197 in) of the disc cleaner (2) will be seen past the edge of the notch on the twine disc. Make sure the disc cleaner is pushed toward the cam gear. Hold the twine disc so the twine disc will not move. Turn the worm gear (5) so the worm gear is against the machinery bushing located between the knotter head frame and worm gear. Tighten the nut on the end of the worm gear shaft. Check the adjustment before baling.

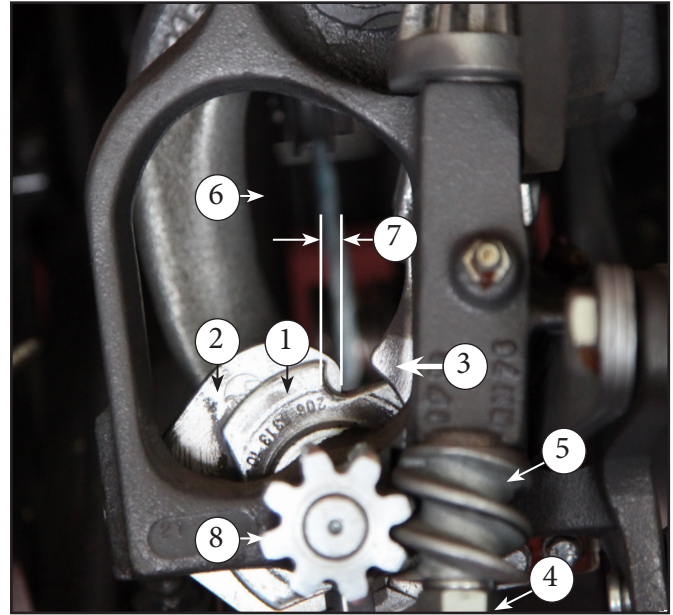


FIG. 91

FIG: 92: Knotter Head

NOTE: The shims between the knotter head frame and the worm gear are used to remove some of the end play from the worm gear shaft. Too many shims will prevent the worm gear from making complete contact on the taper of the worm gear shaft. Maximum permitted end play in worm gear shaft is .2 to .45 mm (.008 to .018 in).

- (1) Worm Pinion Gear
- (2) Knotter Head Frame
- (3) End Play .2 to .45 mm (.08 to .018 in)

NOTE: When the worm gear is installed, make sure the end of the bore in the gear is the same as the tapered section of the worm gear shaft. The larger end of the taper in the worm gear must be toward the knotter frame and away from the nut. If the worm gear is not installed correctly, the worm gear will not seat against the shaft taper. This can cause the worm gear to split along one side when the nut is tightened.

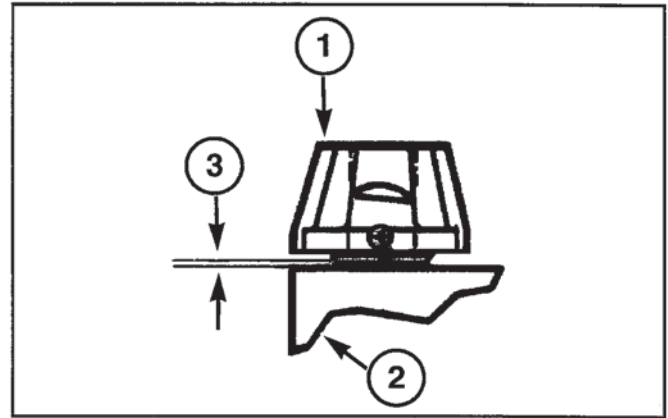


FIG. 92

KNOTTER MAINTENANCE

TWINE HOLDER ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

FIG: 93: The function of the twine holder (1) is to hold the twine in the twine disc (2). The twine holder springs (3) apply pressure to the twine holder. As a knot is being tied, the twine holder permits twine to slip out of the twine disc enough to make the knot.

The adjustment of the twine holder must be done in the field. When making an adjustment to the twine holder, do not turn the adjustment bolt (4) more than 1/6 turn at a time. Check the knot tail length and twine drop length from the twine holder. Both must be approximately 25 mm (1 in) long when this adjustment is correct. If the ends of the knots are too short and the knots are pulling loose when pressure is applied, **LOOSEN** the adjustment bolt 1/6 turn at a time. If the ends of the knots are too long, such as when the knots stay on the billhook too long or the knots are bow knots, **TIGHTEN** the adjustment bolt 1/6 turn at a time. When the adjustment is complete, hold the adjustment bolt and tighten the locking nut (5).

NOTE: If adjusting the twine holder does not correct the problem, check the adjustment of the twine tensioners. See *Twine Tension Adjustment* in this section.

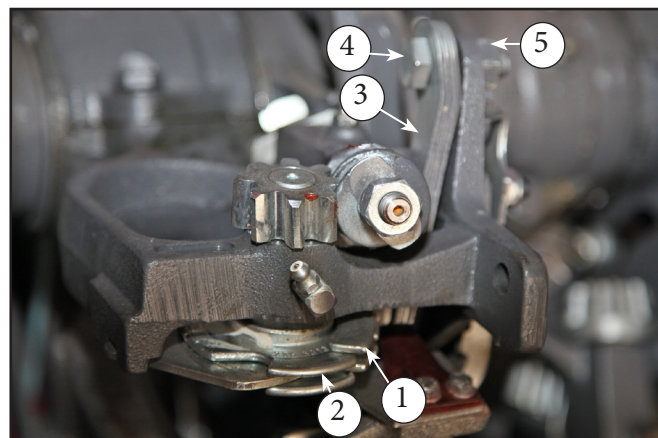


FIG. 93

FIG: 94: Tie Indicators

The amber reflectors located on top of the knotter are to indicate visually to the operator, the status of each individual knotter in regards to tying.

The reflectors are connected to the upper slacker arms and move with the slacker arm. This allows the operator to visually see the movement of the upper slacker arm from the operator station.

As the knotter ties, the monitoring flags raise and lower. If a monitoring flag stays in the down position after the tie cycle, and does not raise before the next horizontal stack is inserted into the chamber, this will indicate the knot has stayed in the billhook.

If a monitoring flag does not lower after the tie cycle, as the next bundle is being produced, this will indicate the knotter has misstied and the top and bottom twines are disconnected.

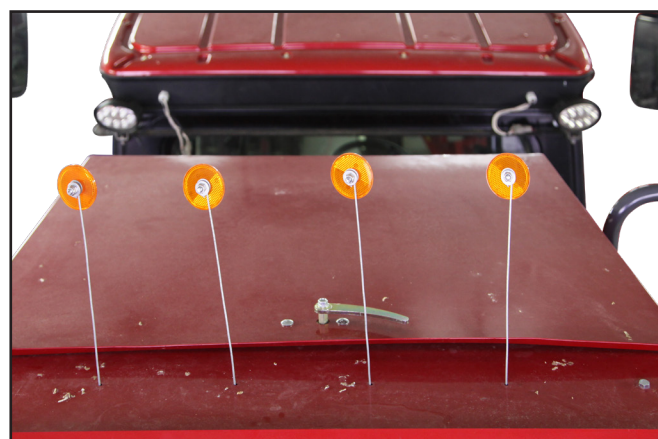


FIG. 94

KNOTTER MAINTENANCE

NEEDLE INSTALLATION AND ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures. If new needle actuating rods or a new needle carriage is being installed, adjust the length of both needle actuating rods to a beginning length of 1430 mm (56.375 in). Take the measurement between the center lines of the clevis pin holes at each end of the needle actuating rod.

FIG. 95: Needle Arm

- (1) Needle Yoke
- (2) Needle
- (3) Connecting Rod
- (4) Connecting Rod Length

a) Put the needle on the needle carriage while the needle carriage is in the home position. Align the new needle with the other needles and tighten the nuts on the attachment bolts.

b) Visually compare the tips of the needles to a horizontal member on the Bale Baron®. If the new needle is not at the same height as the other needles, change the position of the needle using the adjustment bolts. Raise the needle by loosening the bottom bolts and tightening the top bolts. Lower the needle by loosening the top bolts and tightening the bottom bolts.

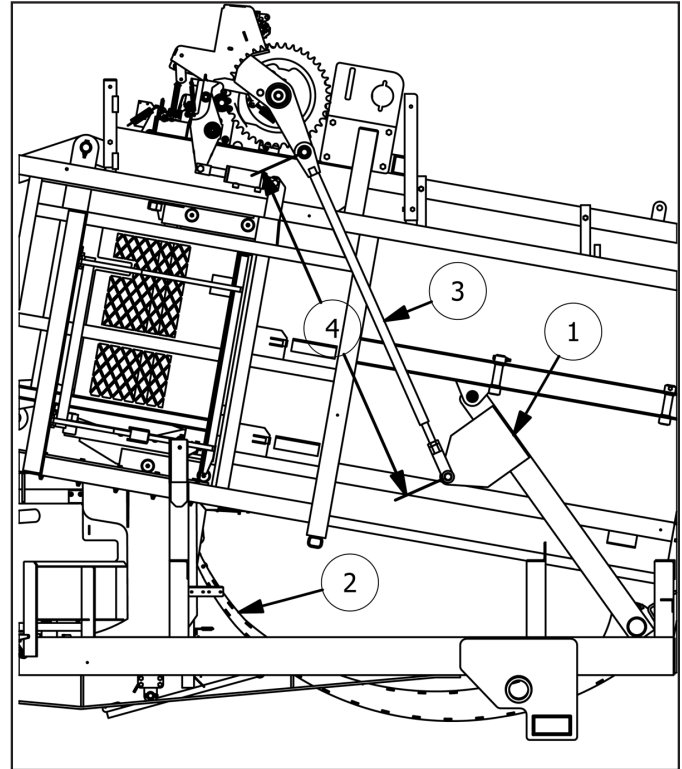


FIG. 95

FIG. 96

- (1) Needle
- (2) Needle Mounting Plate
- (3) Needle Yoke
- (4) Top Needle Attachment Bolts
- (5) Nut
- (6) Bottom Needle Attachment Bolts

Have another person operate the knotter at a slow speed to raise the needles. As the needle carriage is raising, make sure the needle is centered in the needle slot in the bottom of the bale chamber. If the needle is not centered, loosen the nuts on the needle attachment bolts. Slide the needle to the right or the left on the needle carriage and tighten the nuts. Be careful not to raise or lower the tip of the needle.

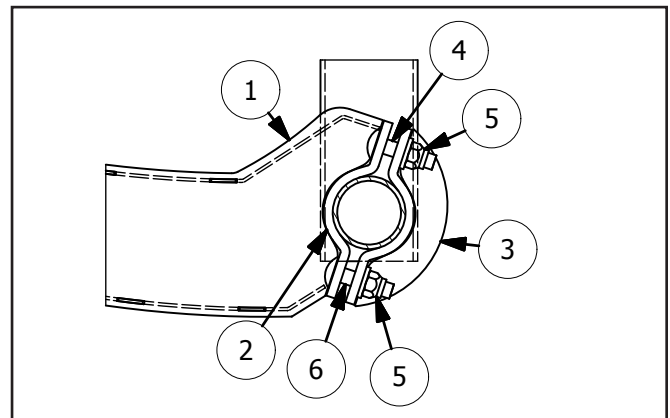


FIG. 96

KNOTTER MAINTENANCE

FIG. 97: Needle Penetration

- (1) Needle
- (2) Needle Mounting Plate
- (3) Needle Yoke
- (4) Top Needle Attachment Bolts
- (5) Nut
- (6) Bottom Needle Attachment Bolts

Manually operate the knotter at slow speed until the needles are at the top of the stroke. Make sure the needles are at the top of the stroke and measure the distance from the back of the twine disc to the center of the lower roller on the needles. The measurement must be 135 to 143 mm (5.375 to 5.625 in) on all of the needles.

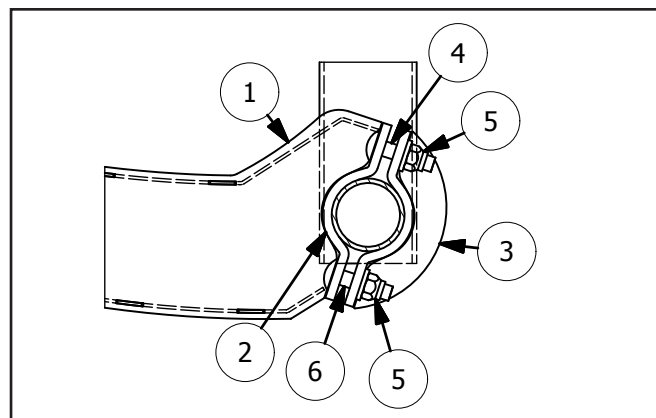


FIG. 97

FIG. 98:

- (1) Twine Disc
- (2) Lower Roller on Needle
- (3) Minimum Measurement Between Twine Disc and Lower Needle Roller
- (4) Needle Activating Rod
- (5) Bottom Clevis

If the distance is not correct on all of the needles, adjust the position of the needle carriage by adjusting the bottom clevis on both of the needle actuating rods.

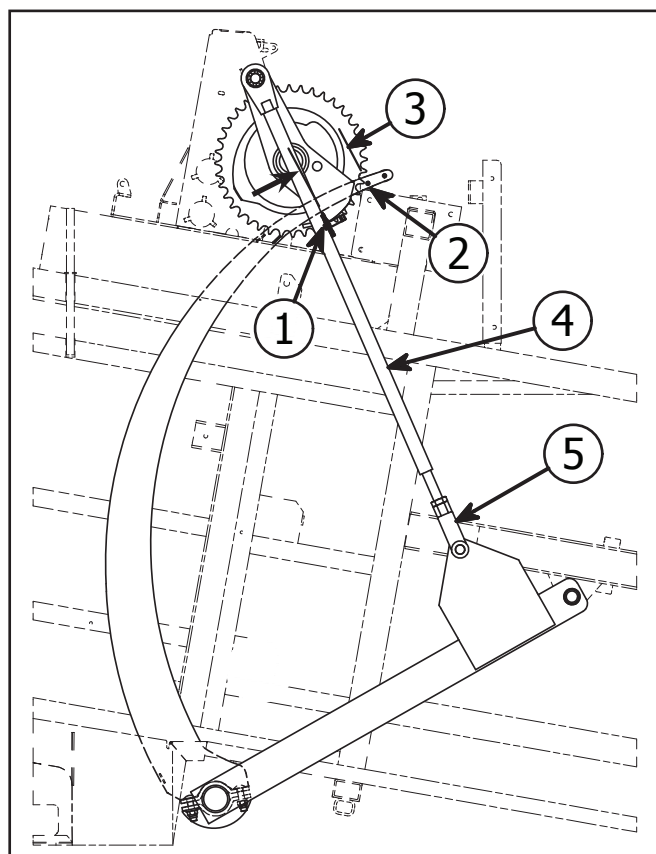


FIG. 98

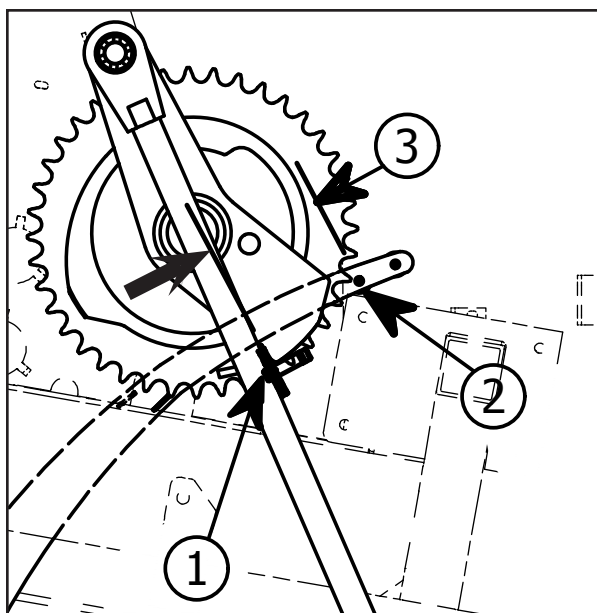


FIG. 98 EXPLODED

KNOTTER MAINTENANCE

FIG. 101: If the distance is not correct on only one needle, change the position of the needle using the adjustment bolts. Raise the needle by loosening the bottom bolts and tightening the top bolts. Lower the needle by loosening the top bolts and tightening the bottom bolts. Tighten the nuts on the attachment bolts. If the alignment cannot be made, check to make sure the needle is not bent or damaged. Lay a straight edge across several of the needles and compare the curves.

FIG. 102: Have another person manually operate the knotter at a slow speed until the tip of the needle is even with the knotter frame. The needle roller must align with the tucker arm roller. The needles should rub against the knotter frame at point (1). The needle should clear the twine disc cleaner by 1 to 3 mm (.039 to .118 in) and must touch the knotter frame or billhook gear lightly. Connect a spring scale to the needle and pull the needle to the side. The needle must lose contact with the knotter frame when the spring scale indicates 1.4 to 4.5 kg (3 to 10 lbs). If the adjustment is not correct, the needle must be moved sideways. To move the needle sideways, loosen the bolts on the needle clamp (Fig 101) and move sideways as required.

Manually operate the knotter at a slow speed until the tip of the needle is just below the top of the bale chamber. Bend the needle so the needle will lightly rub the right side of the needle slot in the top of the bale chamber. Manually operate the knotter until the needle is all the way down and then continue to manually operate until the tip of the needle is even with the knotter frame again. Check the adjustment.

FIG. 105: Make sure the needle (1) is on the forward stroke and the bottom portion of the radius of the needle tip is even with the disc cleaner (2). The needle **MUST** be on the forward stroke and the twine must be slack. There must be a 1 to 3 mm (.039 to .118in) gap between the needle and the disc cleaner.

NOTE: Always check the twine finger and needle clearance on the needle forward stroke, with loose twine around the needle rollers.

FIG. 106: Tighten the nuts on the attachment bolts evenly to 145N (105 lb ft). Be careful to not change the adjustment. Check the alignment of the tucker arm for any needle that was adjusted. See Tucker Arm Adjustment in this section. Check the adjustment of the twine finger for any needle that was adjusted. See Twine Finger Adjustment in this section

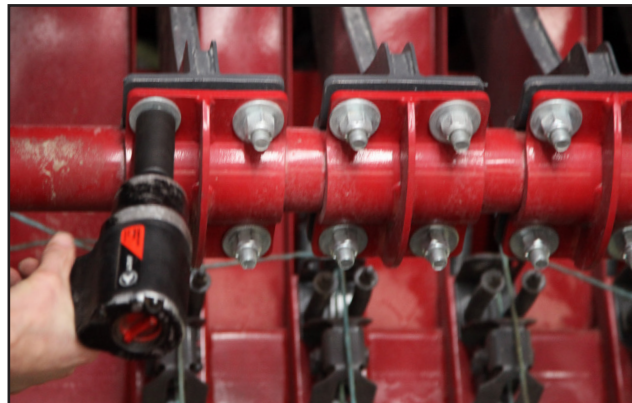


FIG. 101

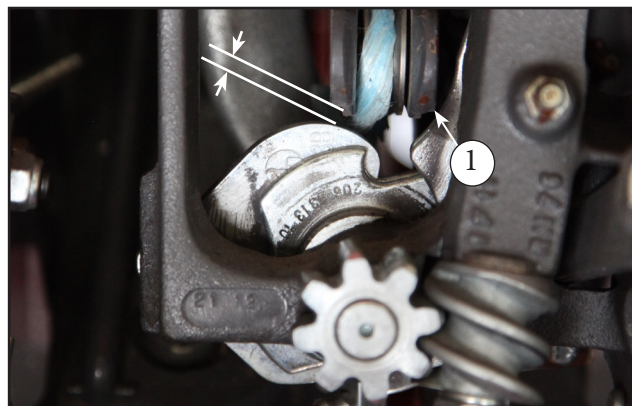


FIG. 102

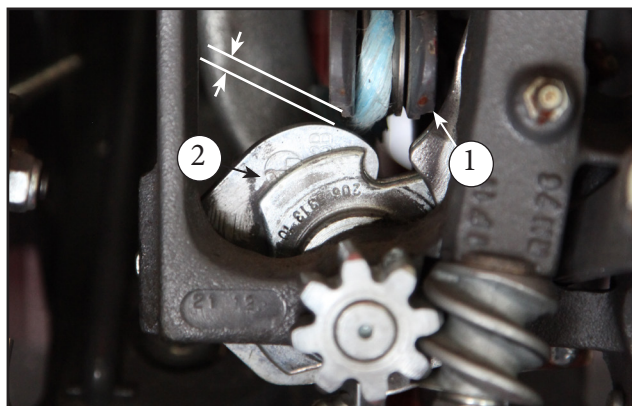


FIG. 105

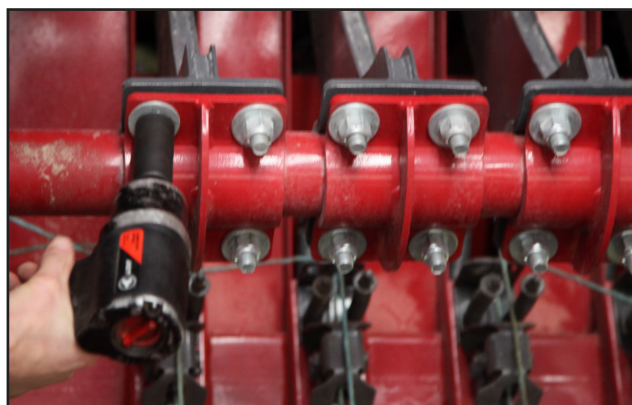


FIG. 106

KNOTTER MAINTENANCE

KNOTTER MAINTENANCE

TWINE FINGER ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

The twine fingers move the twine from the needles into the line of travel of the bill hook. The twine fingers must operate freely and be adjusted correctly. A large amount of tying failures are caused by the twine fingers not being adjusted correctly.

NOTE: *The needles must be properly adjusted before checking the twine finger adjustment. See Needle Installation and Adjustment.*

There are two adjustments that must be made when adjusting the twine fingers. The first adjustment is the clearance between the tips of the twine finger and the needle. The second adjustment is the position of the twine finger at the end of the stroke. The clearance between the tips of the twine finger and the needle must be made first because this adjustment will change the position of the twine finger at the end of the stroke.

Trip the knotter and have another person manually operate the knotter at a slow speed to start the tying cycle. While the needle is on the forward stroke, watch the upper roller on the needle(3). Stop the needle when the upper roller is even with the twine disc(1).

The needle MUST be on the forward stroke, and the twine must be slack. There must be 1.5 mm (.06 in) clearance between the needle and the disc cleaner(2).

If the clearance is not correct, the needle must be adjusted. See Needle Installation and Adjustment in this section.

FIG. 109: Knotter Head Structure

- (1) Disc Cleaner
- (2) Clearance-Between Needle and Disc Cleaner
- (3) Needle

NOTE: *Always check the twine finger and needle clearance on the needle forward stroke, with loose twine around the needle rollers.*

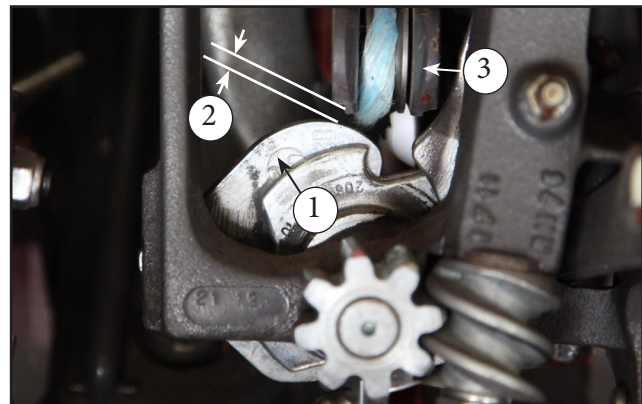


FIG. 109

KNOTTER MAINTENANCE

FIG. 110: Clearance Between Twine Finger & Needle

- (1) Twine Finger Rod
- (2) Twine Finger
- (3) Needle
- (4) Clearance - Between Twine Finger and Needle
- (5) Attachment Bolts

Disconnect the twine finger rod from the twine finger. Rotate the twine finger to check the clearance between the twine finger and the needle. The clearance must be 1 to 3 mm (.039 to .118 in).

To adjust the clearance, loosen the attachment bolts and move the mounting bracket. Tighten the mounting bolts. Connect the clevis. Repeat the procedure for each of the twine fingers.

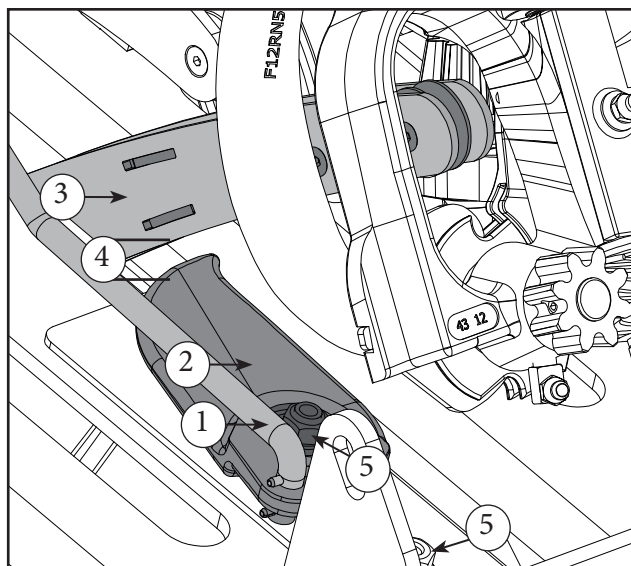


FIG. 110

FIG. 111: Twine Finger Position When In Home Position

- (1) Tip of Twine Finger
- (2) Inner Face of Twine Finger
- (3) Needle Slot
- (4) Clevis
- (5) Twine Finger Rod
- (6) 90 Degree Angle (+/- 3 degrees)

Push the outer end of the twine finger toward the front of the Bale Baron® to remove the slack from the linkage. The inner face of the twine finger must be at a 87 to 93 degree angle to the needle slot as shown. If the position of the twine is not correct, adjust the twine finger rod to move the twine finger.

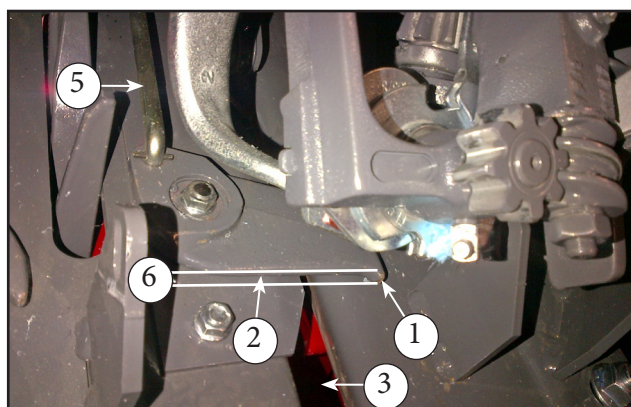


FIG. 111

NOTE: If all of the knotters do not tie, the cause is normally one or more twine fingers not moving freely. Make sure that there are not any twine fingers that move over center. If a twine finger moves over center, adjust the clevis on the twine finger rod. Also check that all twine fingers are receiving lubrication and are moving freely on the bushing or sealing washers. Make sure the twine fingers are not coming in contact with the needles. Check the left side of each needle for damage- approximately 254 mm (10 in) from the roller end. If the twine fingers are coming in contact with the needles, adjust the twine fingers.

FIG. 112: Twine Cam

- (1) Twine Finger Cam
- (2) Twine Finger Cam Roller
- (3) Twine Finger Arm

When the knotter is in the home position, the twine finger cam roller must be in the notch on twine finger cam as shown.

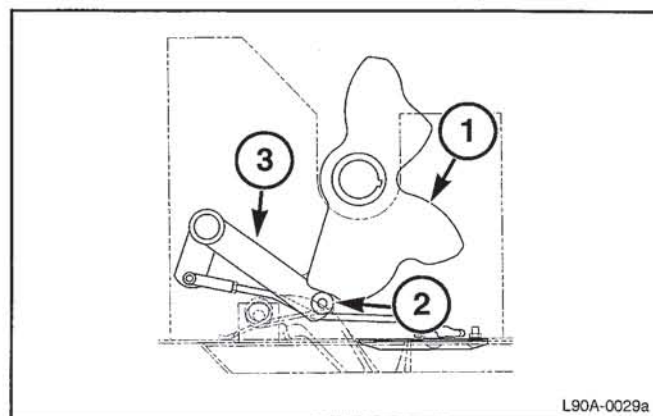


FIG. 112

KNOTTER MAINTENANCE

TUCKER ARM ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

FIGS. 113-114: Tucker Assembly

- (1) Tucker Arm
- (2) Tucker Arm Rollers
- (3) Tip Roller on Needle
- (4) Needle
- (5) Offset .125in (3mm)

One of the most common causes of missing ties is a tucker arm that is out of adjustment. If the adjustment is not correct, the twine can wrap around the billhook. Another indication that the adjustment is not correct is when the top twine wraps around two bales.

The tucker arms hold the top twines in position to be picked up by the tip roller on the needles. If the tucker arms are not adjusted correctly the needles will not pick up the top twines.

The needles must be adjusted correctly before adjusting the tucker arms. See Needle Installation and Adjustment in this section and check the adjustment of the needles.

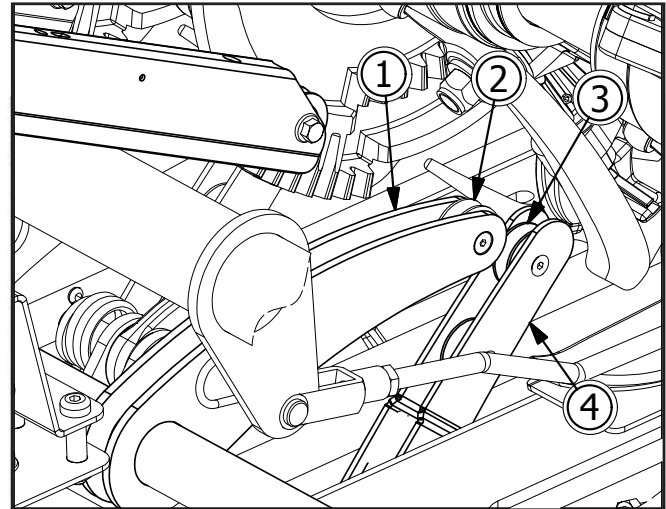


FIG. 113

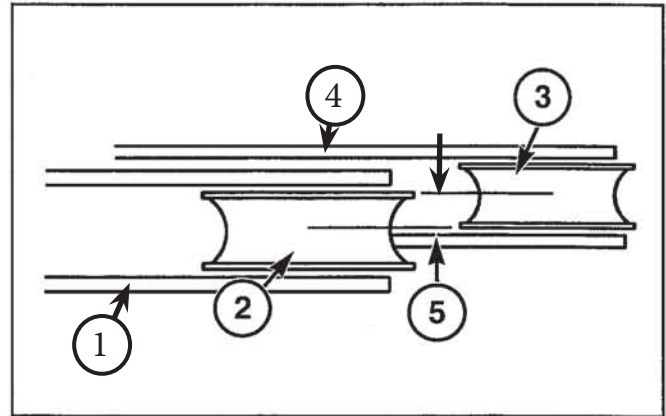


FIG. 114

FIG. 115: Manually operate the knotter at slow speeds to raise the needles until the tip rollers on the needles are even with the tucker arm rollers.

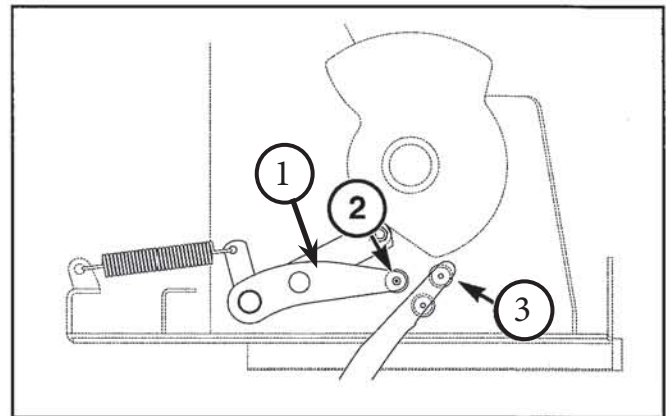


FIG. 115

KNOTTER MAINTENANCE

FIG. 116: Check the alignment of the tucker arm rollers (2) to the needle tip rollers. (1). The alignment is correct when the tucker arm roller is offset to the left, up to one half the width of the roller. The offset to the left makes up for the way the twine feeds off the tucker arm roller onto the tip roller because of the twist in the twine. The tucker roller **MUST NOT** be offset to the right of the tip roller.

If the alignment is not correct on all of the tucker arms, the tucker arm shaft (3) can be moved to the right or the left. To move the tucker arm shaft, loosen the bearing lock collar (4) on both ends of tucker arm shaft and move the tucker arm shaft right or left to desired position. If only one of the tucker arms needs to be adjusted, check the alignment of the needle for that tucker arm. If the needle is adjusted correctly, bend the tucker arm to get the correct alignment.

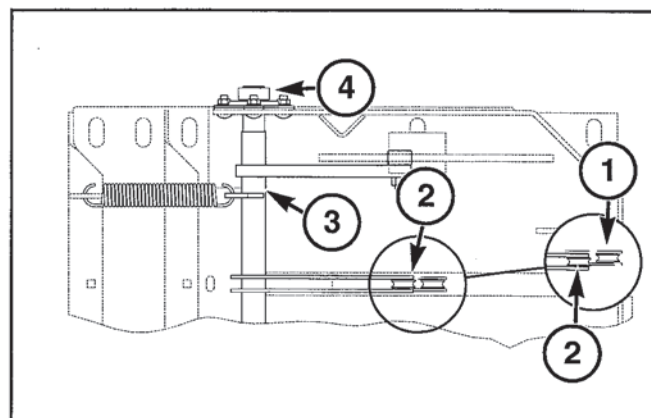


FIG. 116

KNOTTER MAINTENANCE

KNOTTER BRAKE ADJUSTMENT

See the safety warnings at the beginning of this section and follow the procedures.

If the knotter brake has been replaced, turn the brake adjusting nuts to get a spring length of 33 mm (1.3 in). Try to rotate each of the springs with your fingers. If a spring can be rotated, the spring is too loose. Continue the procedure to check the adjustment.

- FIG. 123:** Knotter Brake
(1) Knotter Brake Springs
(2) Brake Adjustment Nuts
(3) Spring Length

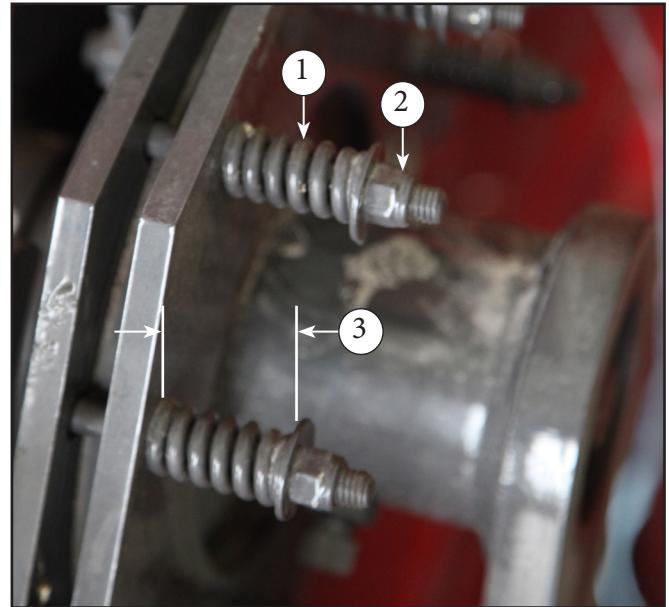


FIG. 123

KNOTTER MAINTENANCE

If the spring (1) is too tight, the knotter brake is adjusted too tight. Loosen each brake adjusting nut 1/4 turn to loosen the knotter brake. Too tight brake setting will cause the knotter sprocket lobe to hit the disengage roller, causing damage to the knotter sprocket lobe and the disengage roller.

FIG. 125: Knotter Brake

- (1) Knotter Brake Springs
- (2) Brake Adjustment Nuts
- (3) Spring Length 33mm (1.3in)

If the spring (1) is set too loose, the needles can return to the home position before the knotter has finished tying. This can cause misties.

NOTE: This can also be caused by lubrication on the brake pad, or a worn out brake pad.

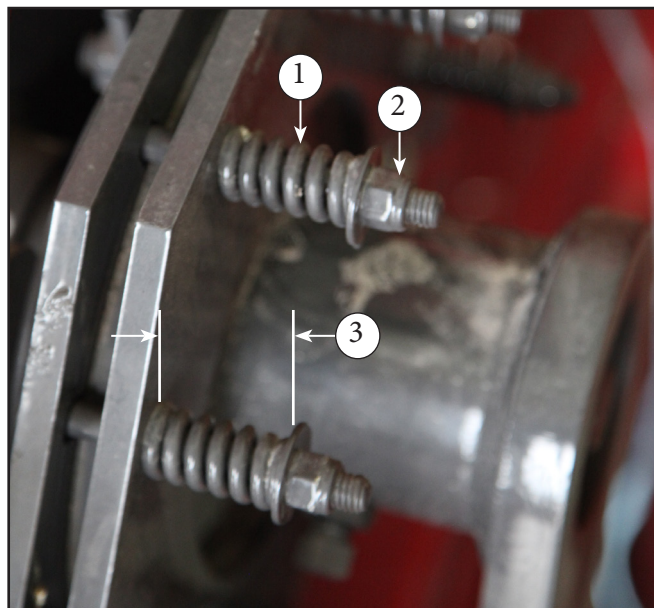


FIG. 125

CAM LOBE WEAR

Every 2000 bundles inspect the cam lobe on the knotter drive sprocket for wear. If the corner of the cam lobe becomes damaged or worn more than 3 mm (.12 in) the knotter drive sprocket must be replaced. Correct adjustment of the knotter brake will reduce cam lobe wear.

Note: Failure to repair a worn cam lobe on the knotter drive sprocket can result in damage (distortion) to the needles, the needle carriage, and the needle protection linkage.

FIG. 126: Brake Cam

- (1) Check this area of the cam lobe for wear
- (2) Wear not to be more than 3 mm (.12 in)

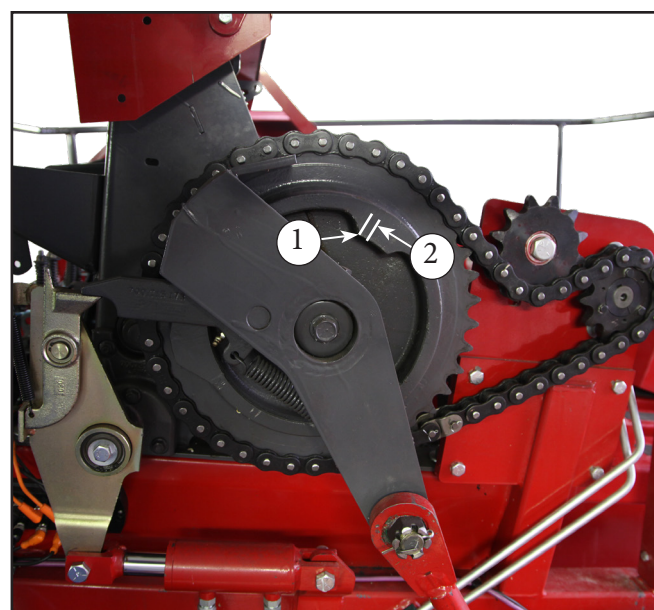
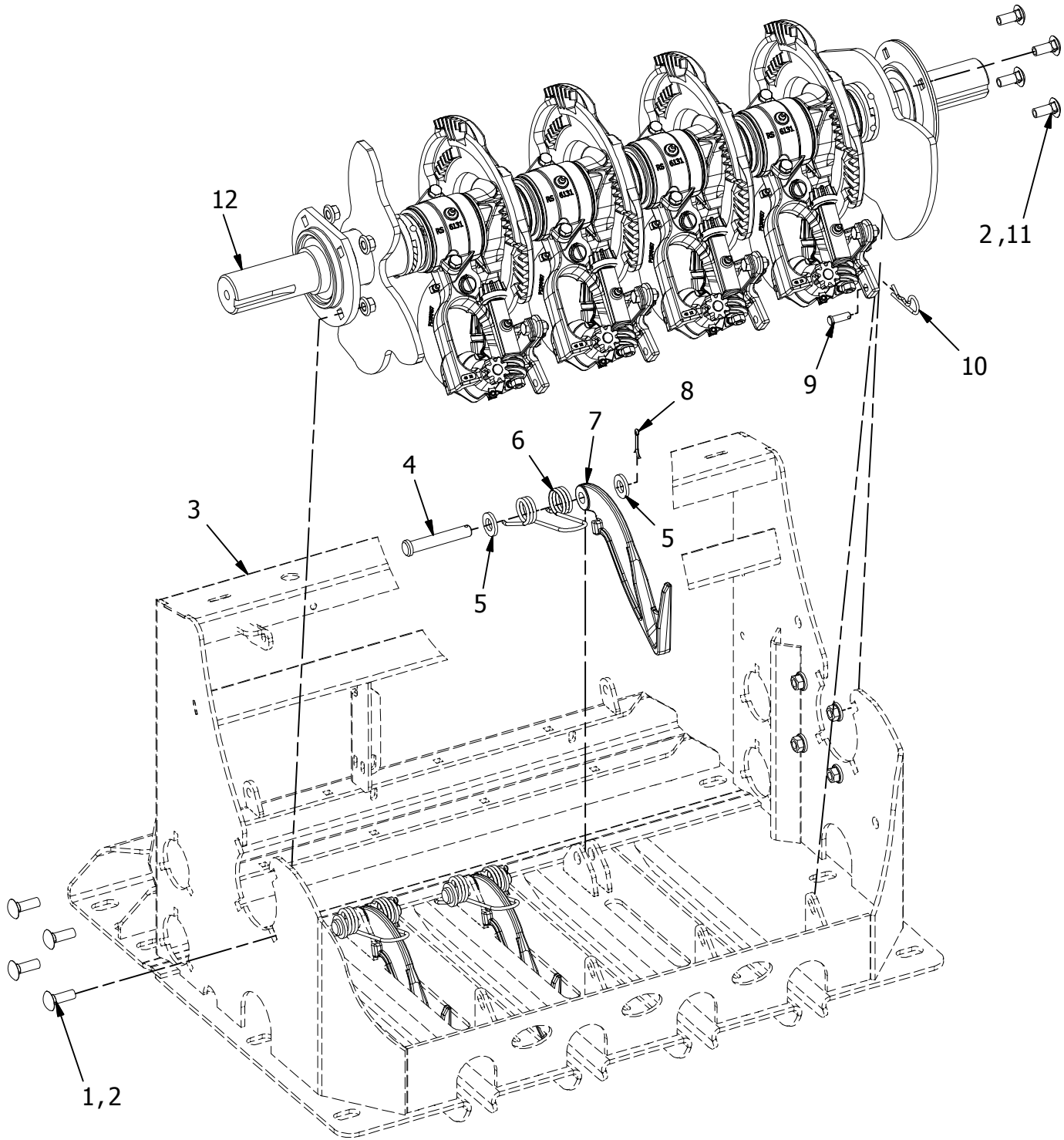


FIG. 126

KNOTTER PARTS BREAKDOWN

Main Assembly

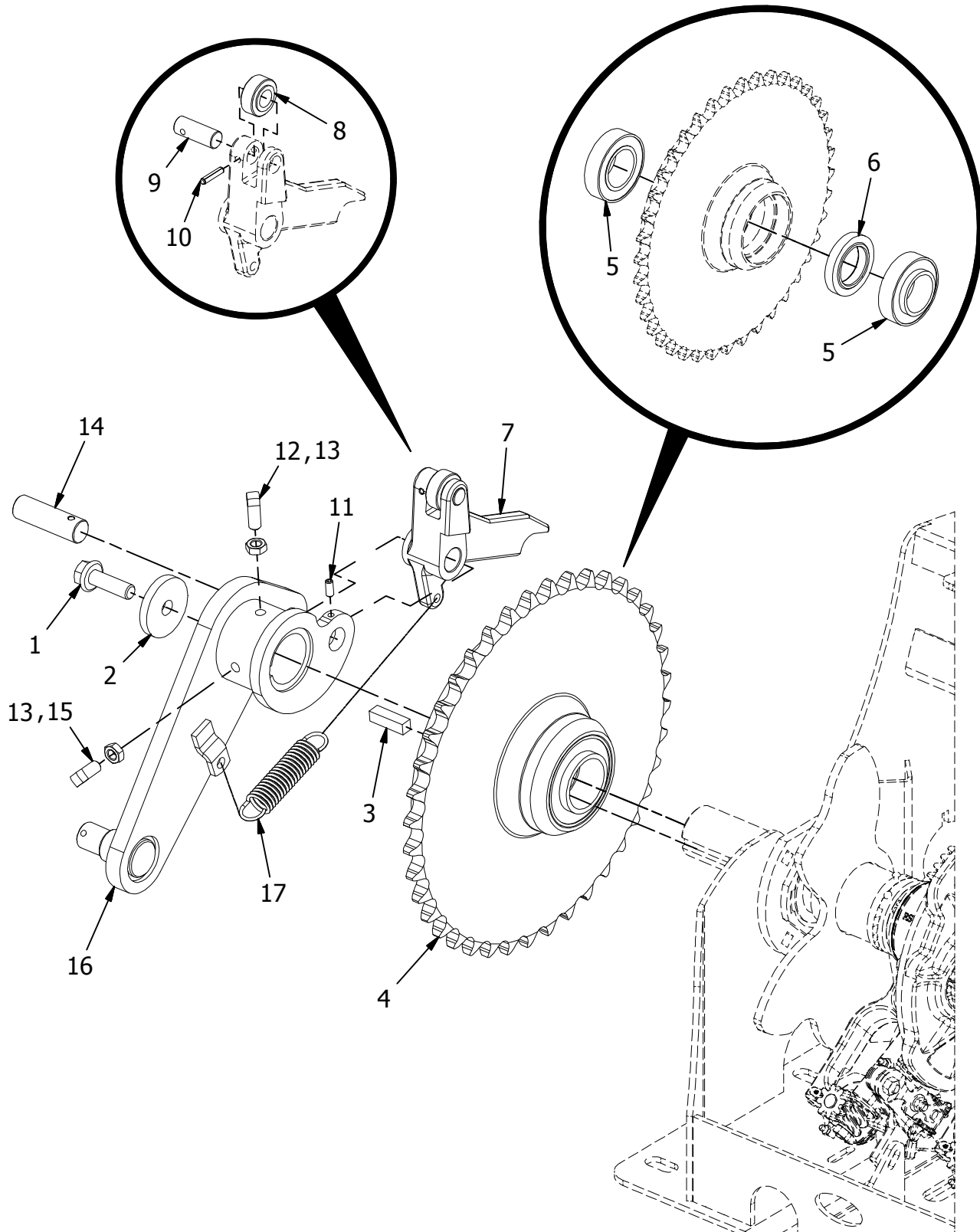


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	304313	4	1/2-13 UNC x 1.5 Carriage Bolt
2	202423	8	1/2-13 UNC Flange Locknut Steel
3	40563132	1	Knotter Frame WA
4	64265	3	Clevis Pin - .625" x 3.75"
5	306016	6	5/8 Washer
6	40563298	3	Spring - Torsion
7	40563402	3	Hay Dog
8	306302	3	5/32" x 1 1/2" Cotter Pin
9	64262	4	Clevis Pin 3/8" x 1 1/8"
10	68446	4	Hitch Pin 5/32" x 2 11/16"
11	304311	4	1/2-13 UNC x 1.25 Carriage Bolt
12	40563232	1	Knotter Main Shaft Assembly

KNOTTER PARTS BREAKDOWN

Clutch

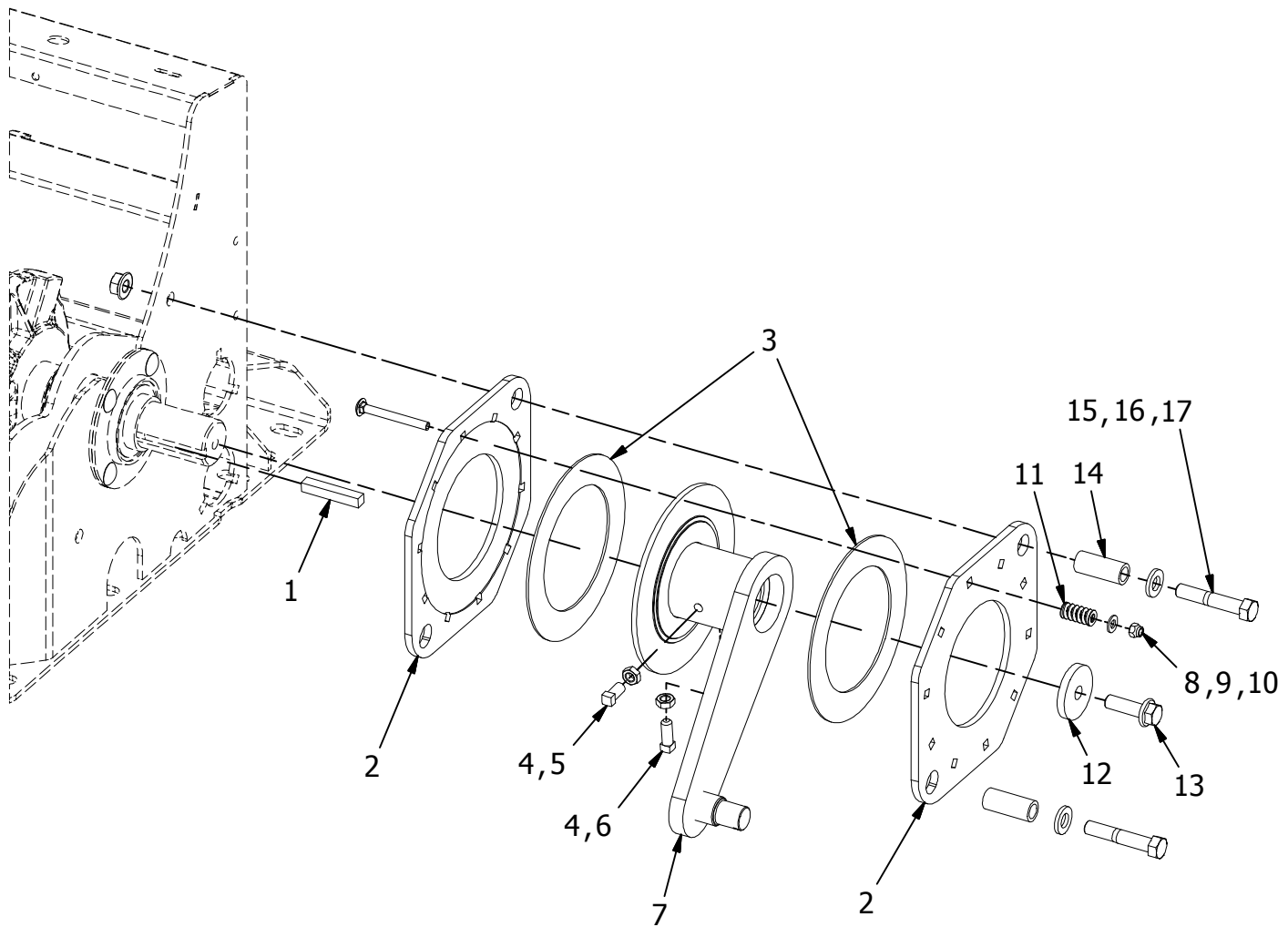


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	203787	1	5/8-11 UNC x 2 Hex Flange Bolt
2	40563248	1	Retaining Cap - Knotter Arm
3	40563242	1	Key .5" x .5" x 1.75"
4	40565151	1	Knotter Drive Sprocket Assembly c/w Bearings
5	62125	2	2.1875" Bearing - Cylindrical
6	40563236	1	Knotter Sprocket Bearing Spacer
7	40563274	1	Trip Arm Clutch Assembly
8	40563276	1	Clutch Roller
9	64264	1	Pin - 3/4" x 2"
10	68450	1	Pin Grooved - 1/4" x 1 1/4"
11	32133	1	5/16-18 UNC x 0.75 Set Screw
12	32135	1	1/2-13 UNC x 1.25 Square Head Set Screw
13	202109	2	1/2-13 UNC Hex Jam Nut
14	64263	1	Pin - 1" x 3.25"
15	32134	1	1/2-13 UNC x 1 Square Head Set Screw
16	40563144	1	Knotter Arm WA - Left
17	40563280	1	Spring Extension - 1.125" x 4.5" x .135"

KNOTTER PARTS BREAKDOWN

Brake

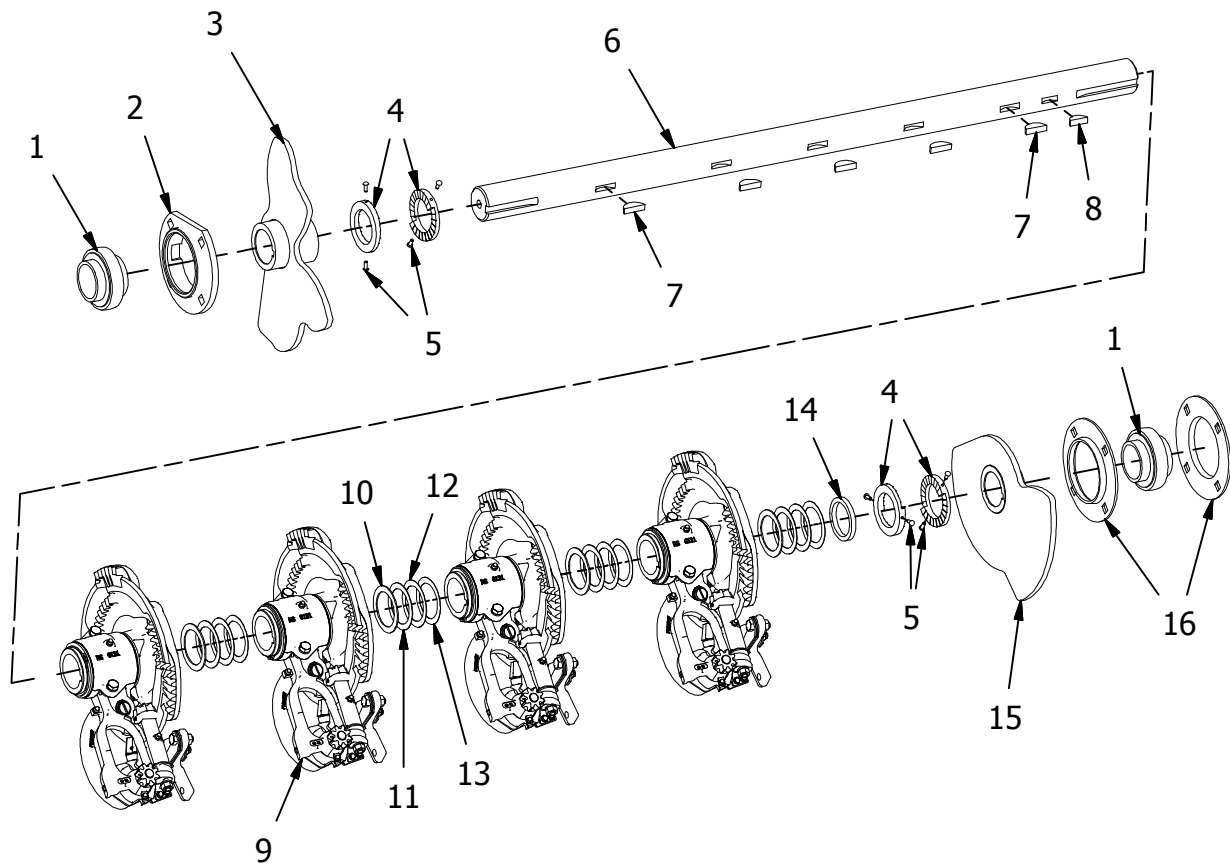


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	40563243	1	Key .5" x .5" x 3"
2	40563146	2	Brake Pressure Plate
3	40563272	2	Brake Friction Disc
4	202109	2	1/2-13 UNC Hex Jam Nut
5	32134	1	1/2-13 UNC x 1 Square Head Set Screw
6	32135	1	1/2-13 UNC x 1.25 Square Head Set Screw
7	40563270	1	Knotter Arm WA - Right
8	202224	10	3/8-16 Locknut
9	306012	10	3/8 Washer
10	304225	10	3/8-16 UNC x 3.5 Carriage Bolt
11	40563246	10	Spring Compression - .75" x 1.5" x .172"
12	40563248	1	Retaining Cap - Knotter Arm
13	203787	1	5/8-11 UNC x 2 Hex Flange Bolt
14	40563244	2	Knotter Brake Retainer Bushing
15	202427	2	5/8-11 UNC Flange Locknut Steel
16	306016	2	5/8 Washer - Plain
17	201397	2	5/8-11 UNC x 3.5 Hex Bolt Zinc

KNOTTER PARTS BREAKDOWN

Main Shaft Assembly

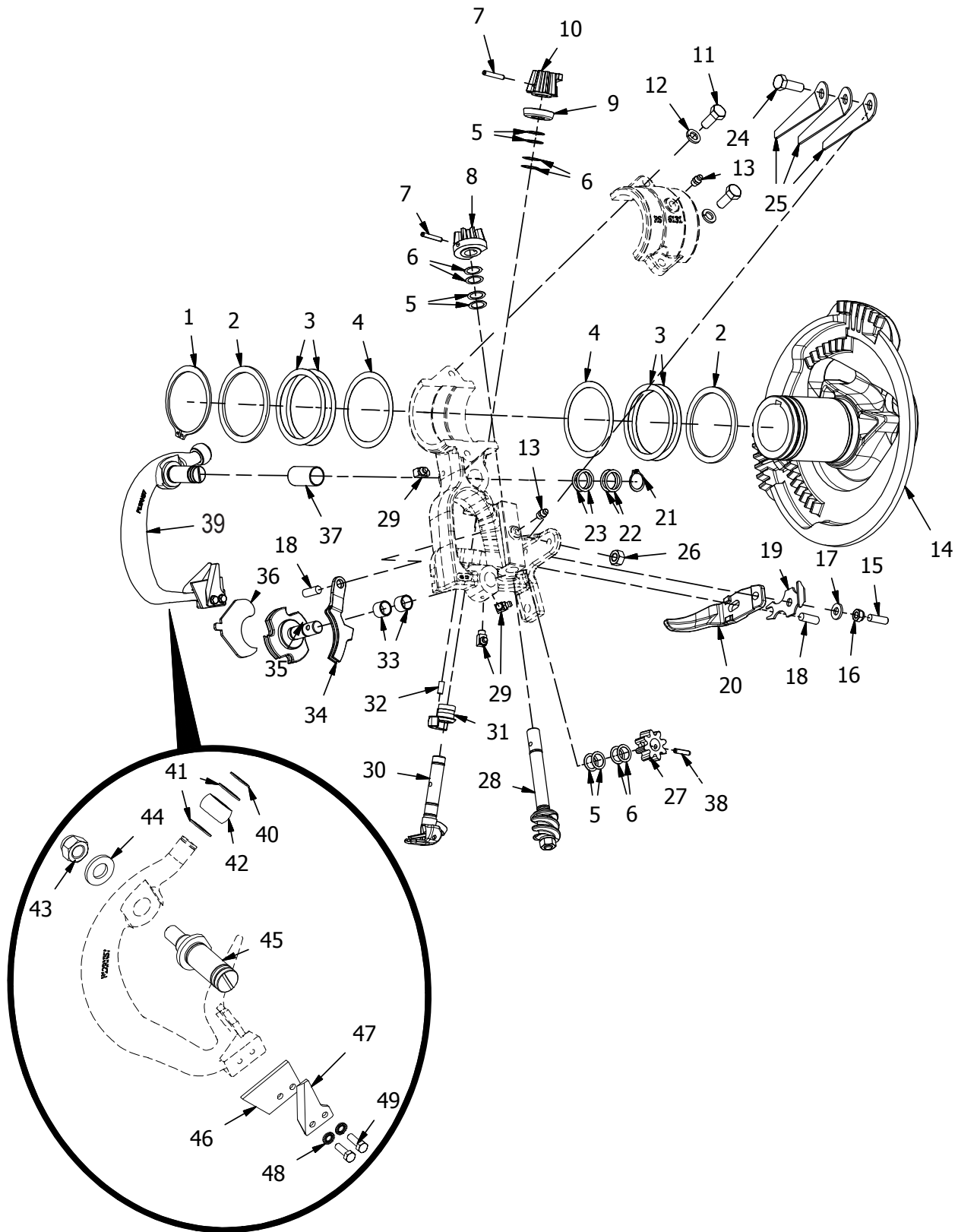


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	62123	2	Bearing - 2 3/16" Wide Inner Race
2	62122	1	Bearing Flange - 4 Bolt Cast
3	40563216	1	Twine Finger Cam
4	40563224	4	Shim - Adjustable
5	40563226	8	Screw - Drive #10 x 1/2"
6	40563222	1	Main Shaft - Knotter
7	34135	5	Woodruff Key - 3/8" x 1 1/2"
8	34134	1	Woodruff Key - 3/8" x 1 1/4"
9	40563302	4	Knotter Head Assembly - Low Maintenance
10	40563231	AR	Shim - 2.25" x 3" x 0.070"
11	40563228	AR	Shim - 2.25" x 3" x 0.030"
12	40563229	AR	Shim - 2.25" x 3" x 0.010"
13	40563230	AR	Shim - 2.25" x 3" x 0.005"
14	40563220	1	Spacer - 2.25" x 2.75" x .375"
15	40563234	1	Tucker Arm Cam
16	62124	2	Bearing Flange - 4 Bolt Pressed Steel - Set of 2

KNOTTER PARTS BREAKDOWN

Knotter Head Assembly



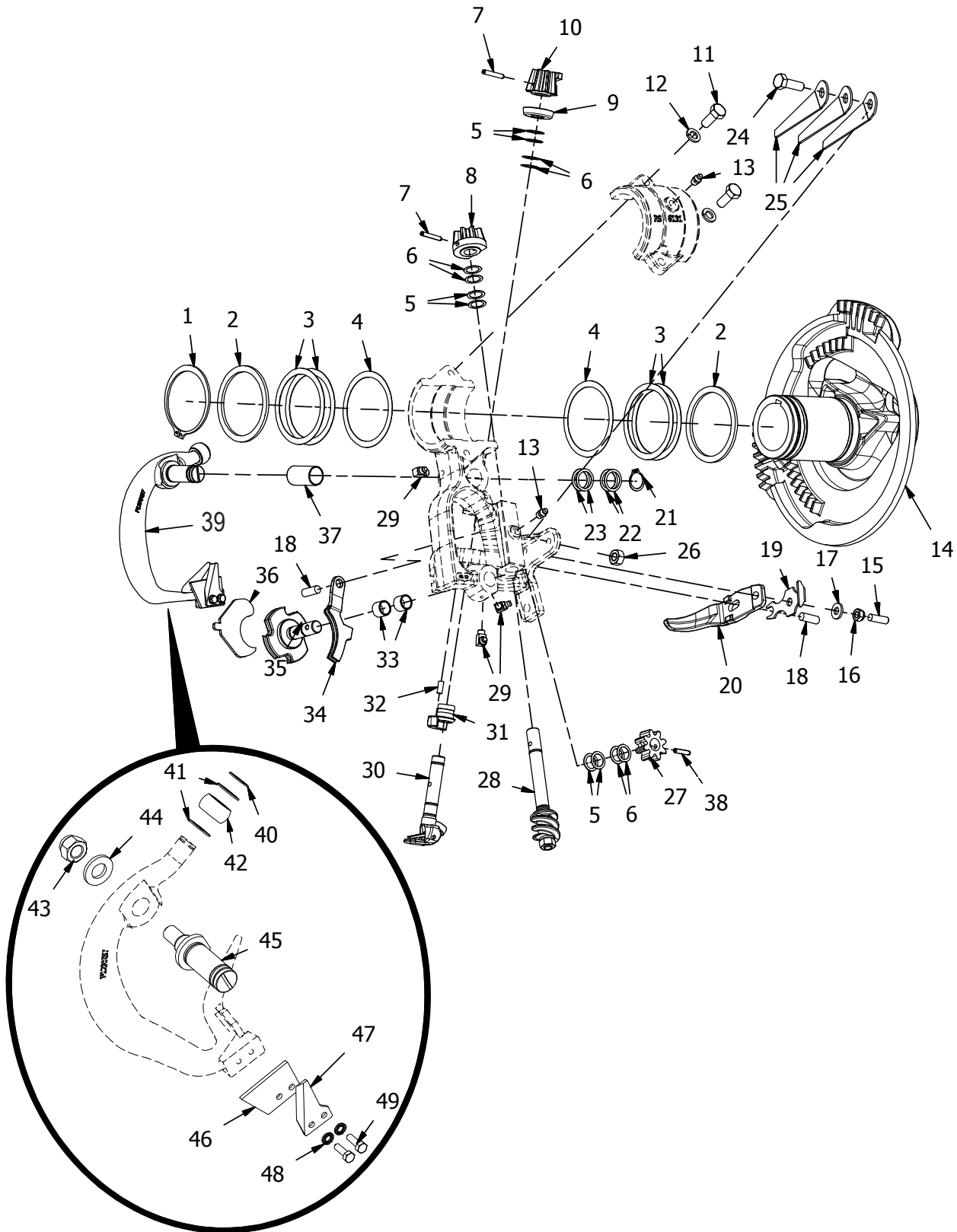
KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	40563382	1	Snap Ring - 72mm x 2.4mm - External
2	40563386	2	Knotter Head Spacer - 3.5mm
3	40563384	AR	Shim - 75.5mm x 90mm x 0.5mm
4	40563385	AR	Shim - 75.5mm x 90mm x 0.2mm
5	40563346	AR	Shim - 15mm x 20mm x 0.5mm
6	40563344	AR	Shim - 15mm x 20mm x 0.2mm
7	40563393	2	Pin - Coiled Spring - 5mm x 30mm
8	40563342	1	Pinion Gear - Twine Disc Drive
9	40563312	1	Needle Guide Bearing
10	40563310	1	Pinion Gear - Billhook
11	201743	2	M10 x 1.5 x 25 Hex Bolt Metric
12	305559	3	10mm Helical Spring Lock Washer Metric
13	791131	2	Grease Fitting - M8 x 1
14	40563390	1	Knotter Cam Gear
	40563388	2	O-Ring - 68mm ID x 4mm
15	40563304	1	Metric Bolt -M8 x 1.25 x 25
16	202305	1	M8 x 1.25 Lock Nut Steel Metric
17	306519	1	8 Circular Washer Metric
18	40563326	1	Positioning Pin
19	40563348	1	Spring - Billhook
20	40563306	1	Billhook Cam
21	40563368	1	Snap Ring - 19mm x 1.2mm - External
22	40563372	AR	Shim - 20mm x 26mm x 0.2mm
23	40563370	AR	Shim - 20mm x 26mm x 0.5mm
24	201744	1	M10 x 1.5 x 30 Hex Bolt Metric
25	40563330	3	Twine Disk Holder Spring
26	202306	2	M10 x 1.5 Hex Nut Metric
27	40563332	1	Pinion Gear - Twine Disk
28	40563338	1	Twine Disk Worm Shaft c/w O-Rings
	40563336	2	O-Ring - 12mm ID x 1.5mm
29	791130	3	Grease Fitting - M8 x 1 90 deg
30	40563308	1	Billhook Assembly c/w O-Rings
	40563336	3	O-Ring - 12mm ID x 1.5mm
31	40563316	1	Billhook Bushing
32	40563318	1	Billhook Bushing Pin
33	40563322	2	Bushing Brass - Twine Disk
34	40563328	1	Twine Holder
35	40563320	1	Twine Disk c/w O-Rings
	40563336	2	O-Ring - 12mm ID x 1.5mm
36	40563324	1	Twine Disk Cleaner
37	40563378	1	Wiper Arm Bushing
38	40563392	1	Pin - Coiled Spring Metric - 5mm x 22mm
39	40563314	1	Wiper Arm Assembly c/w Knife

CONTINUED ON NEXT PAGE.....

KNOTTER PARTS BREAKDOWN

Knotter Head Assembly (cont'd)



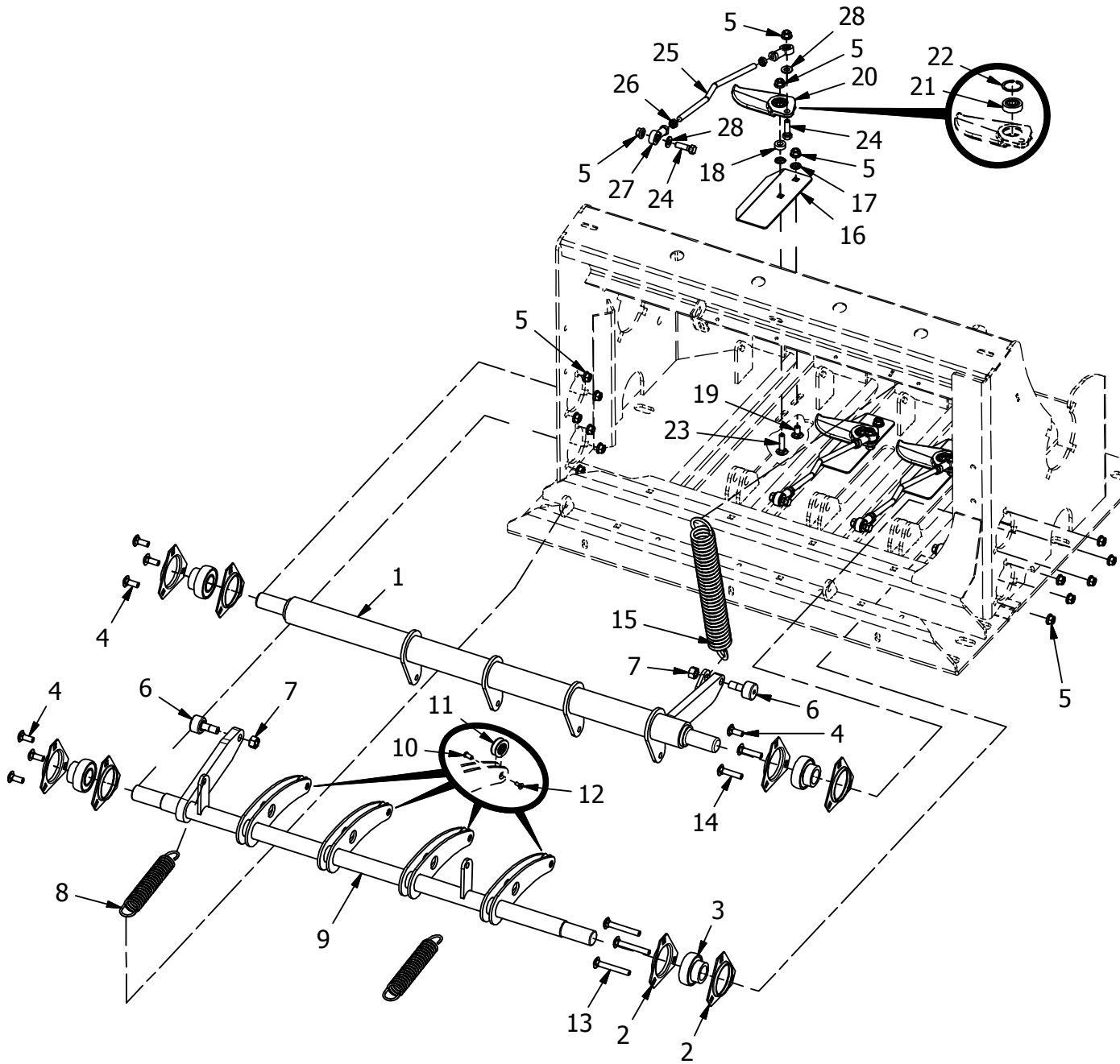
KNOTTER PARTS BREAKDOWN

...CONTINUED FROM PREVIOUS PAGE

ITEM	PART NUMBER	QTY	DESCRIPTION
40	40563360	1	Snap Ring - External - 13mm
41	40563364	2	Wiper Arm Roller Spacer
42	40563362	1	Wiper Arm Roller
43	202307	1	M12 x 1.75 Locknut Steel Metric
44	306502	1	12 Circular Washer Metric
45	40563376	1	Wiper Arm Shaft
	40563374	2	O-Ring - 16.5mm ID x 1.5mm
46	40563358	1	Twine Knife Support
47	40563356	1	Twine Knife
48	40563354	2	5mm Serrated Lock Washer
49	40563352	2	M5 x 0.8 x 16 Metric Bolt

KNOTTER PARTS BREAKDOWN

Twine Finger - Tucker arm

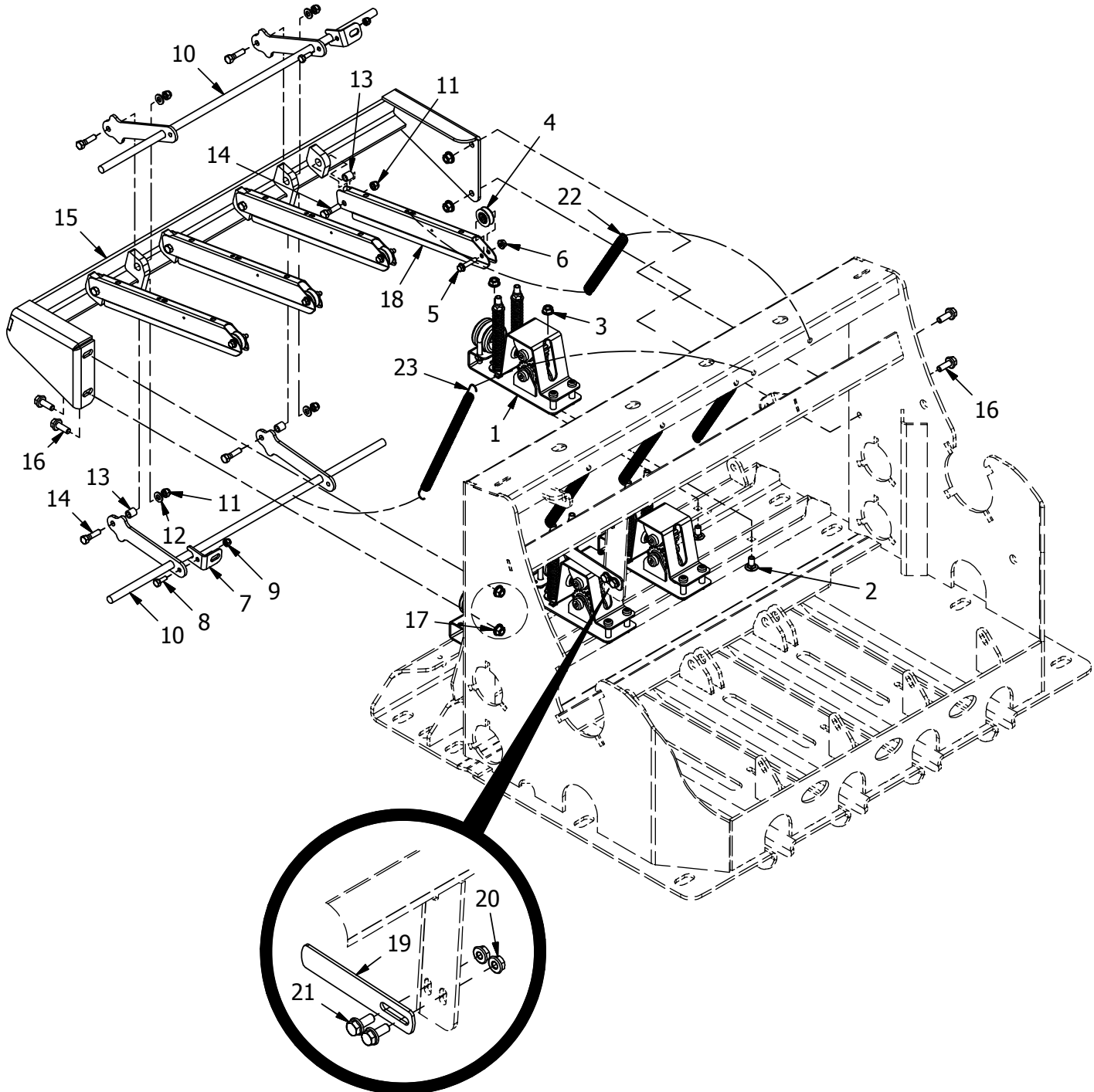


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	40563204	1	Twine Finger Shaft WA
2	62127	4	Bearing Flange - 3 Bolt Pressed Steel - Set of 2
3	62129	4	Bearing - 1 1/8" Spherical c/w Locking Collar
4	304211	7	3/8-16 UNC x 1 Carriage Bolt
5	202419	24	3/8-16 UNC Flange Locknut Steel
6	62131	2	Cam Follower - 1.25" x 1/2-20 UNF
7	202149	2	1/2 - 20 Hex Nut
8	40563264	2	Spring Extension - 1.25" x 5.375" x .148"
9	40563194	1	Tucker Arm Shaft WA
10	68449	4	#10-32 x 1/2" Countersunk Hex Socket Sleeve Nut
11	62130	4	Twine Roller Bearing
12	68448	4	#10-32 x 9/16" Countersunk Hex Socket Screw
13	304222	3	3/8-16 UNC x 2.75 Carriage Bolt
14	304217	2	3/8-16 UNC x 1.75 Carriage Bolt
15	40563262	1	Spring Extension - 1.77" x 12.5" x .225"
16	40563258	4	Twine Finger Plate
17	40563252	8	3/8" Pushnut
18	40563250	4	Twine Finger Spacer
19	304209	12	3/8-16 UNC x 0.75 Carriage Bolt
20	40563238	4	Twine Finger Assembly c/w Bearing
21	64128	4	10mm Ball Bearing
22	32131	4	Snap Ring Internal - 1.188
23	304215	4	3/8-16 UNC x 1.5 Carriage Bolt
24	201206	8	3/8-16 UNC x 1.25 Hex Bolt Zinc
25	40563256	4	Twine Finger Rod
26	202106	8	3/8-24 UNF Hex Jam Nut
27	40563440	8	Female Rod End - 3/8-24 UNF - SIZP9S
28	306012	8	3/8 Washer

KNOTTER PARTS BREAKDOWN

Twine Tensioners

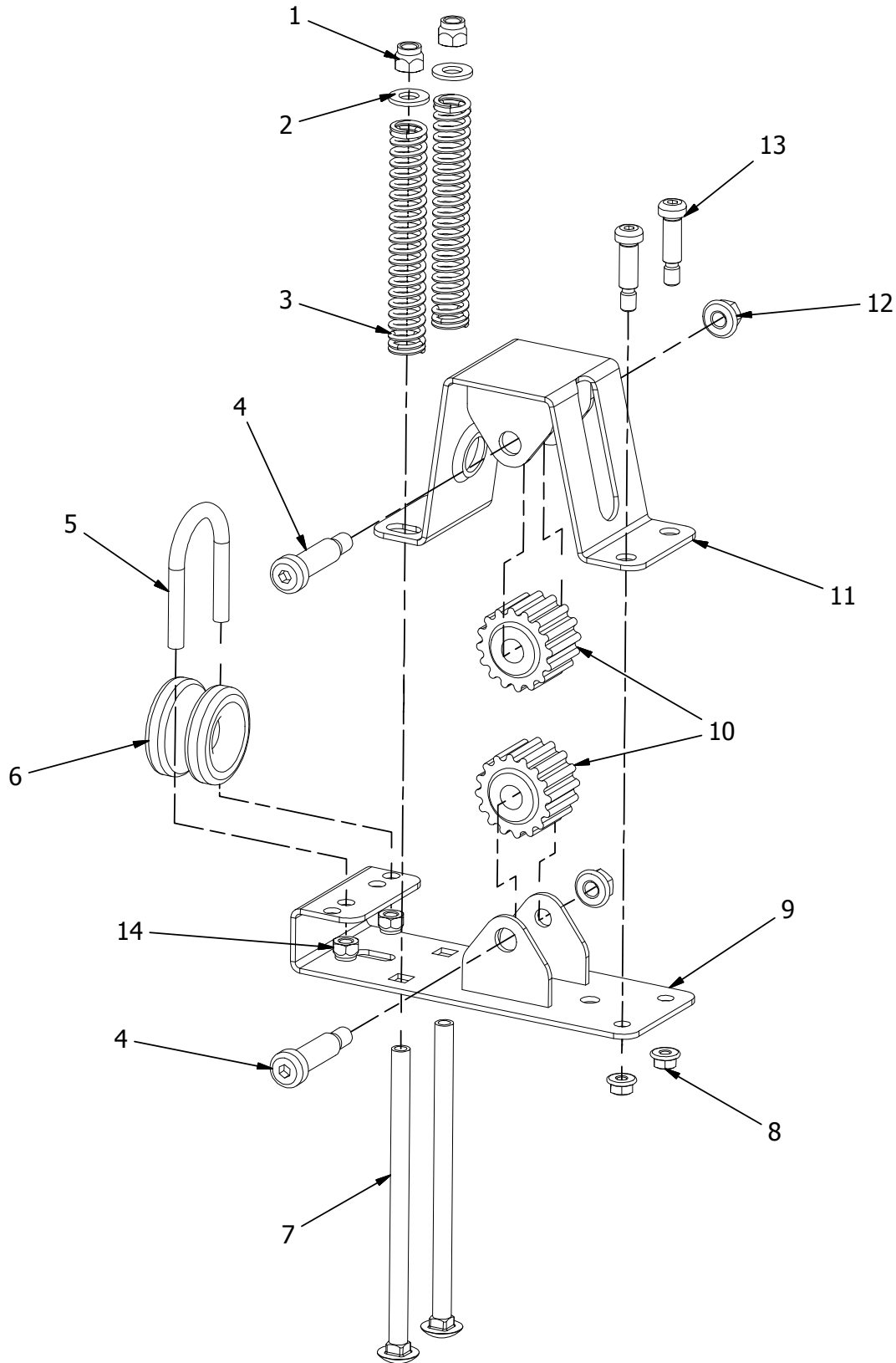


KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	40563110	4	Twine Tensioner Assembly
2	304209	8	3/8-16 UNC x 0.75 Carriage Bolt
3	202387	8	3/8-16 UNC Serated Flange Nut
4	62130	4	Twine Roller Bearing
5	203706	4	1/4-20 UNC x 1.25 Hex Flange Bolt
6	202415	4	1/4-20 UNC Flange Locknut Steel
7	40563290	2	Magnet Bracket - Sensor
8	201103	2	1/4-20 UNC x 0.75 Hex Bolt Zinc
9	202220	2	1/4-20 Locknut
10	40563288	2	Sensor Rod WA
11	202222	8	5/16-18 Locknut
12	306011	4	5/16 Washer
13	66142	8	Bushing - 5/16" x 1/2" x 9/16"
14	201156	8	5/16-18 UNC x 1.25 Hex Bolt Zinc
15	40563124	1	Bracket - Knotter Twine Tension Arm
16	203731	4	3/8-16 UNC x 1 Hex Flange Bolt
17	202419	4	3/8-16 UNC Flange Locknut Steel
18	40563180	4	Twine Tension Arm - Upper
19	40563282	1	Stop - Sensor Rod
20	203716	2	5/16-18 UNC x 0.75 Hex Flange Bolt
21	202385	2	5/16-18 UNC Serated Flange Nut
22	40563296	4	Spring Extension -.66" x 7" x .08"
23	40563297	1	Spring Extension - .61" x 8.75" x .062"

KNOTTER PARTS BREAKDOWN

Twine Tensioner Assembly



KNOTTER PARTS BREAKDOWN

ITEM	PART NUMBER	QTY	DESCRIPTION
1	202224	2	3/8-16 Locknut
2	306012	2	3/8 Washer
3	40563404	2	Compress Spring - .75" x 4.985" x .105"
4	40563294	2	Shoulder Screw 1/2" x 1.5" x 3/8-16 UNC
5	34103	1	U-Bolt - 5/16 x 1-13/16
6	32105	1	Ceramic Insulator
7	304236	2	3/8-16 UNC x 6.5 Carriage Bolt
8	202415	2	1/4-20 UNC Flange Locknut Steel
9	40563120	1	Roller Bracket WA - Lower
10	40563292	2	Twine Tension Roller
11	40563118	1	Roller Bracket WA - Upper
12	202419	2	3/8-16 UNC Flange Locknut Steel
13	40563295	2	Shoulder Screw 3/8" x 1" x 5/16-18 UNC
14	202222	2	5/16-18 Locknut

KNOTTER PARTS BREAKDOWN

KNOTTER SETUP OVERVIEW

Twine Disc Timing Setup (Page 137)

- 3/16" from leading edge of notch to leading edge of cleaner

Bill Hook Tension Setup (Page 130)

- Very slight to no tension on spring

Knotter Brake Setup (Page 148)

- Spring length should be 1-5/16"

Connecting Rod Setup (Page 140)

- Approximately 56-3/8" centre of hole to centre of hole

Needle Setup (page 140)

- Needle – slight side tension to the right
- Clearance of twine disc cleaner – 1/16"
- Penetration – 5 1/2" tape line hooked onto twine disc cleaner to centre of lower roller

Tucker Arm Setup (page 146)

- Bring needles up until close to tucker arms
- Set left side of tucker arm flush with left side of needle (up to 1/8" off centre to the left)

Plunger Guides Setup

- Stop needles just before entering knotter
- Force needle to against guides – left and right
- Ensure needle does not catch upon entering through needle guides
- Adjust guides as required

Twine Finger Setup (page 144)

- Bring needles up until twine fingers start to turn
- Check distance between twine finger and needle
- Return knotter to home position
- Adjust twine finger as required
- Bring needles up again – recheck distance – should be approximately 1/16" clearance
- With needles in home position twine fingers should be set at 90 degrees

KNOTTER PARTS BREAKDOWN

Twine Tensioner Setup (page 128)

- top tensioners
 - 18 lbs (8 kg) of pull on twine
- bottom tensioners
 - 21 lbs (9 ½ kg) of pull on twine

Twine Box Tensioners Setup (page 128)

- only enough tension to avoid free fall of twine

Disabling Knotter Mis-tie Alarm

(“User Settings Screen” on page 61)

The knotter mis-tie alarm can be disabled such as in the following circumstances.

You may want to run with only 3 strings because

1. You run out of twine
2. One knotter not working properly
3. Alarm itself not working properly
 - To disable the knotter mis-tie alarm see (“User Settings Screen” on page 61)

KNOTTER TROUBLESHOOTING

KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction	
Needle breaking or bending	Solid object in needle slot	Remove the object and clean the slot	
	Needle not adjusted correctly	Adjust the needle	
	Crop deposits in plunger needle slots	Remove the crop from the plunger needle slots. Check that crop is not too wet for baling. Permit the crop to dry properly.	
	Knotter clutch arm does not rotate freely on the shaft	Clean and lubricate the knotter clutch arm and shaft NOTE: Lubricate the knotter clutch arm every 2000 bundles	
	Knotter repeating cycle		Check the knotter clutch trip arm for broken or loose spring and broken or bent parts
			Trip arm valve not resetting
	Knotter trip linkage does not move freely	Check the knotter trip linkage for damaged parts. Replace or repair damaged parts.	
Loose bolts in needle	Adjust the needle and make sure the bolts are tight.		
Knotter will not engage	Knotter clutch arm does not rotate freely on shaft	Clean the knotter clutch arm and shaft. Lubricate the knotter clutch arm. NOTE: Lubricate the knotter clutch arm every 2000 bundles	
		Valve for trip arm not activating	
		Repair or replace faulty valve Replace faulty relay	

KNOTTER TROUBLESHOOTING

Tying Problems

Problem	Possible Cause	Correction
Knots staying on billhook too long	Not enough twine holder spring tension	Tighten the twine holder spring adjustment bolt.
	Too much tension on the billhook cam	Check billhook cam adjustment.
	Twine disc rotated clockwise too far	Check twine disc adjustment and rotate the twine disc counterclockwise if necessary.
	Dull or damaged stripper arm knife	Replace or sharpen the stripper arm knife
	Stripper arm not set close enough to billhook	Adjust the stripper arm to lightly rub the billhook.
	Stripper arm does not travel far enough past end of billhook	Check the stripper arm adjustment.
	Stripper arm cam lobe on cam gear worn or damaged	Repair or replace the cam gear
	Stripper arm roller worn or missing	Replace the stripper arm roller
Billhook tongues breaking too frequently	Worn or rough billhook	Replace the billhook or remove the rough edges with a file and emery cloth
	Not enough bottom twine tension	Increase the bottom twine tension by tightening the springs on the bottom twine tensioners.
Twine wrapped on top of the billhook and first and second knot connected	Needle and tucker arm out of alignment causing needle to not get the top twine (twine right-hand of needle)	Bend the tucker arm and/or needle until both parts are in alignment.
	Needle does not put both twines in disc correctly	Adjust the needle position and/or twine disc timing.
	Twine running off the right-hand side of the tucker arm roller	Bend the top slacker arm into alignment with the tucker arm. Use the correct twine.
Knots in bottom twine only; top twine is not cut between bales (top twine is around two bales)	Needle and tucker arm out of alignment causing needle to not get top twine (normally twine left-hand side of needle)	Bend the tucker arm and/or needle until both parts are in alignment.
Knots in bottom twine only; top twine is not cut between bales (top twine is around two bales); a loose half-hitch knot is on the billhook	Needle penetration is too low or needle height is too high over the twine disc; top twine is not in the disc	Adjust the penetration. Adjust the needle height.

KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
Knot in top twine only on first knot	Twine finger did not pick up twine from needles and move twine into tying position correctly	Adjust the twine finger.
	Twine fingers do not rotate freely	Make sure the twine finger pivot bearing is receiving lubricant. Clean and repair as necessary.
		Check the adjustment of the twine finger. Make sure the twine finger adjustment rod does not go over center.
	Twine finger shaft does not rotate freely	Lubricate the twine finger shaft pivot bushings and check for any obstructions that can prevent the shaft from rotating freely.
Twine finger spring broken or weak	Replace the twine finger spring.	
Knot in top twine only on second knot	Bottom twine slacker arm not rotating freely on shaft	Check the bottom slacker arm bearing. Check for obstructions.
	Not enough tension on bottom twine	Increase the twine tension on the bottom twine tensioner.
	Needle twine not threaded correctly	Check and correct the needle twine threading.
	Broken or missing bottom slacker spring or other bottom slacker parts	Replace the bottom slacker spring
		Replace any broken or missing bottom slacker parts
	Bottom twine staying too long on back side of twine finger when twine finger retracts	Remove the rough edges from the twine finger.
	Twine finger not retracting completely	Adjust twine finger.
Make sure the twine finger bushing is receiving lubricant. Clean and repair as necessary.		
Lubricate the twine finger shaft pivot bushings and check for obstructions that can prevent the shaft from rotating freely.		
Check the springs for the twine finger shaft and replace if necessary.		

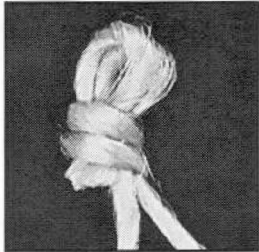
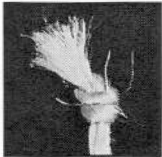
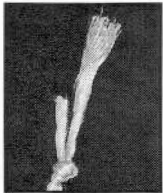



KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
Knot in bottom twine only on second knot	Twine finger not adjusted close enough to tucker arm	Adjust the twine finger forward toward the tucker arm. NOTE: When adjusting the twine finger, check both the tucker arm and needle for the correct gap from the twine finger.
	Needle damaged or bent	Repair or replace the needle if damaged. If the needle is bent, replace the needle.
	Top twine not routed correctly	Check and correct the top twine threading.
	Spring for top twine slacker arm broken or disconnected	Replace or connect the spring for the top twine slacker arm.
	Broken or missing top slacker parts	Replace any broken or missing top slacker parts.
	Tucker arm cam roller broken or not coming in contact with cam	Replace the cam roller and/or straighten the cam roller arm until the roller is centered on the cam.
Twine wrapped on top of billhook on the second knot	Bottom twine slacker arm not moving freely	Clean the bottom twine slacker arm and shaft. Check for obstructions.
	Broken or missing bottom slacker spring or other bottom slacker parts	Replace the bottom slacker spring.
		Replace any broken or missing bottom slacker parts.
	Not enough tension on bottom twine	Increase the bottom twine tension by tightening the springs for the bottom twine tensioner gears.
	Needle and tucker arm out of alignment causing needle to not get top twine (twine right-hand of needle)	Bend the tucker arm and/or needle until both parts are in alignment with each other.
	Twine disc rotated too far counterclockwise	Rotate the twine disc clockwise.
Twine wraps around top of billhook on the first knot	Twine disc rotated too far counterclockwise	Rotate the twine disc clockwise.
	Needle and tucker arm out of alignment causing needle to miss top twine (twine right-hand of needle)	Bend the tucker arm and/or needle until both parts are in alignment.

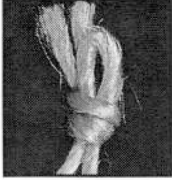
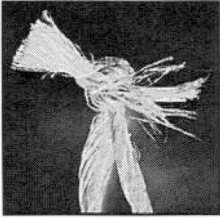
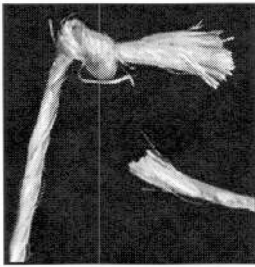
KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
No knot in either twine, one or all knotters	Twine finger not working correctly	Inspect the twine finger linkage and twine finger adjustment.
	Twine finger roller not coming in contact with cam	Replace or connect the twine finger spring.
		Lubricate the twine finger bushings. Make sure the twine finger bushings are receiving lubricant. Clean or repair as necessary.
		Adjust the twine fingers.
		Lubricate the twine finger shaft pivot bearings.
		Check for any obstructions that can prevent the twine finger from rotating freely.
	Damaged billhook tongue	Replace the billhook tongue.
	Not enough tension on billhook cam	Increase the tension on the billhook cam.
	Twines to needle and knotter not routed correctly	Check and correct the twine routing.
	Twine holder spring too tight and does not permit enough twine to slip through disc to form knot	Loosen the twine holder spring adjusting screw. Clean dust and chaff from under the twine holder spring. Adjust the twine holder.
Billhook not rotating	Replace the roll pin in the billhook pinion.	
Twine cut in twine discs	Loosen the twine holder and/or remove all sharp edges on the twine holder and discs.	

KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
Double twine bow knot. 	Twine holder spring set too loose.	Tighten the twine holder spring adjustment bolt to shorten the tail on the knot.
	Not enough travel of stripper arm past billhook.	Adjust the stripper arm to get more travel past the billhook.
		Check the knotter cam gear for wear and repair or replace as necessary.
		Check for worn or damaged roller on the stripper arm
	Twine tension not correct because of broken spring on top or bottom slacker arm.	Replace the broken spring.
	Twine tension not correct because of bottom slacker arm not rotating freely on shaft.	Clean the bottom slacker arm shaft. Check for obstructions.
Dull or damaged twine knife.	Sharpen or replace the twine knife.	
Twine ends frayed 	Dull or damaged twine knife.	Sharpen or replace the twine knife.
	Twine knife base holding twines	Check the twine disc adjustment or position of the twine knife base.
Twine ends not even 	Dull or damaged twine knife.	Sharpen or replace the twine knife.
	Not enough twine tension on either top or bottom twine.	Increase the spring tension on the twine tensioner gears
Twine cut approximately 2 inches from knot 	Sharp edge on twine finger plate 	Remove sharp edge on twine finger plate 

KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
Strands of one twine double back through knot. 	Billhook tongue is closing on top of twine.	Adjust the timing of the twine disc. Adjust the stripper arm to hold the twine over the billhook tongue farther to the right-hand.
	Not enough spring tension on twine holder springs.	Increase the tension on the holder springs.
	Dull or damaged twine knife	Sharpen or replace the twine knife.
Frayed knot. 	Twine tension too high.	Check and adjust the twine tension at both top and bottom twine tensioners. Decrease the tension on the twine holder springs.
	Damaged twine disc or twine holder.	Inspect the twine holder for rough and sharp areas that can damage the twine. Repair as necessary.
	Rough or sharp areas on the billhook or stripper arm.	Remove the tough or sharp edges.
	Dull or damaged twine knife	Sharpen or replace the twine knife.
Knot in end of one twine and no knot in end of other twine on all four twines. 	One or more twine fingers do not work freely, causing all twine fingers to not work correctly.	Lubricate the twine finger bushings. Make sure the twine finger bushing is receiving lubricant. Clean or repair as necessary. Adjust the twine finger.
	Twine finger going over center.	Adjust the twine finger.
	Twine fingers shaft does not rotate freely.	Lubricate the twine finger shaft bearings. Adjust the center bearing for twine finger shaft.
	Spring for twine finger shaft is weak; roller on twine finger shaft does not contact cam through complete cycle.	Replace the twine finger shaft spring.
Weak knot	Twine holder spring tension too tight	Adjust the twine holder spring tension.

KNOTTER TROUBLESHOOTING

Problem	Possible Cause	Correction
Short ends of knot frequently pull loose (normally second knot)	Twine holder spring set too tight	Decrease the tension on the twine holder springs.
	Twine tension not correct	Check the twine tension at both the top and bottom twine tensioners. Increasing the twine tension will normally increase the length of the short ends of knots.
	Not enough tension on billhook cam	Adjust the billhook cam.
Twine discs do not stay in time	Worm drive gear groove pin breaks	Replace the groove pin.
	Worm gear slips on worm shaft	Tighten the nut on the worm shaft.
		Remove the shims to let the worm gear set on the tapered area of the worm shaft. Measure the end play for the worm gear shaft and adjust as necessary.
		Check for cracks in the worm gear and replace if cracks are present.
Worn or broken worm gear or worn drive gear	Replace the worm gear or the worm drive gear.	
Failure to apply enough tension on twine with twine tensioner	Adjustment bolt threads worn	Replace the adjustment bolt.
	Groove worn in tension gears	Replace the tensioner or remove the tensioner assembly and install from the opposite side of the baler.
	No travel left in springs	Replace the bad parts. Straighten the gear mounting bracket or shorten the rear spacers.

Index

A

Adjustable Valves : **48**
Alarm Messages : **72**
Alarm Messages Troubleshooting : **73**
Alarm Sounds : **71**

B

Bale Baron® Setup : **42, 44, 46, 48, 51, 53**
Baler Hardware : **34**
Baler Type : **62**
Bale Size : **42**
Billhook : **130**
Brake Adjustment : **94**
Brake Adjustment Weekly : **93**
Brake Adjustment Yearly : **94**
Bundle Size : **61**

C

Cab Control Panel (Non Isobus) : **38**
Cam Lobe Wear : **149**
Chamber Top Release : **46**
Check List
 Pre-Delivery Check List : **5**
Closed Center System Setup : **41**
Command Messages : **69**
Control Panel Layout : **54**
Counters Screen : **59**
Cylinder Pressure Testing : **107**

D

Diesel Power Unit : **96**
Display Panel Options : **55, 56, 57**
Drift Control : **61**

E

Electrical Circuit : **102**
Electrical Connection : **38**
Endgate Limit Switches : **86**
Endgates : **50**

End Gates : **43**

F

Function Switches : **63**

G

Grease Yearly : **92**

H

Hitch : **37**
Home Screen : **55**
Horizontal Stack Count : **67**
How The Double Knotter System Works : **111**
Hydraulic Circuit : **103**
Hydraulic Connection : **40, 42, 44, 46, 48, 51, 53**
Hydraulic Flow : **61**
Hydraulic Input Selection : **41**
Hydraulic Requirements : **40**
Hydraulics Specifications : **40**
Hydraulic Troubleshooting : **106, 107**
Hydraulic Type : **61**

I

Indication Lights : **65**
Injector Down : **62**
Injector Limit Switches : **84**
Inputs Screen : **57**
Introduction : **11**
Isobus Connection : **39**
Isobus Monitor (Optional) : **39**
Isobus Selector Switch : **65**

K

Knotter Brake Adjustment : **148**
Knotter Operations : **112**
Knotter Sensor : **62**
Knotter Shields : **101**
Knotter Speed Flow Control : **48**
Knotter Upper Limit Switch : **87**

L

Limit Switch Setup : **83**
Load Sense Bleed Off Valve : **49**

Local Selection : **64**

Log Screen : **60**

Lower Expeller Roller : **51**

M

Menu Screen : **56**

N

Needle Installation And Adjustment : **140**

Needle Yoke Home Limit Switch : **87**

New Holland Hose Kit Assembly Instructions : **32**

O

Optional Endgates : **50**

Outputs Screen : **58**

Overload Indicator System : **68**

Override Feature : **65**

P

Pickup Belt Adjustment : **53**

Pickup Chain Tension : **93**

Pickup Height Adjustment : **52**

Pickup Setup 5250P : **52**

Plunger Limit Switches : **85**

Preparing The Baler : **32**

Program : **42**

Pto Pump Kit : **97**

R

Remote Selection : **64**

Rotary Table Shields : **98**

S

Safety Switch Alarm Messages : **74, 75**

Spacer Bar Adjustment : **43**

Speed Control For Knotter : **48**

Stripper Arm Adjustment : **136**

T

Table Speed Flow Control : **48**

Table Switch : **64**

Third Bale Count Limit Switch : **88**

Threading The Knotters : **122**

Tie Alarm Sensors : **90**

Tie Cycle : **68**

Trip Arm Limit Switch : **89**

Tucker Arm Adjustment : **146**

Twine : **47**

Twine Ball Installation : **116**

Twine Box Access : **99**

Twine Disc Adjustment : **137**

Twine Finger Adjustment : **144**

Twine Holder Adjustment : **139**

Twine Installation : **47**

Twine Installation : **116**

Twine Knife : **134**

Twine Specifications : **116**

Twine Tension : **128**

U

User Settings : **61, 62**

V

Vertical Stack Count : **66**

W

Warranty Details : **7**

Warranty Registration : **3**



The Ultimate in Automatic Small Bale Packaging Systems

Marcrest Manufacturing
45415 Perth Line 86
Listowel, ON
Canada N4W 3G6

Phone: 1-519-887-9910
Fax: 1-519-291-9914



Visit us online at www.marcrestmfg.com