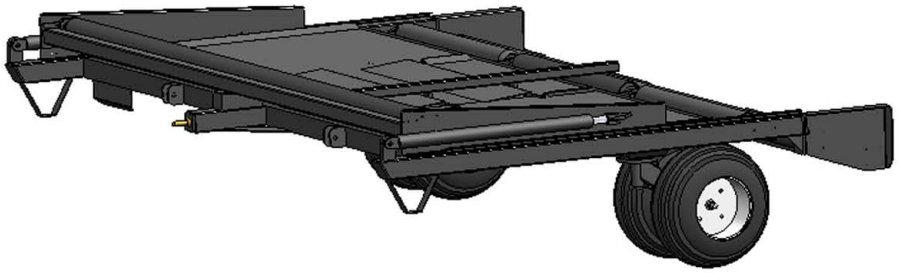
PhiBer Big Bale Accumulator



Models: AC3104, AC3104x,
AC4104 & AC4104x

For New Holland BB9000 series & Case-IH LB3 series balers with virtual terminal accumulator controllers.

PHIBER

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OPERATOR'S MANUAL

Limitation of Liability

PhiBer Manufacturing Inc. shall not be liable for special incidental or consequential damages arising out of the use of, out of the misuse of, or inability to use any product sold by PhiBer Manufacturing Inc. Including without limitation damages or loss of other property or equipment, personal injury, loss of life, loss of profits or revenue, or claims of purchaser for any such damage or loss.

Warranty

PhiBer Manufacturing Inc. warrants its products to be free from defect in factory workmanship and material under normal use and service, when set-up and operated according to factory instructions. Warranty should be handled through PhiBer or an authorized selling dealer. Warranty is subject to the following conditions:

Warranty Claims: Must be completed within 30 days of replacement of part or parts. Claim must include serial number of accumulator, date of delivery and all other necessary particulars and explanation of problem.

Warranty Parts: Must be kept for PhiBer's inspection unless otherwise specified.

Warranty Labour: PhiBer must authorize any labour subject to warranty. PhiBer Manufacturing Inc. reserves the right to set the labor rate and time required to complete a warranty repair.

Warranty Limitations: Warranty will not be granted on any accumulator that has been misused, altered, or modified in any way. Diagnostic and service calls are not covered by warranty. Warranty covers only the cost of repair and parts; it does not include shop supplies, mileage and freight costs.

Government Legislation: Warranty terms and conditions are subject to provincial or state legislation and laws.

Warranty on cylinders, hydraulic components, electronic components, and other trade accessories are limited to the warranties made by the respective manufacturers and not by PhiBer Manufacturing Inc.

The following table shows the available warranty:

Item	Time from Purchase
Frame and other structural components	One (1) Year
Electronic components	One (1) Year
Hydraulic components	One (1) Year
Hydraulic cylinders	One (1) Year

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INTRODUCTION

Congratulations on your purchase of the PhiBer® Large Square Bale Accumulator. The PhiBer® Bale Accumulator offers the agricultural industry a machine for uniformly arranging bales into a desired package that can be handled more efficiently.

All persons authorized to operate this equipment should read and understand the contents of this Operator's Manual, especially the Safety section. The owner or operator should seek assistance from the dealer, distributor or PhiBer® for any information not fully understood regarding the safe operation, adjustment, maintenance or repair of this equipment.

Keep this Operator's Manual in a clean, dry place that is easily accessible for reference when more detailed information is required to perform tasks related to the operation, adjustment, maintenance or repair of this equipment. It is further recommended that the contents of this Operator's Manual be reviewed at least annually by persons operating, adjusting, maintaining or repairing this PhiBer® bale accumulator and any time a new person is assigned to any of the above mentioned tasks.

Any information in this Operator's Manual that is not fully understood should be clarified by contacting the dealer, distributor or manufacturer.

The contents of this Operator's Manual are accurate up to the time of printing.

PhiBer® reserves the right to make design changes without prior notice to the end user.

INTRODUCTION

DESCRIPTION OF THE MACHINE

The operator, from the seat in the tractor cab, can choose from four different automatic discharge patterns or manually eject the bales at any time. This is all done from the operator's seat in the tractor cab. Select the desired bale packaging mode with the PhiBer® Bale Accumulator that will complement the preferred method of bale handling in the field.

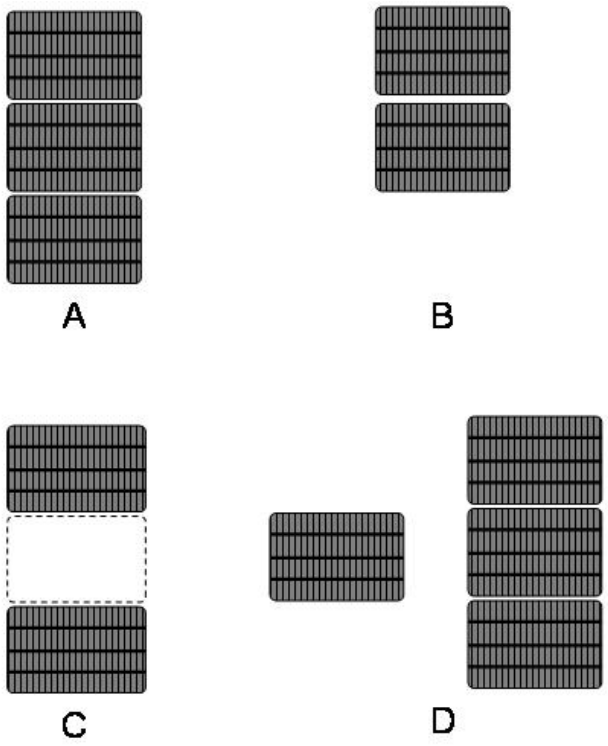


FIG. 1

BALE PACKAGING MODES

FIG. 1

A. Three (3) Bales (default)
B. Two (2) Bales (side-by-side)
C. Two (2) Bales (with gap)
D. One (1) + Three (3) Bales (delayed eject)

ILLUSTRATION OF THE MACHINE

IMPORTANT! All references to "LEFT" or "RIGHT", as used throughout this Operator's Manual, are determined by facing the direction of machine forward travel when in use.

BALE ACCUMULATOR ASSEMBLY

RIGHT SIDE VIEW (FIG. 2)

1. Push-Off Truck
2. Push-Off Roller
3. Master Cylinder
4. Push-Off Limit Switch

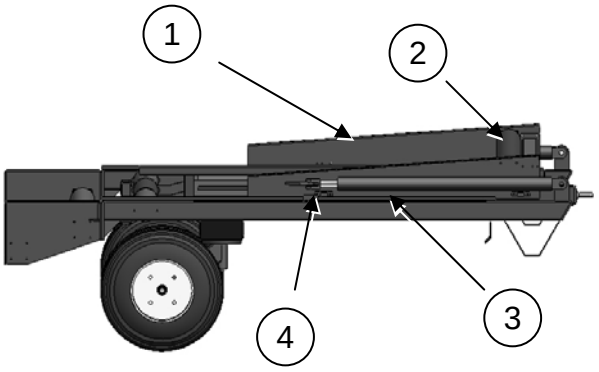


FIG. 2

LEFT CORNER VIEW (FIG. 3)

1. Accumulator Deck
2. Side-Shift Truck
3. Bale Trigger Button
4. Slave Cylinder
5. Track

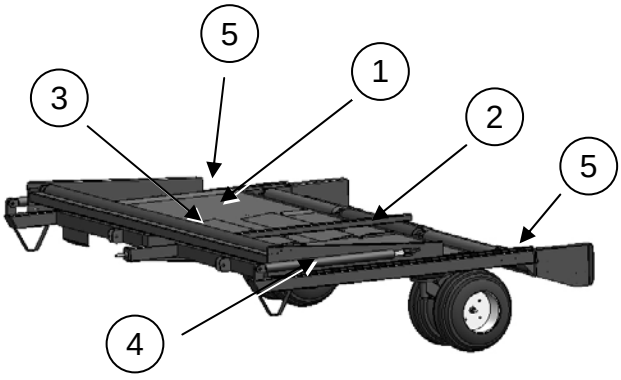


FIG. 3

INTRODUCTION

MONITOR AND CONTROLS

MONITOR/CONTROL PANEL (FIG. 4)

1. Monitor Panel
2. Power Switch
3. Eject Button
4. Indicator Lights
5. Fuse Holder

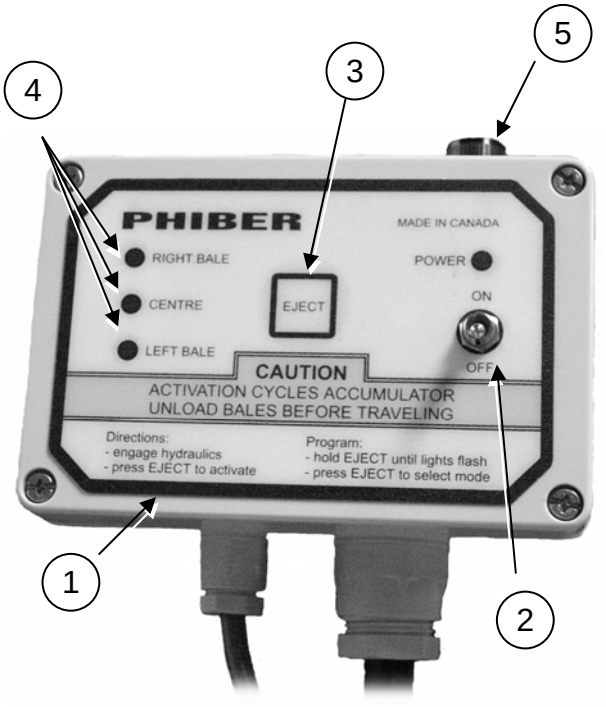


FIG. 4

SERIAL NUMBER LOCATION

The Serial Number plate, FIG. 5, is located on the inside surface of the right hand main frame member.

Record the machine Model and Serial Number in the spaces provided below. Use these numbers when contacting the dealer for repair parts or service assistance.

Model Number: _____

Serial Number: _____

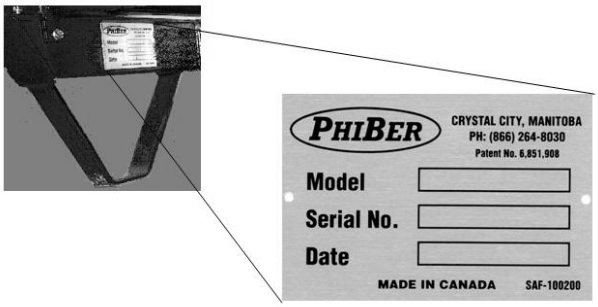


FIG. 5

SAFETY ALERT SYMBOLS

Safety Alert Symbols are intended to draw attention of the machine operator to important safety information both published in the Operator's Manual and applied to the machine. Whenever a Safety Alert Symbol is seen, it means that associated information is provided for recognizing, appropriately responding to and avoiding potentially hazardous situations.

An equilateral triangle surrounding an exclamation point or a double line equilateral triangle surrounding symbols or graphics indicates a potentially hazardous situation. Information included on a safety sign or printed in the Operator's Manual describes the hazardous situation and indicates appropriate response and/or avoidance procedures.

Remember:

ACCIDENTS DISABLE AND KILL
ACCIDENTS ARE COSTLY
ACCIDENTS CAN BE AVOIDED

w/ exclamation point

double line triangle

These Safety Alert Symbols Mean:

ATTENTION!

BE ALERT!

YOUR SAFETY IS INVOLVED!

SIGNAL WORDS

DANGER

Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury if proper precautions are not taken.

WARNING

Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury if proper precautions are not taken.

CAUTION

Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury if proper precautions are not taken, or, serves as a reminder to follow appropriate safety practices.

SAFETY

OPERATOR RESPONSIBILITY

Remember, YOU, the operator, are responsible for the safe operation, adjustment, maintenance and repair of this PhiBer® Large Square Bale Accumulator. It is the responsibility of the owner, or authorized person in charge, to ensure all persons who operate, adjust, maintain and/or repair this implement be familiar with the information provided in this Operator's Manual.

A safe operator is the key to safety. Good safety practices not only protect you, but also persons who may be in the vicinity of the accumulator. Make good safety practices a part of your farming operation. Ensure that all persons operating, adjusting, maintaining and/or repairing this equipment are familiar with the procedures recommended in this Operator's Manual.

Always heed safety warnings and follow recommended safety precautions to avoid hazardous situations. Do not risk personal injury or death by ignoring safety warnings and safety precautions.

Key Safety Reminders:

- The most important safety device is a safe and qualified operator.
- A safe operator is one who has read and understood the contents of the Operator's Manual prior to performing any tasks related to the machine.
- Owners have a responsibility to provide training to persons who may operate, adjust, maintain and/or repair the equipment prior to performing any of these tasks.
- Do not perform any unauthorized modifications to the accumulator or use the accumulator for any purpose other than what is described in the contents of this Operator's Manual.
- Plan tasks and work schedules to reduce exposure to unnecessary stress and fatigue.
- Observe all workplace safety and health requirements.

GENERAL SAFETY PRACTICES

- Read and understand the contents of this Operator's Manual prior to operating, adjusting, maintaining and/or repairing the bale accumulator.
- Locate, read and understand all safety signs applied to the accumulator before performing any tasks.
- Review the contents of this Operator's Manual at least annually, and, any time a new person is assigned to perform any task with the accumulator.
- Ensure that all bystanders, especially small children, are kept at a safe distance while performing any tasks with the accumulator.
- Do not allow riders on any part of the accumulator.
- Ensure all guards and shields are intact and in place prior to operating the accumulator.
- Keep hands, feet, hair and loose clothing away from moving and/or rotating parts.
- Stop the engine, lower the equipment, set the parking brake, remove the ignition key, and allow time for moving parts to stop prior to adjusting, maintaining or repairing the equipment.
- Ensure that all equipment lighting and marking is intact, clean and operating properly prior to traveling on public roads. Check with local highway authorities to confirm accumulator is properly equipped for highway travel.
- Provide a fully stocked First-Aid kit in a highly visible and easily accessible location.
- Keep a fully charged fire extinguisher in a highly visible and easily accessible location.
- Ensure that accumulator is securely blocked and supported prior to working underneath, if it needs to be raised for service.

SAFETY

MAINTENANCE SAFETY

- Read and understand all of the information provided in this Operator's Manual covering the operation, adjustment, maintenance and repair prior to performing any of these tasks.

- Plan work to ensure proper tools, equipment and personal protective equipment are available prior to working on the accumulator.

- Wear appropriate clothing when performing tasks around the accumulator. Ill-fitting and/or frayed clothing as well as loose or dangling items should not be worn when working near the equipment.

- Stop the engine, lower the equipment, set the parking brake, remove the ignition key, and allow time for moving parts to stop prior to adjusting, maintaining or repairing the equipment.

- Ensure that all moving parts have come to a complete stop before performing adjustments, maintenance or repairs.

- Ensure that hydraulic oil pressure in hoses, lines and components is fully relieved prior to performing maintenance or repairs to the hydraulic system.

- Ensure that wings are either fully lowered or fully raised and secured with their safety chains or securely block the wings if raised to perform adjustment, maintenance or repairs.

- Securely block main frame if adjustment, maintenance or repair is required for wheels and tires.

- Wear personal protective equipment, such as gloves, eye protection, etc. when inspecting hydraulic system for leaks. Use a small piece of cardboard or wood to detect leaks.

- Ensure that all guards and shields are intact and in place after performing adjustment, maintenance or repairs prior to operating equipment.

- Store flammable fluids in approved containers and store out of access by unauthorized persons, especially children.

HYDRAULIC SAFETY

- Ensure that all hydraulic system components are kept clean and in proper working condition.
- Periodically inspect condition of hydraulic hoses, lines and components and remove and replace any parts showing damage or deterioration.
- Use only repair or replacement parts specified by the manufacturer.
- Make repairs following instructions provided by the manufacturer.
- Wear appropriate personal protective equipment when unsure if residual pressure may exist in hydraulic components during trouble-shooting and or making repairs.
- Use a piece of cardboard or wood to check for hydraulic leaks. Hydraulic fluid under pressure can penetrate human skin.
- Ensure all fittings, couplings and other hydraulic connections are intact and properly tightened before operating hydraulics.
- Ensure that all persons operating, adjusting, maintaining and/or repairing the accumulator know how to seek or summon medical assistance should an injury occur.

INSTALLATION SAFETY

- Read, review and understand all bale accumulator installation instructions before attempting to attach accumulator to baler.
- Ensure that baler is properly hitched to tractor and that baler is lowered fully to the ground.
- Ensure that tractor engine is shut off, key is removed from the ignition and that parking brake is set and/or wheels blocked.
- Block bale accumulator tires and support the front end of the bale accumulator frame until the accumulator is securely attached to the baler.

SAFETY

TRANSPORT SAFETY

- Ensure that the accumulator is attached to the baler properly.
- Ensure drawbar hitch pin retainer for baler is in place and engaged properly.
- Ensure safety tow chain is securely attached between baler and tractor.
- Ensure all lighting and implement marking devices are intact and visible.
- Ensure equipment is properly marked according to local road regulations and heed all local traffic regulations.
- Accumulator adds length to baler and covers a wide path when making turns.
- Ensure accumulator is fully unloaded before road travel.
- Do not exceed 32 km/h (20 mi/hr).
- Reduce travel speed on rough roads and surfaces.
- Do not allow riders on the accumulator at any time.

STORAGE SAFETY

- Store the accumulator away from areas of human activity.
- Do not allow children to play on or around accumulator

TIRE SAFETY

- Ensure tire inflation pressure is maintained per specifications.
- Follow proper procedures for tire repairs, especially when mounting tire to rim.
- Seek assistance from a trained person for tire repairs or mounting, especially if special equipment is required.

SAFETY SIGNS

SAFETY SIGN LOCATION (FIG. 6)

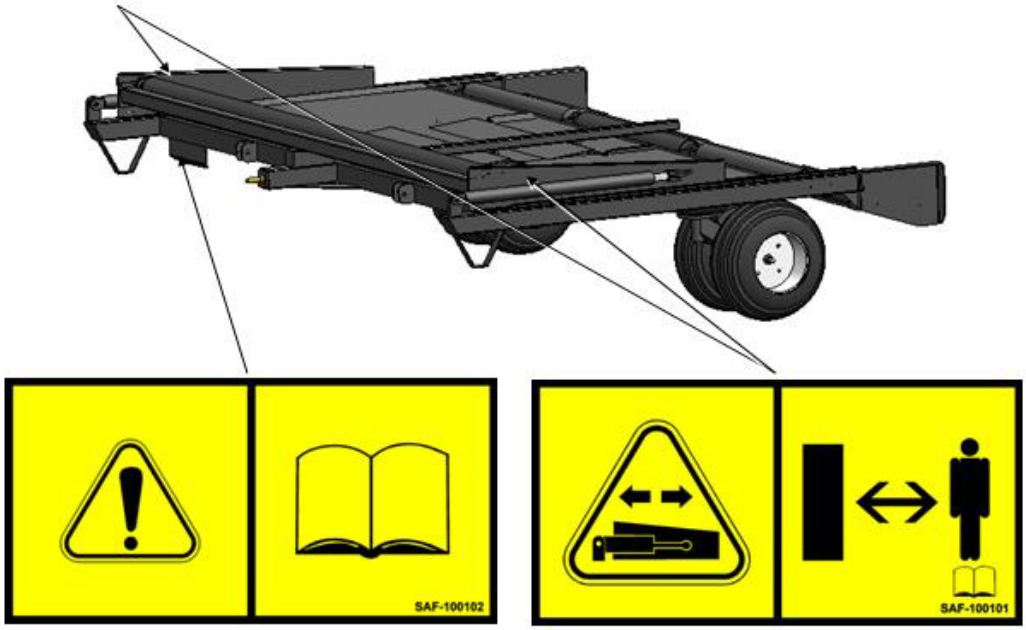


FIG. 6

SAFETY SIGN EXPLANATION

READ THE OPERATOR'S MANUAL (FIG. 7)

WARNING! Read and understand the contents of the Operator's Manual before performing any tasks related to the operation, adjustment, maintenance or repair of the machine.

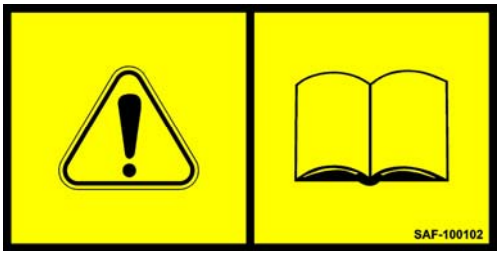


FIG. 7

MOVING PART HAZARD (FIG. 8)

WARNING! MOVING PART HAZARD. Keep all persons at a safe distance while machine is in operation or when making adjustments and/or repairs.

FIG. 8

SAFETY

SAFETY SIGN MAINTENANCE

Safety Sign Legibility

All safety signs applied to the accumulator must be visible and legible. Keep dust and dirt cleared from safety signs and ensure that visibility is not obscured.

Safety Sign Replacement

Replacement safety signs may be ordered through your dealer or distributor. Contact PhiBer® if you are unable to obtain replacement safety signs from a dealer or distributor.

Damaged or Deteriorated Safety Signs

Remove and replace any safety signs that have either damaged or show signs of deterioration.

Safety Signs on Replacement Parts

Ensure that parts or components that are replaced on the accumulator that had a safety sign attached originally include a safety sign.

Affixing Safety Signs to Machine

1. Ensure proper position and orientation before installing.
2. Ensure installation area is clean and dry.
3. Ensure ambient temperature is above 10˚ C (50˚ F).
4. Remove backing material to expose label adhesive.
5. Place one edge of label to machine surface.
6. Slowly press the label onto the surface.
7. Ensure no air pockets exist under surface of label.

SPECIFICATIONS

Bale Accumulator

	AC3104	AC4104
Bale Capacity	3	3
Bale Size	32 in (0.81 m)	48 in (1.22 m)
Bale Ejection	Manual or Automatic	Manual or Automatic
Width	116 in (2.95 m)	162 in (4.11 m)
Length	110 in (2.79 m)	110 in (2.79 m)
Height	38 in (0.96 m)	38 in (0.96 m)
Wheels	4 - 26x12.00-12NHS	4 - 26x12.00-12NHS
Electrical Power Supply	12 V	12 V
Hydraulics	10 gal/min (37.8 L/min) continuous flow	10 gal/min (37.8 L/min) continuous flow
Bale Length (range)	4.5 - 9 ft (1.37 - 2.74 m)	4.5 - 9 ft (1.37 - 2.74 m)
Silage Bale Handling	Yes	Yes

Tractor Requirements

Hydraulics	
# of circuits required	1
hydraulic flow	9 - 12 gal/min (34.1 - 45.4 L/min)
Electrical Power Supply	12 V

SPECIFICATIONS

Hardware Torque

SAE

Bolt Diameter	Bolt Torque		
inches	SAE 2 n·m (lb-ft)	SAE 5 n·m (lb-ft)	SAE 8 n·m (lb-ft)
1/4	8 (6)	12 (9)	19 (12)
5/16	13 (10)	25 (19)	36 (27)
3/8	27 (20)	45 (33)	63 (45)
7/16	41 (30)	72 (53)	100 (75)
1/2	61 (45)	110 (80)	155 (115)
9/16	95 (70)	155 (115)	220 (165)
5/8	128 (95)	215 (160)	305 (220)
3/4	225 (165)	390 (290)	540 (400)
7/8	230 (170)	570 (420)	880 (650)
1	345 (225)	850 (630)	1320 (970)

Metric

Bolt Diameter	Bolt Torque	
mm	8.8 n·m (lb-ft)	10.9 n·m (lb-ft)
M3	0.5 (0.4)	1.8 (1.3)
M4	3 (2.2)	4.5 (3.3)
M5	6 (4)	9 (7)
M6	10 (7)	15 (11)
M8	25 (18)	35 (26)
M10	50 (37)	70 (52)
M12	90 (66)	125 (92)
M14	140 (103)	200 (148)
M16	225 (166)	310 (229)
M20	435 (324)	610 (450)
M24	750 (555)	1050 (774)
M30	1495 (1103)	2100 (1550)
M36	2600 (1917)	3675 (2710)

Flare-Type Tube Fittings

Tube Size OD in	Nut Size across flats in	Torque n·m (lb-ft)	Recommended # Turns (after finger tightening) turns (flats)
3/16	7/16	8 (6)	1/6 (1)
1/4	9/16	12 (9)	1/6 (1)
5/16	5/8	16 (12)	1/6 (1)
3/8	11/16	24 (18)	1/6 (1)
1/2	7/8	46 (34)	1/6 (1)
5/8	1	62 (46)	1/6 (1)
3/4	1-1/4	102 (75)	1/8 (0.75)
7/8	1-3/8	122 (90)	1/8 (0.75)

NOTE: Torque values listed are based on lubricated connections in reassembly.

ACCUMULATOR HYDRAULICS

Proper set-up of tractor hydraulics ensures optimum operation of Bale Accumulator and can greatly increase system reliability. The hydraulic system on this Bale Accumulator is designed to function with open-center, closed-center and closed-center load-sensing tractor hydraulic systems. For tractors configured with closed-center hydraulic systems, some adaptation may be required to achieve optimum performance. Contact your dealer or PhiBer for assistance.

There are two crucial elements that must be heeded to ensure optimum Bale Accumulator performance:

1. Tractor hydraulic output flow must be set between 9 and 12 gal-US/min (34.0 - 45.4 L/min)

   NOTE: Hydraulic oil flow in excess of 12 gal-US (45.4 L/min) may cause hydraulic lock up of the system. Flow rates below 9 gal-US (34.0 L/min) will cause lower cycle times and can impede productivity.

2. The low pressure tank return line must discharge directly into the tractor hydraulic reservoir with negligible system back pressure.

   NOTE: Newer model tractors may have a setting on the hydraulic couplers remote connection that directs return oil flow straight to the tractor hydraulic reservoir. Other tractors may be fitted with an external port that leads directly to the tractor hydraulic reservoir. DO NOT connect the tank return line so that return oil flow must work against pilot operated check valves in the tractor hydraulic system.

OPERATION

COMPONENT CYCLE TIMES

Component / Action **12 gal-US/min (45.4 L/min) flow rate**	**Model** **3104** **(sec)**	**Model** **4104** **(sec)**
Side Truck: R/H side to L/H side	4	6
Side Truck: L/H side to R/H side	4	5
Push Off Truck: extend and retract	7 (4 ext / 3ret)	7 (4 ext / 3ret)

MACHINE OPERATING MODES

The accumulator can be operated in one of three modes:

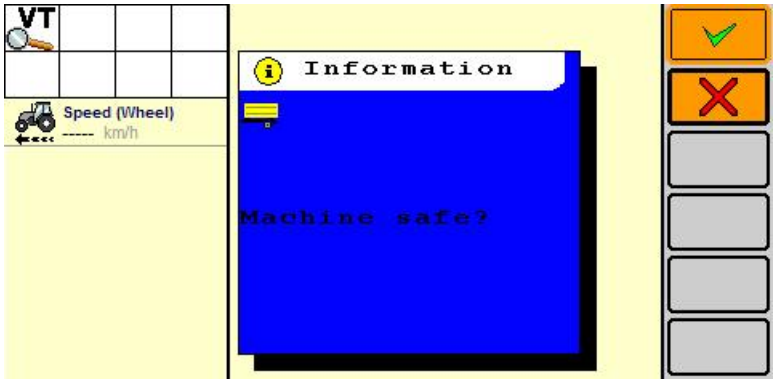
- Normal operating mode – this mode is used to process bales according to the selected bale dispatch program (see below). This mode does not allow manually controlling the push-off/shift bars of the machine, but does allow the ejection of bales at any time (which resets the running dispatch program).

- Maintenance with hydraulics enabled – this mode is intended to allow inspection of the machine and to support manual translation of the push-off/shift bars. Dispatch programs are not executed.

- Maintenance without hydraulics – this mode is intended to allow inspection of the machine without the risks involved with having hydraulics enabled at the time of the maintenance.

MACHINE STARTUP BEHAVIOR

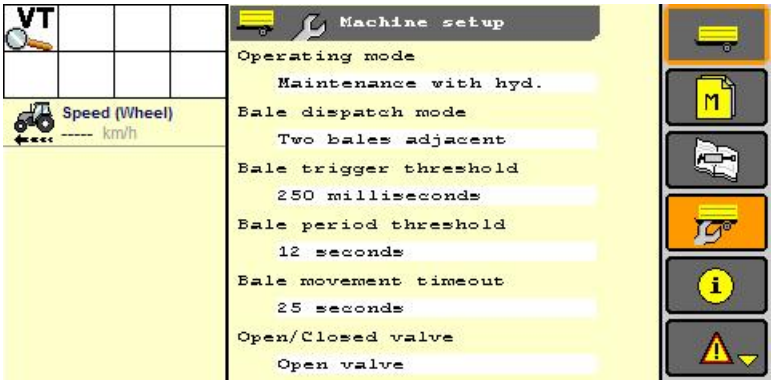
When the control module of the accumulator is powered-up, the implement's page on the Virtual terminal will first require the operator to confirm that the surroundings of the machine are safe. This applies to "normal operating" and to "maintenance with hydraulics enabled" modes:



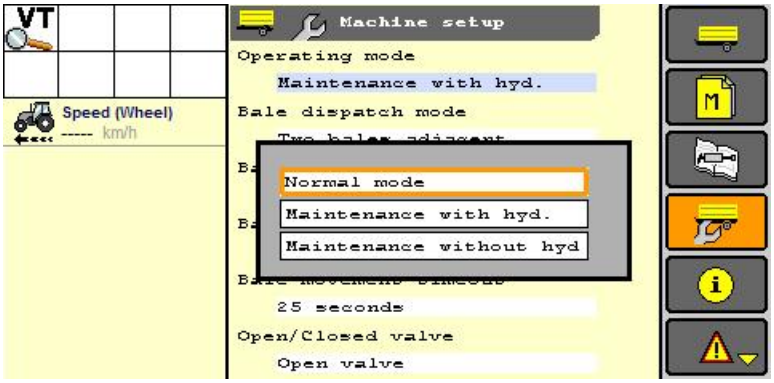
When in normal operating mode, the machine executes a startup procedure in order to bring the bars to their home position (i.e. shift bar to the right when looking ahead, push-off bar fully retracted) and to execute an initial anti hydraulics creep procedure.
When in maintenance with hydraulics enabled mode, only the hydraulics circuit is enabled.
When starting up in maintenance without hydraulics, there is no visible startup procedure as the hydraulics circuit is open.

MACHINE PARAMETERS

The machine allows the adjustment of the following parameters via the machine setup page:

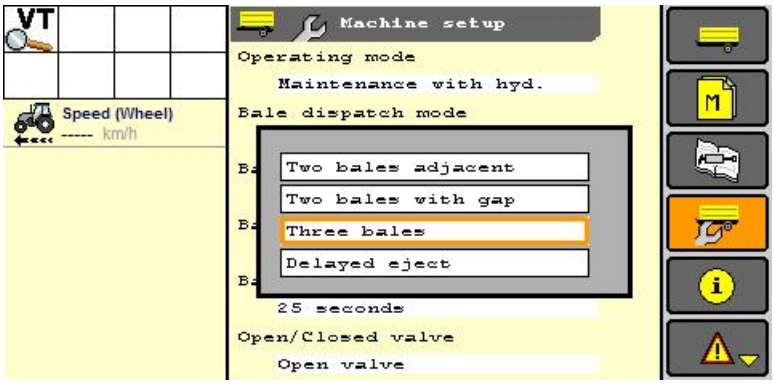


Selecting the “Operating Mode” field allows for the adjustment of the machine operating mode:



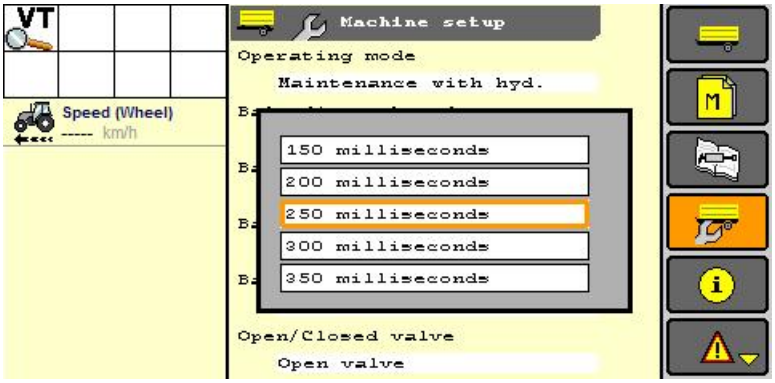
Any selection here applies immediately.

Selecting “Bale Dispatch Mode” field offers the following options:

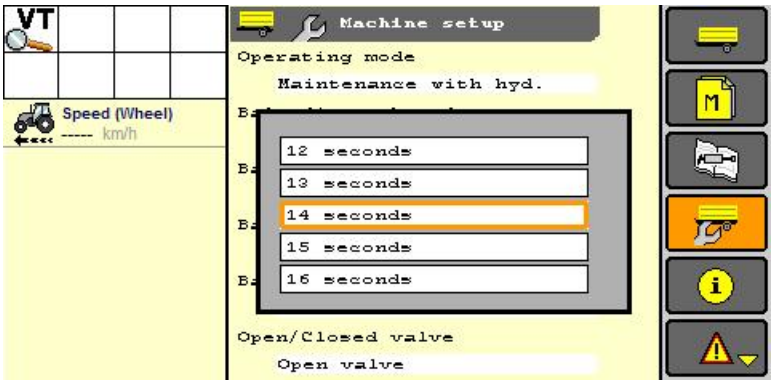


Please note that it is not possible to alter the bale dispatch program while there is a program in progress (i.e. there are bales on the deck). If that guideline is violated, the new selection shall be reverted to the previous one. In order to change a dispatch program, the operator must either wait until the program is finished (i.e. bale are ejected) or eject the bales manually.

The next option, “Bale Trigger Threshold” can be used to filter out false bale trigger signals, which might occur due to harsh field conditions. This setting determines how long the bale trigger signal must remain active before the next step in the running dispatch program is executed:

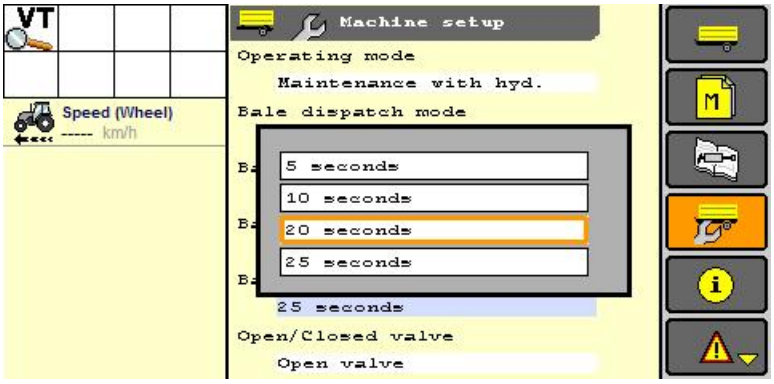


The “Bale Period Threshold” option determines the minimum time allowed between bales:

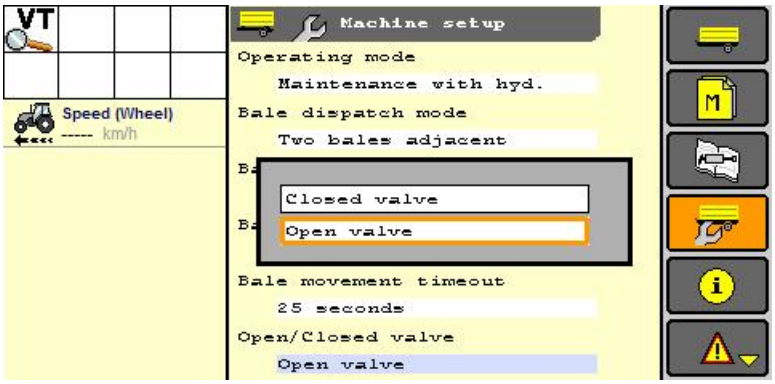


This means that any bale trigger that occurs before this time period elapses is ignored.

The setting “Bale Movement Timeout” determines how long the system will wait before issuing a timeout error in case there was no indication that a bar has reached its target (note: this applies only if the respective limit switch is operational. In case of limit switch failure, no timeout errors are generated):



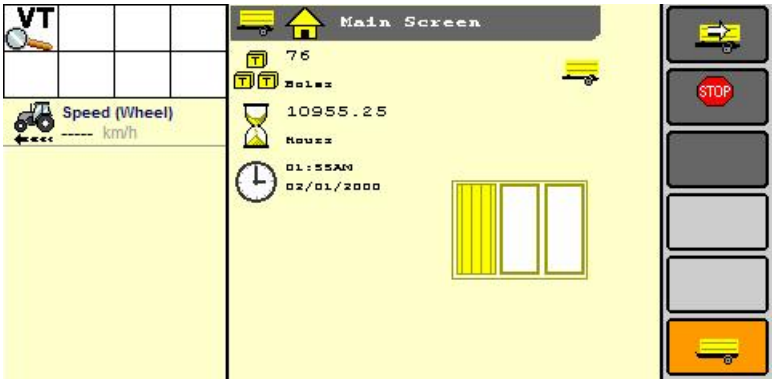
The Setting Open/Closed valve determines whether the system will control the center open valve as well as the hydraulic output (open valve) or only the output (closed valve).



EMERGENCY STOP BUTTON

The emergency stop button is located on the work page. Utilizing the button marked with a red “STOP” sign 

will stop the machine immediately by disconnecting the hydraulics circuit. It was made available for safety reasons. Recovery from an emergency stop requires the operator to select an operating mode that requires the hydraulics circuit to be active. The icon  appears in the status bar when the machine has gone through an emergency stop (induced by the emergency stop button or a machine failure of some kind), and the hydraulic circuit is idle. In order to recover, an operating mode requiring hydraulic must be selected or the  (error recovery) button can be utilized.



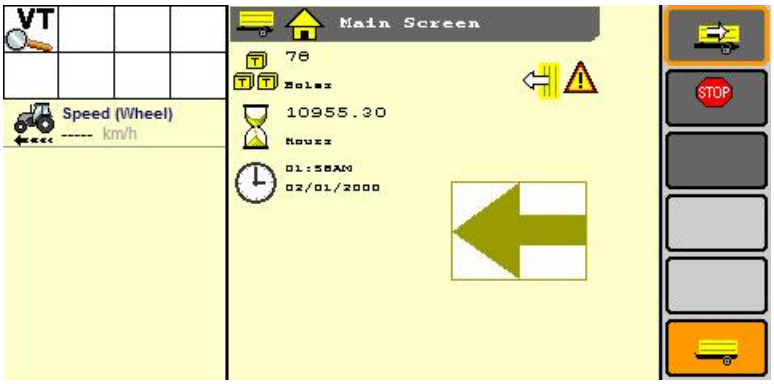
OPERATION

MANUAL EJECT BALES BUTTON

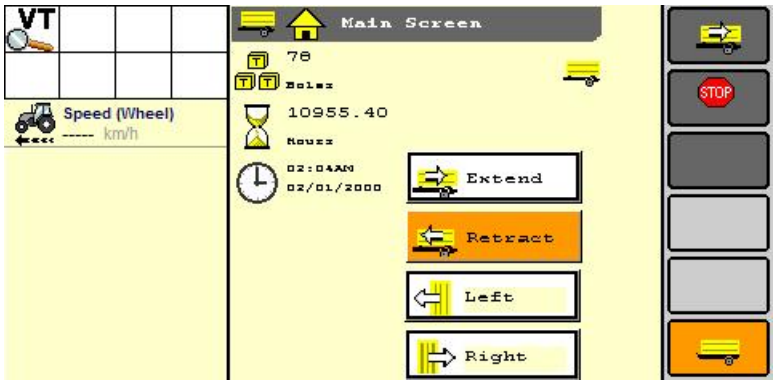
The manual eject button is located on the work page. Utilizing the  button will start a bales drop procedure. This can be done at any time either in normal operating mode or in maintenance with hydraulics enabled mode.
This will, of course, reset the selected bales dispatch program.
Note that once in every 50 bale drop operations, the operator is requested to confirm the execution of an anti-hydraulics creep procedure (which invokes bales discharge). If the operator chooses not to run the procedure, the next indication of the need to run the procedure will be after additional 50 bales drops. This applies to bale discharges that stem from manual drops or dispatch programs.

THE WORK PAGE

<u>Normal operating mode</u>
When the machine is performing any action that involves moving parts, it is indicated by an icon that appears at the upper part of the main screen. It can either be  for shifting to the left,  for shifting to the right,  for retracting or  for extending. In addition, the main screen displays the progress of the selected bale dispatch program. Below is indicated the handling of the first bale of the “Two bales with gap” program, as it is shifted to the left.
Note also that in case of a malfunction, it is indicated by  .



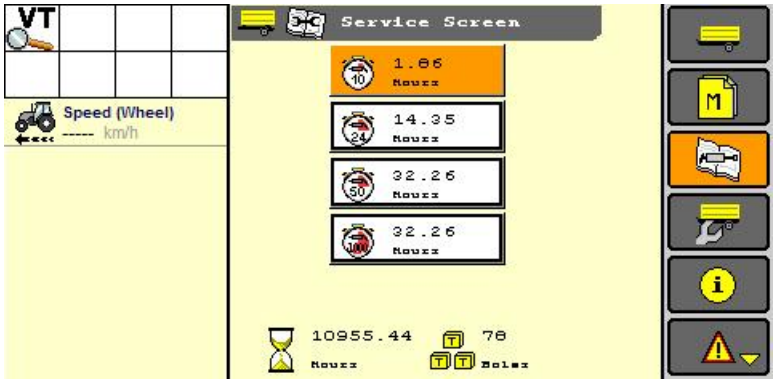
Maintenance with hydraulics operating mode
When this mode is selected, the main screen layout is different:



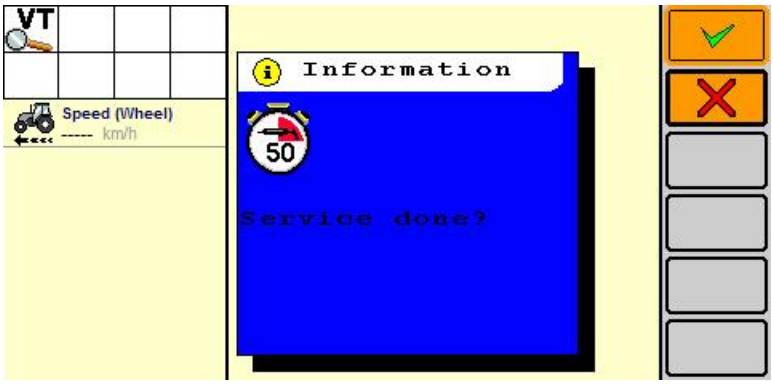
Pressing and holding down a button will move the respective bar to the desired direction.

MACHINE MAINTENANCE NOTIFICATIONS

The machine will indicate when maintenance is required as specified by PhiBer. The maintenance cycles are each 10, 24, 50 and 1000 hours. A typical layout of the maintenance screen looks like this:



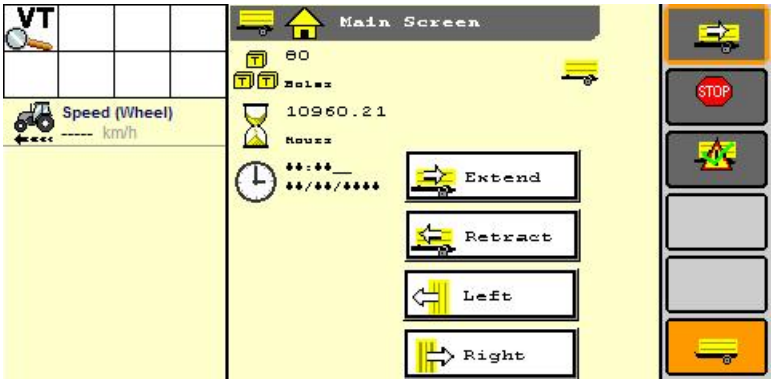
In order to confirm that maintenance has been carried out, select the indicated-by-red block and confirm:



ERROR CONDITIONS AND RECOVERY

As a matter of principal, the machine will not take any chances once something goes seriously wrong. That means that in case of a failure or unpredicted behavior, the operator is informed and the hydraulics circuit is disabled immediately, possibly after some mandatory operations intended to keep the machine from disturbing minimal operations.

In order to recover from an error, the operator is compelled to select an operating mode that requires the hydraulic circuit to be activated, or use the dedicated "error recovery" button  . Otherwise, the machine will not translate any moving part.



The following error conditions invoke a machine hydraulics circuit shutdown:

- Movement time out

  If a command to translate a bar was issued, the machine monitors for a timeout as long as the movement is ongoing and the respective limit switch is operational. If such a timeout occurs, it yields a failure which is reported to the operator and disables the hydraulics circuit.

- Bale trigger button jam

  The machine expects the bale trigger signal to be in a deactivated state once a push-off/shift operation is complete. If that is not the case, the operator is alerted and the hydraulics circuit disabled.

- Output signal failure

  If one of the signals to control bale location fails (except for the push-off bar retracting signal), the push-off bar is retracted before a alerting the operator and shutting down the hydraulic circuit.

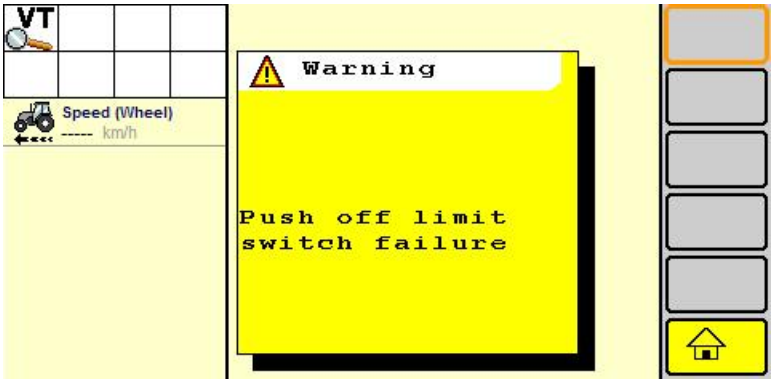
- Bale trigger failure

  This failure will cause the push-off bar to retract to its home position before alerting the operator to physically stop the oil from to the accumulator, and shutting down the hydraulic circuit.

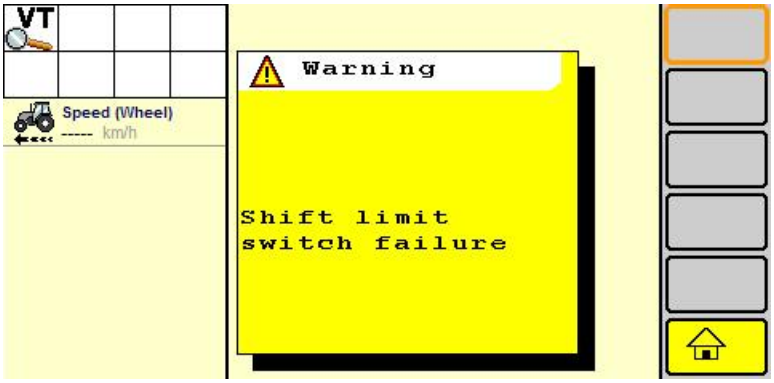
Note however, that in case of a limit switch failure only an alarm is issued to notify the operator without affecting basic machine functionality. In case of such an event, the average translation time as calculated up to the moment (if available; if not a fail-safe time is used) is used to run dispatch programs.

On the user interface, the operator can expect the failure reports to look like this:

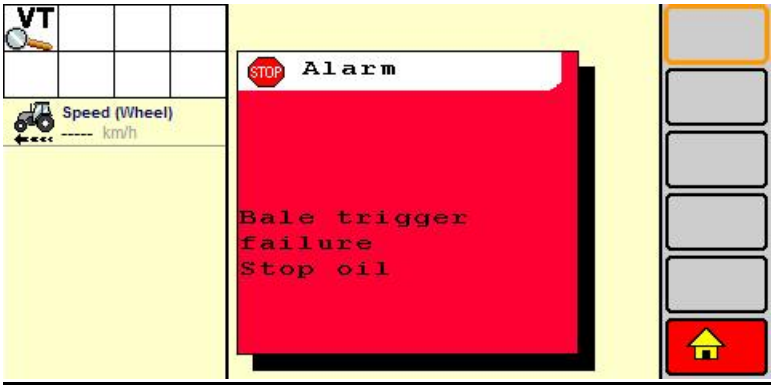
Limit switch failure



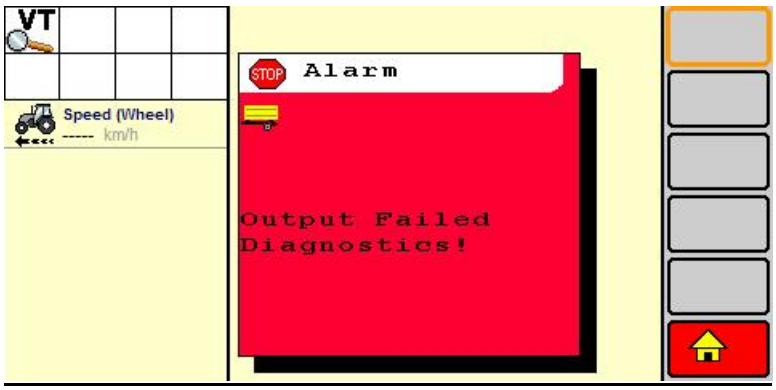
or



Bale trigger failure



Output Failure



OPERATION

FIELD OPERATION

AUTOMATIC BALE EJECTION

Once the Bale Accumulator has been started, cycled and bale ejection mode selected, the accumulator will function automatically. If the chamber on the baler is empty at the beginning of the baling process, stop the accumulator. As soon as a solidly formed bale has formed in the chamber, initiate the accumulator again.

MANUAL BALE EJECTION

Windrow Formation

The operator can form rows of bale packages at any desired place in the field by pressing the “EJECT” button at the desired drop location. The Accumulator will unload all finished bales on deck at that point. Automatic accumulation will resume if “EJECT” button is not used.

Bales Ejected at Headlands

Bales can be placed at the ends of a field by pressing the “EJECT” button before or after turning at headlands. Do not eject while turning. The “delayed eject” mode can be used when gathering bales at headlands. In this mode the Accumulator will fill up but not eject immediately. Indicator lights will show the number of bales on deck. When deck is full the operator will interrupt the baling process and drive to the desired drop location where the bales can be unloaded by pressing “EJECT”. Alternately, when operating in the “delayed eject” mode the accumulator will drop a single bale (the third bale in the accumulation cycle). When the following bale drops onto the accumulator deck, a package of three bales will be ejected onto the ground. This mode may conveniently be used in irrigated fields, where gathering bales at headlands is critical. The “delayed eject” mode allows the package of three bales to reach the headlands and a single bale to drop in the field, rather than vice versa.

BALE TRIGGER ADJUSTMENT

The bale trigger mechanism senses a bale entering the accumulator deck from the baler and activates the side shift truck function. The side shift truck may cycle prematurely if the bale trigger spring tension is set too loose, the bale trigger button is set too high or the bale trigger button is set too close to the baler.

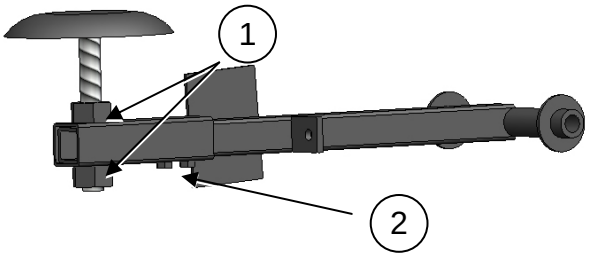


FIG. 8

BALE TRIGGER VERTICAL ADJUSTMENT

1. Loosen nuts, 1, FIG. 8, on threaded rod.
2. Turn bale trigger button and threaded rod until reaching desired vertical position.
3. Tighten nuts on threaded rod.

BALE TRIGGER HORIZONTAL ADJUSTMENT

1. Loosen nuts, 2, FIG. 8, on telescoping tube.
2. Slide tube forward or rearward to desired position.
3. Tighten nuts.

NOTE: Loosely packed or silage bales may sag and contact bale trigger button causing the side shift truck to cycle prematurely.

OPERATION

TRANSPORTING

WARNING! Unload all bales from accumulator deck before traveling on public roads.

WARNING! WIDE TURNING PATH. Ensure that all oncoming and/or overtaking traffic is clear before making turns on public roads. Slow down and look for both oncoming and overtaking traffic before making turns.

Always travel on public roads with the Bale Accumulator in the lane of travel, FIG. 9.

Allow oncoming and overtaking traffic to clear before making turns when traveling on public roads, FIG 10.

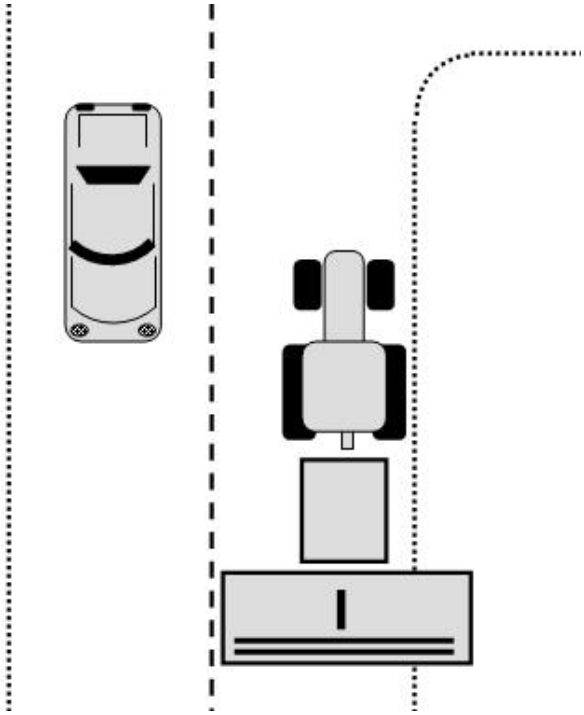


FIG. 9

STORAGE

WARNING! Store Bale Accumulator away from human activity. DO NOT allow children to play on the Bale Accumulator at any time.

To ensure optimum operation of the Bale Accumulator for the next season:

1. Clean all crop material and dirt from Bale Accumulator frame and deck.
2. Retract hydraulic cylinders fully.
3. Lubricate casters to prevent rusting.
4. Lubricate bearings in rollers.

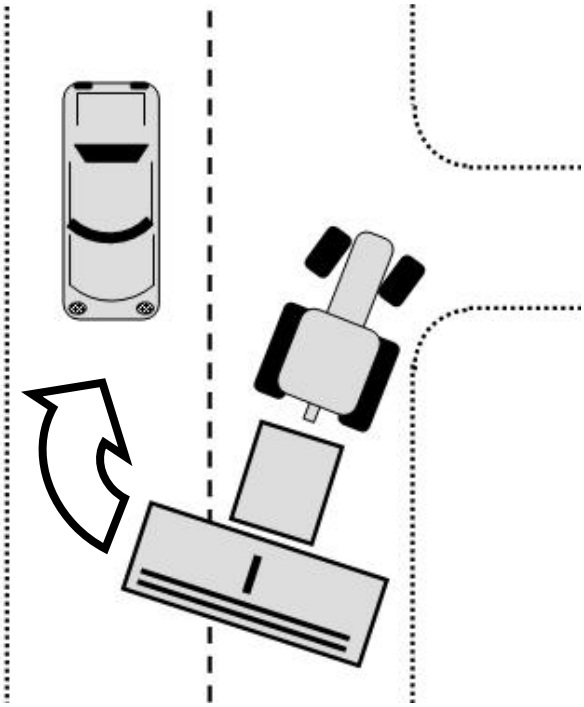


FIG. 10

ROUTINE MAINTENANCE

Proper maintenance of the accumulator will result in more reliable performance. Please refer to the chart below for recommended maintenance information:

KEY				MAINTENANCE RECORD											
✓	check		hours												
♦	lubricate		by												
◇	clean		date												
▲	change														
12 ⧖															
♦	Casters														
✓	Limit Switches														
✓	Wheel Lug Nuts														
50 ⧖															
♦	Roller Bearings														
♦	Hitch Pivot														
✓	Bale Trigger Spring Tension														
1000 ⧖															
✓	Wheel Lug Nuts														
♦	Wheel Bearings														

CASTERS

Grease casters, 1, FIG. 11 every 12 hours or daily (2 fittings).

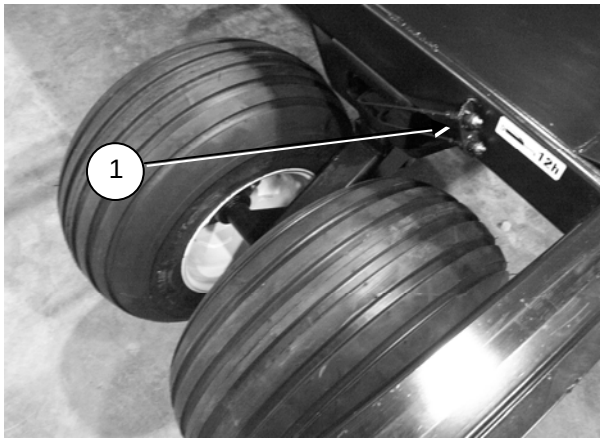


FIG. 11

MAINTENANCE

PROXIMITY SWITCHES

Check the limit switches, 1, FIG. 12 daily to ensure they are clear of accumulation of foreign material.

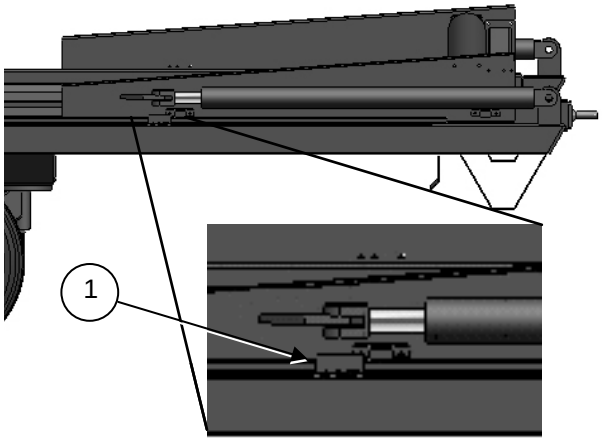


FIG. 12

WHEEL LUG NUTS

Check wheel lug nut 1, FIG. 13 tightness after the first two (2) hours of operation, again after the first ten (10) hours, then periodically.

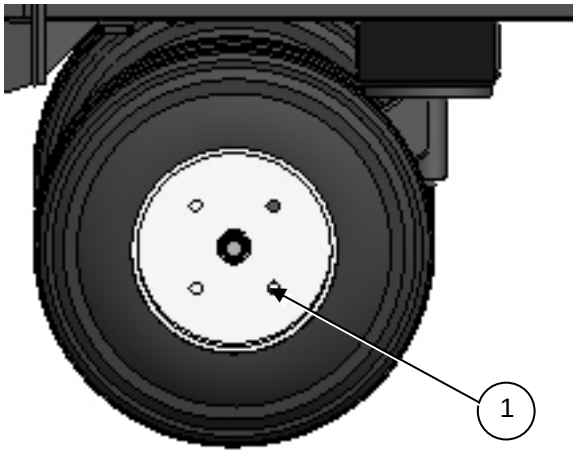


FIG. 13

ROLLER BEARINGS

Grease roller bearings, 1, FIG. 14 every 50 hours or weekly (12 fittings plus 2 additional fittings if front roller option is installed).

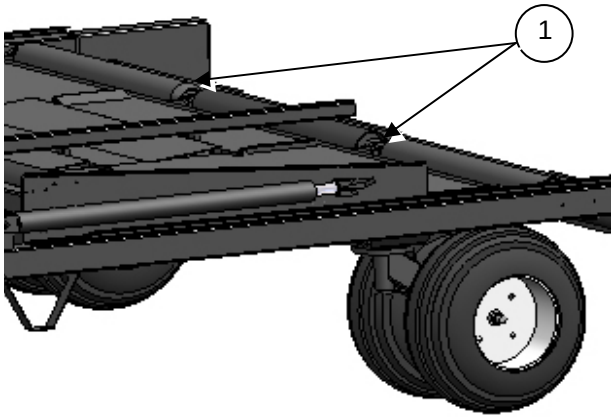


FIG. 14

HITCH PIVOT

Grease hitch pivot, 1, FIG. 15 every 50 hours or weekly.

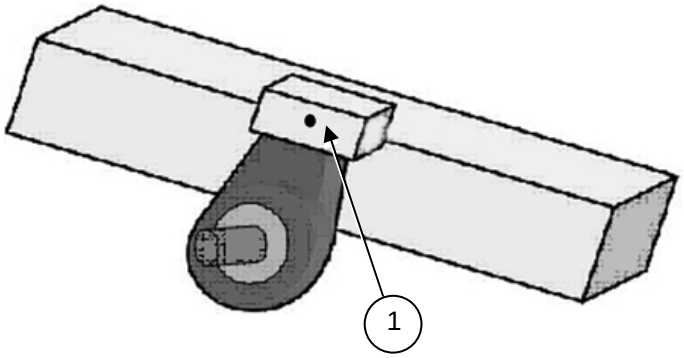


FIG. 15

BALE TRIGGER SPRING TENSION

Check bale trigger spring tension, FIG.16, every 50 hours or weekly. Adjust, if necessary.

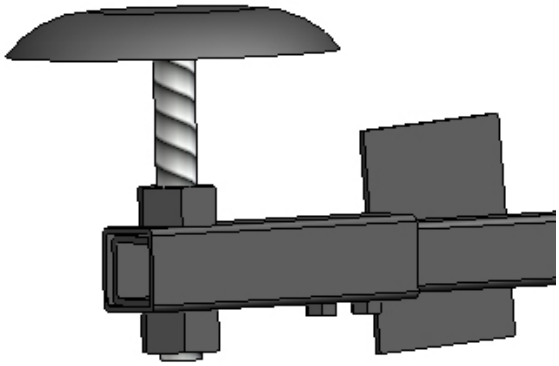


FIG. 16

WHEEL BEARINGS

Remove, clean and re-pack wheel bearings, FIG. 17, every 1000 hours or annually.

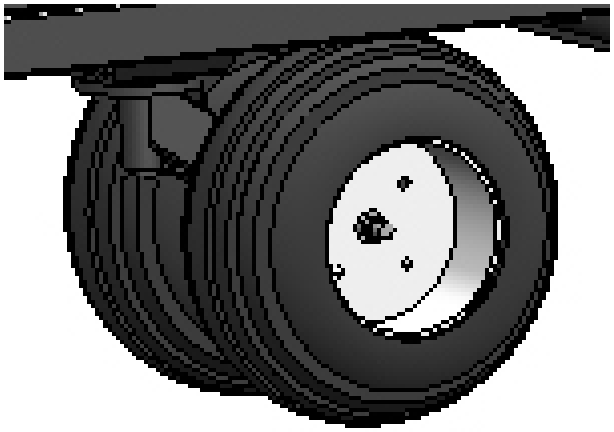


FIG. 17

MAINTENANCE

HYDRAULIC CYLINDER REPLACEMENT

NOTE: The following procedure must be followed in order to remove air from the hydraulic system if a hydraulic cylinder is ever removed and replaced.

WARNING! Unexpected Motion Hazard. Ensure all bystanders are clear of the deck and tracks during this air removal procedure.

1. Disconnect rear pin from push-off master and slave cylinder and support cylinders away from push-off truck.

2. Activate hydraulic control valve to allow oil to flow.

3. Change the operating mode to ‘maintenance with hydraulics’.

4. Press and hold “EXTEND” on monitor panel. Master cylinder will begin to fill followed by the slave cylinder.

5. Continue holding “EXTEND” to push the air out of the cylinders. Hold for approximately 2 minutes.

6. Press and hold “RETRACT” to bring the cylinders back to the home position.

7. Repeat steps 4-6 until cylinders extend and retract evenly.

8. Turn key off to stop accumulator.

WARNING! UNEXPECTED MOTION HAZARD. Ensure power is switched off before re-attaching hydraulic cylinder.

9. Replace push-off cylinder rear pins connecting them to the push-off truck.

10. Turn key back on to start accumulator.

11. Change the operating mode back to ‘Normal operating mode’.

WARNING! MOVING PART HAZARD. Use caution when activating bale trigger. DO NOT stand on deck to activate bale trigger.

12. Pull the bale trigger arm downward from below the deck to test bale accumulator function.

MAINTENANCE

HYDRAULIC CIRCUIT

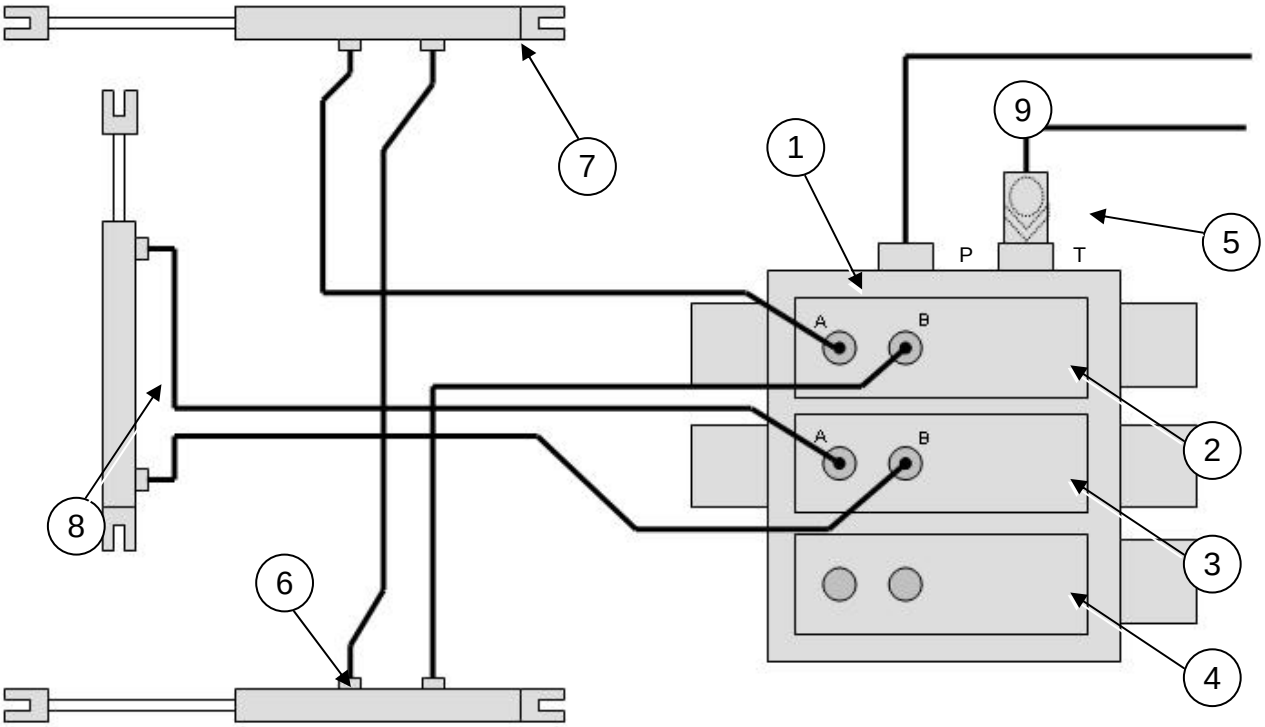


FIG. 18

Item	Description
1	Solenoid Control Valve
2	Eject Valve
3	Side Shift Valve
4	Open Center Valve
5	Check Valve
6	Eject Cylinder - Master
7	Eject Cylinder - Slave
8	Side Shift Cylinder
9	Hydraulic Oil to/from Tractor
P	“Pressure” port on valve
T	“Tank” port on valve

LIGHTING AND MARKING

FIG. 20

Item	Description
1	Harness Connector
2	Tail Lights
3	Left Hand Flasher
4	Right Hand Flasher

NOTE: Wiring harness wire colors may vary depending on make and model of baler.

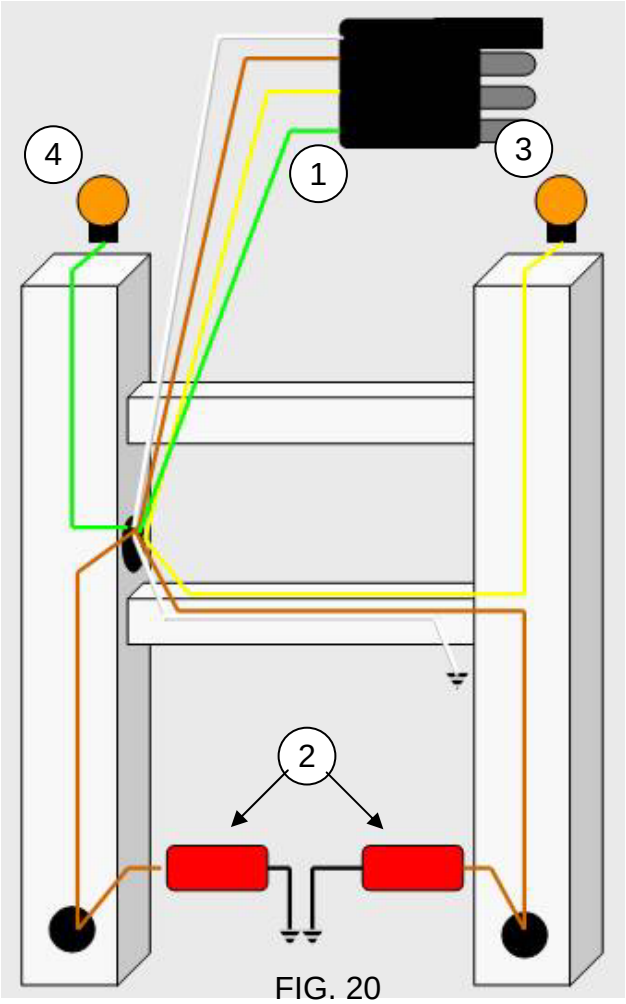


FIG. 20

TROUBLE-SHOOTING

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Side shift and push off trucks do not move when tractor hydraulic lever actuated.	Hydraulic hose connections reversed.	Change hose connections at tractor hydraulic quick couplers.
	Improper proximity switch setting.	Check settings on proximity switches for side shift and push off modes. Adjust, if necessary.
Side shift operates prematurely.	Bale trigger bounces on rough terrain.	Tighten spring on bale trigger.
	Bales sag as they leave the chamber on the baler.	Adjust bale trigger downward to make less sensitive. Adjust bale trigger forward for haylage bales. Raise front of accumulator.
Push off truck moves slightly after resetting accumulator even if other tractor hydraulics appear to be functioning properly.	Hydraulic lock.	Place tractor hydraulic control lever in float position or disconnect return hydraulic hose coupler to drain off excessive oil.
	Hydraulic lock.	Ensure that return oil is discharging into tractor hydraulic reservoir.
	Hydraulic lock.	Reduce tractor hydraulic flow to accumulator to 12 gal-US/min (45.4 L/min) or less.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Bale trigger does not activate side shift truck.	Gap between proximity switch and trigger plate is too large.	Measure gap between proximity switch and trigger plate. Adjust gap, if necessary. Proper gap setting is between 3/16 - 1/8” (1.5 - 3 mm).
Tractor hydraulic oil overheating.	Tractor hydraulic oil flow set too high. Low pressure return oil flow is not discharging into tank properly.	Reduce tractor hydraulic oil flow setting. Ensure that low pressure return flow is discharging directly into the tractor hydraulic reservoir. Newer tractor hydraulic systems have provisions for setting oil flow return directly into the tractor reservoir. With older model tractors, it may be necessary to plumb return flow to a port or fitting to allow direct discharge into the reservoir. Remove and inspect check valve. Clean out any debris and replace check valve. Inspect quick coupler tips for proper action and/or blockage.

INSTALLATION

HITCH KIT MOUNTINGGUIDELINES

All PhiBer Bale Accumulator hitch kits are similar in design, but each specific baler make and model require certain specific hitch parts. All hitch kits consist of three main sets of components:

1. Center mount hitch assembly that carries the weight of the accumulator.
2. Pair of link arms with associated hardware for towing the accumulator.
3. Bale support system that supports oncoming bales during bale ejection.

> **NOTE:** All PhiBer® Bale Accumulators are shipped with a complete set of installation instructions. The information provided here are some guidelines for preparing the baler for installation of the Bale Accumulator.

Read, understand and follow all installation instructions prior to installing the Bale Accumulator onto the baler. Failure to follow these instructions may result in improper Bale Accumulator installation and the Bale Accumulator may not perform as intended.

PREPARE TRACTOR AND BALER

1. Hitch baler to tractor per instructions found in baler Operator's Manual.
2. Park tractor and baler on firm, level surface.
3. Shut tractor engine off and remove key from ignition.
4. Set tractor parking brake.
5. Support bale chute securely and remove retaining hardware.
6. Carefully lower bale chute to the ground and move it away from the baler.

GENERAL INSTALLATION TIPS

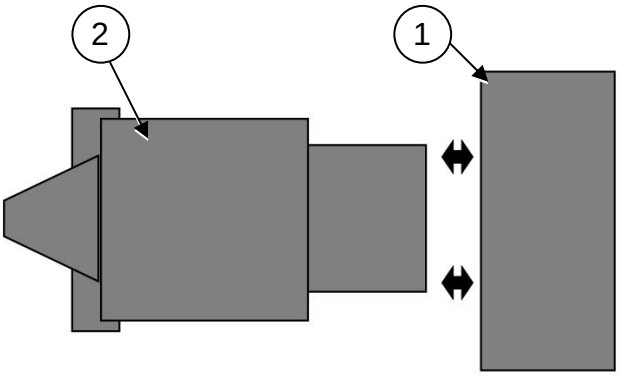


FIG. 21

Accumulator Placement

Ensure that the Bale Accumulator, 1, FIG.21, is mounted squarely to the rear of the baler, 2, FIG. 21 as shown. Begin installation procedures with Bale Accumulator set on a firm, level surface behind the baler. The deck should be evenly spaced behind the baler.

After-Market Baler Attachments

Check for potential interference with any after-market baler attachments such as bale ejectors, preservative tanks, etc. Contact PhiBer if any modifications are necessary.

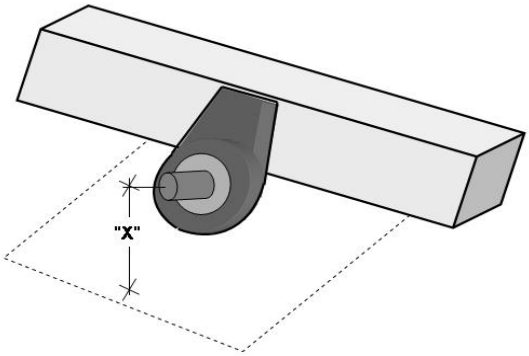


FIG. 22

Optimum Hitch Height

The optimum hitch height is 30 in (762 mm) from the ground as shown in FIG. 22. This is important so that the leaf springs, 1, FIG.23, do not become over stressed as indicated by the dashed line.

NOTE: Hitch height may range from 28 in (711 mm) to 34 in (864 mm) to allow for differences in baler makes and models (9.5Lx15). If equipped with 26x12x12 tires, the range is 5 in (127 mm) less.

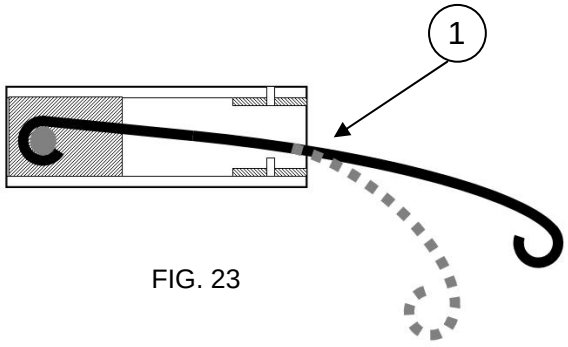


FIG. 23

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