

GRAINLOGIX

GRAIN BAG STORAGE SYSTEMS

Grain Bag Baler

Model BB12500



Owner's Manual and Parts Book (Originating w/Serial Number 117-101)

| Model Number: | |
|-------------------|--|
| Serial Number: | |
| Date of Purchase: | |



202249 Rev. A 11.11.25



LOFTNESS SPECIALIZED EQUIPMENT, INC. LIMITED WARRANTY POLICY

The limited warranty policy begins upon delivery of the unit to the original customer.

The following Loftness products have a two (2) year limited warranty;

XLB10 Grain Bag Loader, Battle Ax L-series Skid Steer, Battle Ax S-series Skid Steer, Battle Ax H-series Skid Steer, Battle Ax Excavator 20-series, Battle Ax Excavator 30-series, Battle Ax Excavator 40-series, Battle Ax Excavator 50-series, Battle Ax Extreme, Bad Ax Skid Steer, Timber Ax Skid Steer, Stump Ax, BT20, Kwik Cut.

All other Loftness products have a one (1) year limited warranty.

If any Loftness product is used as rental or leased equipment the limited warranty period is for only 30 days from the delivery date to the original customers.

Loftness Specialized Equipment, Inc. ("LOFTNESS") warrants new LOFTNESS machinery and/or attachments at the time of delivery to the original purchaser, to be free from defects in material and workmanship when properly set up and operated in accordance with the recommendations set forth in the LOFTNESS Operator's Manual. The second year of limited warranty includes only parts, and not labor.

LOFTNESS' liability for any defect with respect to accepted goods shall be limited to repairing the goods at an authorized dealer or other LOFTNESS designated location, or replacing them as LOFTNESS shall elect. The above shall be in accordance with LOFTNESS warranty adjustment policies.

WARRANTY REQUIREMENTS

Warranty registration form must be filled out and returned to Loftness Specialized Equipment to validate all warranty claims. To request a warranty claim, a return authorization from LOFTNESS must be obtained. The failed part may then be returned in an untampered status. This warranty does not include freight or delivery charges incurred when returning machinery for servicing. Dealer mileage, service calls and pick-up/delivery charges are the customer's responsibility.

LIMITATIONS OF WARRANTY

LOFTNESS products are designed to provide years of dependable service when proper use and maintenance is adhered to. The potential for misuse in many applications exists; therefore, a limited warranty is provided as follows.

This warranty shall not apply to any machine or attachment which shall have been repaired or altered outside the LOFTNESS factory or authorized LOFTNESS dealership or in any way so as in LOFTNESS' judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any machine or attachment which shall not have been operated in accordance with LOFTNESS' printed instructions or beyond the company recommended machine rated capacity. LOFTNESS may elect to have an area representative evaluate the condition of the machine before warranty is considered.

In addition, this limited warranty provides no coverage for general wear or maintenance items, misuse, environmental conditions and/or contamination for which they were not designed or not intended, including but not limited to the following items;

Use of machine beyond its rated capacity, Conveyors, Improper knife replacement, Auger wear, Missing knives, Saw blades, Striking foreign objects, Brakes and brake pads, Lack of lubrication, Tires, Failures caused by running in an "out-of-balance" condition, Hydraulic hoses damaged by being caught in "pinch points" or by moving parts, and Damage caused by excessive force from the power unit.

EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, LOFTNESS makes no representation or warranty of any kind, expressed or implied. The implied warranty of merchantability and fitness for a particular purpose are disclaimed, and excluded from this limited warranty. The remedies set forth in this warranty are the sole and exclusive remedies available to any person under this warranty. LOFTNESS shall have no liability to any person for incidental, consequential or special damages of any description, whether arising out of express or implied warranty or any other contract, negligence, or other tort or otherwise. This exclusion of consequential, incidental and special damages is independent from and shall survive any finding that the exclusive remedy failed of its essential purpose. Upon purchase, the buyer assumes all liability, all personal injury and property damage resulting from the handling, possession or use of the goods by the buyer.

No agent, employee or representative of LOFTNESS has any authority to bind LOFTNESS to any affirmation, representation or warranty concerning its machinery and/or attachments except as specifically set forth herein. (October 2025)



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Warranty

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Owner Information

Thank you for your decision to purchase a Model BB12500 Grain Bag Baler from Loftness. To ensure maximum performance of your machine, it is mandatory that you thoroughly study the owner's manual and follow the recommendations. Proper operation and maintenance are essential to maximize machine life and prevent personal injury.

NOTE: This manual provides safety, set-up, operation, and maintenance instructions, along with a replacement parts section for the Loftness Grain Bag Baler. There will be some references to operation of the Loftness Grain Bag Unloader within this manual when it pertains to bag winding only. For safety instructions, operation, maintenance, and replacement parts for the grain bag unloader, refer to the Loftness Grain Bag Unloader Owner's Manual.

The Loftness BB12500 Grain Bag Baler is designed to wind and bale emptied bags used for grain storage. The baler will handle bags up to 12 ft. (3.66 m) in diameter with a maximum length of 500 ft. (152.4 m).

Operate and maintain this machine in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and/or laws. Follow all on-product labeling and instructions.

Make sure that all personnel have read this owner's manual and thoroughly understand safe and correct operating, installation and maintenance procedures.

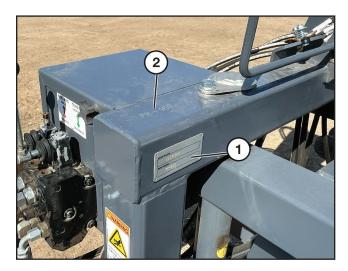
Continuous improvement and advancement of Loftness products may result in changes to your equipment that may not be reflected in this publication. Loftness reserves the right to make product improvements to the machine at any time. Although great care has been taken to ensure the accuracy of this publication, Loftness does not assume any liability for errors or omissions.

Loftness Specialized Equipment, Inc. is not responsible for the condition of the grain when it is being stored in or removed from grain bags loaded or unloaded with Loftness built equipment.

Warranty Policy

Be sure to read and understand the Warranty Policy at the beginning of this manual. It is also important that you fill out the Warranty Registration form(s) completely and return to Loftness so as not to void the warranty.

Serial Number Location



The arrows above indicate the location of the serial number tag (1) and the location of the serial number stamped into the frame (2).

Always use your model and serial number when requesting information or when ordering parts

Owner's Manual Access



The Bag Baler is shipped with a printed owner's manual. The manual must be available for all operators. Keep in a safe, dry location.

To access a digital owner's manual, use a smart phone to scan the QR Code (1) located on the left end frame. This code will link to the Bag Baler owner's manual on the Loftness website.

Introduction

Grain Bag Baler Features

- Rolls 9, 10, or 12-foot bags up to 500 ft. long.
- Weighs 2,360 lbs. (1,070.5 kg).
- Rolls bags directly off of main bag roller.
- Eliminates unrolling bags onto the ground, and handling loose bags in windy conditions.
- Requires two hydraulic outlets.
- Rugged 4 in. x 4 in. steel tube frame.
- 3-1/4 in. bore x 8 in. stroke hydraulic cylinder.
- Enclosed twine ball holder.
- Sliding twine wrapping handle.
- Hydraulic adjustable bag tensioner.
- Hydraulic drive with two lever control valve.
- Cat II and Cat III 3-pt hitch.

Safety First

Accidents can be prevented by recognizing the causes or hazards before an accident occurs and doing something about them. Regardless of the care used in the design and construction of this machine, there are some areas that cannot be safeguarded without interfering with accessibility and efficient operation.



Safety Alert Symbol

This message alert symbol identifies important safety messages on the machine and in the owner's manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

In the owner's manual and on decals used on the machine the words **DANGER**, **WARNING**, **CAUTION**, **IMPORTANT**, and **NOTE** are used to indicate the following:

DANGER: This word warns of immediate hazards which, if not avoided, will result in severe personal injury or death. The color associated with Danger is RED.

WARNING: This word refers to a potentially hazardous situation which, if not avoided, could result in severe personal injury or death. The color associated with Warning is ORANGE.

CAUTION: This word refers to a potentially hazardous or unsafe situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

IMPORTANT: Highlights information that must be heeded.

NOTE: A reminder of other related information that needs to be considered.

If Safety Decals on this machine are ISO two panel pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as **♦** ★ and **•** if used, are RFD

Be certain all machine operators are aware of the dangers indicated by safety decals applied to the machine, and be certain they follow all safety decal instructions. Contact Loftness for safety decal replacement.

Loftness cannot anticipate every possible circumstance that may involve a potential hazard. The warnings in this owner's manual are not all inclusive.

Owner's Responsibility

Because of the potential safety hazard to eyes from hydraulic leaks and/or flying debris, "USE OF PROTECTIVE EYEWEAR IS ABSOLUTELY MANDATORY" for operator and others in the work area.

Make sure that all personnel have read this owner's manual, and thoroughly understand safe and correct installation, operation, and maintenance procedures.

Operate and maintain this machine in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and/or laws; and in compliance with on-product labeling and this owner's manual instructions.

Make sure that all personnel know how to stop the machine and attachment by disengaging all controls. See "Mandatory Shut-Down Procedure" on page 4.

Make sure the attachment is installed on the machine correctly before being placed in service. At regular intervals thereafter, the attachment should be serviced in accordance with procedures outlined in this owner's manual.

Fulfill all warranty obligations so as not to void the warranties. The warranty policy included in this manual outlines the warranty policy of Loftness.

Mandatory Shut-Down Procedure

- Stop the machine and attachment on a level surface and lower the attachment to the ground.
- Move throttle to idle position.
- Disengage all power to the attachment.
- Shut off engine and remove the key.

Safety Rules

These are general safety considerations. Additional precautions may be necessary to operate your machine in a safe manner. Be certain you are operating your machine in accordance with all safety codes, OSHA rules and regulations, insurance requirements and local, state, and federal laws.

Operating Safety

- Do not allow anyone to operate the machine until they have read the owner's manual and are completely familiar with all safety precautions.
- Do not allow inexperienced persons unfamiliar with the machine, or unfamiliar with safe operating and maintenance procedures, to operate or maintain the machine.
- Do not allow persons under the influence of alcohol, medications, or other drugs that can impair judgment or cause drowsiness to operate or maintain the machine.
- Keep children, bystanders and other workers away from the machine while it is operating. No riders allowed.
- The machine requires an operator at all times. Never leave the machine running and unattended.
- Do not wear loose hanging clothes, neckties or jewelry. Long hair is to be placed under a cap or hat. These precautions will help prevent you from becoming caught in any moving parts on the machine.
- Do wear safety glasses, ear protection, respirators, gloves, hard hats, safety shoes and other protective clothing when required.

- The baler should not be used to handle materials other than those which were specified as part of its design. It is the operator's responsibility to be aware of the specifications and operate the baler accordingly.
- It is the operator's responsibility to be aware of machine operation and work area hazards at all times.
- Never enter the grain bag.
- Operators are responsible to know the location and function of all guards and shields including but not limited to PTO drivelines, gearboxes, chain drives, augers and are responsible to make certain that all guards are in place when operating the machine.
- Operators are responsible to be aware of safety hazard areas and follow instructions on warning, caution, or danger decals applied to the machine.
- Know the area before operating the machine. Be aware of power lines or other equipment. Watch for adequate overhead clearance.
- Always have an operator in the tractor while the machine is in operation.
- Remove from the emptied bag any foreign objects.
- Disengage hydraulic valve and shift tractor into neutral or park before starting engine.

Transporting Safety (while installed on 3-Point Hitch)

- Be sure the baler is in the transport position before transporting on a roadway.
- Disengage hydraulic valve and shift tractor into neutral or park before starting engine.
- Ensure Bag Baler is securely connected to the 3-point hitch.

Safety Rules (Cont'd)

Maintenance Safety

- Do not allow inexperienced persons unfamiliar with the machine, or unfamiliar with safe operating and maintenance procedures, to operate or maintain the machine.
- Do not allow persons under the influence of alcohol, medications, or other drugs that can impair judgment or cause drowsiness to operate or maintain the machine.
- Make sure the operator's area is clear of any distracting objects. Keep work areas clean and free of grease and oil to avoid slipping or falling.
- Periodically check all guards, shields and structural members. Replace or repair anything that could cause a potential hazard.
- Do not replace components or parts with other than factory-recommended service parts. To do so may decrease the effectiveness of the machine.
- Do not lubricate parts while the machine is running.
- Do not smoke while servicing the machine.
- Never attempt to make any adjustments while the tractor engine is running or the key is in the "ON" position in the tractor. Before leaving the operator's position, disengage power to the machine and remove ignition key.

Hydraulic Safety

- The hydraulic system is under high pressure. Make sure all lines and fittings are tight and in good condition. These fluids escaping under high pressure can have sufficient force to penetrate skin and cause serious injury.
- Never check for leaks by using any part of your body to feel for escaping fluid.
- Always wear safety goggles or glasses when working on hydraulic system to avoid eye injury.



WARNING: Contact with high pressure fluids may cause fluid penetration and burn hazards. Fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. If fluid is injected into the skin, seek medical attention immediately!

California Proposition 65 Warning



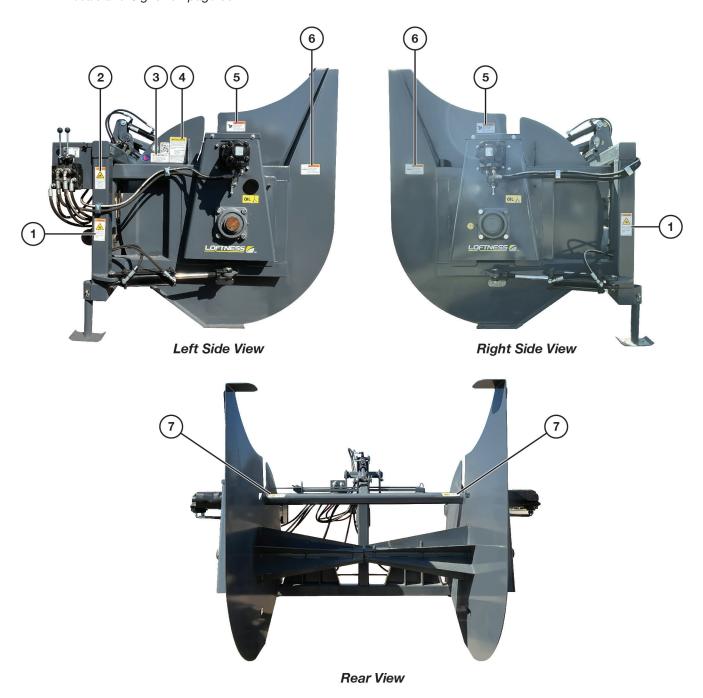
WARNING: This product can expose you to Mineral Oil, which is known to the State of California to cause cancer. For more information, go to www.p65warnings.ca.gov.

A decal with this warning statement is adhered to the machine. If the decal should become worn or missing, replace immediately.

Safety Decal Locations

Check and replace any worn, torn, hard to read or missing safety decals on your machine.

NOTE: This section shows where safety-related decals are applied on the machine. For all machine decals see "Machine Decals and Signs" on page 35.



See the following page for detailed images of the safety decals called out above.

Safety Decal Locations (Cont'd)





Pinch point. Keep hands clear.

N23507

Part No. N23507





Skin Puncture
Hazard.
Hydraulic Lines.
Protect hands and
body from
pressure fluids.

Part No. N23899

(5)



Part No. N68716





This product can expose you to Mineral Oil, which is known to the State of California to cause cancer. For more information, go to www.p65warnings.ca.gov.

Part No. 203264



A WARNING

Rotating parts hazard. Can cause serious injuries or death.

Do not operate machine without shields attached.

PN 4189

Part No. 4189



A CAUTION

DO NOT START, OPERATE, OR WORK ON THIS MACHINE UNTIL YOU HAVE CAREFULLY READ AND THOROUGHLY UNDERSTAND THE CONTENTS OF THE OPERATOR'S MANUAL.

NOTE: SCAN QR CODE TO ACCESS MANUAL OR CONTACT

LOFTNESS SPECIALIZED EQUIPMENT 650 SOUTH MAIN HECTOR, MN 55342 1-800-828-7624

FAILURE TO FOLLOW SAFETY, OPERATING, AND MAINTENANCE INSTRUCTIONS COULD RESULT IN DEATH OR SERIOUS INJURY TO THE OPERATOR OR BYSTANDERS, POOR OPERATION, AND COSTLY BREAKDOWN.

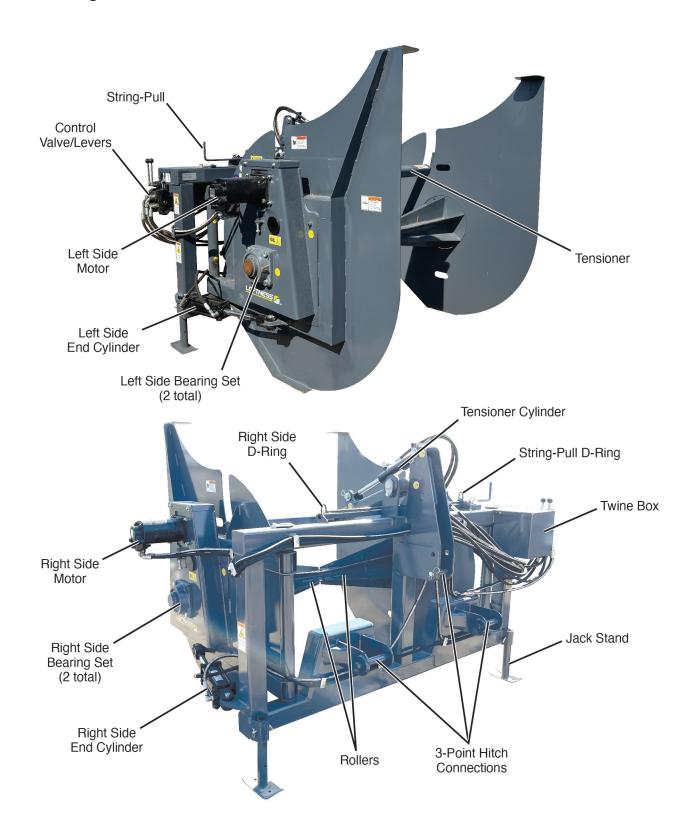
208824

Part No. 208824

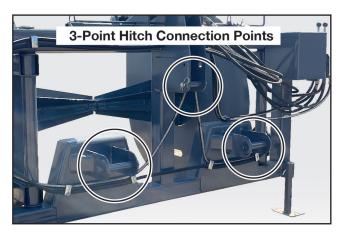


Part No. 206502

Grain Bag Baler Identification



Mounting the Bag Baler to the Tractor



The Bag Baler is designed to mount to a Category II or Category III three-point hitch.

Always follow proper procedures and safety guidelines when attaching the bag baler to the 3-point hitch.

Set the bag baler down on the ground after the bag baler is properly connected to the 3-point hitch.

Hydraulic Connections

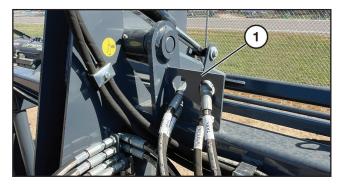


WARNING: Hydraulic Lines. Protect hands and body from high pressure fluids. Pressurized fluids can penetrate the skin. Disconnect and lock out power source before disconnecting and/or connecting hydraulic hoses.

Turn the tractor off.



DANGER: Failure to turn the tractor off before connecting the hydraulic lines could result in serious injury or death.



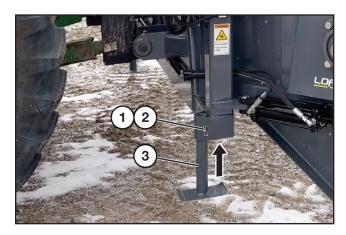
Remove the hydraulic hose ends from the storage rack (1).



Connect the quick couplers to the tractor's hydraulic ports.

IMPORTANT: It is the owner's responsibility to assure that the hydraulic hoses from the bag baler to the tractor are not caught in pinch points, or in any way damaged by moving parts.

Jack Stands



Remove the clip (1) and pin (2) securing the left-side jack stand (3). Then, raise the jack stand fully to the stowed (UP) position. Reinstall the pin (2) and clip (1) to secure the jack stand in place.

Repeat the same procedure for the right-side jack stand.

IMPORTANT: Leaving the jack stands in the lowered (DOWN) position during baling may cause the stands to become bent or damaged while maneuvering the baler.

Set-up Instructions

Testing the Controls and Operation

Turn the tractor on.

Using the tractor's hydraulic controls, lift and lower the baler, and open and close the baler ends to ensure all functions are operating correctly.

Lower the bag baler.

From the control valve, move the levers to ensure functions are working as labeled.

ROLLERS

"ROLL" (push and hold lever down) - The rollers should turn in a counter-clockwise direction when viewing from the control valve.

"REVERSE" (pull and hold lever up) - The rollers should turn in a clockwise direction when viewing from the control valve.

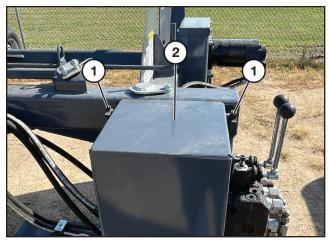
TENSION

"INCREASE" (push and hold lever forward) - The tensioner should swing down.

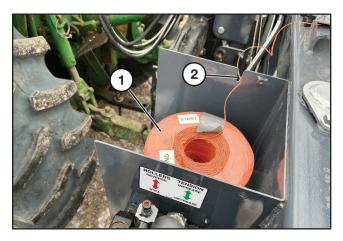
"DECREASE" (pull and hold lever back) - The tensioner should swing up.

Loading Twine

NOTE: For best results, use high-quality baling twine (not included) with this baler.

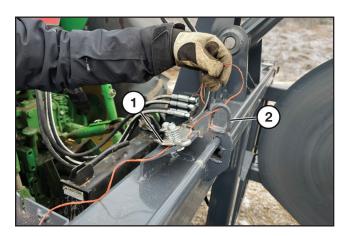


Loosen and remove the two knobs (1) securing the lid (2) to the twine box.



Load the twine roll (1) and pull the end of spool through the slot (2) on side of the twine box.

Replace cover and knobs.



Route the twine through the twine tensioner (1) and loop (2) as shown.



Pull the twine to the D-ring (1) on the right end of the string-pull and tie off with a temporary knot.

Operation

It is recommended that the bag winding/baling process be carried out by two people. One person should operate the hydraulic controls from inside the tractor to lift the bag baler and open the baler ends, while the other person manages the controls on the bag baler, including the roller intake and bag tension adjustments.



DANGER: Keep unauthorized persons away from the tractor, baler, and bag during the baling process. Stay alert to pinch points on the baler, the moving bag as it is being wound, and the bag baler while it is being lifted, lowered, or when the baler ends are opening and closing. Failure to stay aware of these hazards could result in serious injury or death.

Securing Bag onto the Rollers



Gather the corners and the center of the bag together.



DANGER: Stay clear of the bag baler while the tractor is being placed into position. Failure to do so could result in serious injury or death.

Position the tractor-bag baler so that the end of the bag is centered between the rollers on the bag baler.

Then, using the hydraulic controls in the tractor, open the baler ends so the rollers are separated enough to allow the gathered end of the bag to fit between them.



Place the collected end of the bag between the two rollers.



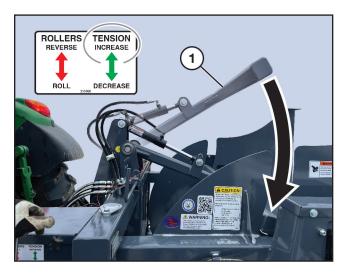
WARNING: Pinch Point. Keep hands away from the ends of the rollers when positioning the bag. Failure to do so may result in serious injury.

SLOWLY close the baler ends to secure the bag between the rollers as shown above. KEEP HANDS CLEAR!



The bag should be firmly secured between the rollers, as shown above.

Lowering Tensioner



Lower the tensioner (1) completely by pushing and holding the "TENSION" lever forward to the "INCREASE" position.

Winding the Bag

IMPORTANT: Before beginning the winding process, ensure the bag is free of grain, rocks, debris, and any foreign objects. Check the

area for anything that could get entangled in the bag during winding and remove.

NOTE: Check the tension of the bag. If necessary, move the tractor forward to tighten the bag further.

Ensure the bag baler is resting on the ground and the jack stands are raised.



DANGER: Stay clear of the bag and the rollers during the winding process. Failure to do so could result in serious injury or death.



Push and hold the "ROLLERS" lever downward to the "ROLL" position to begin winding the bag.

IMPORTANT: Ensure the bag feeds over the top of the rollers during this process

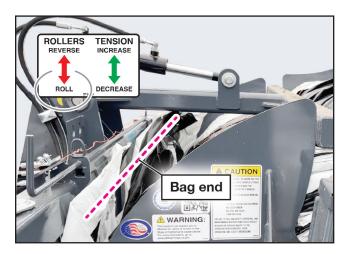
As the bag begins to accumulate on the rollers and initially comes into contact with the tensioner, adjust the tension using the "TENSION" lever as needed.

IMPORTANT: Avoid applying excessive tension; ensure the bag can continue to wind freely.

When the bag is completely wound onto the rollers, allow the bale to rotate a few additional times while gradually applying tension with the tensioner.

(Procedure continued on following page.)

Winding the Bag (Cont'd)



Release the "ROLLERS" lever when the end of the bag is towards the back of the bag baler as shown.

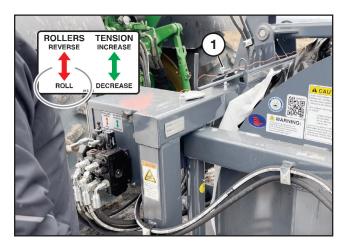
Wrapping the Bale



Untie the temporary knot made earlier and route the bailing twine through the D-ring (1) as shown.



Use a knife to cut a small hole in the end of the bag towards the right side of the bale, then route the baling twine through the hole and tie off with a secure knot.



Push and hold the "ROLLERS" lever downward to the "ROLL" position to begin wrapping the twine around the bale.

NOTE: The twine should pass through the twine tensioner (1) with a slight amount of tension. If it appears too loose or too tight, adjust the two nuts on the twine tensioner as needed.

(Procedure continued on following page.)

Wrapping the Bale (Cont'd)

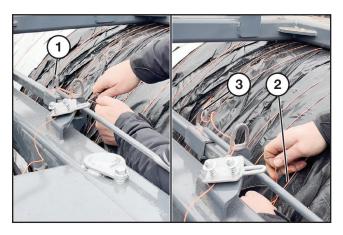


After 2-3 full revolutions of the bale, slowly begin sliding the string-pull (1) out as the twine wraps around the bale. Continue to hold down the "ROLLER" lever in the "ROLL" position.

Pull the string-pull at a steady, even pace to ensure that the twine wraps the bag securely. Leave approximately 5 inches of spacing between each wrap of twine.

When the D-ring on the string pull reaches the end, let the bale turn about 2-3 revolutions to ensure the end of the bag bale is securely fastened.

Release the "ROLLER" lever to stop wrapping the bale.

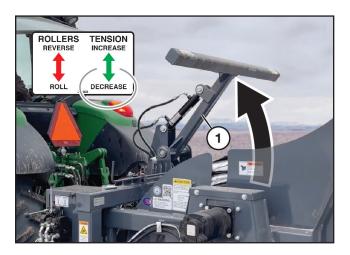


Cut the baling twine at the D-ring (1) in the string-pull. Then tie the bale end to the twine that is wrapped around the bale (2).

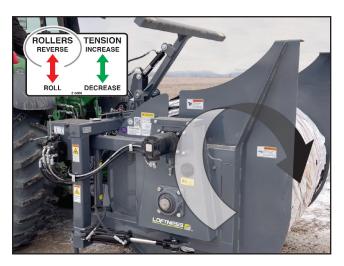
Tie the end of the twine coming from the spool onto the D-ring in the string-pull (3), then slide the string-pull back into position to prepare it for the next bale wrapping cycle.

Unloading the Bale

IMPORTANT: During this procedure, the bag baler ends will be swung open. Ensure the area is clear of obstructions to prevent any contact before unloading the bale.



Pull the "TENSION" lever until tensioner (1) is fully raised to keep it clear of the bale during unloading.



Lift up and hold the "ROLLER" lever in the "REVERSE" position. Rotate the bale one revolution, then release the lever.

NOTE: This releases bag tension caused when winding the bag on to the rollers, allowing the rollers to be pulled out from the bale easier.

(Procedure continued on following page.)

Unloading the Bale (Cont'd)



DANGER: Stay clear of the bag baler when unloading the bag. Failure to do so could result in serious injury or death.

Using the tractor's hydraulics:



Raise the bag baler off of the ground approximately 5-6 inches.



Open the bag baler ends to release the bale.

NOTE: If the bale doesn't release from the rollers, lower the baler until it rests on the ground and ensure jack stands are raised. Then, drive the tractor forward to release the bale.

If baling another bag immediately, close the bag baler ends and reposition the baler for the next bag.

If finished using the baler and wish to disconnect, follow the procedure "Disconnecting the Bag Baler" below.

Disconnecting the Bag Baler

With the baler raised, lower the jack stands and secure in place using the pins and clips.

Lower the bag baler to the ground.

Close the bag baler ends.

Turn the tractor off.

Disconnect the hydraulic hoses and secure the coupler ends in the hose rack on the rear of the baler.

Refer to "Storage" on page 20 for detailed steps on long-term or off-season storage of the bag baler.



General Maintenance

See "Maintenance Safety" on page 5 before performing any service or maintenance on the grain bag baler.



WARNING: Always shut down the tractor, remove the ignition key, set the park brake and remove the PTO shaft from the tractor before performing any inspections or maintenance.

To ensure efficient operation, you should inspect, lubricate, and make necessary adjustments and repairs at regular intervals. Parts that are starting to show wear should be ordered ahead of time, before a costly breakdown occurs and you have to wait for replacement parts. Keep good maintenance records and adequately clean your baler/unloader after each use.

NOTE: Lubricate chains at the end of the day while the chains are warm from operating.

Maintenance Schedule

| н | | | SERVICE REQUIRED | | | | |
|----------------------|-------------------------|-------|------------------|-------|--------|-------------|------------------|
| U SERVICE POINTS R S | | СНЕСК | GREASE | 0 - L | CHANGE | A D J U S T | P G E # |
| Every | Outside Roller Bearings | | Х | | | | 18 |
| 8 | Inside Roller Bearings | | Х | | | | 18 |
| Tensioner Cylinder | | | Х | | | | 18 |
| Every 100 | Tensioner Pivot | | Х | | | | 18 |
| | Baler End Pivot Shafts | | Х | | | | 19 |
| | Roller Chains | | | Х | | | 19 |

Fluids And Lubricants



CAUTION: Use proper safety procedures when handling petroleum products including, but not limited to, the use of rubber gloves and eye protection.

Proper lubrication is important. Too little lubricant will cause premature failure of a bearing. Too much lubrication

usually causes high operating temperature and early failure of seals. Follow all lubrication instructions and schedules included in this section.

- Grease Use an SAE multipurpose high temperature grease with extreme-pressure (EP) rating. Also acceptable is an SAE multipurpose lithium based grease.
- 2. Chain Use 80W-90 gear lube.
- Storing Lubricants Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

Lubrication

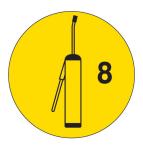
Grease Points



DANGER: Shut down power from the tractor before lubricating.

NOTE:

Replace any broken or missing grease fittings. Be sure to clean fittings before greasing.



NOTE: Lubricate the grease point every "X" hours indicated on the decal adjacent to the grease point.

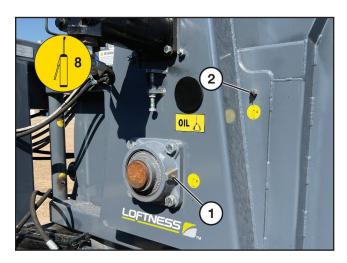
See "Grain Bag Baler Identification" on page 8 for component location and identification.

(Procedure continued on following page.)

Maintenance

Lubrication (Cont'd)

Grease Points (Cont'd)



Location: Inside and outside roller bearings;

left side (1, 2).

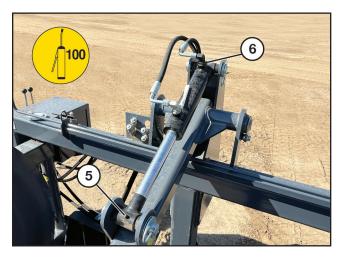
Interval: Every 8 hours of operation.



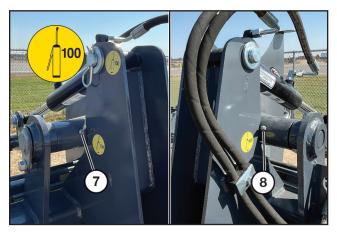
Location: Inside and outside roller bearings;

right side (3, 4).

Interval: Every 8 hours of operation.



Location: Tensioner Cylinder (5, 6). **Interval:** Every 100 hours of operation.

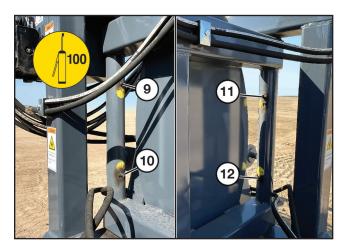


Location: Tensioner Pivots (7, 8). **Interval:** Every 100 hours of operation.

(Procedure continued on following page.)

Lubrication (Cont'd)

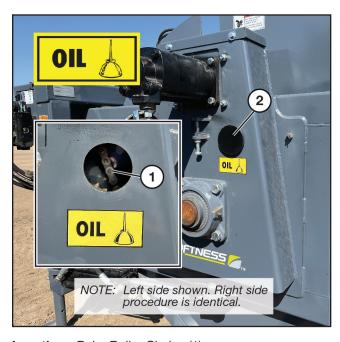
Grease Points (Cont'd)



Location: Baler End Pivot Shafts;

left side (9, 10), right side (11, 12).

Interval: Every 100 hours of operation.



Location: Baler Roller Chains (1). **Interval:** Every 100 hours of operation.

NOTE: Remove plug (2) to access chain.

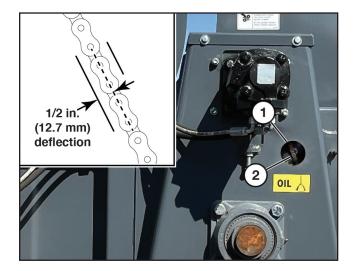
Bale Roller Chain Inspection and Adjustment



WARNING: Never attempt to make any adjustments while the tractor engine is running or the key is in the "ON" position in the tractor. Before leaving the operator's position, disengage power to the machine and remove ignition key.

Baler Roller Chain Inspection

NOTE: A roller chain is located on each side of the bag baler. This procedure gives instructions for one side. The steps are identical for the opposite side.



To access the baler roller chain, remove the plug from the access hole (1).

To check the deflection, press the chain at the location (2) between two sprockets. The chain should move approximately 1/2 in. (12.7 mm).

If the chain deflection is more than 1 in. (25.4 mm), see the directions in the following sub-section adjustment instructions.

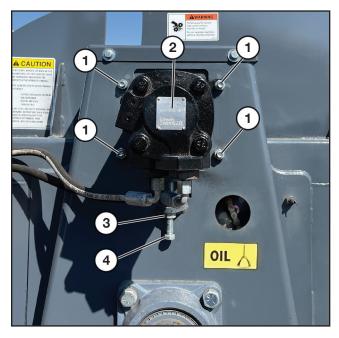
If no adjustment is needed, return the plug to the chain access hole.

Maintenance

Bale Roller Chain Inspection and Adjustment (Cont'd)

Baler Roller Chain Adjustment

NOTE: A roller chain is located on each side of the bag baler. This procedure gives instructions for one side. The steps are identical for the opposite side.



To adjust the chain deflection, loosen the four nuts (1) securing the motor (2).

Loosen the jam nut (3).

Turn the hex bolt (4) to slide the motor either up or down until the deflection in the chain is approximately 1/2 in. (12.7 mm).

NOTE: Do not over tighten the chains. Overtightening the chains will put undue stress on the chains and other components of the roller drive.

Once the correct deflection is set, tighten the jam nut (3) and retighten the four nuts (2) securing the motor.

Return the plug to the chain access hole.

Storage

NOTE: Refer to "Maintenance Safety" on page 5 before storing the baler and/or preparing it for service.

End of Season

- Ensure jack stands are lowered, and baler ends are folded in.
- Store hose end couplers in storage rack.
- Clean entire Bag Baler thoroughly.
- Lubricate all parts of the machine. See "Lubrication" on page 17.
- Make a list of all worn or damaged parts and replace them.
- Paint all parts that are worn or rusted.
- Store the Bag Baler in a clean, dry area.
- Review the Bag Baler operator's manual.

Beginning of the Season

- Review the Bag Baler operator's manual.
- Lubricate all parts of the machine. See "Lubrication" on page 17.
- Tighten all bolts, nuts, and set screws. See "Torque Specifications" on page 39.
- Replace all damaged, worn or missing decals.
- Install the Bag Baler onto a tractor and test for proper operation. See "Set-up Instructions" on pages 9 and 10 for instructions.

Troubleshooting

To assist with maintenance and repair, the following list of common problems and corrections is provided.

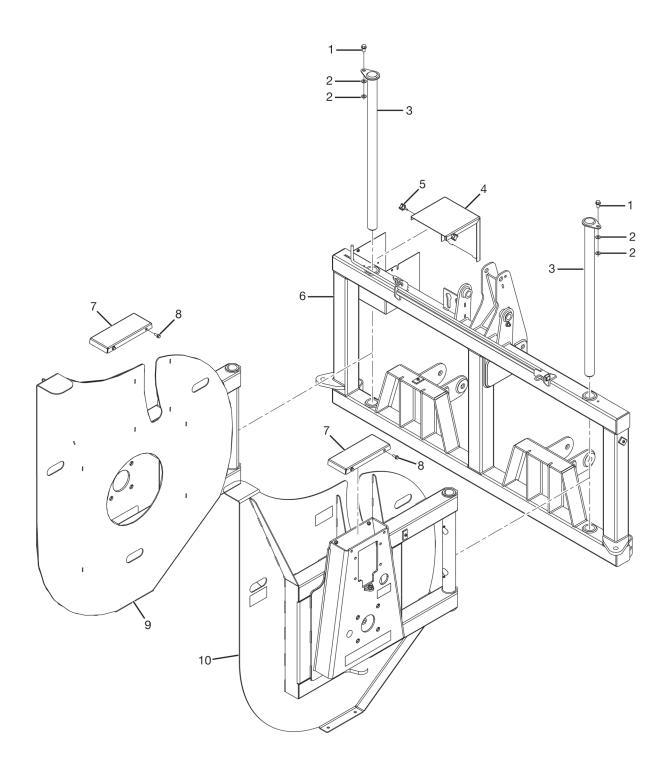
| PROBLEM | CAUSE | SOLUTION |
|---|--|--|
| Roller not turning. | Chain not engaged or broken. | Verify chain engagement. Tighten chain. Replace chain. |
| | Hydraulic hoses not connected to tractor | Connect hoses. |
| Hydraulic controls not functioning correctly. | Hydraulic hoses not installed correctly. | Reverse hydraulic hoses at tractor. |
| | Hydraulic couplers not opening. | Replace couplers. |
| Bag will not wrap around rollers. Rollers stalling. | Tension too tight. | Decrease tension. |
| Bag not fitting on roller. | Tension too loose. | Increase tension. |
| | Grain sticking to bag. | Open up tension bars to 3/4 in. to allow sticking grain to pass through and then wind 150 ft. onto roller. |
| Bag not wrapping around roller evenly. | Tension not set correctly. | Adjust tension. |
| Bag will not release from roller. | Bag caught on roller. | Reengage roller completely and reverse roller rotation 1 to 2 revolutions. |





PARTS IDENTIFICATION

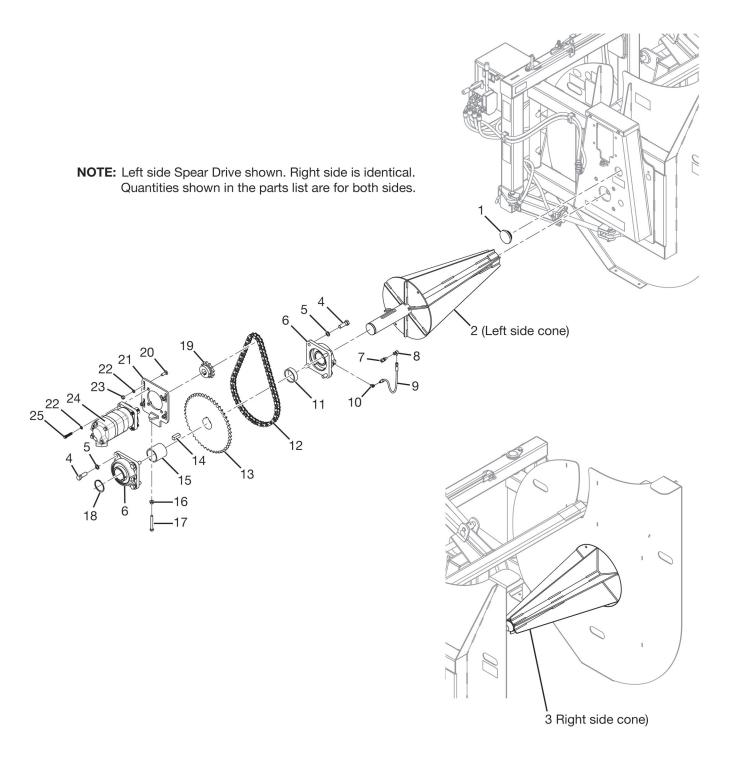
Bag Baler - Main



Bag Baler - Main

| # | QTY. | PART # | DESCRIPTION |
|----|------|--------|-------------------------------|
| 1 | 2 | N26748 | BOLT, 1/2" X 1" SER FLG |
| 2 | 4 | 4068 | WASHER, 1/2" SAE FLAT |
| 3 | 2 | 202222 | WELDMENT, BB12500 PIVOT SHAFT |
| 4 | 1 | 212977 | PLATE, TWINE BOX COVER |
| 5 | 2 | N17502 | KNOB, 1/4" X 3/4" FOUR PRONG |
| 6 | 1 | 215940 | FRAME, BB12500 HITCH W/DECALS |
| 7 | 2 | 202234 | PLATE, BB12500 COVER |
| 8 | 8 | N26743 | BOLT, 3/8" X 1" SER FLG |
| 9 | 1 | 212959 | FRAME, BB12500 END LEFT |
| 10 | 1 | 212958 | FRAME, BB12500 END RIGHT |

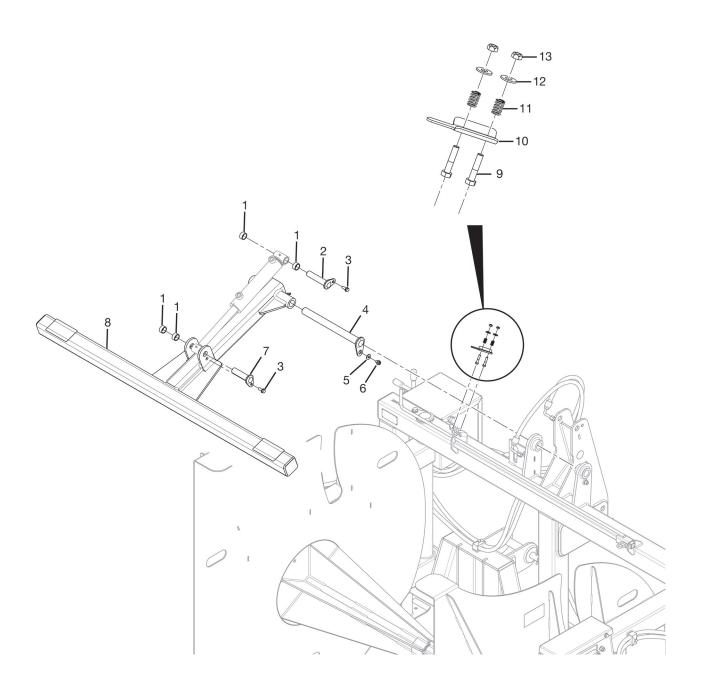
Bag Baler - Drive



Bag Baler - Drive

| # | QTY. | PART # | DESCRIPTION |
|----|------|---------|--------------------------------|
| 1 | 2 | N33214 | PLUG, 2-1/2" CUSTUM RUBBER |
| 2 | 1 | 212945 | CONE, BB12500 LEFT |
| 3 | 1 | 212944 | CONE, BB12500 RIGHT |
| 4 | 16 | 4475 | BOLT, 3/4" X 2-1/4" GRADE 5 |
| 5 | 16 | N16474 | WASHER, 3/4 NORDLOCK |
| 6 | 4 | 202254 | BEARING, 3" DODGE 4BLT FLG |
| 7 | 2 | 4304-10 | BULKHEAD, FITTING-GREASE HOSE |
| 8 | 2 | N25125 | ELBOW, 90 DEG - 4FJIC - 4MJIC |
| 9 | 2 | 4304 | HOSE, 15' GREASE W/FITTINGS |
| 10 | 2 | 4471 | ELBOW, 1/8 45 DEG STREE |
| 11 | 2 | 215020 | SPACER, BB12500 SPEAR MIDDLE |
| 12 | 2 | 212960 | CHAIN, #80 ROLLER 64 PITCH |
| 13 | 2 | 202232 | SPROCKET, 80B48 3.000 BORE |
| 14 | 2 | N16918 | KEY, 3/4 X 2 |
| 15 | 2 | 215019 | SPACER, BB12500 SPEAR OUTER |
| 16 | 2 | N29075 | NUT, LOCK 1/2" SERRATED FLANGE |
| 17 | 2 | 201968 | BOLT, 1/2" X 4" GR 5 FULL THRD |
| 18 | 2 | 202229 | RING, SNAP EXT 3.0" SHAFT |
| 19 | 2 | N33721 | SPROCKET, 80B12 1-1/2" KEYED |
| 20 | 8 | 4039 | BOLT, CARRIAGE 1/2" X 1-1/2" |
| 21 | 2 | 202204 | MOUNT, BB12500 MOTOR |
| 22 | 16 | N16472 | WASHER, 1/2 NORDLOCK |
| 23 | 8 | 4250 | NUT, STANDARD 1/2 |
| 24 | 2 | 202278 | MOTOR, 29.95 CID SIDE PORT |
| 25 | 8 | 215949 | BOLT, 1/2 X 2 GR 8 12 PT |

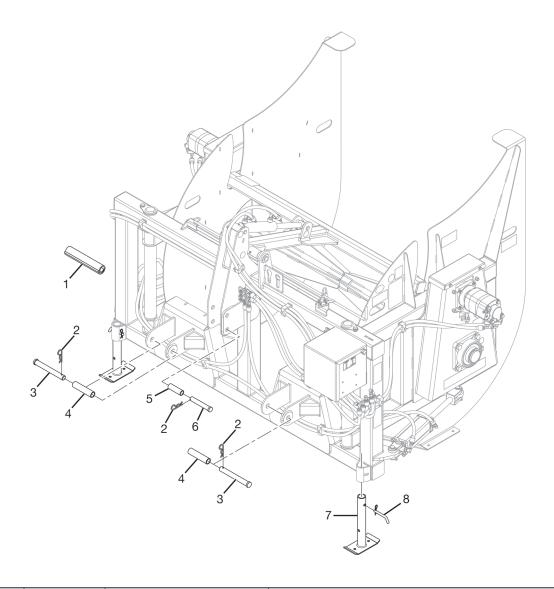
Tensioner



Tensioner

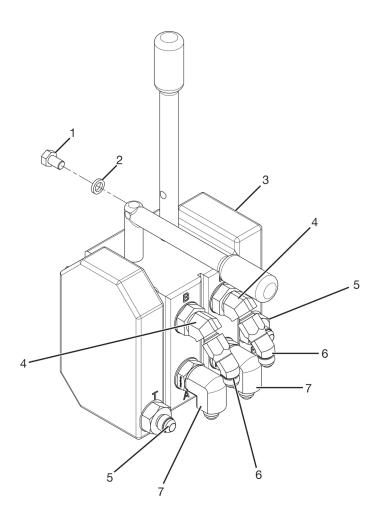
| # | QTY. | PART # | DESCRIPTION |
|----|------|--------|--------------------------------|
| 1 | 4 | 215004 | SPACER, 1.01IDX1.25ODX.562 |
| 2 | 1 | 215944 | PIN, 1.000 BB12500 TENSIONER L |
| 3 | 2 | N26743 | BOLT, 3/8" X 1" SER FLG |
| 4 | 1 | 215941 | PIN, 1.250 BB12500 TENSIONER |
| 5 | 1 | 4064 | WASHER, FLAT 3/8" |
| 6 | 1 | 215256 | BOLT, 3/8 X 1/2 FLANGE |
| 7 | 1 | 215947 | PIN, 1.000 BB12500 TENSIONER S |
| 8 | 1 | 215930 | TENSIONER, BB12500 BAG 1-1/4 |
| 9 | 2 | 4241 | BOLT, 5/16" X 1-1/2" GRADE 5 |
| 10 | 1 | 215001 | PLATE, TWINE TENSIONER B |
| 11 | 2 | 215002 | SPRING, .500D .062W .75FL |
| 12 | 2 | 4369 | WASHER, 5/16" FLAT |
| 13 | 2 | 4414 | NUT, NYLOCK 5/16" |

Hitch Pins; Jack Stands; Manual



| # | QTY. | PART # | DESCRIPTION |
|---|------|--------|------------------------------------|
| 1 | 1 | 202249 | MANUAL, BB12500 |
| 2 | 3 | 4389 | CLIP, HAIRPIN 3/16" X 3" |
| 3 | 2 | 4100 | PIN, 1-1/8" X 8-3/32" |
| 4 | 2 | 202285 | BUSHING, 1.438OD X 1.125ID X 5.938 |
| 5 | 1 | 212943 | BUSHING, 1.250OD X 1.010ID |
| 6 | 1 | N16300 | PIN, 1" X 6" |
| 7 | 2 | 202256 | JACK, BB12500 STORAGE STAND |
| 8 | 2 | N30804 | PIN, 1/2" X 3" BENT HITCH |

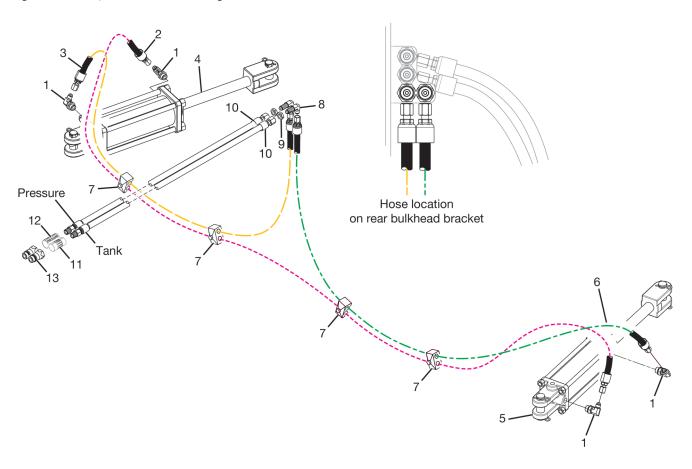
Control Valve



| # | QTY. | PART # | DESCRIPTION | | |
|---|------|--------|-------------------------------|--|--|
| 1 | 4 | 4532 | BOLT, 5/16" X 1/2" GRADE 5 | | |
| 2 | 4 | N16469 | WASHER, 5/16 NORDLOCK | | |
| 3 | 1 | 202288 | VALVE, 2-SECTION CONTROL | | |
| 4 | 2 | N22720 | ELBOW, 45 DEG - 6MJIC - 10MOR | | |
| 5 | 2 | N28826 | ADAPTER, 6MJIC - 10MOR | | |
| 6 | 2 | N28837 | ELBOW, 45 DEG - 6MJIC -6FJIC | | |
| 7 | 2 | N21992 | ELBOW, 90 DEG - 6MJIC - 10MOR | | |

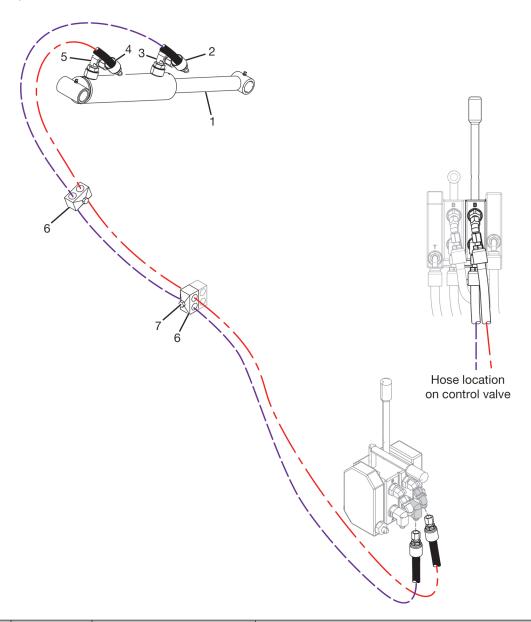
Parts Identification

Hydraulics, End Frame Cylinders



| # | QTY. | PART # | DESCRIPTION | | |
|----|------|--------|--------------------------------|--|--|
| 1 | 4 | N20037 | ELBOW, 90 DEG - 6MJIC - 8MOR | | |
| 2 | 1 | 212986 | HOSE, 3/8 X 121 -6FJIC -6FJIC | | |
| 3 | 1 | 212988 | HOSE, 3/8 X 79 -6FJIC -6FJIC | | |
| 4 | 1 | 8043 | CYLINDER, 3-1/4" X 8" REPHASNG | | |
| 5 | 1 | 8042 | CYLINDER, 3" X 8" REPHASING | | |
| 6 | 1 | 215007 | HOSE, 3/8 X 77 -6FJIC -6FJIC | | |
| 7 | 4 | N21365 | CLAMP, 3/8" DOUBLE HOSE | | |
| 8 | 2 | N28429 | ADAPTER, 90 BULKHEAD -6MJIC | | |
| 9 | 2 | N24780 | NUT, LOCK BULKHEAD -6 | | |
| 10 | 2 | 215012 | HOSE, 3/8 X 52 -6FJIC -8MOR | | |
| 11 | 1 | N24823 | DECAL, TANK | | |
| 12 | 1 | N24822 | DECAL, PRESSURE | | |
| 13 | 2 | 203957 | COUPLER, 1/2" MALE PIONEER | | |

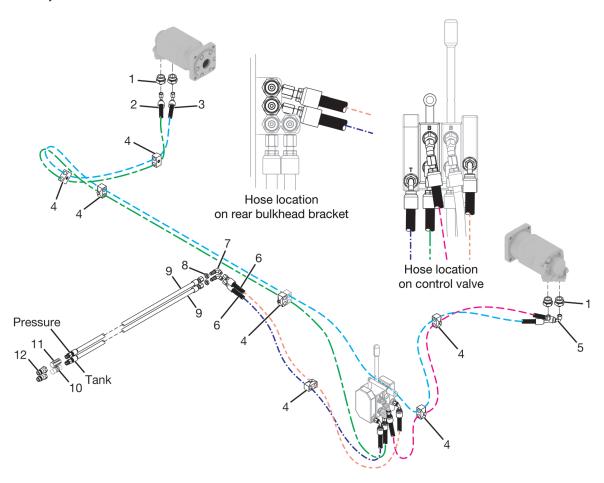
Hydraulics, Tensioner



| # | QTY. | PART # | DESCRIPTION | | |
|---|------|--------|----------------------------------|--|--|
| 1 | 1 | 212984 | CYLINDER, 2 X 8 3000 PSI | | |
| 2 | 1 | 212996 | HOSE, 38 X 90 -6FJIC -6FJIC90LG | | |
| 3 | 1 | N20037 | ELBOW, 90 DEG - 6MJIC - 8MOR | | |
| 4 | 1 | 212998 | HOSE, 3/8 X 82 -6FJIC -6FJIC90LG | | |
| 5 | 1 | N28002 | ELBOW, 90 -6MJIC-8MORB .031 OR | | |
| 6 | 2 | N21365 | CLAMP, 3/8" DOUBLE HOSE | | |
| 7 | 1 | N28436 | BOLT, 5/16" X 2-1/4" GR5 | | |

Parts Identification

Hydraulics, Roller



| # | QTY. | PART # | DESCRIPTION |
|----|------|--------|------------------------------------|
| 1 | 4 | 215005 | ADAPTER, 6MJIC - 16MOR |
| 2 | 1 | 212990 | HOSE, 3/8 X 142 -6FJIC -6FJIC90S |
| 3 | 1 | 212994 | HOSE, 3/8 X 178 -6FJIC90S-6FJIC90S |
| 4 | 7 | N21365 | CLAMP, 3/8" DOUBLE HOSE |
| 5 | 1 | 212992 | HOSE, 3/8 X 58 -6FJIC -6FJIC90S |
| 6 | 2 | 215015 | HOSE, 3/8 X 61 -6FJIC -6FJIC90S |
| 7 | 2 | N28429 | ADAPTER, 90 BULKHEAD -6MJIC |
| 8 | 2 | N24780 | NUT, LOCK BULKHEAD -6 |
| 9 | 2 | 215012 | HOSE, 3/8 X 52 -6FJIC -8MOR |
| 10 | 1 | N24823 | DECAL, TANK |
| 11 | 1 | N24822 | DECAL, PRESSURE |
| 12 | 2 | 203957 | COUPLER, 1/2" MALE PIONEER |

Machine Decals and Signs

NOTE: All safety related decals are also shown in the Safety Instructions Section along with their location on the machine. See "Safety Decal Locations" on page 6.

Check and replace any worn, torn, hard to read or missing decals on your machine.

Part No. N68716



Part No. N23507



Part No. N23899



Part No. 206502



Part No. 4189



Part No. 208824



DO NOT START, OPERATE, OR WORK ON THIS MACHINE UNTIL YOU HAVE CAREFULLY READ AND THOROUGHLY UNDERSTAND THE CONTENTS OF THE OPERATOR'S MANUAL.

NOTE: SCAN QR CODE TO ACCESS MANUAL OR CONTACT

LOFTNESS SPECIALIZED EQUIPMENT 650 SOUTH MAIN HECTOR, MN 55342 1-800-828-7624

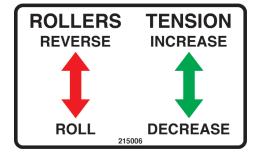
FAILURE TO FOLLOW SAFETY, OPERATING, AND MAINTENANCE INSTRUCTIONS COULD RESULT IN DEATH OR SERIOUS INJURY TO THE OPERATOR OR BYSTANDERS, POOR OPERATION, AND COSTLY BREAKDOWN.

208824

Part No. 203264



Part No. 215006



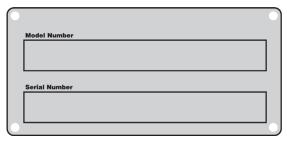
Parts Identification

Machine Decals and Signs (Cont'd)

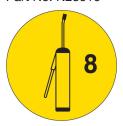
Part No. 4136



Part No. N13721



Part No. N28010



Part No. N28013



Part No. 4138



Part No. N13517



Part No. N24822

PRESSURE
PRESSURE
PRESSURE
PRESSURE
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PRESSURE
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PRESSURE

Part No. N24823

TANK TANK TANK TANK TANK TANK TANK

Part No. 209528



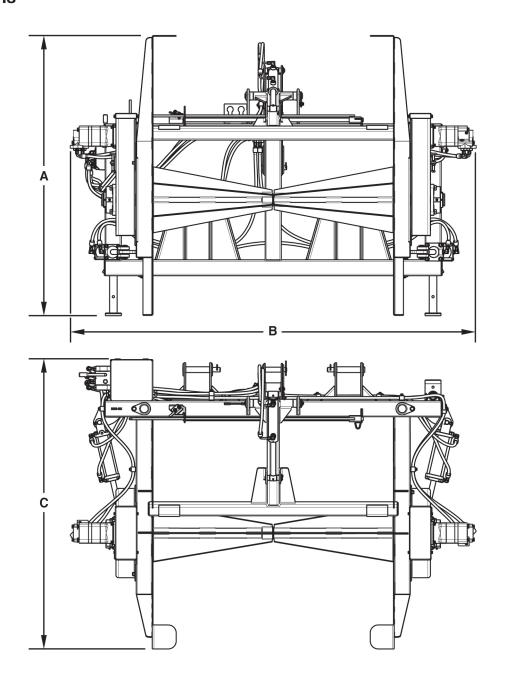
Part No. N26974 (Horizontal Small)



Specifications

| DESCRIPTION | MODEL BB 10-300 GRAIN BAG BALER | | |
|---------------------|--|--|--|
| Bag Baling Capacity | 9 ft., 10 ft., or 12 ft. bags up to 500 ft. long | | |
| Bag Baler Control | Hydraulic | | |
| Weight | 2,360 lbs. (1070.5 kg) | | |

Dimensions



| DESCRIPTION | MODEL BB 10-300 GRAIN BAG BALER | | |
|-------------|---------------------------------|--|--|
| Height (A) | 70.13 in. (178.1 cm) | | |
| Width (B) | 101.5 in. (257.8 cm) | | |
| Length (C) | 72.44 in. (184.0 cm) | | |
| Weight | 2,360 lbs. (1070.5 kg) | | |

Torque Specifications

Inches Hardware and Lock Nuts

TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications (Standard Hardware and Lock Nuts)

| SAE Gr. 2 | SAE G | SAE Grade 5 SAE Grade 8 | | irade 8 | LOCK NUTS | | | |
|-----------------|------------------------------------|----------------------------|------------------------------------|----------------------------|------------------------------------|----------------------------|----------------------------|----------------------------|
| Nominal Size | Unplated or Plated Silver | Plated W / ZnCr Gold | Unplated or Plated Silver | Plated W / ZnCr Gold | Unplated or Plated Silver | Plated W / ZnCr Gold | Grade W / Gr. 5 Bolt | Grade W / Gr. 8 Bolt |
| 1/4 | 55 inlb. | 72 inlb. | 86 inlb. | 112 inlb. | 121 inlb. | 157 inlb. | 61 inlb. | 86 inlb. |
| | (6.2 N•m) | (8.1 N•m) | (9.7 N•m) | (12.6 N•m) | (13.6 N•m) | (17.7 N•m) | (6.9 N•m) | (9.8 N•m) |
| 5/16 | 115 inlb. | 149 inlb. | 178 inlb. | 229 inlb. | 250 inlb. | 324 inlb. | 125 inlb. | 176 inlb. |
| | (13 N•m) | (17 N•m) | (20 N•m) | (26 N•m) | (28 N•m) | (37 N•m) | (14 N•m) | (20 N•m) |
| 3/8 | 17 ftlb. | 22 ftlb. | 26 ftlb. | 34 ftlb. | 37 ftlb. | 48 ftlb. | 19 ftlb. | 26 ftlb. |
| | (23 N•m) | (30 N•m) | (35 N•m) | (46 N•m) | (50 N•m) | (65 N•m) | (26 N•m) | (35 N•m) |
| 7/16 | 27 ftlb. | 35 ftlb. | 42 ftlb. | 54 ftlb. | 59 ftlb. | 77 ftlb. | 30 ftlb. | 42 ftlb. |
| | (37 N•m) | (47 N•m) | (57 N•m) | (73 N•m) | (80 N•m) | (104 N•m) | (41 N•m) | (57 N•m) |
| 1/2 | 42 ftlb. | 54 ftlb. | 64 ftlb. | 83 ftlb. | 91 ftlb. | 117 ftlb. | 45 ftlb. | 64 ftlb. |
| | (57 N•m) | (73 N•m) | (87 N•m) | (113 N•m) | (123 N•m) | (159 N•m) | (61 N•m) | (88 N•m) |
| 9/16 | 60 ftlb. | 77 ftlb. | 92 ftlb. | 120 ftlb. | 130 ftlb. | 169 ftlb. | 65 ftlb. | 92 ftlb. |
| | (81 N•m) | (104 N•m) | (125 N•m) | (163 N•m) | (176) N•m | (229 N•m) | (88 N•m) | (125 N•m) |
| 5/8 | 83 ftlb. | 107 ftlb. | 128 ftlb. | 165 ftlb. | 180 ftlb. | 233 ftlb. | 90 ftlb. | 127 ftlb. |
| | (112 N•m) | (145 N•m) | (174 N•m) | (224 N•m) | (244) N•m | (316 N•m) | (122 N•m) | (172 N•m) |
| 3/4 | 146 ftlb. | 189 ftlb. | 226 ftlb. | 293 ftlb. | 319 ftlb. | 413 ftlb. | 160 ftlb. | 226 ftlb. |
| | (198 N•m) | (256 N•m) | (306 N•m) | (397 N•m) | (432 N•m) | (560 N•m) | (217 N•m) | (306 N•m) |
| 7/8 | 142 ftlb. | 183 ftlb. | 365 ftlb. | 473 ftlb. | 515 ftlb. | 667 ftlb. | 258 ftlb. | 364 ftlb. |
| | (193 N•m) | (248 N•m) | (495 N•m) | (641 N•m) | (698 N•m) | (904 N•m) | (350 N•m) | (494 N•m) |
| 1 | 213 ftlb. | 275 ftlb. | 547 ftlb. | 708 ftlb. | 773 ftlb. | 1000 ftlb. | 386 ftlb. | 545 ftlb. |
| | (289 N•m) | (373 N•m) | (742 N•m) | (960 N•m) | (1048 N•m) | (1356 N•m) | (523 N•m) | (739 N•m) |









NEW CLOCK MARKINGS NUTS INCHES AND METRIC

LINE MARKINGS NUTS



















39

CENTER LOCK MARKING

LOCK NUT MARKING

LOCK NUT NOTCH MARKING

LOCK NUT LETTER MARKING

Appendix

Torque Specifications (Cont'd)

Metric Hardware and Lock Nuts

TORQUE CHARTS

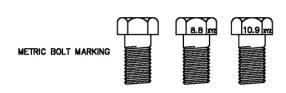
Minimum Hardware Tightening Torques

Normal Assembly Applications

(Metric Hardware and Lock Nuts)

| | Class 5,8 | | Clas | s 8,8 | Class | Lock nuts | |
|-----------------|---------------------------------|----------------------------|---------------------------------|----------------------------|------------------------------------|----------------------------|--------------------------------|
| Nominal Size | Unplated or Plated Silver | Plated W / ZnCr Gold | Unplated or Plated Silver | Plated W / ZnCr Gold | Unplated or Plated Silver | Plated W / ZnCr Gold | Class 8 W / CL. 8,8 Bolt |
| M4 | 1.7 N•m | 2.2 N•m | 2.6 N·m | 3.4 N•m | 3.7 N•m | 4.8 N•m | 1.8 N•m |
| | (15 inlb.) | (19 inlb.) | (23 inlb.) | (30 inlb.) | (33 inlb.) | (42 inlb.) | (16 inlb.) |
| M6 | 5.8 N•m | 7.6 N•m | 8.9 N•m | 12 N•m | 13 N•m | 17 N•m | 6.3 N•m |
| | (51 inlb.) | (67 inlb.) | (79 inlb.) | (102 inlb.) | (115 inlb.) | (150 inlb.) | (56 inlb.) |
| M8 | 14 N•m | 18 N•m | 22 N•m | 28 N•m | 31 N•m | 40 N•m | 15 N•m |
| | (124 inlb.) | (159 inlb.) | (195 inlb.) | (248 inlb.) | (274 inlb.) | (354 inlb.) | (133 inlb.) |
| M10 | 28 N•m | 36 N•m | 43 N•m | 56 N•m | 61 N•m | 79 N•m | 30 N•m |
| | (21 ftlb.) | (27 ftlb.) | (32 ftlb.) | (41 ftlb.) | (45 ftlb.) | (58 ftlb.) | (22 ftlb.) |
| M12 | 49 N•m | 63 N•m | 75 N•m | 97 N•m | 107 N•m | 138 N•m | 53 N•m |
| | (36 ftlb.) | (46 ftlb.) | (55 ftlb.) | (72 ftlb.) | (79 ftlb.) | (102 ftlb.) | (39 ftlb.) |
| M16 | 121 N•m | 158 N•m | 186 N•m | 240 N•m | 266 N•m | 344 N•m | 131N•m |
| | (89 ftlb.) | (117 ftlb.) | (137 ftlb.) | (177 ftlb.) | (196 ftlb.) | (254 ftlb.) | (97 ftlb.) |
| M20 | 237 N•m | 307 N•m | 375 N•m | 485 N•m | 519 N•m | 671 N•m | 265 N•m |
| | (175 ftlb.) | (226 ftlb.) | (277 ftlb.) | (358 ftlb.) | (383 ftlb.) | (495 ftlb.) | (195 ftlb.) |
| M24 | 411 N•m | 531 N•m | 648 N•m | 839 N•m | 897 N•m | 1160 N•m | 458 N•m |
| | (303 ftlb.) | (392 ftlb.) | (478 ftlb.) | (619 ftlb.) | (662 ftlb.) | (855 ftlb.) | (338 ftlb.) |

GRADE 2 GRADE 5 GRADE 8 CLASS A CLASS B CLASS C



MANUFACTURER'S IDENTIFICATION

METRIC BOLT MARKING

METRIC NUT MARKING

PROPERTY CLASS

METRIC NUT MARKING

B 3xZ

12 3xz

NOTE: CLASS 2 IN METRIC IS 5.8



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