LOFTNESS™

OS 170 Fertilizer Spreader

Owner's Manual and Parts Book
(Originating w/Serial Number 82-101)

Model Number: _____
Serial Number: _____
Date of Purchase: _____

N117080 Rev. A

08.05.17

LOFTNESS SPECIALIZED EQUIPMENT, INC.
LIMITED WARRANTY POLICY

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

All Loftness products have a one (1) year limited warranty. The XLB10 Grain Bag Loader has a two (2) year limited warranty.

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

Loftness Specialized Equipment, hereinafter referred to as LOFTNESS, a manufacturer of quality machinery since 1956, 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.

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 receive 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;
- Improper knife replacement;
- Missing knives;
- Striking foreign objects
- Lack of lubrication
- Failures caused by running in an "out-of-balance" condition;
- Tires;
- Conveyors;
- Auger wear;
- Saw blades; and
- Brakes and brake pads.

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 excluded from this limited warranty.** The remedies set forth in this warranty are the only 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.

April 2017


LOFTNESS

Warranty

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LOFTNESS

Owner Information

Thank you for your decision to purchase a Fertilizer Spreader from Loftness. To ensure maximum performance of this product, it is mandatory that you thoroughly study the owner's manual and follow its recommendations. Proper operation and maintenance are essential to prevent injury or damage and to maximize machine life.

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 these instructions.

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

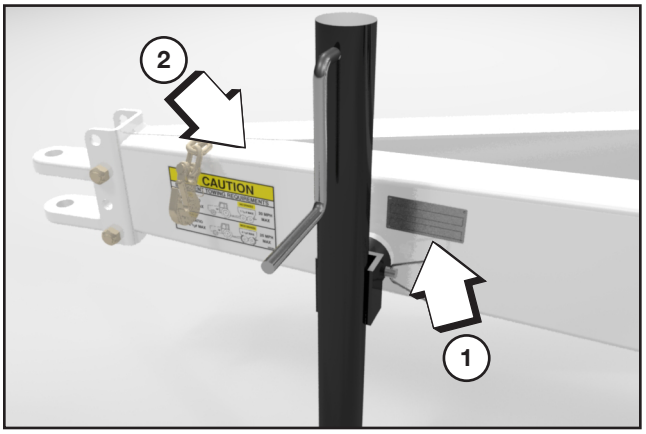
Continuous improvement and advancement of Loftness products may result in changes to your equipment that may not be reflected in this publication. Loftness reserves the right to make product improvements to the machine at any time. Although great care has been taken to ensure the accuracy of this publication,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

Loftness is not responsible for costs or damages caused by misapplication of fertilizers. It is the responsibility of the operator to assure that the fertilizer is applied uniformly and correctly over the application area.

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.

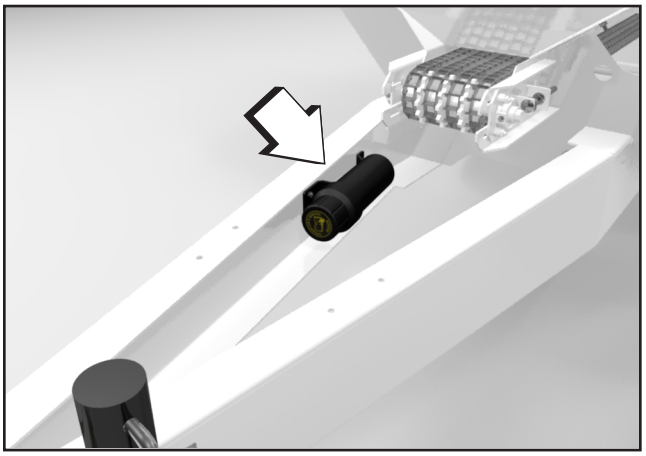
Serial Number Location



The arrows indicate the location of the Loftness 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.

Manual Storage



Keep the owner's manual and the entire documentation packet in the storage compartment provided with your fertilizer spreader. The owner's manual must be available to all operators.

The manual holder is located on the inside of the spreader tongue.

Features

Spread Pattern

- Dual (25 ft.) stainless steel spinners deliver a spread pattern using a 100% overlapping triangular pattern.
- Spread pattern up to 40 ft.

Fixed Axles

- 42 in. (106.7 cm) track setting.

Adjustable Height Hitch

- Moveable clevis accommodates wide range of drawbar heights.
- Allows for leveling of spreader.

Integral Hitch

- Hitch is integral to frame.

Conveyor Drive

- Hydraulic drive, variable rate ready.
- Chain drive, fixed rate, adjustable with gate.

Obstruction Free Interior

- No internal gussets/plates to catch fertilizer.

Spinner Drive

- Hydraulic drive

Options

Bander

- Optional banding attachment - Adjustable wings for placing fertilizer in strips

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 RED.

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

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 have read this owner's manual, and thoroughly understand safe and correct installation, operation and maintenance procedures.

Make sure the machine is assembled and installed correctly before being placed in service. At regular intervals thereafter, the machine 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.

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 he or she has read the owner's manual and is 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 fertilizer spreader 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 spreader accordingly.
- It is the operator's responsibility to be aware of machine operation and work area hazards at all times.
- Operators are responsible to know the location and function of all guards and shields including but not limited to chain drives, conveyors, spinners 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.
- Disengage PTO, clutch hydraulic valve and shift tractor into neutral or park before starting engine.

Transporting Safety

- Be sure the machine is in the transport position before transporting on a roadway.
- Do not exceed speed rating (30 mph) on the factory provided tires.
- Disengage PTO, clutch hydraulic valve and shift tractor into neutral or park before starting engine.
- Machine has high center of gravity. Exercise caution when pulling on slopes. Reduce speed while turning.

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.

Safety Rules (Cont'd)

Maintenance Safety (Cont'd)

- Periodically check all hoses, hose connections and electrical wiring. 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 use a piece of wood to check for leaks.

⚠	**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!*

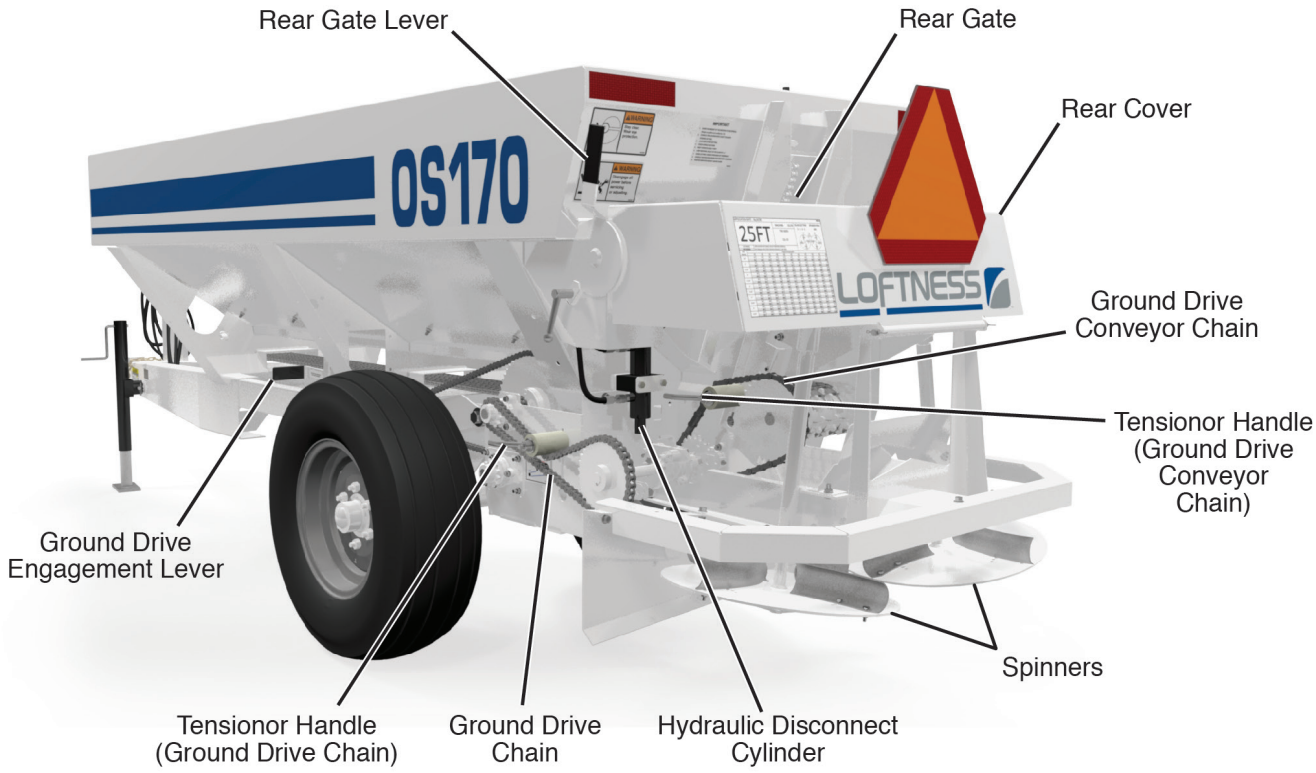
Chemical Fertilizer Safety

- Always read the label before using chemical fertilizers. Follow manufacturer's instructions for use and handling. Also follow label directions and recommendations on keeping fertilizer residue on edible parts of plants within limits permitted by law.
- Wear personal protective equipment (PPE) when handling chemical fertilizers, such as safety glasses or face shield, respirators, proper clothing, and rubber gloves.
- Wash hands, face, and clothing after handling and spreading.
- Do not spill chemical fertilizers on skin or clothing. In case of a spill, remove contaminated clothing and wash skin and clothing thoroughly with soap and water.
- Avoid inhaling chemical fertilizers.
- Do not smoke when handling chemical fertilizers.
- Cover food and water containers when spreading around livestock or pet areas.
- Keep bystanders away while spreading fertilizer.
- The spreader should be completely emptied of chemical fertilizer, all residue removed, and washed with clean water before servicing.
- If symptoms of illness occur during or after handling and/or spreading chemical fertilizers, contact a physician immediately.
- Store chemical fertilizer in a locked, secure space away from food and animal feed. Do not store inside of the home.
- Keep chemical fertilizers away from children, pets, and unauthorized personnel.
- Store chemical fertilizers in their original containers and securely closed. Be sure to read fertilizer manufacturers storage recommendations.
- Dispose of empty fertilizer containers according to manufacturer's instructions.

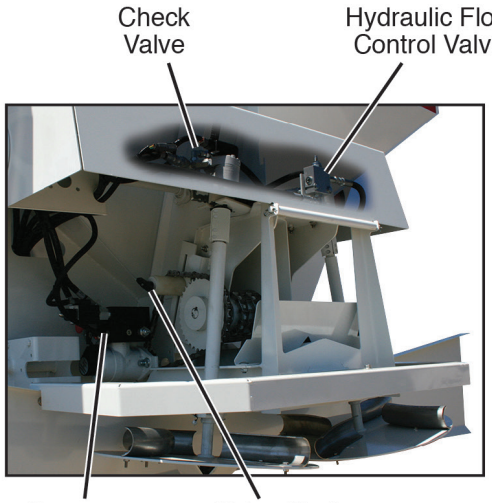
Hydraulic (VRR) Drive Model

Mechanical Ground Drive with PTO-Driven Conveyor

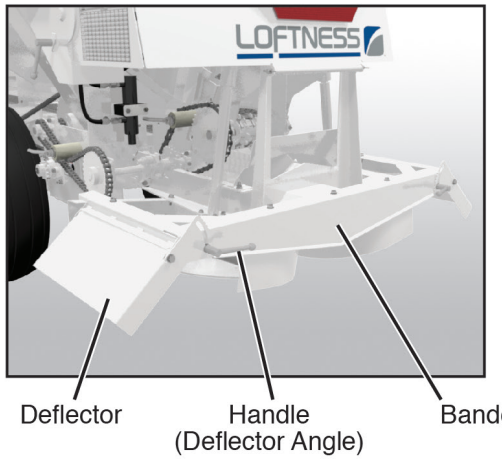
OS 170 Fertilizer Spreader Identification (Cont'd)



(Mechanical Ground Drive model shown)



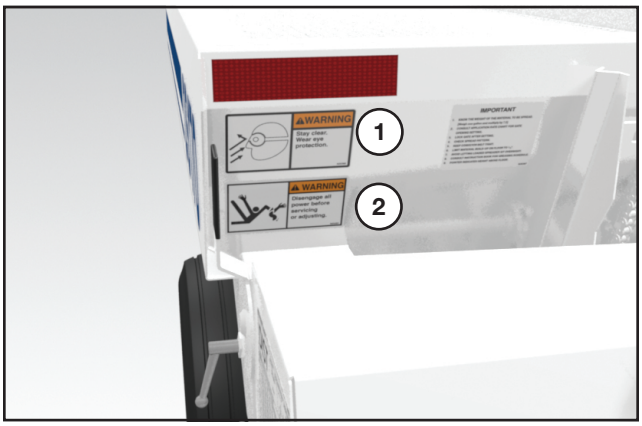
Hydraulic (VRR) Drive



Optional Bander

Safety Decal Locations

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

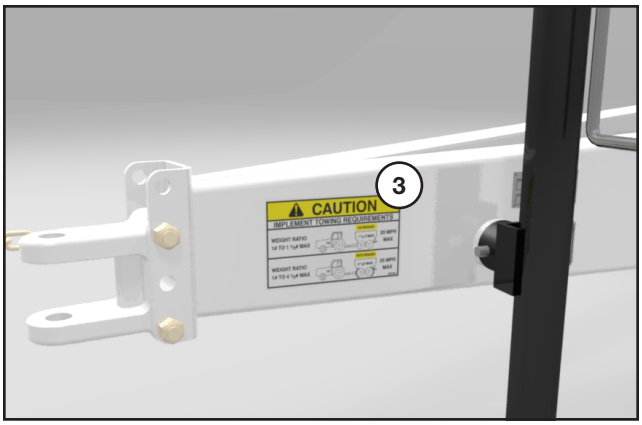


1

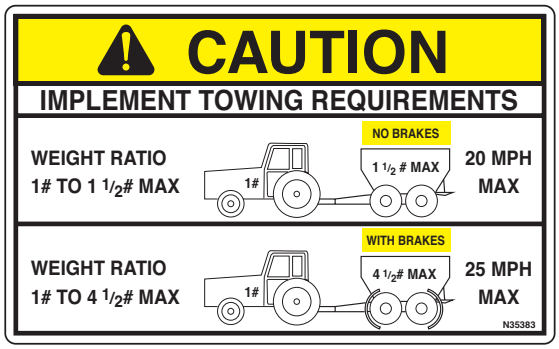
Part No. N35380

2

Part No. N35391



3



Part No. N35383

Preparation for Use

Before putting the spreader into operation make sure the machine has been properly adjusted and the spread pattern has been determined.

IMPORTANT: *Read and thoroughly understand the contents of the operator's manual before operating.*

- Visually inspect the spreader for damage or missing parts. Contact your Loftness dealer if any parts need replacing.
- Remove protective cover on Slow Moving Vehicle (SMV) sign on upper rear of the spreader. Place SMV vertical for display while in use. SMV folds down for shipping.
- Check the machine for loose bolts. Check bearing, sheave, and sprocket set screws.
- Check wheel lugs for tightness.
- Check tire pressure.
- Turn conveyor chain by hand to ensure it moves freely without obstruction(s).
- Check conveyor chain for tension. There should be a 2-3 in. (5.08 - 7.62 cm) sag underneath.
- Perform a test pattern.

IMPORTANT: *Before placing the fertilizer spreader into operation, a spread pattern test MUST be performed. Refer to "Spread Pattern Test" on page 20 for instructions.*

Monitors/Controllers

Install controller/monitor in cab. Consult tractor manual to determine locations for mounting monitors and controllers.

Connect controllers and monitors to keyed switch power. Consult tractor manual for sources of keyed switch power. If keyed switch power is not available, constant 12V power may be used.

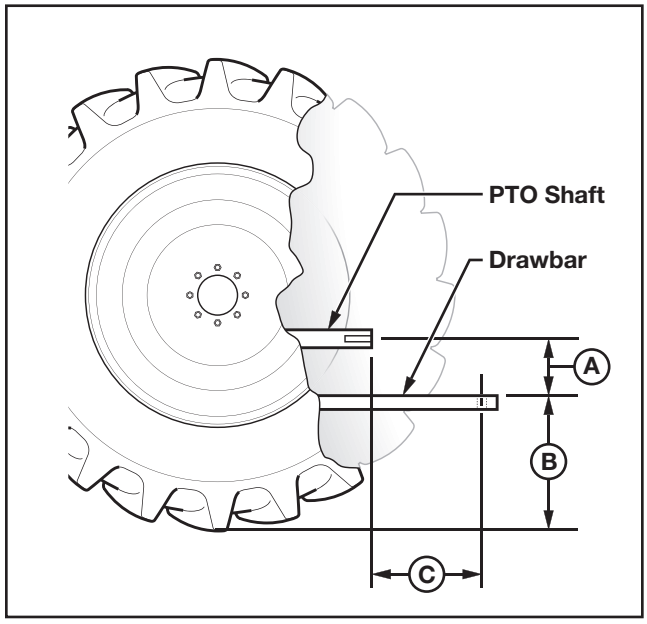
IMPORTANT: *Monitors and Controllers that have power supplied via constant 12V power will not turn off with tractor key. Turn off monitor when tractor is not running.*

Connecting to Tractor

For PTO Drive Models

Adjust the spreader hitch so the spreader is as level as possible. Connect to the tractor and install an approved hitch pin for the load, securing hitch pin with a safety locking pin. Connect the safety chains to the tractor. Connect surge breakaway chain to tractor.

The tractor draw bar and PTO must conform to ASAE specifications shown in illustration below for proper PTO operation.



⚠	**CAUTION:** *Lock the draw bar securely in both the horizontal and the vertical positions to avoid damage to the PTO.*

A - 6-12 in. (15.24-30.48 cm)

B - 13-17 in. (33.02-43.18 cm); 15 in. (38.1 cm preferred. *(Higher draw bars disrupt spread pattern.)*

C - 540 RPM - 14 in. (35.56 cm

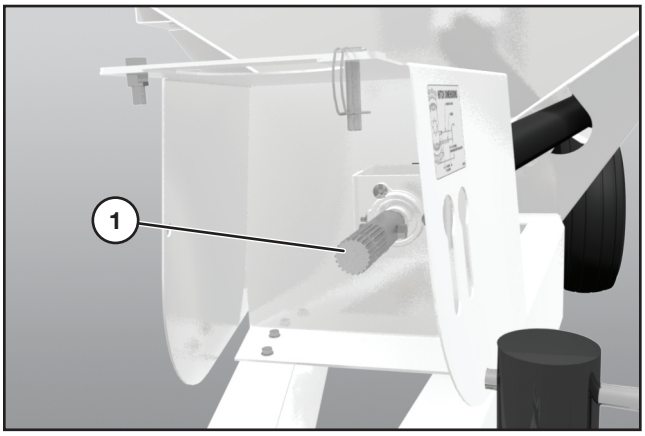
⚠	**CAUTION:** *Always work with the PTO driveline as straight as possible to guard against damage to the PTO, spreader, or tractor.*

(Procedure continued on following page.)

Connecting to Tractor (Cont'd)

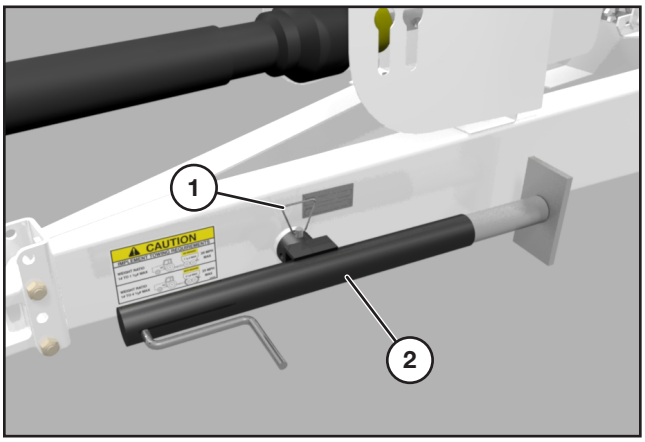
For PTO Drive Models (Cont'd)

Attaching PTO



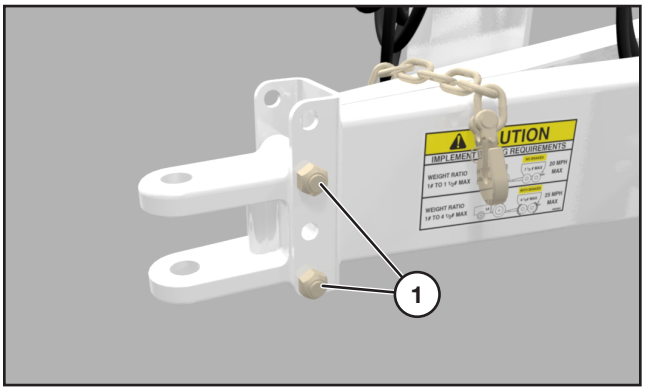
540 RPM Input Shaft

Connect the PTO to the shaft (1) on the spreader.



Pull pin (1) that secures the jack (2) to the frame and rotate into the storage position as show. Reinsert pin to secure.

For Variable Rate Ready and Ground Drive Models



Adjust bolts (1) on the clevis (if necessary) to be level as possible with the tractor drawbar height.

Connect to the tractor and install an approved hitch pin for the load, securing hitch pin with a safety locking pin. Connect the safety chains to the tractor. Connect surge breakaway chain to tractor.

Remove the jack and secure in the storage position. (See photo to the left).

Controller/Monitor Connections (Variable Rate Ready Only)

For spreaders equipped with hydraulic drive, connect the controller harness on the spreader to the mating harness on the tractor.

Connecting to Tractor (Cont'd)

Hydraulic Connections

Connect the spreader's hydraulic hoses to the tractor's hydraulic system. Hydraulic hoses are marked with corresponding "TANK" or "PRESSURE" decals.

Setting Tractor Hydraulics

For Clutch Disengage:

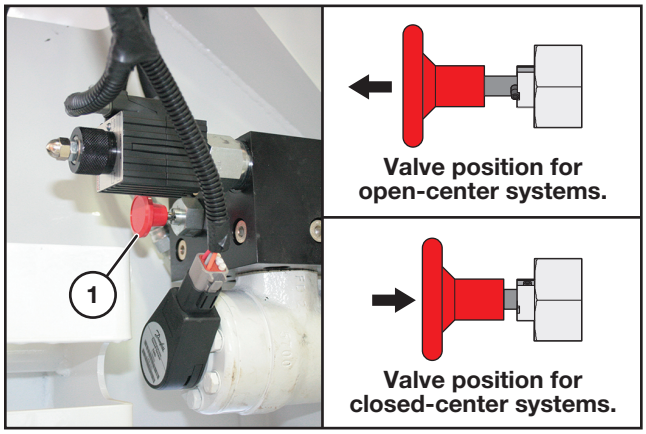
1. Valve should be set fully so cylinder extend/retract time is 3 seconds.

IMPORTANT: *Clutch disengage cylinder is small – high cylinder speed could damage cylinder*

For Conveyor Drive and Spinners:

1. Make hydraulic hose connections.
2. Set hydraulics to continuous flow.
3. Determine if your tractor is equipped with an open-center or closed-center hydraulic system.

NOTE: *For tractors equipped with an open-center system, contact your dealer for an open-center kit.*



4. If the tractor has an ***open-center system***, pull the red button (1) on the conveyor manifold out, and turn to lock into place.

   If the tractor has a ***closed-center system***, turn and push the red button (1) on the controller in.

5. If the tractor is equipped with an open-center system, set the tractor hydraulic flow to maximum.
6. Set the controller to Test mode.
7. Set the speed to 15 MPH.
8. Set the rate to 1,000 lbs.
9. Decrease the tractor hydraulic flow until the conveyor slows. Then slightly increase tractor flow.

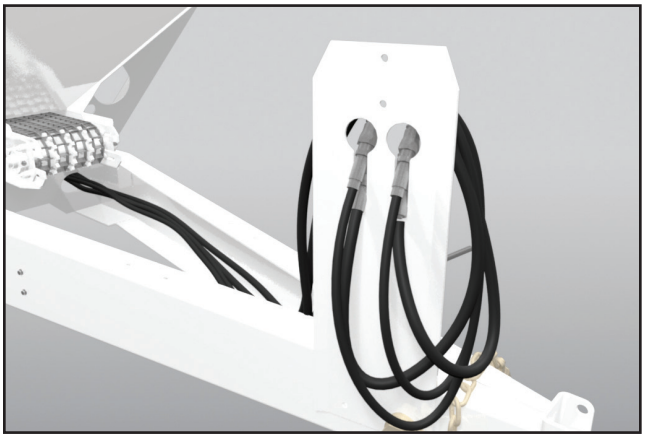
IMPORTANT: *This is done to reduce the amount of bypass oil.*

10. Exit the Test mode on the controller.

Connecting to Truck - Transporting

⚠	**CAUTION:** *Tow only with a truck or vehicle capable of pulling the weight of the spreader and its contents.*

Adjust the spreader hitch so the spreader is as level as possible. Connect to the truck hitch and install an approved hitch pin for the load, securing hitch pin with a safety locking pin. Connect the safety chains to the truck.



IMPORTANT: *Make sure hydraulic hoses are secure before transport.*

IMPORTANT: *For PTO drive models, make sure PTO is locked in the storage cradle and hydraulic hoses are secure before transport.*

Determining Product Density

Determine the fertilizer density using the scale provided with your spreader following these instructions

1. Fill canister gently to the top with material to be spread.
2. Support by the ring.
3. Level beam.
4. Read pounds per cubic feet at the center of weight.

NOTE: *Instructions are also written on the density scale.*

NOTE: *A density scale is provided with variable rate ready model spreaders. If you would like to order a density scale for your mechanical ground drive model spreader, contact your Loftness dealer.*

Variable Rate Ready (VRR)

Setting the Metering Gate Opening (VRR models)

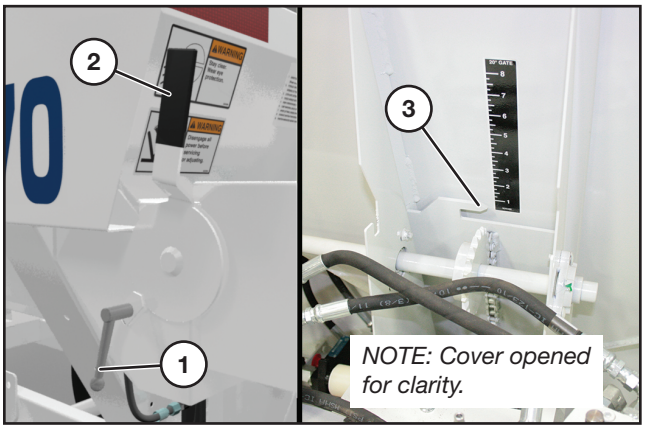
The metering gate opening, along with the speed of the conveyor chain, determines the spreader constant. Refer to the spreader setup chart, “Hydraulic (Variable Rate Ready) - N129459” on page 17, for the spreader constant as it relates to the metering gate opening.

The recommended metering gate opening for variable rate ready spreaders is 2 in. However, some adjustments may need to be made after the machine has been put into operation.

RAISE metering gate opening if conveyor cannot keep up with high rates/application speeds.

LOWER metering gate opening for low rates/speed to prevent ratcheting.

IMPORTANT: *If an adjustment to the metering gate is made, the spreader constant needs to be adjusted accordingly. Refer back to the chart on page 17 to find the spreader constant that correlates with the meter gate opening.*



Loosen handle (1). Move the gate control lever (2) until the indicator (3) is at the proper setting. Lock gate by retightening the handle (1).

Variable Rate Ready (VRR) (Cont'd

Calibrate Spreader Constant (VRR)

The spreader constant should be calibrated every time the metering gate is adjusted.

Catch Test

1. Fill spreader with product.
2. Measure product density using scale provided.
3. Weigh empty container and place container under spreader discharge to collect fertilizer.
4. Engage hydraulics for conveyor. DO NOT engage spinners.
5. Place controller console in test mode.
    a. Enter spreader constant for metering gate opening.
    b. Enter product density.
    c. Enter desired application rate, spread width, and application speed.
    d. Zero out total/field volume.
6. Turn on conveyor and collect fertilizer. Recommend 1,000 lb. for increased accuracy.
7. Turn off conveyor.
8. Weigh full container. Determine actual weight of fertilizer in container (full weight – empty weight)
9. Calculate new spreader constant. New spreader constant = old spreader constant * (console weight/actual weight).

NOTE: *If catch test is not feasible, new spreader constant can be calculated by using same formula and spreading a known amount of fertilizer on a field. Weigh spreader before and after test to determine amount actual amount of fertilizer applied.*

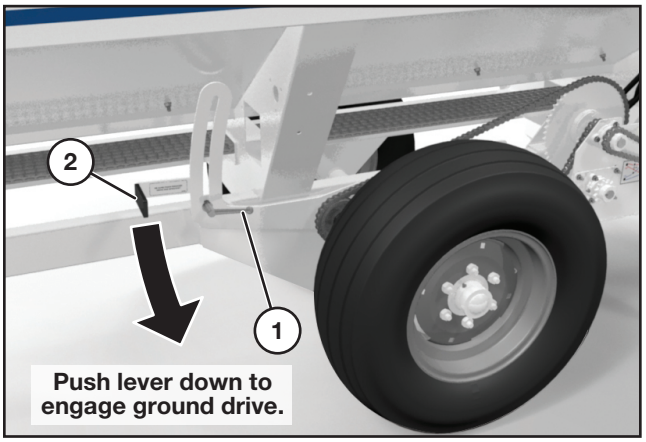
Engaging the Conveyor (VRR)

The conveyor is engaged from the controls in the tractor cab. Hydraulic valves on the tractor need to be activated. Set the valves to continuous flow.

IMPORTANT: *When spreader not in use, or to avoid unintended application, turn off hydraulic flow from tractor.*

Mechanical Ground Drive

Prepare For Field Use



1. Loosen the handle (1). Push down on the lever (2) to engage the ground drive. Retighten the handle (1).

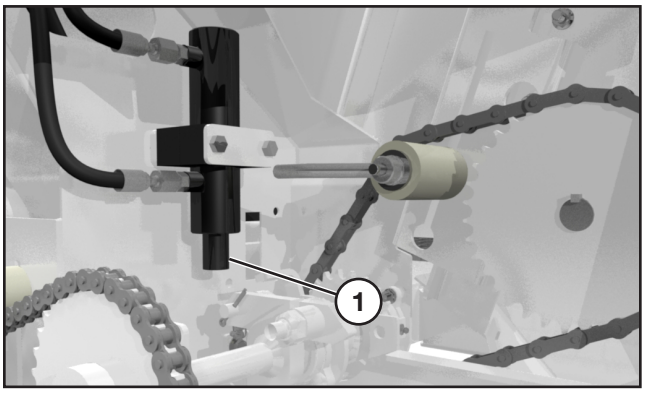
IMPORTANT: *Be sure the chain engages the hub sprocket properly. If it slips to one side, raise the chain and realign before lowering.*

2. Ensure hydraulic connections to tractor have been made.

(Procedure continued on following page.)

Mechanical Ground Drive (Cont'd)

Prepare For Field Use (Cont'd)



3. Using hydraulic controls in the tractor, fully retract the hydraulic disconnect cylinder (1) to apply product. Extend the cylinder to stop application.

IMPORTANT: *Disengage the chain drive when field work is complete by reversing step 1 from above. Do not transport the spreader when the ground drive is engaged. Also, make sure the hydraulic disconnect cylinder is extended to prevent product from spilling.*

⚠	**CAUTION:** *Transporting the spreader at high speeds with the ground drive engaged could cause serious damage to the spreader.*

Setting the Metering Gate Opening (Mechanical Ground Drive)

The application rate is determined by the metering gate opening and the speed range (high or low) of the conveyor chain.

To determine the gate opening:

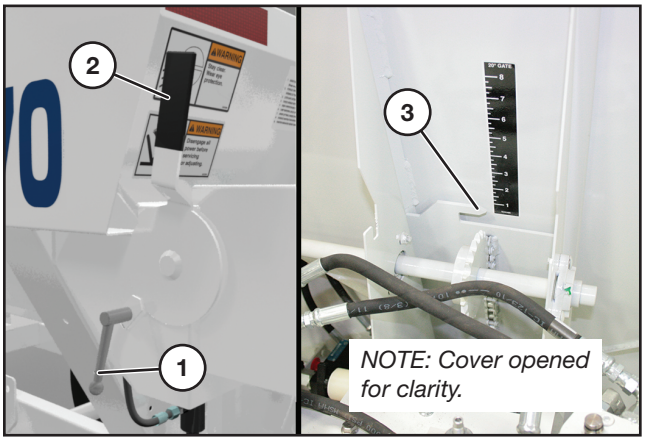
1. Find the fertilizer density. See "Determining Product Density" on page 12.

NOTE: *If scale is not available, weigh 1 gallon (3.78 Liters) of the fertilizer and then multiply that by 7.5 to establish the product density.*

2. Go to the Rate Chart Selector Guide found on page 16. Use this chart to find the correct Application Rate Chart within this manual that corresponds with your desired spread width and the machine's tire size.

3. Under the "Product Density" row of the Application Rate Chart, find the value closest to your outcome from Step 1. Follow this column down to the desired application rate.

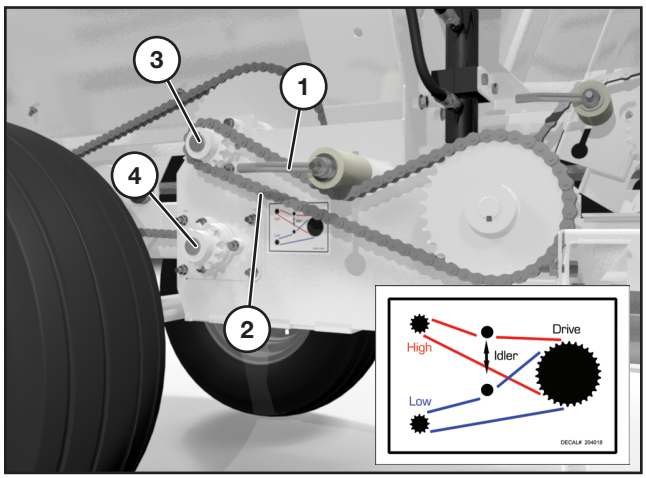
4. Follow this row to the left of the chart to the proper gate opening size.



Loosen handle (1). Move the gate control lever (2) until the indicator (3) is at the proper opening size. Lock gate by retightening the handle (1).

Mechanical Ground Drive (Cont'd)

Adjusting for High or Low Range (Mechanical Ground Drive)



Determine if the application will be spread in high range or low range.

Loosen the conveyor drive chain tensioner (1) and move the chain (2) to the appropriate set of sprockets.

High range - The chain must wrap around the upper sprocket (3).

Low range - The chain must wrap around the lower sprocket (4).

Reposition the drive chain tensioner and retighten.

IMPORTANT: *Read the application rate chart for operating in high range. To avoid undue stress on the conveyor mechanism, it is recommended to use the largest practical gate opening in low range before changing to high range.*

To assure a uniform application rate around field edges, make a border application with these adjustments. Reduce to 1/2 fan speed, gate opening, and travel interval.

⚠	**CAUTION:** *Do not use a gate setting of 1.5 in. (3.81 cm) in high range. This could cause undue stress on the hopper from a high conveyor speed.*

Spreading Speed and Interval

Speed

When spreading for a test pattern and for the final field application, maintain a speed of 3-8 mph.

Driving Interval

Test Pattern Interval: Driving interval is 25 ft. (7.62 m), depending on machine, to maintain an accurate spreader constant and spread pattern.

Field Application Interval: Determine optimum driving interval by following the steps below.

NOTE: *The spreader is designed to spread the material 25 ft. (7.62 m) to each side of center, giving a double coverage for a uniform application. The application chart is based on 25 ft. (7.62 m) driving intervals, not the actual spread width. However, a slight change in driving distance or spinner RPM may be beneficial for optimum coverage.*

1. Make sure all spread pattern adjustments are complete, and a spread pattern test has been produced following the "Spread Pattern Test" instructions found on page "Spread Pattern Test" on page 20.
2. From the Spread Pattern Test Results Sheet found on page 22, determine the maximum (cc) volume value of material in center of pattern.
3. Divide this value by two.
4. Locate the distance from the zero foot mark (centerline of driving path) where the graph intersects this (cc) value.
5. Multiply this distance by two to determine the optimum driving interval.

Even if the pattern has an acceptable shape, optimum driving interval may be too small for practical field use. If this is the case, the spreader must be adjusted to produce the best possible pattern shape with an acceptable driving interval.

⚠	**CAUTION:** *Do not exceed the rated gross weight of the spreader.*

Calibration (VRR Models)

The following chart shows the recommended calibration numbers for the VRR model spreader.

Calibration Component	Signal Type	Calibration Value
Spinner Speed Sensor	Pulses Per Spinner Revolution	20
Conveyor Speed Sensor	Pulses Per Drum Revolution	180
Conveyor Valve Type	Valve Type	PWM-Close
	Valve Calibration	Raven 0043 Deere 1533
	Coil Frequency	122 Hz
	High limit	255
	Low limit	0

Rate Chart Selector

Use the Rate Chart Selector Guide below to determine the correct Application Rate Chart based off of your spreader's drive option (hydraulic or mechanical).

The Application Rate Charts are found in this manual and the page numbers are provided within the Rate Chart Selector Guide below, after each respective chart/decal number.

NOTE: *An Application Rate Chart decal is also applied to the spreader when shipped from the factory that is reflective of the spreader's drive option. If changes are made to the spreader's configuration, and/or a different application setting is desired, a new decal can be ordered to coincide with the new changes. Refer to "Machine Decals and Signs" on page 61 to order a new decal.*

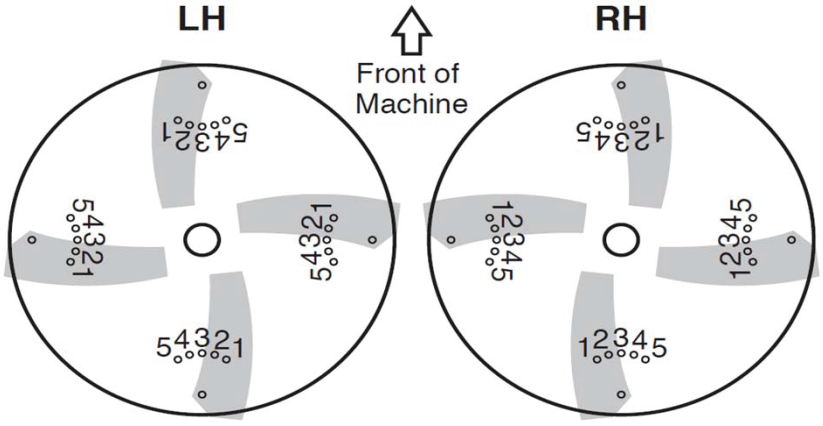
Rate Chart Selector Guide		
Driving Interval (ft)	**Conveyor Drive**	
	Mechanical Ground Drive (11L-15 Tires)	**Hydraulic (Variable Rate Ready)**
25	204016 *(page 18)*	N129459 *(page 17)*
DIST	204017 *(page 19)*	

Spreader Constants/Rate Charts

Hydraulic (Variable Rate Ready) - N129459

SPREADER SETUP		
MACHINE: FS800, RC800, OS170		N129459
GATE OPENING INCHES	SPREADER CONSTANT	CUBIC FEET PER REVOLUTION
1.00	3,170	0.0568
2.00	1,664	0.1082
3.00	1,132	0.1590
4.00	880	0.2045
5.00	702	0.2565
6.00	601	0.2993

DRIVING INTERVAL	SPINNER RPM	BLADE SETTING
25	495	3 - 2 - 3 - 2
40	700	
50	830	
60	950	
80	740	3 - 3 - 3 - 3
88	780	
90	790	



Spreader Constants/Rate Charts (Cont'd)

25 Ft. Mechanical Drive - 204016

APPLICATION RATE -- lbs/ACRE — 204016

25FT

MACHINE: OS170

TIRE SIZES: 11L-15

BLADE SETTING 3 - 2 - 3 - 2

SPINNER RPM 495

LOW RANGE
HIGH RANGE

APPLICATION RATE BASED ON 25 FT DRIVING INTERVALS
SEE MANUAL FOR OTHER DRIVING INTERVALS / TIRE SIZES

Gate Opening	Product Density lbs/ft3												
	45	50	55	58	60	62	65	67	70	75	80
5/8"	31	35	38	40	42	43	45	46	49	52	55
	94	**104**	**114**	**121**	**125**	**129**	**135**	**139**	**146**	**156**	**166**
1"	42	46	51	54	56	58	60	62	65	70	74
	126	**139**	**153**	**162**	**167**	**173**	**181**	**187**	**195**	**209**	**223**
1 1/2"	60	66	73	77	79	82	86	89	93	99	106
	179	**199**	**219**	**230**	**238**	**246**	**258**	**266**	**278**	**298**	**318**
2"	80	89	97	103	106	110	115	119	124	133	142
	239	**266**	**292**	**308**	**319**	**329**	**345**	**356**	**372**	**399**	**425**
2 1/2"	99	110	121	128	133	137	144	148	155	166	177
	298	**331**	**364**	**384**	**398**	**411**	**431**	**444**	**464**	**497**	**530**
3"	117	130	143	151	156	161	169	174	182	195	208
	351	**391**	**430**	**453**	**469**	**484**	**508**	**523**	**547**	**586**	**625**
3 1/2"	134	149	163	172	178	184	193	199	208	223	238
	401	**446**	**490**	**517**	**535**	**552**	**579**	**597**	**624**	**668**	**713**
4"	151	167	184	194	201	208	218	224	234	251	268
	452	**502**	**552**	**583**	**603**	**623**	**653**	**673**	**703**	**753**	**804**
4 1/2"	169	188	207	218	226	233	245	252	263	282	301
	508	**564**	**621**	**655**	**677**	**700**	**734**	**756**	**790**	**847**	**903**
5"	189	210	231	244	252	260	273	281	294	315	336
	567	**630**	**693**	**731**	**756**	**781**	**819**	**844**	**882**	**945**	**1,008**
5 1/2"	207	230	253	267	276	285	299	308	322	345	368
	621	**690**	**759**	**800**	**828**	**855**	**897**	**924**	**966**	**1,035**	**1,104**

Spreader Constants/Rate Charts (Cont'd)

Distance Mechanical Drive - 204017 (Used with Bander)

APPLICATION RATE -- lbs/ACRE — 204017

DIST

MACHINE: OS170

TIRE SIZES: 11L-15

BLADE SETTING 3 - 2 - 3 - 2

SPINNER RPM 495

LOW RANGE
HIGH RANGE

APPLICATION RATE BASED ON 100 FT OF DISTANCE TRAVELED
SEE MANUAL FOR OTHER DRIVING INTERVALS / TIRE SIZES

Gate Opening	Product Density lbs/ft3															
	45	50	55	58	60	62	65	67	70	75	80
1"	2	2	2	2	2	2	3	3	3	3	3
	5	**6**	**7**	**7**	**7**	**7**	**8**	**8**	**8**	**9**	**10**
1"	2	3	3	3	3	3	3	4	4	4	4
	7	**8**	**9**	**9**	**10**	**10**	**10**	**11**	**11**	**12**	**13**
1 1/2"	3	4	4	4	5	5	5	5	5	6	6
	10	**11**	**13**	**13**	**14**	**14**	**15**	**15**	**16**	**17**	**18**
2"	5	5	6	6	6	6	7	7	7	8	8
	14	**15**	**17**	**18**	**18**	**19**	**20**	**20**	**21**	**23**	**24**
2 1/2"	6	6	7	7	8	8	8	8	9	10	10
	17	**19**	**21**	**22**	**23**	**24**	**25**	**25**	**27**	**29**	**30**
3"	7	7	8	9	9	9	10	10	10	11	12
	20	**22**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**34**	**36**
3 1/2"	8	9	9	10	10	11	11	11	12	13	14
	23	**26**	**28**	**30**	**31**	**32**	**33**	**34**	**36**	**38**	**41**
4"	9	10	11	11	12	12	12	13	13	14	15
	26	**29**	**32**	**33**	**35**	**36**	**37**	**39**	**40**	**43**	**46**
4 1/2"	10	11	12	13	13	13	14	14	15	16	17
	29	**32**	**36**	**38**	**39**	**40**	**42**	**43**	**45**	**49**	**52**
5"	11	12	13	14	14	15	16	16	17	18	19
	33	**36**	**40**	**42**	**43**	**45**	**47**	**48**	**51**	**54**	**58**
5 1/2"	12	13	15	15	16	16	17	18	18	20	21
	36	**40**	**44**	**46**	**48**	**49**	**51**	**53**	**55**	**59**	**63**

Spread Pattern Test

Before placing the fertilizer spreader into operation, a spread pattern test must be performed. Differences in product density and/or texture can vary a spread pattern, therefore a test must performed each time a new material is implemented. Certain variables must be controlled and adjusted to ensure that there is uniform product coverage and that the spreader is operating efficiently with optimal performance.

Loftness is not responsible for costs or damages caused by misapplication of fertilizers. It is the responsibility of the operator to assure that the fertilizer is applied uniformly and correctly over the application area.

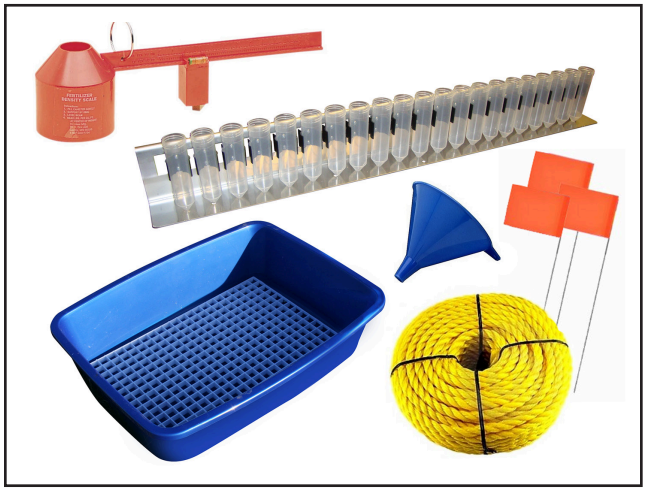
NOTE: *A spread pattern test must also be performed at the beginning of each season, and after adjustments have been made.*

Machine Preparation

Ensure the following items are completed before performing the spread pattern test.

- Inspect, repair, or replace any components that are damaged or not performing properly.
- Make all of the adjustments indicated in this manual.
- Ensure rear end and spinners are clear and free of obstruction.
- Determine the weight per cubic foot of material to be spread as accurately as possible using a density scale. See Loftness part number N105370.
- Fill the hopper 40-50% of full capacity. There must be enough product added to ensure the gate is completely covered throughout the test.
- Set the machine to the appropriate RPM. Refer to *"Spinner RPM" on page 25* for instructions. Chart shows recommended spinner speeds and blade setting for desired driving intervals. Adjustments to spinner speed/blade settings may be required to optimize spread pattern.

Course Set-up



You will need:

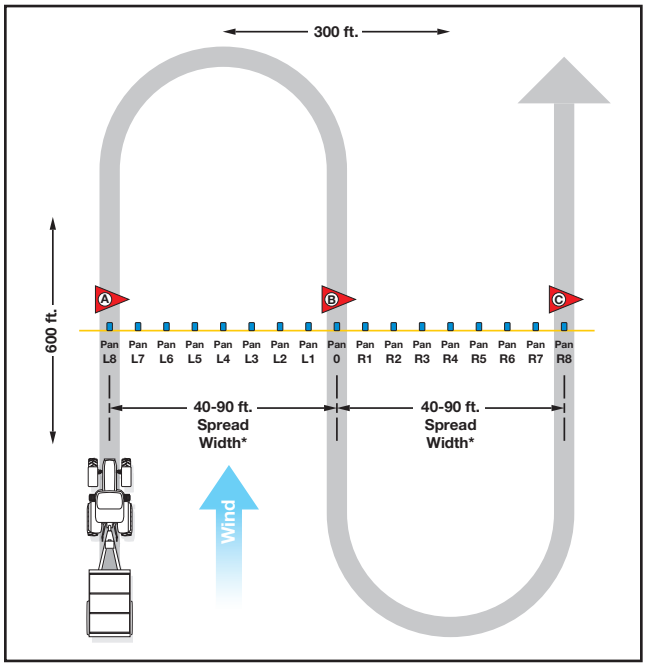
- Density scale
- 17 identical collecting pans lined with dividers
- 3 flags
- Yellow rope
- 17 cone-bottom vials with rack
- Funnel

NOTE: *For a test pattern kit with these items, contact your dealer.*

Spread Pattern Test (Cont'd)

Course Set-up (Cont'd)

Spread Pattern Course



Select a flat, level area 100-140 ft. x 200 ft. (30.48-42.68 m x 61 m). The 200 ft. (61 m) length should be parallel with the wind direction. For best results wind speed should be less than 10 mph.

Place the 17 identical pans lined with dividers in a line approximately 5-7 ft. apart (on center) from one another as shown above. Use the yellow rope to keep all pans in a straight line.

NOTE: *All pans must be at the same elevation. Additional pans may be necessary for wider spread patterns or increased test resolution. Pans should be evenly spaced.*

Spread Procedure

Use a wide front end tractor to pull the spreader.

Before conducting the test, drive the tractor/spreader for at least 450 ft. to allow the material in the hopper to settle.

IMPORTANT: *DO NOT let the spreader sit for an extended period of time with material in the hopper.*

1. Position unit at the beginning of the course, directed at Flag A.
2. Set gate for desired spreader constant. For variable rate ready drive, refer to *"Setting the Metering Gate Opening (VRR models)" on page 12* for instructions. For mechanical drive, refer to "Setting the Metering Gate Opening (Mechanical Ground Drive)" on page 14.
3. Make sure conveyor drive is engaged.

NOTE: *The recommended speed is 3-8 mph (4.8-12.9 km/h). The speed test should match your operating speed.*

4. Engage spinners.

NOTE: *During the test, note the farthest point from the course and unit center line that material is being spread. You will record this on the data sheet (see "Spread Pattern Test Results Sheet" on page 22).*

For steps 5-7, refer to illustration under *"Spread Pattern Course"* for course direction.

5. Drive through Flag A with the center of the unit lined up with the center of Pan L8.

   Allow ample room to turn back

6. Drive back through Flag B, keeping center of the unit lined up with the center of Pan 0.
7. Turn back and drive through Flag C, keeping center of the unit lined up with the center of Pan R8.
8. At the end of the course, turn off spinners and disengage the conveyor drive.

NOTE: *Depending on rate per acre, as many as five passes may be required to obtain a measurable amount of material in the outermost pans.*

IMPORTANT: *Do not test if wind speed is over 5 mph (8 km/h). If a wind exists, the direction of travel must be parallel with the wind direction, and all passes must be made traveling in the same direction.*

Gather the collection pans in an organized fashion. Start with the outermost pan - Pan L8. Proceed left to right until all pans have been picked up.

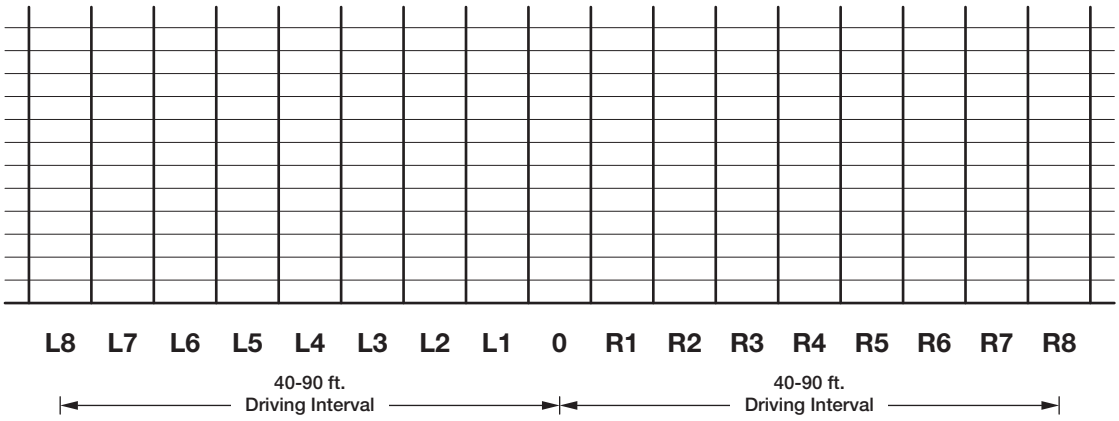
IMPORTANT: *Keep track of the order in which the pans are stacked. It is vital that they stay in order as this will facilitate the recording procedure. It may help to label each pan accordingly.*

Spread Pattern Test (Cont'd)

Spread Pattern Test Results Sheet

Location_____ **Serial #**_____ **Date**_____ **Test#**_____

Spread Pattern Test Results



Recorded Vial Readings

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

L8 L7 L6 L5 L4 L3 L2 L1 0 R1 R2 R3 R4 R5 R6 R7 R8

Spinner Blade Hole Location	Rear Deflector Setting	Gate Setting	Range	Spinner RPM	Material Density

Notes/Comments:_____

_____

_____

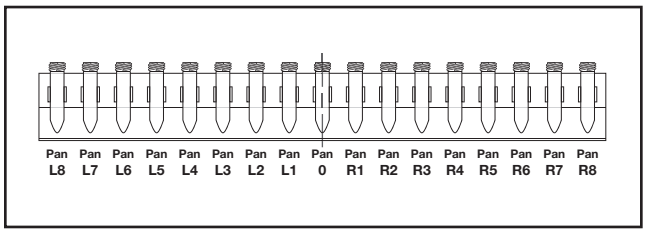
Spread Pattern Test (Cont'd)

Spread Pattern Recording

The material collected in the pans will be measured in the Spread Pattern Test Results sheet found on page 22 and will reveal the spread pattern. This data can be used to make adjustments to the machine, if necessary, based on the results.

Before entering the test pattern results, be sure to fill out the information requested such as location, serial number, etc. This information, along with the results, can be filed for future reference when completed.

NOTE: *Keep the original Spread Pattern Test Results sheet in this Owner's Manual and use a photocopy for writing down the information and recording the test results.*

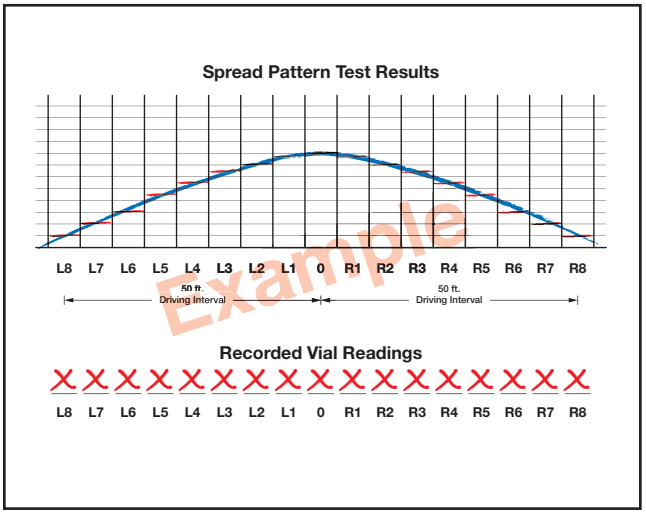


Using the funnel, empty the contents of each pan into its corresponding vial, starting with the L8 pan and vial.

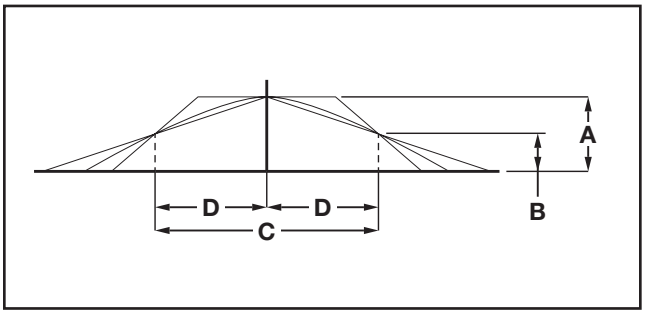
Measure the weight of the material in each vial using a scale. Record the weight for each vial in its proper square on the Test Pattern Results sheet.

NOTE: *Although each vial has marks for measure, the most reliable method for measurement is by weight as granular fertilizer components can settle with some irregularity.*

Graphing the Test Results



After all of the data has been entered on the Spread Pattern Test Results sheet, graph the results (see example above). Compare the shape of the graph to the following illustrations.



Any symmetrical spread pattern of these dimensional characteristics is acceptable.

A - Application rate of centerline.

B - One half of application rate at centerline.

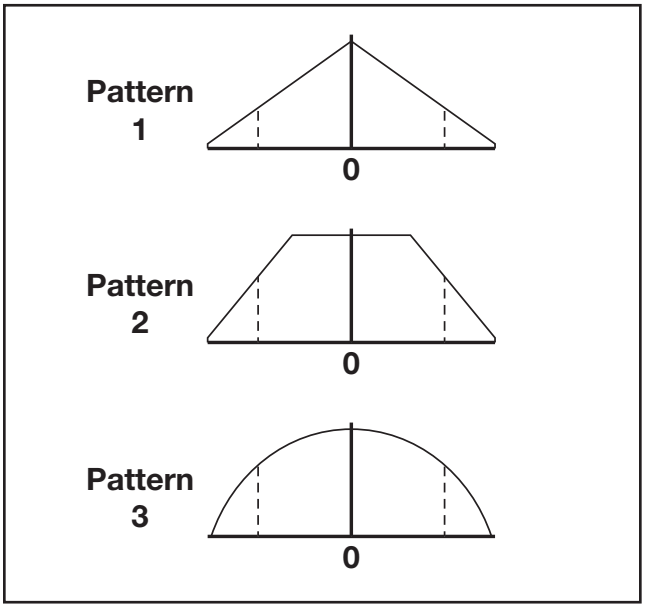
C - Driving interval width.

D - One half of driver interval width.

Acceptable patterns will deliver one half of the desired application rate at distance equal to one half driving interval from centerline. This point will be at the middle of the overlap.

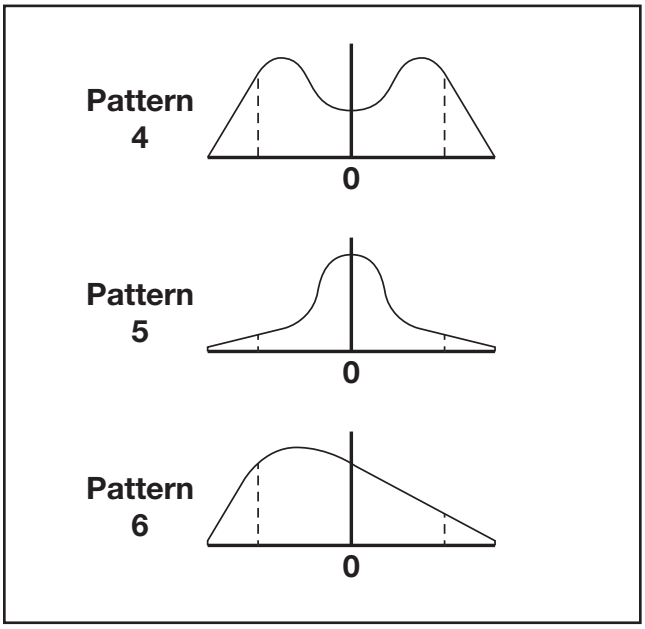
Spread Pattern Test (Cont'd)

Acceptable Patterns



If the pattern resembles any of the acceptable patterns above, no adjustments will need to be made to the machine.

Unacceptable Patterns

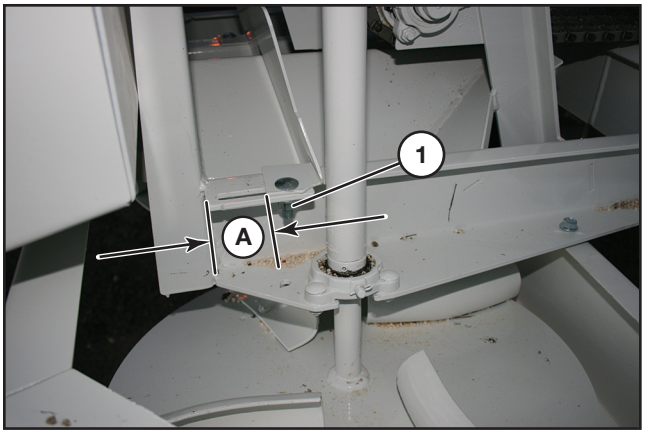


If the shape resembles any of the undesirable patterns above, take the recommended corrective action described in the following chart.

Spread Pattern	Recommended Corrective Action
Pattern 4 Low at center - High at sides	Move one or two spinner blades to a higher numbered hole.*
	Increase dimension "A". (See photo below.)
	Increase spinner RPM.
Pattern 5 High at center - Low at sides	Move one or two spinner blades to a lowered numbered hole.*
	Reduce dimension "A". (See photo below.)
	Decrease spinner RPM.
Pattern 6 Pattern off center	Check center divider - straighten or center if required.
	Spinner blade settings should be identical on each spinner.
	Check component condition and adjustment settings.

* Refer to *"Spinner Blade Positions" on page 25* for adjustment instructions.

Retest and adjust the machine until the test pattern matches one of the acceptable patterns. Refer to *"Spread Pattern Adjustments"* for adjustment instructions.



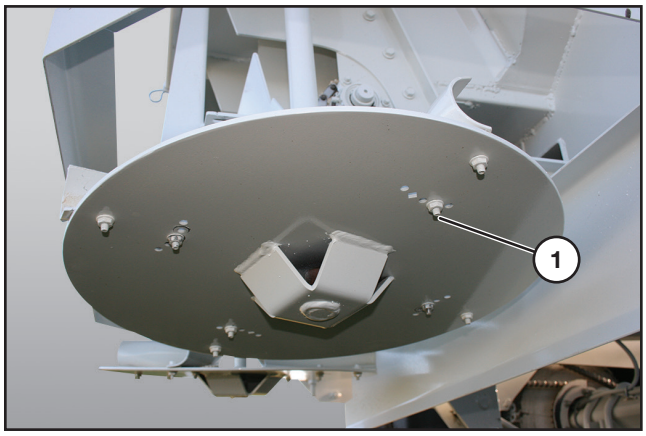
Loosen nut (1) - (both sides) to adjust dimension "A". Retighen nuts when preferred dimension is reached. See also *"Rear Deflector Adjustment" on page 25*.

Spread Pattern Adjustments

Before attempting any spread pattern adjustments, make sure the actual spread pattern has been determined.

Spinner Blade Positions

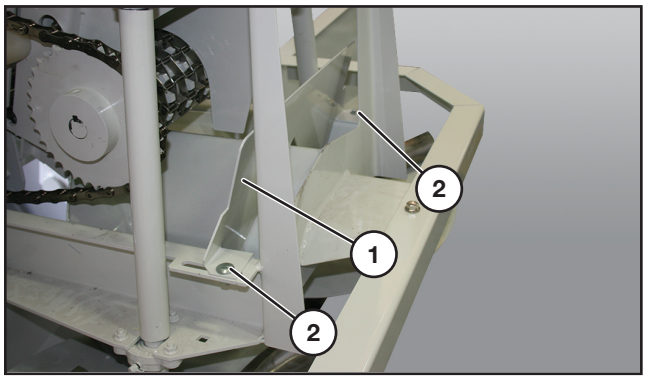
The spinner blades are the primary means of adjustment.



To adjust a spinner blade, remove the nut and washer (1) from the bolt securing the blade to the spinner. Reposition the blade and reinsert the bolt into the appropriate hole, securing with washer and nut.

NOTE: *Any adjustment to a blade must also be duplicated to the blade opposite the spinner shaft. Also, spinner blade settings should be identical to the opposite spinner.*

Rear Deflector Adjustment



To adjust rear deflector (1), loosen the nut and washer (2) on each side of deflector. Slide the deflector forward or back accordingly. Retighten hardware when deflector is in the desired position.

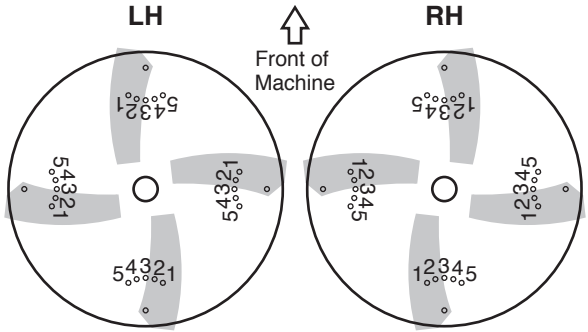
Spinner RPM

Check the spinner RPM with tractor throttle at operating speed - “PTO speed” for PTO powered spinners. Hold an electronic or mechanical tachometer near one of the spinners to check the spinner speed.

NOTE: *For spreaders with spinner speed sensor, speed can be checked from the controller.*

Driving Interval (Spread Width)	Spinner Speed RPM	Pattern Type	Spinner Blade Setting			
			1	2	3	4
25 ft.	495	Pattern 1 Triangle 100% Overlap	3	2	3	2

NOTE: *Spinner blade hole number increases as blade is moved rearward. 1-2-3-4-5 when facing RH spinner; and 5-4-3-2-1 when facing LH spinner.*



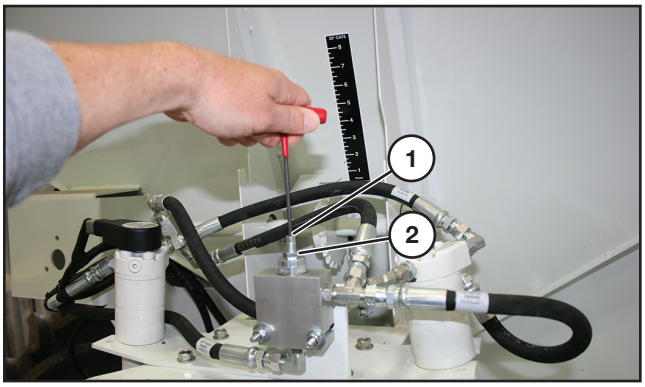
WARNING: *Spinners rotate at high speed. Do not get hands or tachometer too close when checking spinner RPM.*

(Procedure continued on following page.)

Spread Pattern Adjustments (Cont'd)

Spinner RPM (Cont'd)

For Hydraulic Drive Spreaders



To make adjustments, use a hex key to turn the flow control on the hydraulic valve located above the spinners.

Turn the adjustment screw (1) clockwise to decrease RPM and counterclockwise to increase spinner RPM.

NOTE: *Do not make more than 1/4 turn of the adjustment screw without rechecking the spinner RPM.*

Recheck the spinner RPM using the tachometer or spinner speed sensor on control display, if equipped.

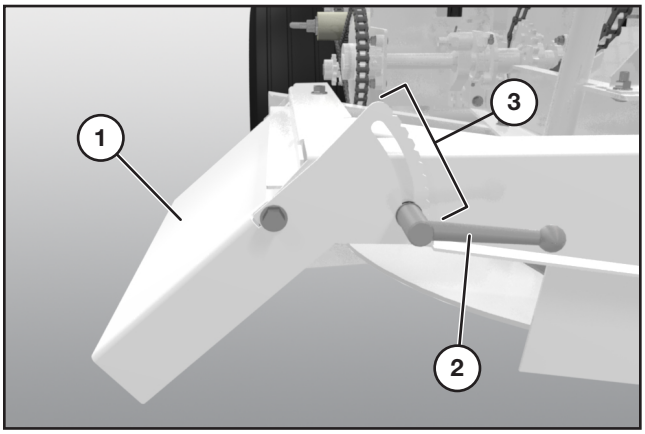
When complete, tighten the lock nut (2) to maintain the desired setting.

Spinner RPM (PTO Powered Spinners)

For PTO powered spinners, adjust tractor PTO speed. Or if different spread width is desired, contact your dealer for alternate pulleys.

Bander Operation

The optional bander at the rear of the spreader deflects the fertilizer and places it in narrow zones or bands to provide a concentrated application. Deflectors on the bander can be adjusted to direct the fertilizer to the desired location, or band width.



To adjust a deflector (1), loosen the handle (2) then raise or lower the deflector angle to the desired setting.

Notches (3) are provided in the deflectors to be used as a mark for equal setting on both bander deflectors.

Retighten handle when angle is set.

Repeat for opposite side.

NOTE: *Refer to "Bander Installation and Removal" on page 32 for installation and removal of the bander assembly. The bander will need to be removed when broadcast spreading.*

General Maintenance

See *"Maintenance Safety" on page 4* before performing any service or maintenance on the fertilizer spreader.

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 spreader after each use.

Maintenance Schedule

HOURS	SERVICE POINTS	SERVICE REQUIRED					
		CHECK	CLEAN	CHANGE	GREASE	ADJUST	OIL
Every 8 (or after each use)	**Machine**		X				
	Loose Bolts	X				X	
	Hoses and Wiring	X					
	Oil Leaks	X					
	Bearings (Spinner, Conveyor, Metering Gate, Mechanical Ground Drive - if equipped)				X		
	Chain Tension	X					
	PTO Shaft	X			X		
Every 50	**Conveyor**	X					
	Safety Labels	X					
	Wheels and Tires	X					
Every 60	**Bearing Set Screws**	X				X	
Every 500	**Wheel Bearings**	X			X		
	Jack				X		

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.

1. Grease - Use an SAE multipurpose high temperature grease with extreme-pressure (EP) rating. Also acceptable is an SAE multipurpose lithium based grease.

3. 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

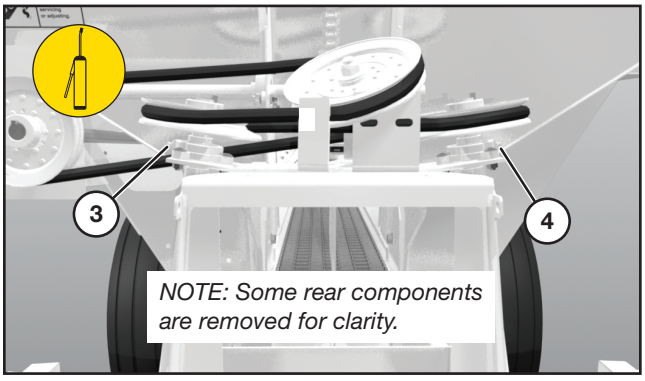
WARNING: *Do not lubricate parts while the machine is running.*

Use an SAE multipurpose high temperature grease with extreme-pressure (EP) rating.

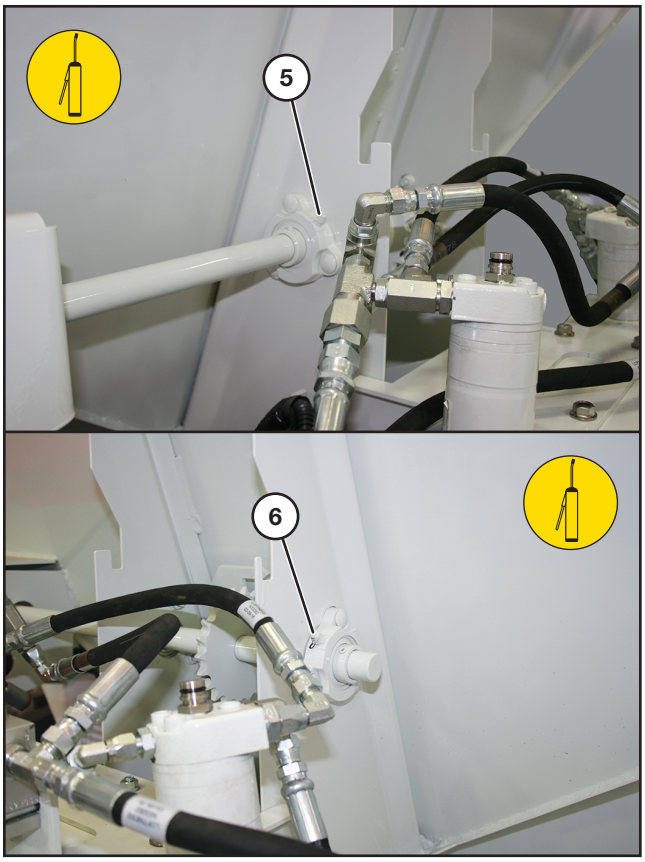
NOTE: *Replace any broken or missing grease fittings. Be sure to clean fittings before greasing.*

NOTE: *See "OS 170 Fertilizer Spreader Identification" on pages 6 and 7 for component location and identification.*

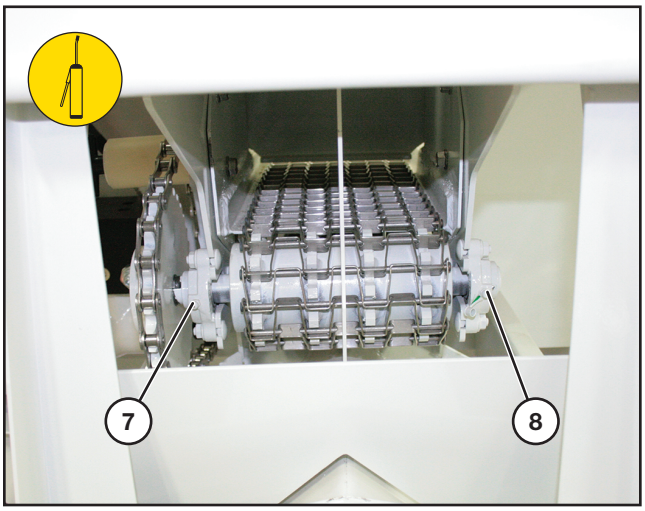
Location: Spinner bearings, lower (1, 2).
Interval: Every 8 hours of operation.



Location: Spinner bearings, upper (3, 4). (PTO drive models only).
Interval: Every 8 hours of operation.



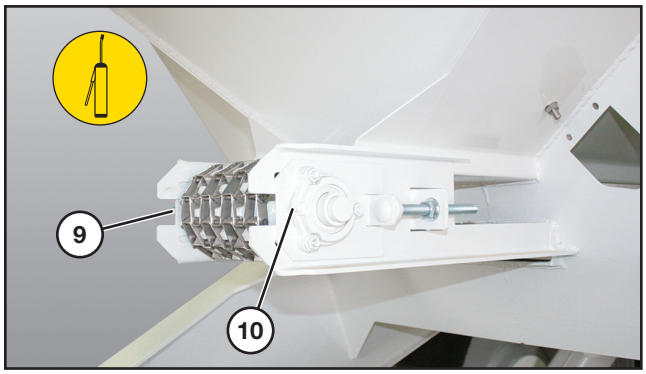
Location: Metering gate bearings (5, 6).
Interval: Every 8 hours of operation.



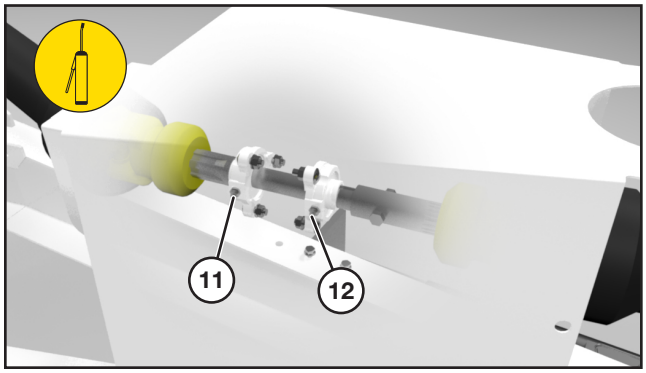
Location: Conveyor roller bearings; rear (7, 8).
Interval: Every 8 hours of operation.

Lubrication (Cont'd)

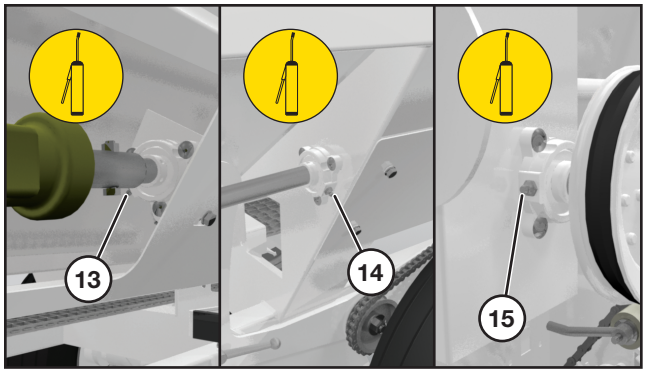
Grease Points (Cont'd



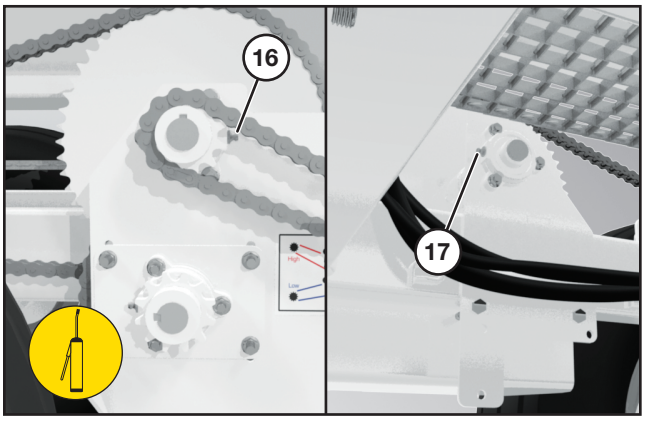
Location: Conveyor roller bearings; front (9, 10).
Interval: Every 8 hours of operation.



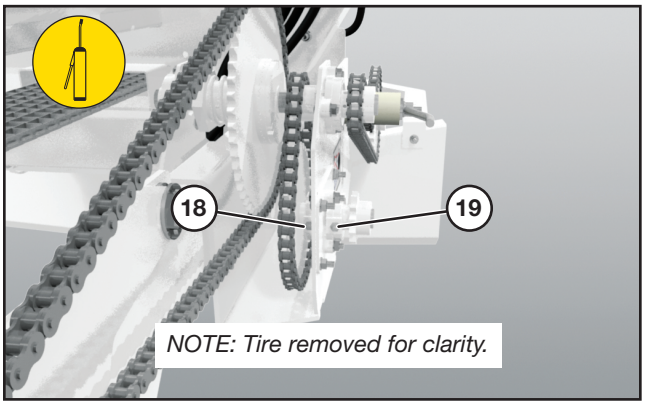
Location: PTO drive bearings; front (11, 12). (PTO drive models only) .
Interval: Every 8 hours of operation.



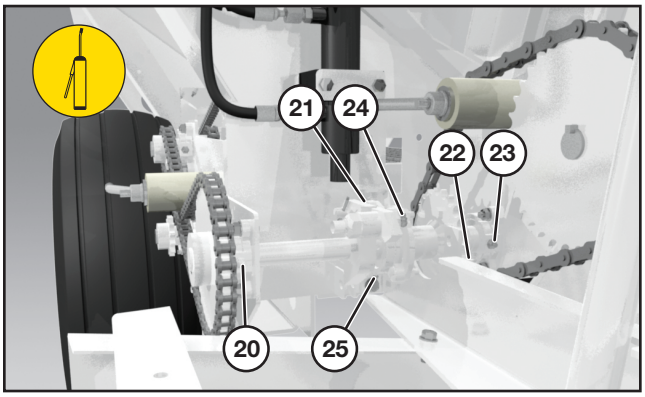
Location: Drive shaft bearings (13, 14, 15). (PTO drive models only).
Interval: Every 8 hours of operation.



Location: High range shaft bearings (16, 17). (Mechanical ground drive only.)
Interval: Every 8 hours of operation.



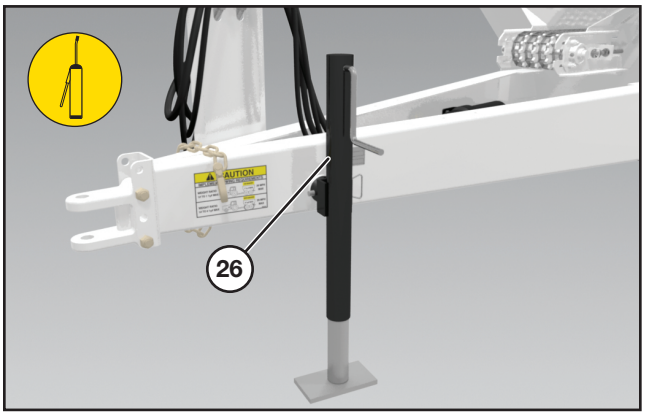
Location: Low range shaft bearings (18, 19). (Mechanical ground drive only.)
Interval: Every 8 hours of operation.



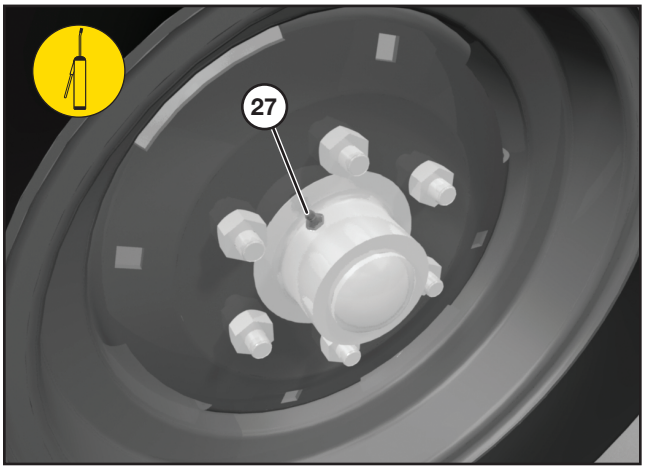
Location: Clutch shaft bearings (20, 21, 22, 23). Clutch assembly elbow fittings (24, 25). (Mechanical ground drive only.)
Interval: Every 8 hours of operation.

Lubrication (Cont'd)

Grease Points (Cont'd



Location: Jack (26).
Interval: Every 500 hours of operation. Disassemble jack and clean and re-pack acme screw and thrust bearing after each season.



Location: Wheel bearings - both tires (27).
Interval: Every 500 hours of operation.

NOTE: *See "Wheel Bearing Maintenance" for more information on wheel bearing maintenance.*

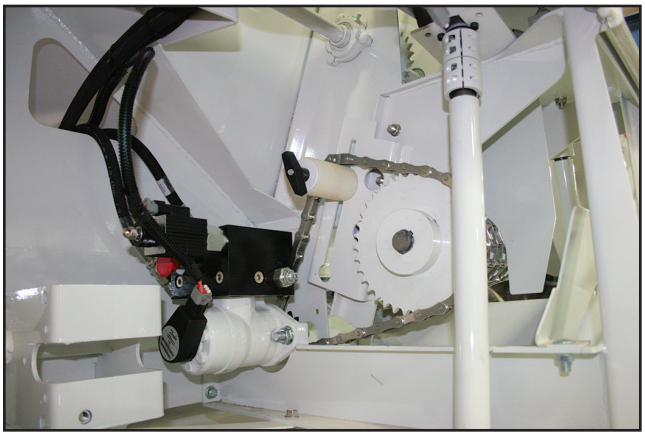
Wheel Bearing Maintenance

⚠	**CAUTION:** *Do not remove wheel hubs with wheels and tires attached.*

⚠	**WARNING:** *Block and support the spreader securely before removing the tires and wheels to prevent it from falling.*

Thoroughly clean all parts in solvent and check for bearing wear or cracked spindles. Repack bearings by forcing grease between the rollers. Assemble washer and nut on spindle and rotate hub while tightening the nut to 20-25 ft/lbs. Back off the nut until it becomes loose. While rotating the hub, hand tighten the nut, and align the cotter pin hole in the spindle with the slot in the nut. There should be .001-.005 in of end play. Insert cotter pin and bend it around the nut.

Roller Chain(s)



Remove the roller chain(s) every two weeks during the season and soak in oil for at least 4 hours.

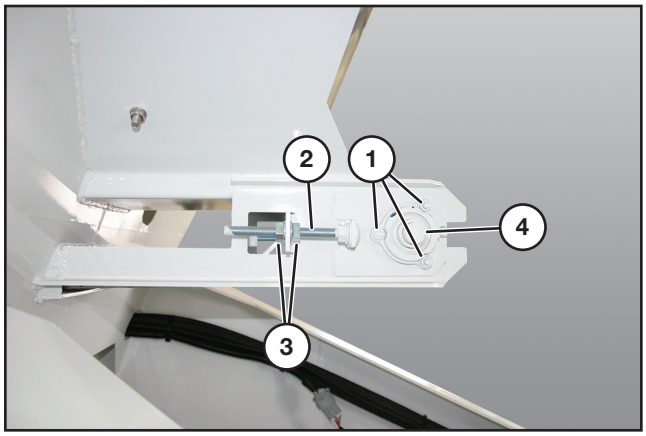
Wipe off excess oil before reinstalling.

Removing the Rear End

The rear end can be removed if repairs, replacement, or reconditioning should ever be needed.

To disassemble, remove the conveyor chain, bumper, and both spinners. Locate splice pin in conveyor chain. Remove the bolts securing the rear end.

Tightening Conveyor



Loosen nuts on the bearing mounting bolts (1) (three on each side of conveyor).

Adjust the take-up bolt (2) and nuts (3) on both sides of the frame evenly until conveyor chain clears frame by 1/2 in. to 1 in.

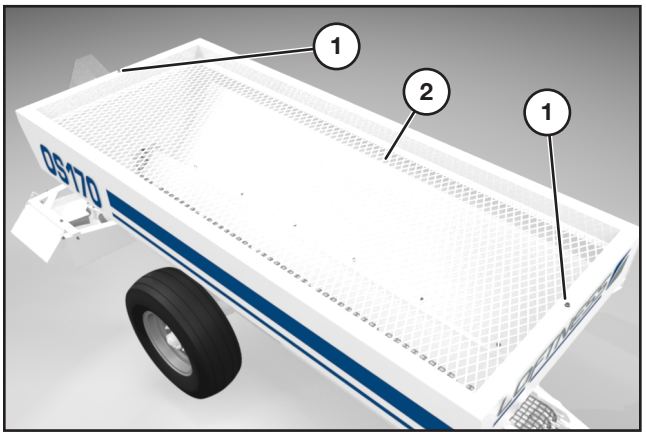
Check shaft locking collar set screws (4) for tightness (both sides).

Reset take-up nuts (3). Tighten.

Screen Removal

The OS170 is equipped with a screen to keep debris from falling into the hopper and conveyor.

The screen may need to be removed occasionally to service and/or maintain the machine.



Remove the two bolts (1) on top of the spreader.

⚠	**WARNING:** *The screen is heavy. It is recommended that a power hoist be used to lift and place the screen.*

Lift screen (2) off of the spreader and set aside.

To replace the screen, reverse the steps above.

Replacing Metering Shaft

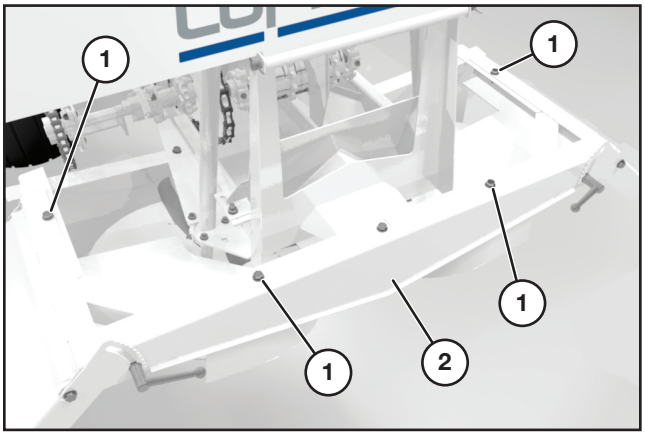
With old shaft out, install new metering shaft with handle up and approximately 1 to 1-1/2 in. away from hopper. Install and align sprocket with chain on gate, be sure gate is closed all the way.

Tire Inflation

Check tire inflation pressure. Set correct inflation pressure for tire per table.

Tire Size	Inflation Pressure
11L-15	44 psi

Bander Installation and Removal



To remove the bander assembly and return the spreader to broadcast spreading, remove the four bolts (1) and nuts at the locations shown above.

Slide the bander assembly (2) off the back of the spreader frame.

⚠	**CAUTION:** *The bander assembly is heavy. Use two people to lift when removing or installing.*

Reverse the steps above for installation.

Cleaning

To extend the life of the spreader and to keep it running efficiently, it should be cleaned after each day of use and before both short-term and long term storage. Left unchecked, accumulation of fertilizer will cause corrosion on the machine. Fertilizer buildup in and around the conveyor and rear gate could also decrease the spreader constant.

⚠	**CAUTION:** *Chemical ingredients in some fertilizers may cause paint to blister or peel.*

Position so one end of the spreader is lower than the other and place blocks under the conveyor chain to lift it up off of the floor of the spreader.

Using a high-pressure water sprayer, clean the conveyor, rear end, spinners, and everywhere that the fertilizer accumulates.

IMPORTANT: *To avoid damage to the conveyor mechanism, make sure all fertilizer is removed in the areas around the spinners and on the floor of the spreader.*

Storage

Because of the corrosiveness of granular fertilizers, the machine should be kept clean and lubricated to extend the life of the machine and prevent damage to the driveline and other moving parts.

For Short-term Storage:

1. Make sure the spreader hopper is completely empty.
2. Wash machine thoroughly to remove all fertilizer, grease, and oil.
3. Lubricate machine per instructions in this manual.

For Long-term or End of Season Storage:

⚠	**CAUTION:** *Do not remove wheel hubs with wheels and tires attached.*

⚠	**WARNING:** *Block and support the spreader securely before removing the tires and wheels to prevent it from falling.*

1. Make sure the spreader hopper is completely empty.
2. Wash machine thoroughly to remove all fertilizer, grease, and oil.
3. Lubricate machine per instructions in this manual. Remove all roller chains and store them in a container of oil. Remove wheel hubs and repack the wheel bearings. Do not remove hubs with wheels and tires attached.
4. Sand and clean any rusted areas. Apply a coat of metal primer and finish with a top coat of paint.
5. Park spreader with one end lower for drainage. Do not cover during storage. If equipped, do not have cover on hopper.

Troubleshooting

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

PROBLEM	POSSIBLE CAUSE	SOLUTION
Spreader constant inaccurate.	Driving at wrong interval.	Drive at correct interval for pattern. Check controller settings for application width.
	Incorrect metering gate setting and/or incorrect range being used.	Verify metering gate setting and ensure operation range is correct.
	Fertilizer build-up on floor and around metering gate.	Clear fertilizer build up.
	Spreader not calibrated correctly.	Calibrate spreader.
Spread pattern not the same on both sides of the spreader.	For PTO drive models, check wrap on rear V-belt.	Tighten/adjust rear V-belt.
	Rear deflector and/or divider is misaligned.	Check alignment.
	Spinners height not consistent.	Verify and adjust spinners to be the same height.
Spread pattern heavy or light at center line of spreader.	Spinner RPM is incorrect.	Use tachometer to verify spinner RPM. Adjust if necessary.
	Rear V-belt is slipping, or too loose.	Tighten V-belt.
	Spinner blades and deflector position are in incorrect position.	Adjust blades and deflector accordingly.
	Driving at wrong interval.	Drive at correct interval for pattern. Check controller settings for application width.
Spread pattern too narrow.	Low spinner RPM.	Increase spinner speed.
Spread pattern too wide.	High spinner RPM.	Decrease spinner speed.
Applied rate low.	Speed too fast.	Drive slower.
	Rate set too high.	Increase gate opening and adjust spreader constant.
		Decrease rate.
Application rate inaccurate.	Driving at wrong interval.	Drive at correct interval. (*Example: Drive at 25 ft. intervals for 25 ft. spread pattern.*)
		See Rate Charts.
	Wrong interval entered.	Enter correct interval in controller.
	Calibration number incorrect.	Calibrate spreader.
	Incorrect metering gate setting and/or incorrect range being used.	Verify metering gate setting and ensure operation range is correct.
	Fertilizer build-up on floor and around metering gate.	Clear fertilizer build up.
Spinner speed does not increase.	Low tractor hydraulic flow.	Increase flow from tractor.

Troubleshooting (Cont'd)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Spinner speed not stable.	Flow control set too high.	Decrease flow until speed is stable.
Spinners not spinning.	Tractor hydraulics not running.	Turn on tractor hydraulics.
	Incorrect hydraulic setting.	Set tractor hydraulics to motor/ continuous.
		Check priority setting of tractor hydraulics.
	Tank line pressurized.	Pressurize "Pressure" line.
Spinner speed not reading.	Sensor not connected.	Connect sensor.
	Calibration not entered.	Enter correct calibration number.
	Incorrect calibration.	Enter correct calibration number.
	Poor electrical connection.	Check electrical connections.
		See Troubleshooting in controller manufacturer's manual.
	Failed sensor.	Replace sensor.
Conveyor will not move.	Tractor hydraulics not running	Turn on tractor hydraulics.
	Incorrect hydraulic setting.	Set tractor hydraulics to motor/ continuous.
		Check priority setting of tractor hydraulics.
	Tank line pressurized.	Pressurize "Pressure" line.
	Master switch off.	Turn on master switch.
	No rate entered.	Enter desired rate.
	Tractor not moving.	Drive tractor.
		Enter test mode.
	Insufficient tractor speed.	Drive faster than minimum application speed.
Conveyor speed will not change.	Controller in test mode.	Exit test mode.
	Rate set to manual.	Set rate to automatic mode.
Conveyor ratches.	Rate set too low.	Increase rate.
		Decrease gate opening and adjust spreader constant.
	Speed too slow.	Drive faster.

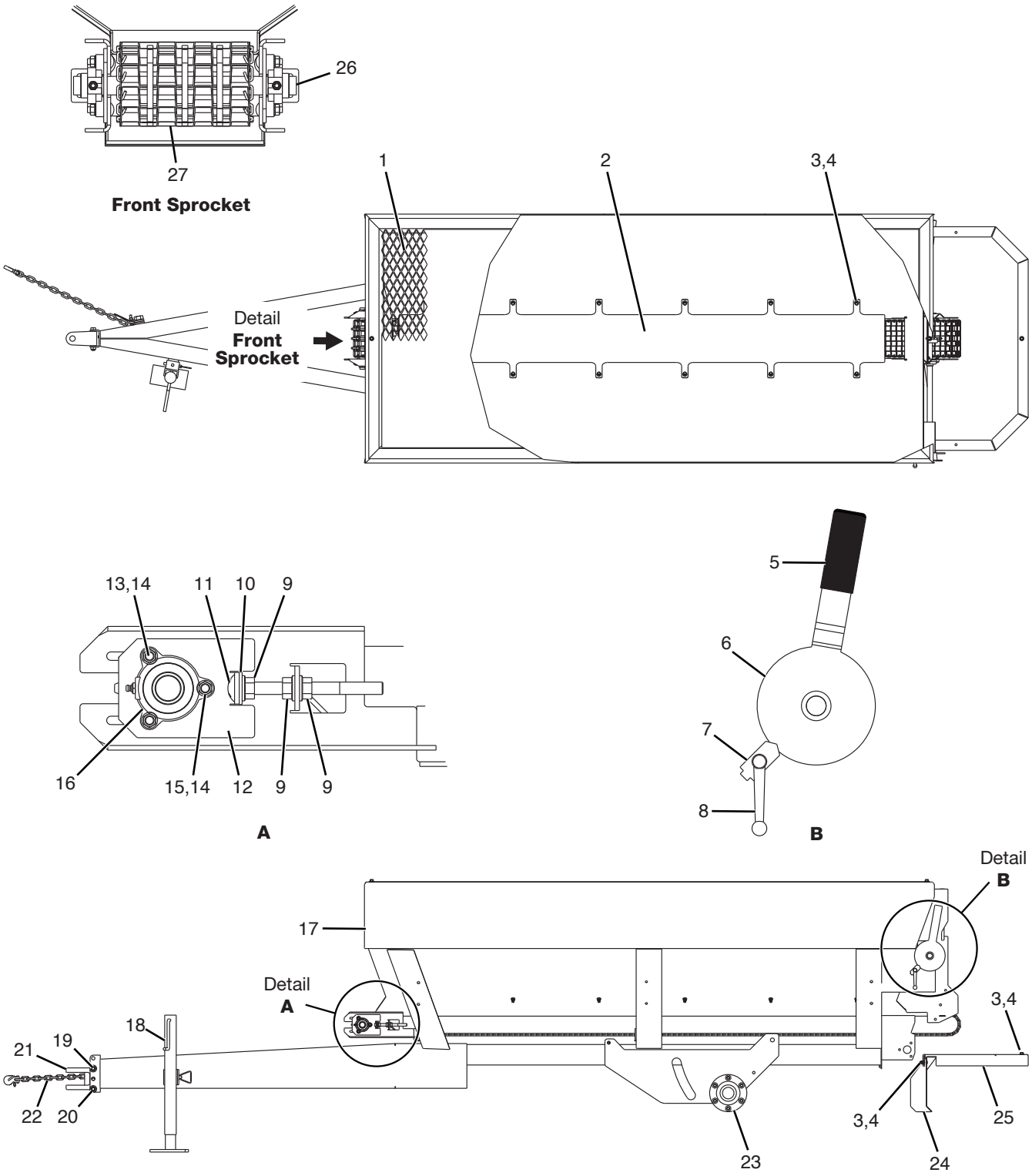
Troubleshooting (Cont'd)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Slip clutch slips.	Conveyor is catching or has obstructions such as caked fertilizer.	Fully open metering gate, drive a few feet to free conveyor of packed fertilizer.
		Shift to low range and use a larger gate opening.
		Remove built up fertilizer from floor and around metering gate.
		Adjust slip clutch tension.
	Ground drive chain wrapped incorrectly.	Check ground drive chain wrap.
Rear V-belt comes off.	Sheaves are misaligned.	Realign sheaves and adjust belt tension.
	Wrong sheaves and V-belt are being used.	Use only sheaves and deep-groove belts.
Bander not throwing product at correct or consistent distance(s).	Bander deflector(s) not set properly.	Adjust and set bander deflector(s). See "Bander Operation" on page 26 for instructions.


LOFTNESS

PARTS IDENTIFICATION

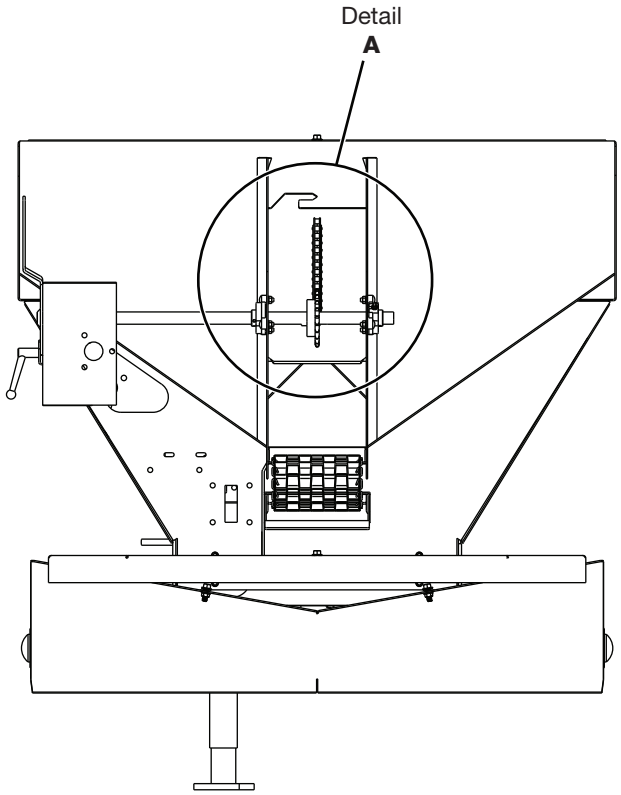
Spreader Frame

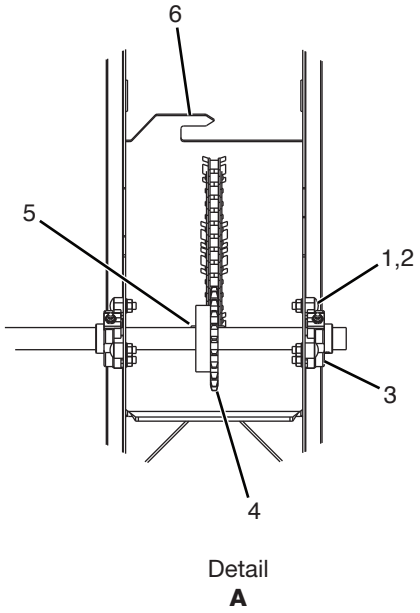


Spreader Frame

#	QTY.	PART #	DESCRIPTION
1	1	N123921	OS170 SCREEN COVER
2	1	N41898	HOOD, SRDR 6 & 8 FLOOR CHAIN
3	17	N73940	NUT, LOCK 3/8" SER FLG SS
4	19	N50815	BOLT, 3/8" X 1" SS SER FL GR 5
5	1	N50757	COVER, PLASTIC HANDLE
6	1	N43352	ADJUSTER,GATE
7	1	N43362	POINTER, SPREADER GAUGE
8	1	N128964	HANDLE, 3/8-16 X 1-9/16
9	6	N29075	NUT, LOCK 1/2" SERATED FLANGE
10	2	4997	WASHER, FLAT 5/8" SAE
11	2	4988	BOLT, CARRIAGE 1/2" X 6" GR 5
12	2	N62318	PLATE, SPREADER B
13	4	N62391	BOLT, CARRIAGE 5/16 X 1-1/4, SS
14	12	N41427	NUT, LOCK 5/16" SER FLG, SS
15	8	N41428	BOLT, CARRIAGE 5/16" X 1", SS
16	4	N33830	BEARING, 1" DODGE 3-BOLT FLG
17	1	N116626	BIN WLDMT, OS170
18	1	8047	JACK, BULLDOG SWL 158DTSF
19	2	4027	BOLT, 5/8" X 4" GRADE 5
20	2	4055	NUT, LOCK 5/8" TOP
21	1	N124747	CLEVIS, HITCH 1"
22	1	N24248	CHAIN, SAFETY W/MOUNT HARDWARE
23	2	N23778	HUB, 6 BOLT 6" PAT W/STUDS
24	1	N123691	DEFLECTOR, SPREADER SPINNER
25	1	N124104	GUARD, SPREADER SPINNER
26	1	N43841	SPROCKET WLDMT, IDLER
27	1	N41429	BELT, FLATWIRE 7"X241"

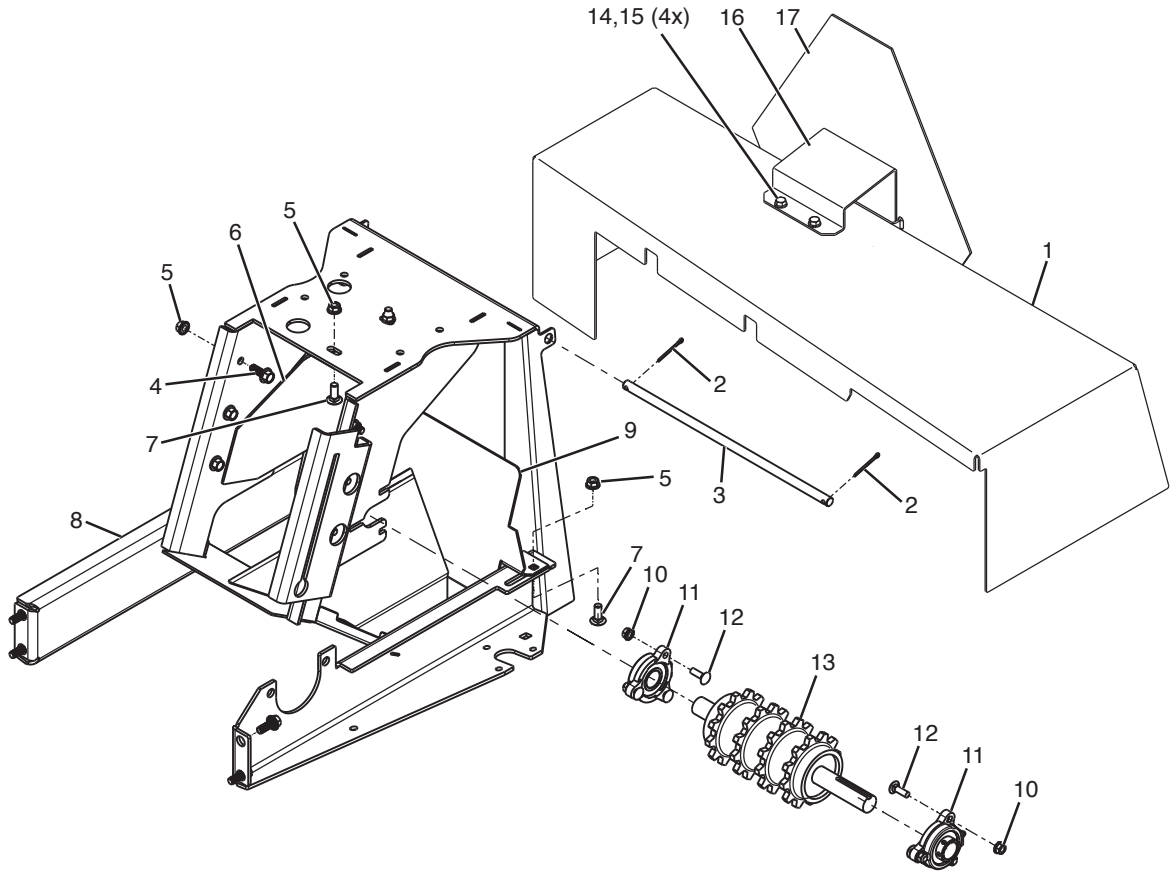
Spreader Frame (Cont'd)





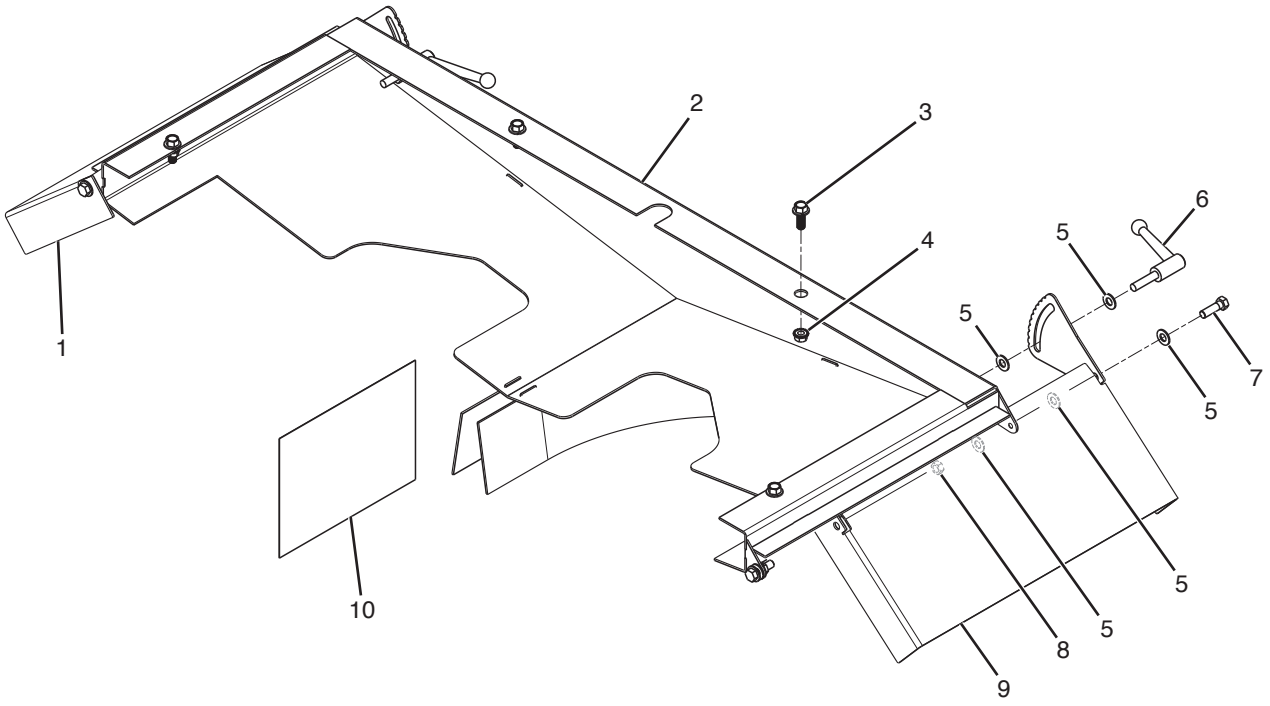
#	QTY.	PART #	DESCRIPTION
1	12	N41427	NUT, LOCK 5/16" SER FLG, SS
2	8	N41428	BOLT, CARRIAGE 5/16" X 1", SS
3	4	N33830	BEARING, 1" DODGE 3-BOLT FLG
4	1	N43498	SPROCKET, 50B22 1/4 KEYWAY & SS
5	1	7187-03	KEY, 1/4" X 1-1/2"
6	1	N43400	GATE WLDMT

Spinner Mount and Cover



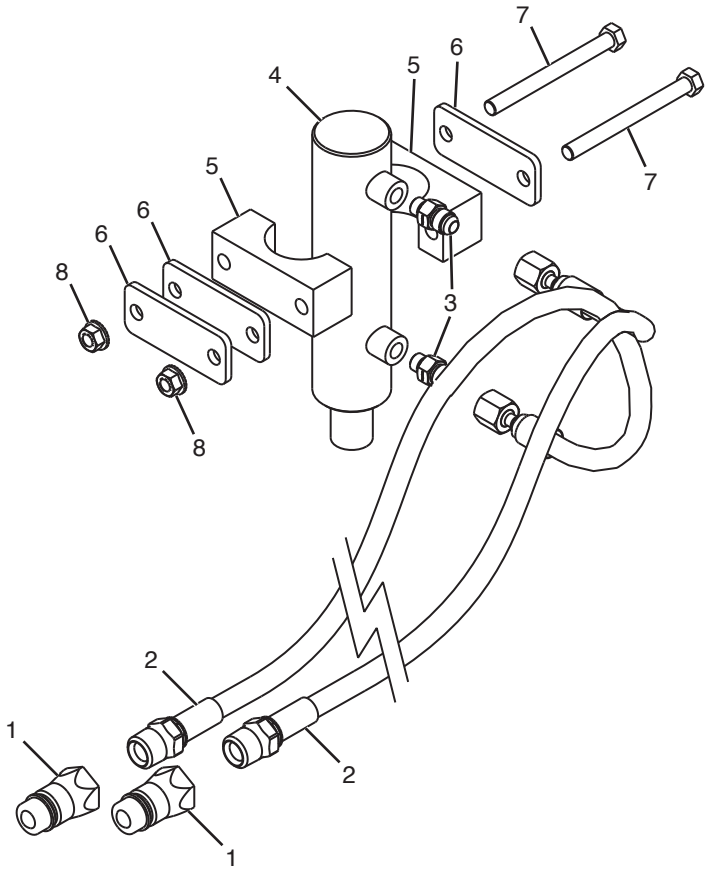
#	QTY.	PART #	DESCRIPTION
1	1	N124727	OS170 BACK COVER W/LOGO
2	2	4099	PIN, COTTER 1/8" X 1-1/2"
3	1	N44143	PIN, SPREADER BELT SHIELD
4	10	N50815	BOLT, 3/8" X 1" SS SER FL GR 5
5	10	N73940	NUT, LOCK 3/8" SER FLG SS
6	1	N44105	DIVIDER, SPRDER CTR DISCHARGE
7	4	4567	BOLT, CARRIAGE 3/8" X 1" SS
8	1	N101005	MOUNT, SPREADER SPINNER
9	1	N43924	PLATE, SPRDR DUAL SPNR STOP
10	6	N41427	NUT, LOCK 5/16" SER FLG, SS
11	2	N33830	BEARING, 1" DODGE 3-BOLT FLG
12	6	N41428	BOLT, CARRIAGE 5/16" X 1", SS
13	1	N51441	DRUM WLDMT,DRIVER
14	4	4560	BOLT, 5/6" X 1" SER FLG
15	4	N26742	NUT, LOCK 5/16" SER FLG
16	1	N130958	BRACKET
17	1	N130948	SIGN, SMV

Bander Assembly (Optional)



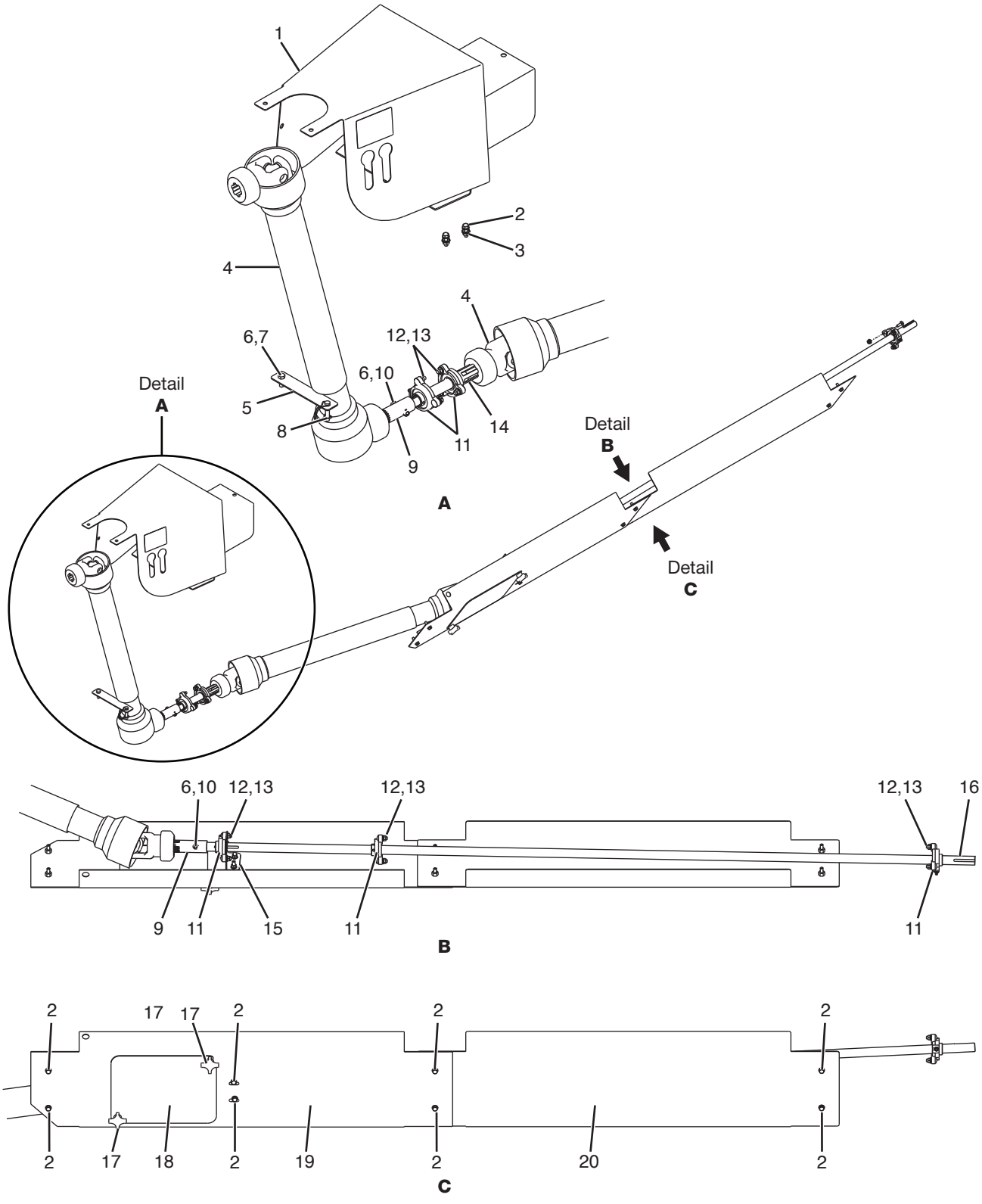
#	QTY.	PART #	DESCRIPTION
1	1	204032	DEFLECTOR, BANDER RH
2	1	N117894	BANDER
3	4	N50815	BOLT, 3/8" X 1" SS SER FL GR 5
4	4	N73940	NUT, LOCK 3/8" SER FLG SS
5	16	N31741	WASHER, FLAT 3/8" SAE
6	2	N128964	HANDLE, 3/8-16 X 1-9/16
7	4	4563	BOLT, 3/8" X 1-1/4" SS GR 5
8	4	4568	NUT, LOCK 3/8" SS
9	1	204034	DEFLECTOR, BANDER LH
10	1	204017	DECAL, FERTILIZER APPLICATION

Disconnect, Hydraulic



#	QTY.	PART #	DESCRIPTION
1	2	N11825	COUPLER, 1/2" MALE PIONEER
2	2	N66861	HOSE, 1/4" X 257" -8MPT -6FJX
3	2	N28824	ADAPTER, 6MJIC -4MOR
4	1	N43516	CYLINDER, 1-1/2" x 3"
5	2	N43518	BODY, CLAMP 1.75"
6	3	N43520	PLATE, SPREADER CYL CLAMP
7	2	4456	BOLT, 3/8" X 4" GRADE 5
8	2	4979	NUT, LOCK 3/8" SER FLG

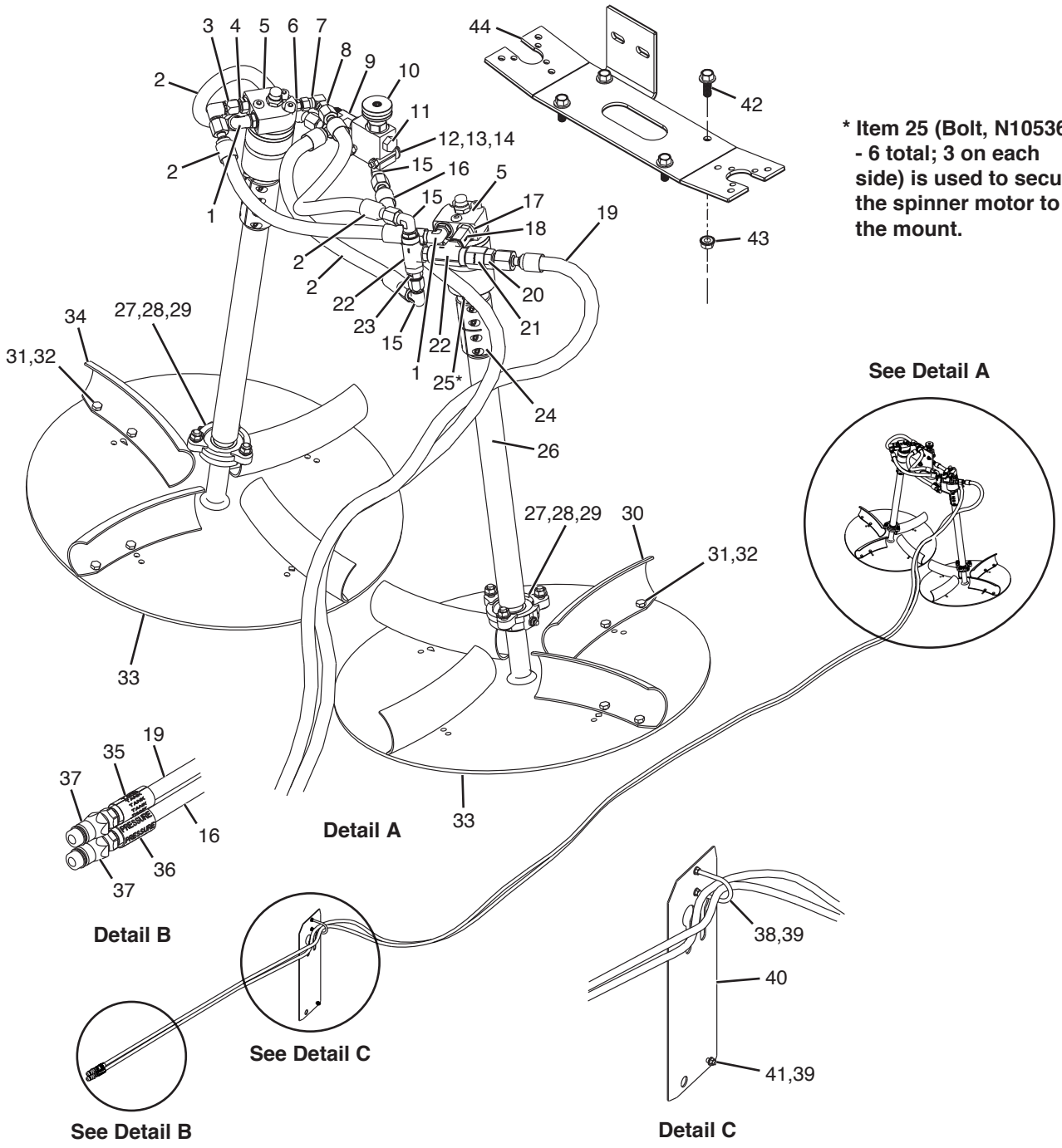
Drive, PTO Model



Drive, PTO Model

#	QTY.	PART #	DESCRIPTION
1	1	N120644	COVER, SPREADER PTO
2	12	4560	BOLT, 5/6" X 1" SER FLG
3	4	4979	NUT, LOCK 3/8" SER FLG
4	2	N41664	SHAFT,PTO 540/1000
5	1	N41760	PLATE, SPREADER PTO LATCH
6	3	4052	NUT, LOCK 3/8"
7	1	4195	BOLT, 3/8" X 1" GRADE 5
8	1	N27991	PIN, 3/8" X 1-3/8" RETAINER
9	2	N33992	SHAFT, 1-3/8" 21 SPLINED 6"
10	2	4232	BOLT, 3/8" X 1-3/4" GRADE 5
11	5	N33830	BEARING, 1" DODGE 3-BOLT FLG
12	15	N26741	BOLT, CARRIAGE 5/16" X 1"
13	17	N26742	NUT, LOCK 5/16" SER FLG
14	1	N41458	SHAFT, SPREADER PTO DRIVE
15	1	N124687	BEARING HANGER
16	1	N120495	DRIVELINE, SPREADER PTO
17	2	N23873	KNOB, 3/8" X 1-1/2 FOUR PRONG
18	1	N129916	COVER
19	1	N130924	GUARD
20	1	N130936	GUARD

Spinner Drive, Hydraulic



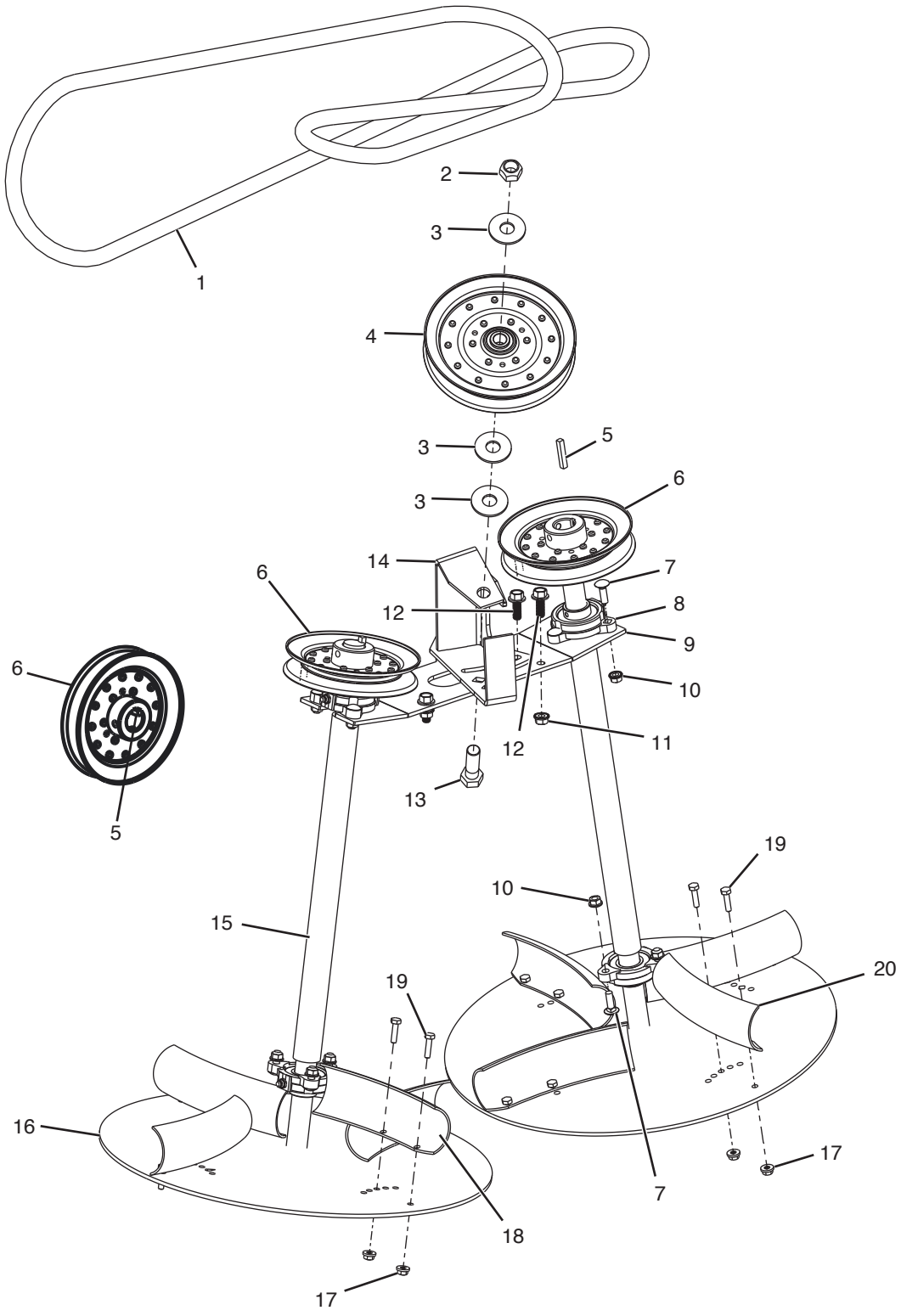
*** Item 25 (Bolt, N105367 - 6 total; 3 on each side) is used to secure the spinner motor to the mount.**

#	QTY.	PART #	DESCRIPTION
1	2	N105368	ELBOW, 90 DEG -6MJIC -6MBSPP
2	4	N53062	HOSE, 3/8 X 14 -6FJX -6FJX
3	2	N29078	ELBOW, 90 DEG - 6MJIC - 6FJIC
4	1	N28847	ADAPTER, -6MJIC -6MBSPP

Spinner Drive, Hydraulic

#	QTY.	PART #	DESCRIPTION
5	2	N101185	MOTOR, SPINNER DANFOSS
6	1	N110162	ADAPTER. -4MJIC -2BSPP
7	1	N25125	ELBOW, 90 DEG - 4FJIC - 4MJIC
8	1	N29812	ADAPTER, 4FJC - 6MJC
9	1	N16169	TEE, 6MJIC-6MOR-6MJIC
10	1	N55844	VALVE, FLOW REGULATOR
11	1	N14118	PLUG, 6MOR HEX
12	2	4001	BOLT, 1/4" X 1-3/4" GRADE 5
13	2	3183	WASHER, FLAT 1/4"
14	2	4050	NUT, 1/4" LOCK
15	2	N26204	ELBOW, 90 DEG - 6MJIC - 6MOR
16	1	N62067	HOSE, 3/8 X 280 -6FJIC -8MP
17	1	N105366	ADAPTER, -6MOR -6MBSPP
18	1	N34162	ADAPTER, COUPLING -6FOR
19	1	N61596	HOSE, 3/8 X 269.375 -8FJIC-8MP
20	1	N55949	VALVE, CHECK -08MOR -08MJIC
21	1	N34022	ADAPTER, 6MOR - 8MOR
22	2	N55850	TEE, -06FOR-06F0R-06MOR
23	1	N55947	VALVE, CHECK -06MOR -06MJIC
24	2	N55903	COUPLING, CLAMP-TYPE 1"x 5/8"
25	6	N105367	BOLT, SHCS M6X1.0X12
26	2	N62261	SHIELD, SPREADER SPINNER SHAFT
27	2	N33830	BEARING, 1" DODGE 3-BOLT FLG
28	6	N41428	BOLT, CARRIAGE 5/16" X 1", SS
29	6	N41427	NUT, LOCK 5/16" SER FLG, SS
30	4	N44111	SLINGER, LH
31	16	N68478	BOLT, 1/4" X 1" SS
33	2	N62257	SPINNER
33	16	N68480	NUT, LOCK 1/4" SER FLG SS
34	4	N33836	SLINGER, RH
35	1	N24823	DECAL, TANK
36	1	N24822	DECAL, PRESSURE
37	2	N11825	COUPLER, 1/2" MALE PIONEER
38	1	N19296	U-BOLT, 3/8 X 2 X 4 GR 5
39	5	4979	NUT, LOCK 3/8" SER FLG
40	1	N102127	BRACKET, HOSE HOLDER
41	1	4195	BOLT, 3/8" X 1" GRADE 5
42	4	N50815	BOLT, 3/8" X 1" SS SER FL GR 5
43	4	N73940	NUT, LOCK 3/8" SER FLG SS
44	1	N101044	PLATE, SPINNER MOTOR 50'

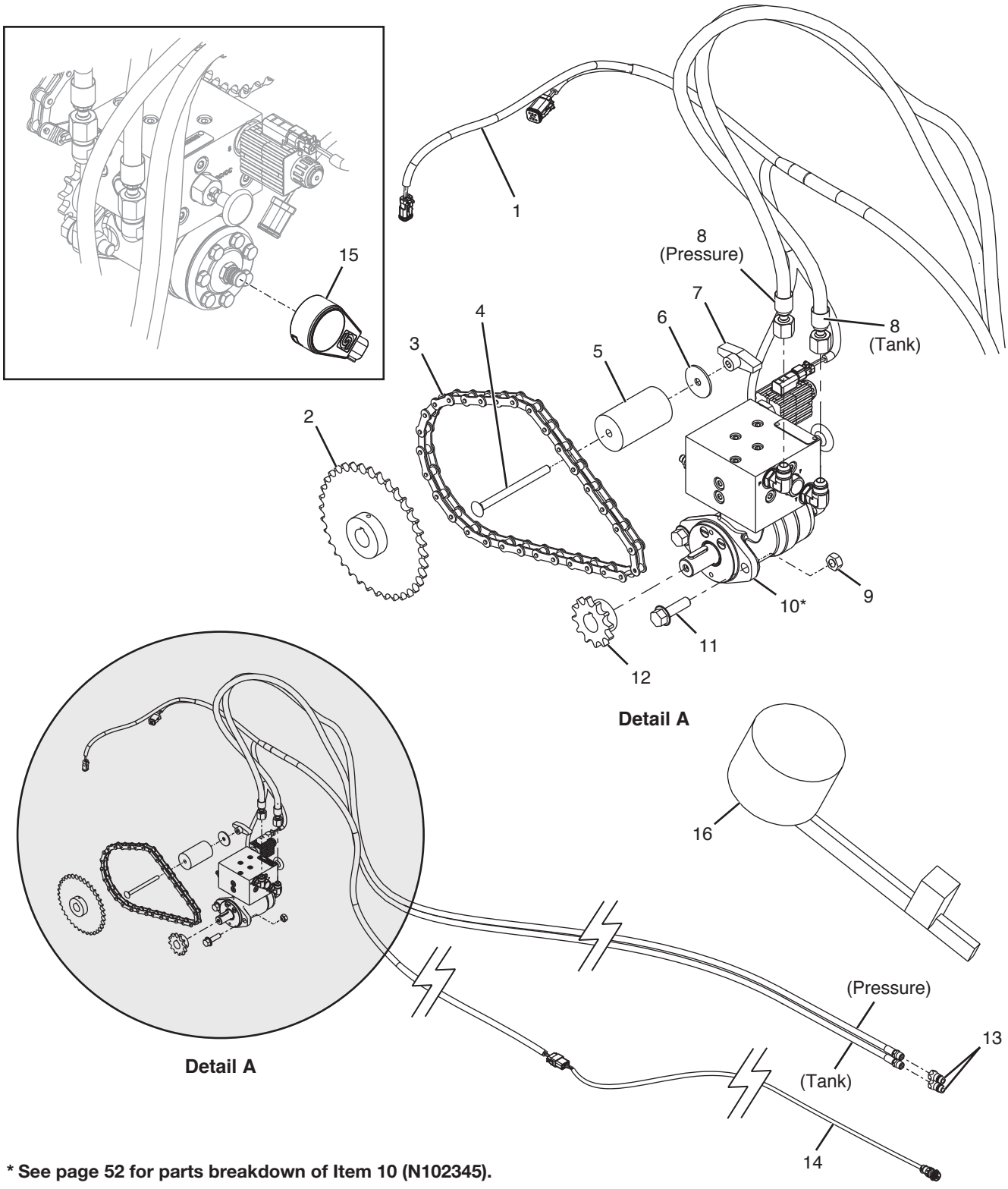
Spinner Drive, Belt



Spinner Drive, Belt

#	QTY.	PART #	DESCRIPTION
1	1	N120497	BELT, BB103 DBL V
2	1	4055	NUT, LOCK 5/8" TOP
3	3	4069	WASHER, FLAT 5/8"
4	1	N33864	PULLEY, V-BELT 7.31" IDLER
5	3	7187-03	KEY, 1/4" X 1-1/2"
6	3	N33862	PULLEY, V-BELT 6.50" C-GROOVE
7	12	N41428	BOLT, CARRIAGE 5/16" X 1", SS
8	4	N33830	BEARING, 1" DODGE 3-BOLT FLG
9	1	N124412	SPINNER WLDMT
10	12	N41427	NUT, LOCK 5/16" SER FLG, SS
11	3	N73940	NUT, LOCK 3/8" SER FLG SS
12	5	N50815	BOLT, 3/8" X 1" SS SER FL GR 5
13	1	4022	BOLT, 5/8" X 2" GRADE 5
14	1	N109469	ADJUSTOR, BELT
15	2	N41848	SHIELD, SPREADER SPINNER SHAFT
16	2	N43950	SPINNER
17	16	N68480	NUT, LOCK 1/4" SER FLG SS
18	4	N44111	SLINGER, LH
19	16	N68478	BOLT, 1/4" X 1" SS
20	4	N33836	SLINGER, RH

Conveyor Drive, Hydraulic

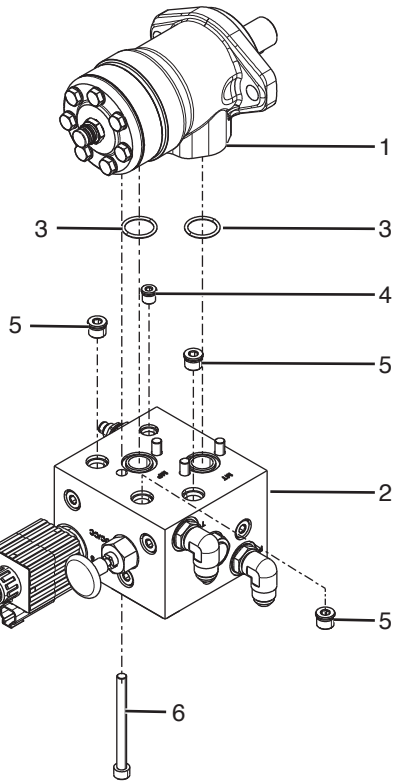


*** See page 52 for parts breakdown of Item 10 (N102345).**

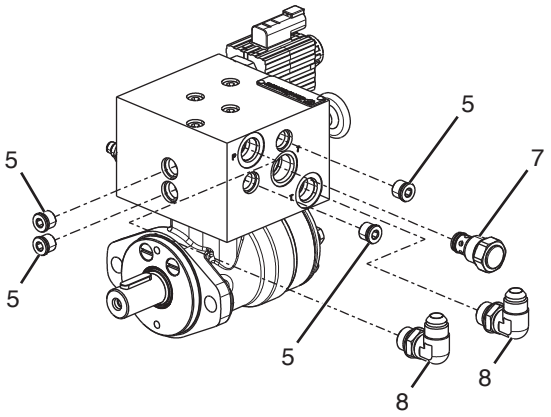
Conveyor Drive, Hydraulic

#	QTY.	PART #	DESCRIPTION
1	1	N107992	HARNESS, VARIABLE RATE READY
2	1	N87343	SPROCKET, 50B36-1.000
3	1	N42066	CHAIN, #2050 X 37.50
4	1	4569	BOLT, CARRIAGE 3/8" X 5" SS FT
5	1	N114840	TENSIONER, MOS2 2" DIA
6	1	N43801	WASHER, SPREADER 1.75 X .40
7	1	N33933	KNOB, 3/8" THREADED TWO PRONG
8	2	N86859	HOSE, 3/8" X 270 -8FJX -8MPT
9	2	4054	NUT, LOCK 1/2" TOP
10*	1	N102345	MOTOR/VALVE ASM
11	2	N18159	BOLT, 1/2" X 1-3/4" SER FLG
12	1	8317	SPROCKET, 50B42 1" BORE
13	2	N11825	COUPLER, 1/2" MALE PIONEER
14	1	N108462	HARNESS, CONTROL RAVEN 16 PIN
		N150788	HARNESS, CONTROL RAVEN 22 PIN
		N150789	HARNESS, CONTROL RAVEN 37 PIN
15	1	N113354	SENSOR, SPIN SPEED
16	1	N105370	DENSITY SCALE, FERTILIZER

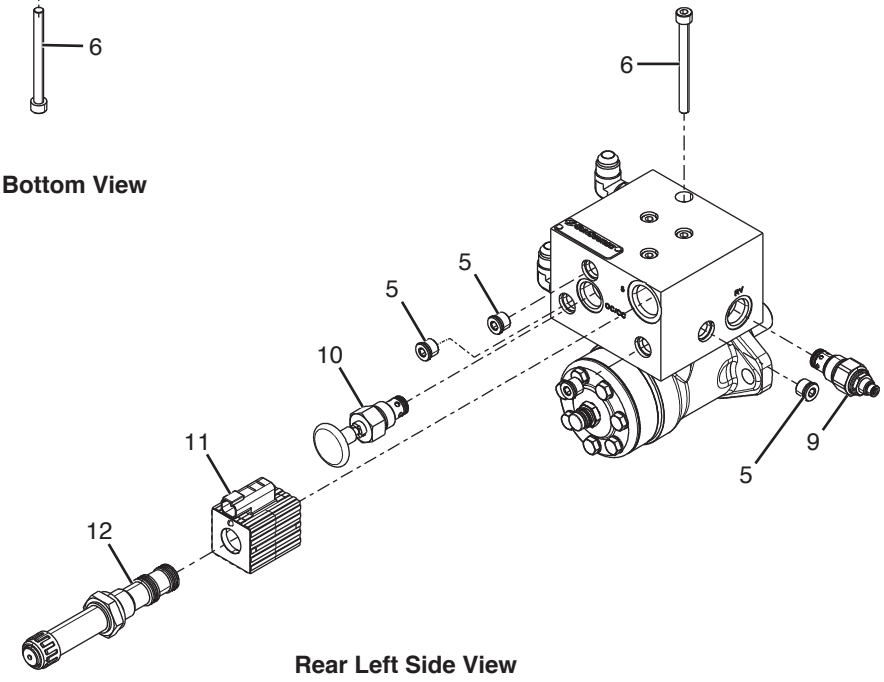
Motor and Valve Assembly (N102345)



Bottom View



Rear Right Side View

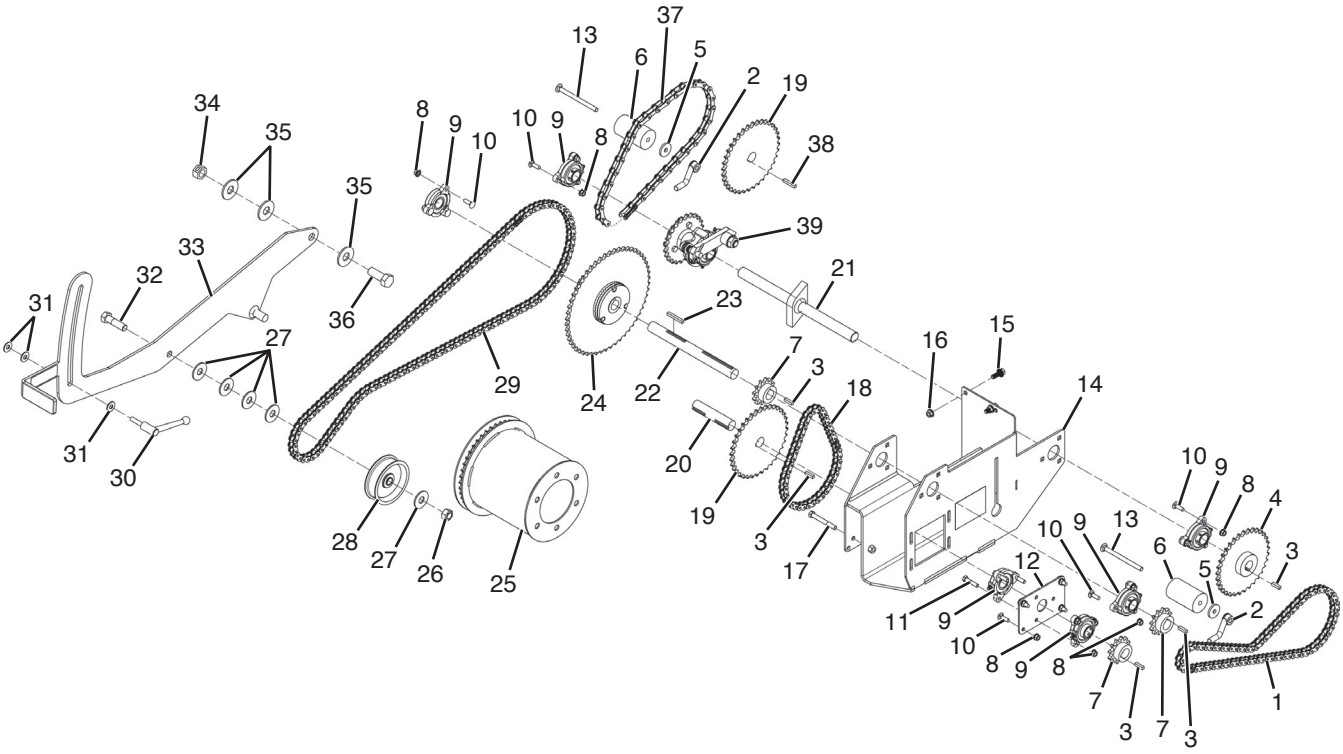


Rear Left Side View

Motor and Valve Assembly (N102345)

#	QTY.	PART #	DESCRIPTION
1	N101181	1	MOTOR, 9.53 CI DANFOSS
2	N142486	1	MANIFOLD, APRON MOTOR
3	N142496	1	0-RING, SAE 568-119
4	N139982	1	PLUG, SAE -04
5	N142494	11	PLUG, SAE -06
6	N142520	4	BOLT, SHCS M8X1.25X90
7	N142508	1	CARTRIDGE, CHECK VALVE 5PSI
8	N11952	2	ELBOW, 90 DEG - 08MJIC - 08MOR
9	N142510	1	CARTRIDGE, RELIEF VALVE ADJ
10	N139974	1	CARTRIDGE, PUSH/PULL
11	N142518	1	COIL,12VDC 3AMP DEUTSCH
12	N142516	1	CARTRIDGE, PROPORTIONAL PCFC

Conveyor Drive, Ground



#	QTY.	PART #	DESCRIPTION
1	1	N128976	CHAIN, #50 X 48.75 SS
2	2	N144570	HANDLE, 3/8-16 THREADED
3	5	7187-12	KEY, 1/4" X 1"
4	1	N114719	SPROCKET, 50B33-1.002 KW SS
5	2	4067	WASHER,1-3/8" X 3/8" X 1/4"T
6	2	N114840	TENSIONER, MOS2 2" DIA
7	3	8317	SPROCKET, 50B42 1" BORE
8	19	N41427	NUT, LOCK 5/16" SER FLG, SS
9	6	N33830	BEARING, 1" DODGE 3-BOLT FLG
10	16	N41428	BOLT, CARRIAGE 5/16" X 1", SS
11	3	4241	BOLT, 5/16" X 1-1/2" GRADE 5
12	1	204012	PLATE, ADJUSTER
13	2	4569	BOLT, CARRIAGE 3/8" X 5" SS FT
14	1	N129000	BRACKET ASM, SPREADER DRIVE
15	2	N50815	BOLT, 3/8" X 1" SS SER FL GR 5

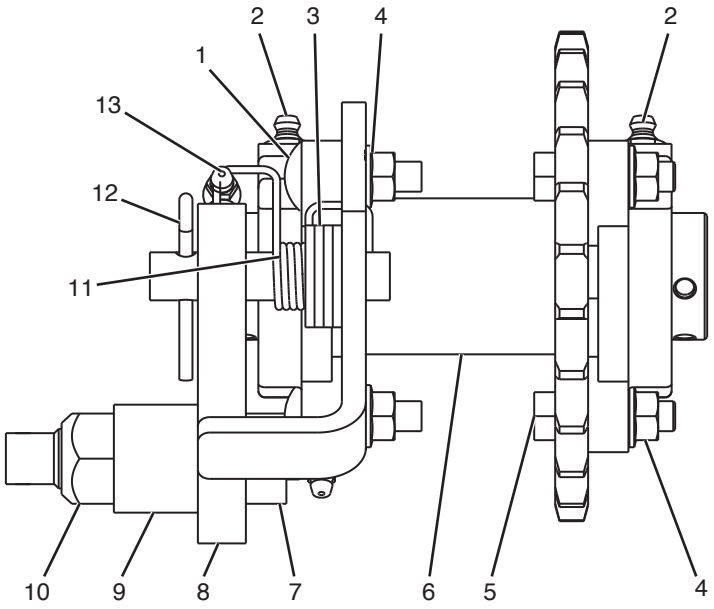
*** See page 56 for parts breakdown of Item 39 (N109201).**

Conveyor Drive, Ground

#	QTY.	PART #	DESCRIPTION
16	2	N73940	NUT, LOCK 3/8" SER FLG SS
17	2	4007	BOLT, 3/8" X 3" GRADE 5
18	1	204015	CHAIN, #50 SS X 27.50
19	2	N87343	SPROCKET, 50B36-1.000
20	1	204019	SHAFT, LOW RANGE
21	1	N123865	SHAFT WLDMT
22	1	N123877	SHAFT, SPREADER WHEEL DRIVE
23	1	7187-05	KEY, 1/4" X 2"
24	1	N33893	CLUTCH, RATCHED SLIP SC-X4
25	1	N123750	DRUM, DRIVE 44 TOOTH
26	1	4057	NUT, 5/8" FINE THREAD TOP LOCK
27	5	4069	WASHER, FLAT 5/8"
28	1	N33879	PULLEY, IDLER 4-1/2" OD X 5/8" ID
29	1	204009	CHAIN, #50 SS X 85.00
30	1	N128964	HANDLE, 3/8-16 X 1-9/16
31	3	4064	WASHER, FLAT 3/8"
32	1	4494	BOLT,5/8-18 X 2-1/4 GR 8
33	1	204005	ARM ASM, TENSIONER
34	1	4056	NUT, LOCK 3/4"
35	3	4071	WASHER, 3/4" FLAT
36	1	4517	BOLT, 3/4" X 2" BOLT GR 5
37	1	N42066	CHAIN, #2050 X 37.50
38	1	7187-03	KEY, 1/4" X 1-1/2"
39	1	N109201	CLUTCH ASM

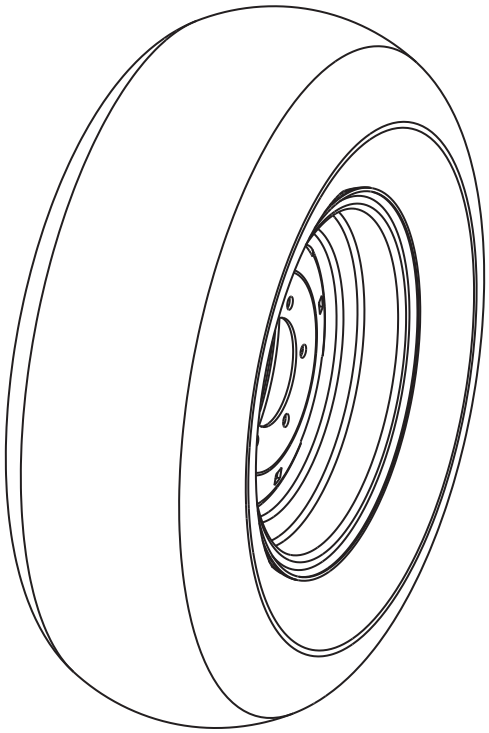
*** See page 56 for parts breakdown of Item 39 (N109201).**

Clutch Assembly (N109201)



#	QTY.	PART #	DESCRIPTION
1	N62391	3	BOLT, CARRIAGE 5/16 X 1-1/4, SS
2	N33830	2	BEARING, 1" DODGE 3-BOLT FLG
3	4068	4	WASHER, 1/2" SAE FLAT
4	N41427	6	NUT, LOCK 5/16" SER FLG, SS
5	N143908	3	BOLT, 5/16" X 1-1/4" SS
6	N109203	1	BASE, SPRDR CLUTCH SPRKT
7	N33958	1	BOLT, SPRDR CLUTCH STOP
8	N109212	1	ARM, SPRDR CLUTCH
9	N33959	1	BUSHING, SPRDR CLUTCH STOP
10	4055	1	NUT, LOCK 5/8" TOP
11	N62413	1	SPRING,SPREADER CLUTCH
12	4325	1	PIN, COTTER 3/16" X 1-1/2"
13	4107	2	GREASE-ZERK, 1/4" SCREW-IN 90 DEG

Tire (N22459)



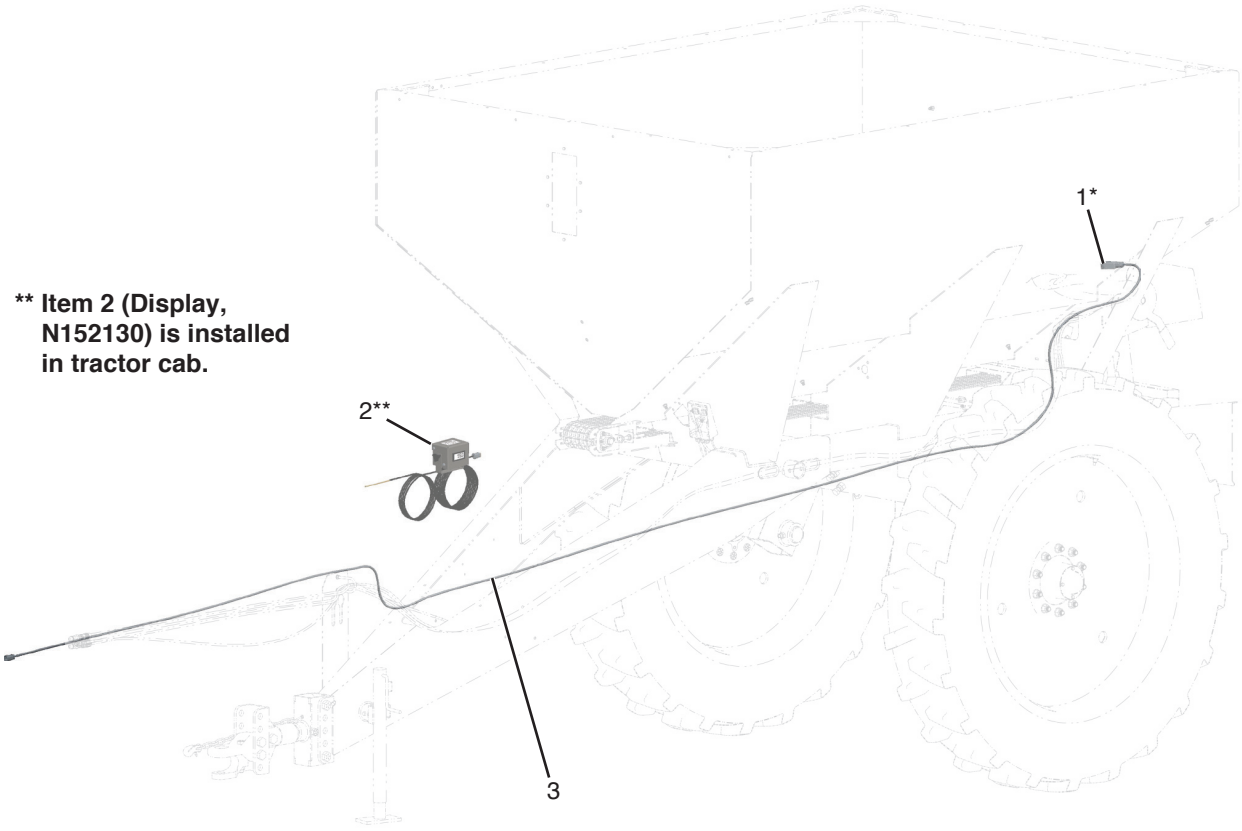
#	QTY.	PART #	DESCRIPTION
1	N22459	2	WHEEL, 11L15 - 8" RIM - 10 PLY

Spinner Speed Sensor

*** Item 1 - Speed Sensor (N113354)**

1. Install speed sensor on left spinner motor.
   Orient connector to face left on machine.
   Orient such that wrenches will not damage sensor.
2. Sensor clips onto stub on port end of motor.
3. Connect sensor to VRR harness connector C4.

**** Item 2 (Display, N152130) is installed in tractor cab.**

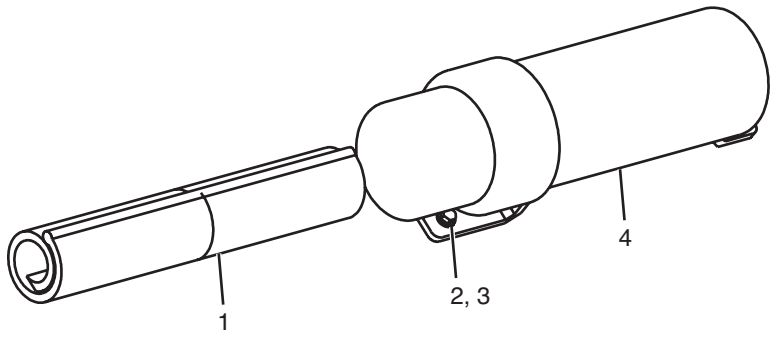


#	QTY.	PART #	DESCRIPTION
1	1	N113354	SENSOR, SPIN SPEED
2	1	N152130	DISPLAY ASM, SPINNER SPEED
3	1	N152222	HARNESS, SPINNER SENSOR EXT

Raven 660 Controller (N89543) - (parts not shown)

#	QTY.	PART #	DESCRIPTION
1		N89543	CONTROLLER KIT RAVEN 660 (INCLUDES N89545, N89553, N90023)
2		N89545	CONSOLE, RAVEN 660M
3		N89553	CABLE, 660 3'
4		N90023	MANUAL, RAVEN 660 CONSOLE
5		N89596	SENSOR-SPEED, GPS
6		N89555	CONTROLLER KIT ISO (INCLUDES N89557 & N89559)
7		N89557	ECU-RAVEN ISO
8		N89559	CABLE, ISO HITCH 12'

Manual Holder



#	QTY.	PART #	DESCRIPTION
1	1	N117080	OPERATORS MANUAL OS170
2	3	4573	BOLT, 1/4" X 3/4" SER FLANGE
3	3	4996	NUT, LOCK 1/4" NYLOCK
4	1	N19600	HOLDER, 01-315A STND. MANUAL

Machine Decals and Signs

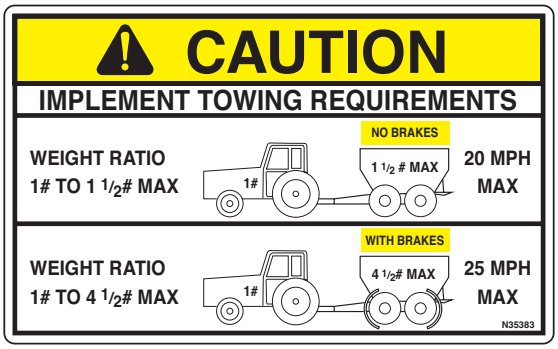
NOTE: *All safety related decals are also shown in the Safety Instructions section along with their location on the machine. See "Safety Decal Locations" on page 8.*

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

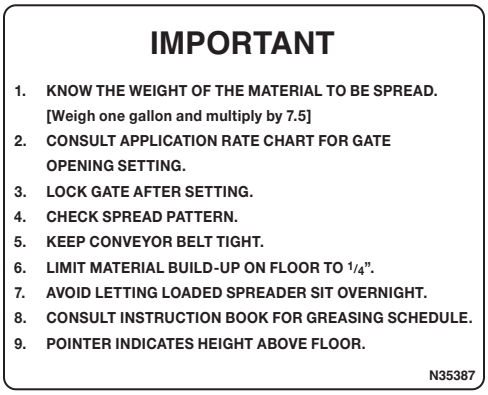
Part No. N35391

Part No. N35380

Part No. N35383



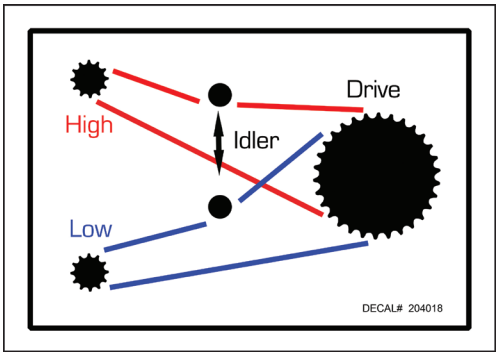
Part No. N35387



Part No. 4132

Part No. N35392

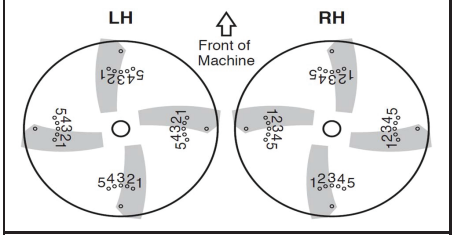
Part No. 204018



Machine Decals and Signs (Cont'd)

Part No. N129459

SPREADER SETUP		
MACHINE: FS800, RC800, OS170		N129459
GATE OPENING INCHES	SPREADER CONSTANT	CUBIC FEET PER REVOLUTION
1.00	3,170	0.0568
2.00	1,664	0.1082
3.00	1,132	0.1590
4.00	880	0.2045
5.00	702	0.2565
6.00	601	0.2993
DRIVING INTERVAL	SPINNER RPM	BLADE SETTING
40	700	
50	830	3 - 2 - 3 - 2
60	950	
80	740	
88	780	3 - 3 - 3 - 3
90	790	

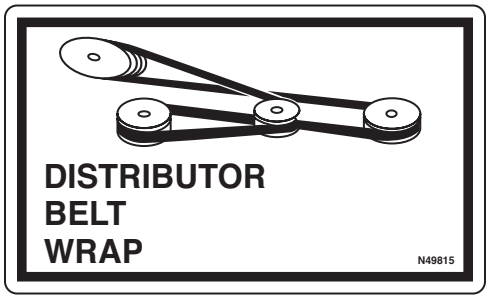


Application Rate Chart Decals

NOTE: *For application rate chart decals for mechanical drive spreaders, see pages 18 and 19. The part number is printed in the upper right-hand corner of each decal.*
Below is a list of the application rate charts for mechanical spreaders.

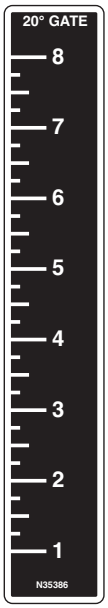
204016 - 25 Ft. Mechanical Drive
204017 - Distance Mechanical Drive (Used with Bander only)

Part No. N49815



Part No. N35385

Part No. N35386



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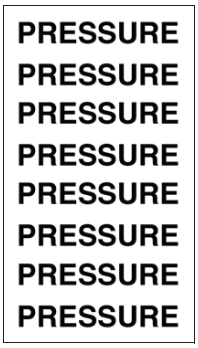
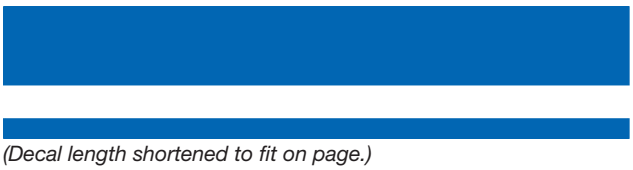


Part No. N24823

Part No. N47490

LOFTNESS

Part No. N47482 (sides); N55874 (front)



(Decal length shortened to fit on page.)

Part No. N117054

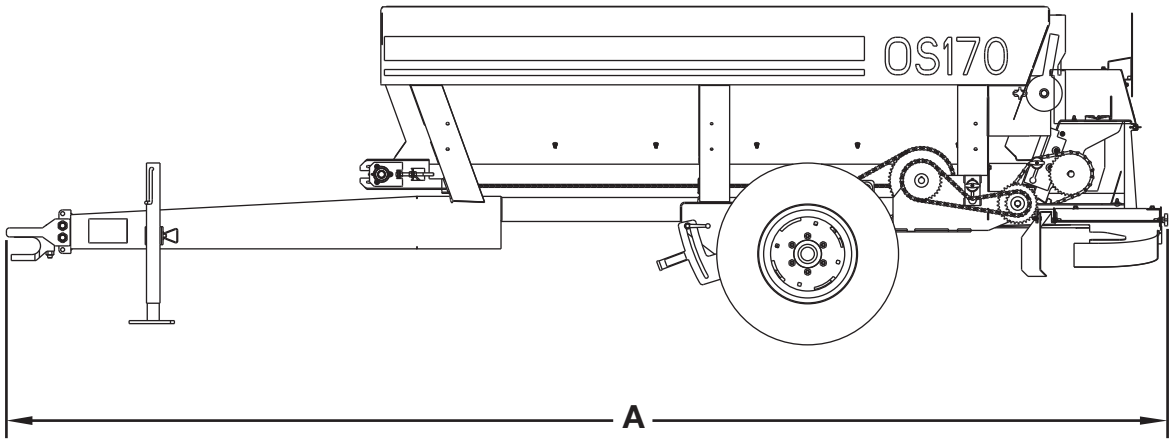
OS170

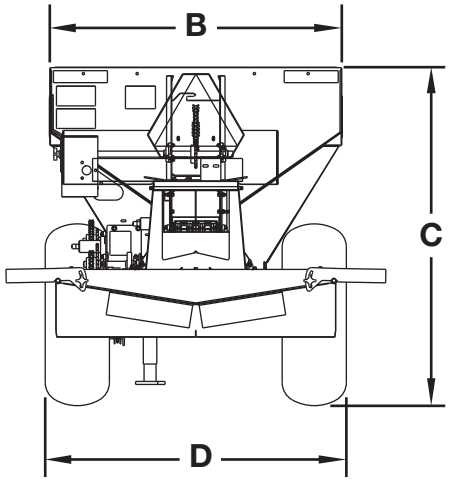

LOFTNESS

Specifications

DESCRIPTION	OS 170 FERTILIZER SPREADER
Spread Pattern (Dual)	25 ft. (7.62 m)
Hopper Capacity-Struck	58 cu. ft. (1.64 cu. m)
Hopper Capacity-Heaped	80 cu. ft. (2.27 cu. m)
Weight-Empty	1,690 lbs. (766.57 kg)
Max Gross Weight	6,500 lbs. (2,948.4 kg)
Tires	11L-15
Axles/Suspension	2½ OD
Frame	4 x 2 x 10 ga. rectangular tubing
Hitch	¼ in., hot-rolled sheet, channel-formed
Drawbar	Bolt in, adjustable position
Hopper	12-gauge, 409 stainless steel
Skid	12-gauge, 409 stainless steel
Gate	7-gauge, 409 stainless steel
Conveyor Chain	7 in. wide, 304 stainless steel with 1 in. x 1 in. mesh
Spinner Dish	19 in. (48.26 cm) dia. 7 gauge, 409 stainless steel

Dimensions





DESCRIPTION	OS 170 FERTILIZER SPREADER
Length (A)	194.9 in. (495.05 cm)
Hopper Width (B)	56.4 in. (143.26 cm)
Height (C)	48.7 in. (123.70 cm)
Wheel Width (D)	50.1 in (127.25 cm)

Torque Specifications

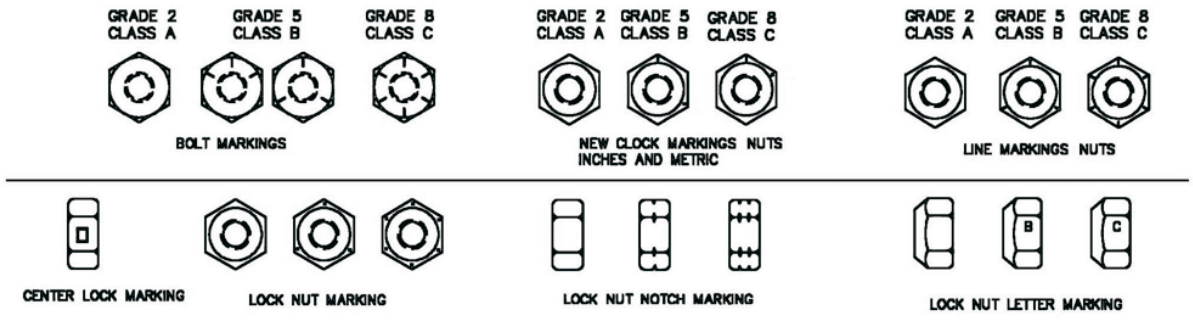
Inches Hardware and Lock Nuts

TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications
(Standard Hardware and Lock Nuts)

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



Torque Specifications (Cont'd)

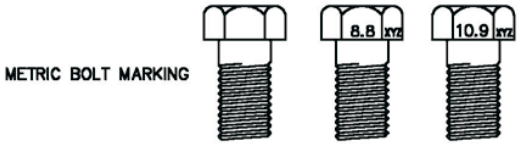
Metric Hardware and Lock Nuts

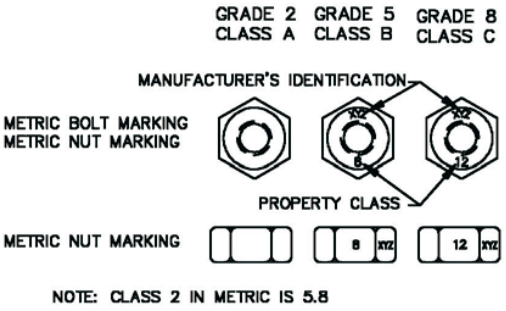
TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications
(Metric Hardware and Lock Nuts)

	Class 5,8		Class 8,8		Class 10,9		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 (15 in.-lb.)	2.2 N•m (19 in.-lb.)	2.6 N•m (23 in.-lb.)	3.4 N•m (30 in.-lb.)	3.7 N•m (33 in.-lb.)	4.8 N•m (42 in.-lb.)	1.8 N•m (16 in.-lb.)
M6	5.8 N•m (51 in.-lb.)	7.6 N•m (67 in.-lb.)	8.9 N•m (79 in.-lb.)	12 N•m (102 in.-lb.)	13 N•m (115 in.-lb.)	17 N•m (150 in.-lb.)	6.3 N•m (56 in.-lb.)
M8	14 N•m (124 in.-lb.)	18 N•m (159 in.-lb.)	22 N•m (195 in.-lb.)	28 N•m (248 in.-lb.)	31 N•m (274 in.-lb.)	40 N•m (354 in.-lb.)	15 N•m (133 in.-lb.)
M10	28 N•m (21 ft.-lb.)	36 N•m (27 ft.-lb.)	43 N•m (32 ft.-lb.)	56 N•m (41 ft.-lb.)	61 N•m (45 ft.-lb.)	79 N•m (58 ft.-lb.)	30 N•m (22 ft.-lb.)
M12	49 N•m (36 ft.-lb.)	63 N•m (46 ft.-lb.)	75 N•m (55 ft.-lb.)	97 N•m (72 ft.-lb.)	107 N•m (79 ft.-lb.)	138 N•m (102 ft.-lb.)	53 N•m (39 ft.-lb.)
M16	121 N•m (89 ft.-lb.)	158 N•m (117 ft.-lb.)	186 N•m (137 ft.-lb.)	240 N•m (177 ft.-lb.)	266 N•m (196 ft.-lb.)	344 N•m (254 ft.-lb.)	131N•m (97 ft.-lb.)
M20	237 N•m (175 ft.-lb.)	307 N•m (226 ft.-lb.)	375 N•m (277 ft.-lb.)	485 N•m (358 ft.-lb.)	519 N•m (383 ft.-lb.)	671 N•m (495 ft.-lb.)	265 N•m (195 ft.-lb.)
M24	411 N•m (303 ft.-lb.)	531 N•m (392 ft.-lb.)	648 N•m (478 ft.-lb.)	839 N•m (619 ft.-lb.)	897 N•m (662 ft.-lb.)	1160 N•m (855 ft.-lb.)	458 N•m (338 ft.-lb.)





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Loftness Specialized Equipment, Inc.
650 So. Main Street • PO Box 337 • Hector, MN 55342
Tel: 320.848.6266 • Fax: 320.848.6269 • Toll Free: 1.800.828.7624

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