



Lubrication and Maintenance Guide for the NL5000 G5



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Preventative Maintenance Pays!

The handling and spreading of commercial fertilizers is a most severe operation with respect to metal corrosion. Establish a frequent, periodic preventative maintenance program to prevent rapid deterioration to spreading equipment. Proper cleaning, lubrication and maintenance will yield longer life, more satisfactory service and more economical use of your equipment.

WARNING

Shut off all power and allow all moving parts to come to rest before performing any maintenance operation.

Hydraulic System

Proper oil in the hydraulic system is one of the most important factors for satisfactory operation. Utmost cleanliness in handling the oil cannot be stressed enough. Keep hydraulic oil in original closed containers, clean top of container before opening and pouring, and handle in extremely clean measures and funnels.

Check hydraulic oil level and filter condition regularly.

Refer to "Lubricant and Hydraulic Oil Specifications" for selection of the proper hydraulic fluid for use in the hydraulic system.

WARNING

DO NOT check leaks with hands while system is operating as high pressure oil leaks can be dangerous! If skin is pierced with hydraulic fluid at high pressure seek immediate medical attention as fluid injected into the skin could cause gangrene if left untreated. Relieve pressure before disconnecting hydraulic lines or working system. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

WARNING

DO NOT check for leaks adjacent to moving parts while system is operating as there may be danger of entanglement!

Periodically inspect hydraulic hoses and fittings for leaks. Repair and replace components as necessary.

Check hydraulic oil daily by means of sight gauge on hydraulic reservoir. Add oil as necessary to maintain level around mid-point of sight gauge. Periodically inspect hoses and fittings for leaks.

NOTICE

Change hydraulic oil filter after first week (or not more than 50 hours) of operation on a unit.

Controller will warn when filter is restricted. Change filter when warning sounds.

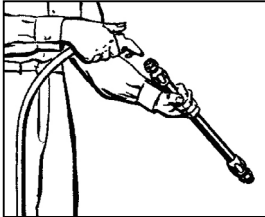
Drain hydraulic reservoir through drain plug (not through suction outlet), flush, and refill, and change filter element annually. Oil and filter should also be changed whenever oil shows any signs of breaking down under continued high-pressure operation. Discoloration of oil is one sign of breakdown.

Hydraulic Hose

Hose assemblies in operation should be inspected frequently for leakage, kinking, abrasion, corrosion or other signs of wear or damage. Worn or damaged hose assemblies should be replaced immediately.

⚠ WARNING

Testing should be conducted in approved test stands with adequate guards to protect the operator.



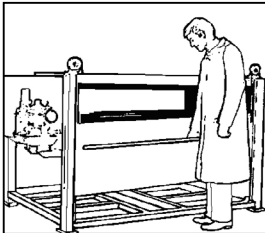
Clean

Clean assembly by blowing out with clean compressed air. Assemblies may be rinsed out with mineral spirits if the tube stock is compatible with oil, otherwise hot water at 150°F (65.55° C) maximum may be used.



Inspect

Examine hose assembly internally for cut or bulged tube, obstructions, and cleanliness. For segment style fittings, be sure that the hose butts up against the nipple shoulder; band and retaining ring are properly set and tight, and segments are properly spaced. Check for proper gap between nut and socket or hex and socket. Nuts should swivel freely. Check the layline of the hose to be sure the assembly is not twisted. Cap the ends of the hose with plastic covers to keep clean.



Test

The hose assembly should be hydrostatically tested at twice the recommended working pressure of the hose.

Test pressure should be held for not more than one minute and not less than 30 seconds. When test pressure is reached, visually inspect hose assembly for: 1. Any leaks or signs of weakness. 2. Any movement of the hose fitting in relation to the hose. Any of these defects are cause for rejection.

Storage and Handling

Hose should be stored in a dark, dry atmosphere away from electrical equipment, and the temperature should not exceed 90° F (32° C).

Conveyor Chain

⚠ WARNING

Stay out of the spreader. If it's necessary to enter the hopper, return to the shop, empty body, turn off all power, set vehicle brakes, lock engine starting switch and remove keys before entering. Tag all controls to prohibit operation. Tags should be placed, and later removed, only by person working in the body.

Hose down unit and remove any material build-up on sprockets and under chain.

NOTICE!

The conveyor will move away from the bottom panel if material accumulates under the conveyor or on the sprockets. The more material that accumulates, the closer the chain will come to the chain shields. If the conveyor should catch a chain shield, it could permanently damage the conveyor, the chain shields or the unit. Do not remove material while conveyor or spinner is running!

Lubrication

Make sure unit is clean and completely dry. With spreader empty, shut down spinners and run conveyor at 20 RPM. Lubricate conveyor chain via display through two full revolutions of conveyor. Lubricate every 10 hours of spreading, or at the end of each day's use.

Only lubricate insert bin conveyor chain strands annually with Fluid Film™ or equivalent.

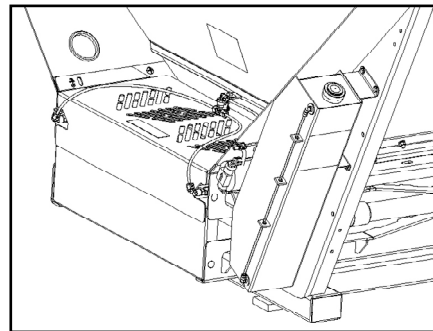


Figure 1

NOTICE

Do not allow lubricants to contact belting as they will cause the belt to deteriorate and fail prematurely.

Tension

NOTICE

Over-tensioning of conveyor chain will lead to excessive load on the system, causing excessive chain and sprocket wear and can cause extremely high starting pressures. Under-tensioning allows conveyor chain to "wrap" around drive sprockets and not exit sprocket freely, causing excessive chain stretch and surging of the conveyor which will result in interrupted flow of material to the spinners.

WARNING

Keep hands, feet, hair and clothing away from moving parts while system is operating as there may be danger of entanglement!

Proper chain tension is a factor in chain and sprocket life. Measuring from rear of unit, top of chain should appear between MIN and MAX lines in sight window (Figure 2A), and conveyor should touch bottom sill flange at 36" - 40" (91 - 102cm) mark as shown in Figure 3.

If manual adjustments need to be made: With spreader unloaded, run conveyor at 15 - 20 RPM. On valve block, loosen conveyor tension valve jam nut. Turn counterclockwise to lower tension, or turn clockwise to increase tension (Figure 2B).

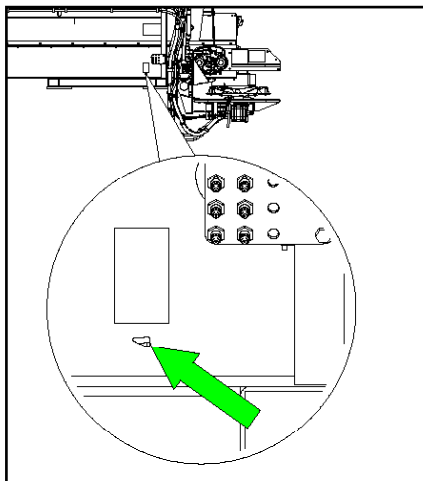


Figure 2A

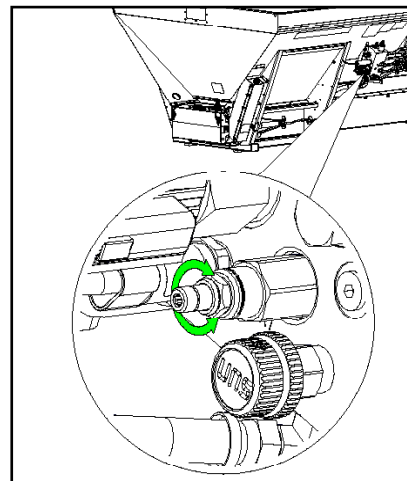


Figure 2B

Insert Bin

Using a 3/4" wrench, turn idler extenders at rear of unit to adjust tension. Turn clockwise to increase tension, and turn counterclockwise to decrease tension. Measuring from rear of insert bin's sill, conveyor chain should touch bottom sill flange at 30" - 34" (76 - 86cm) mark as shown in Figure 3. Measurements must be equal between each side.

Chain Tension to be Measured from
Rear of Sill.

Proper Tension:

Main Unit Conveyor
36" to 40"
(9144mm - 1016mm)

Bin 2 Conveyor
30" to 34"
(762mm - 864mm)

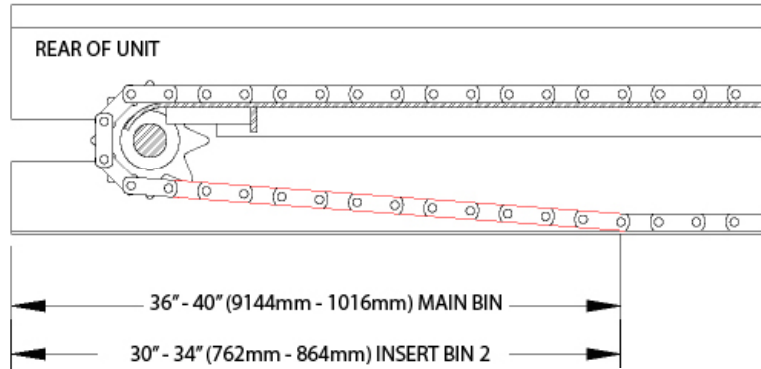


Figure 3 - Chain Tension

#4 BOC Conveyor Belt Maintenance

Standard belting for the #4 conveyor is moderately oil resistant (MOR) that is impervious to moisture, weathering, and normal action which can be used with chemical-impregnated fertilizer or oil-based additives.

- Inspect belt fastener occasionally for wear or "raveling" of belt grip area.
- Make sure belt connecting pin is positioned correctly as shown in Figure 3.

NOTICE

Pin must not rotate. If pin ends are not bent down and tight against lacing, the ends may cut into the chain shield sealers or belt wipers.

BOTH PIN ENDS MUST
BE BENT DOWN &
TIGHT AGAINST ENDS
OF LACING

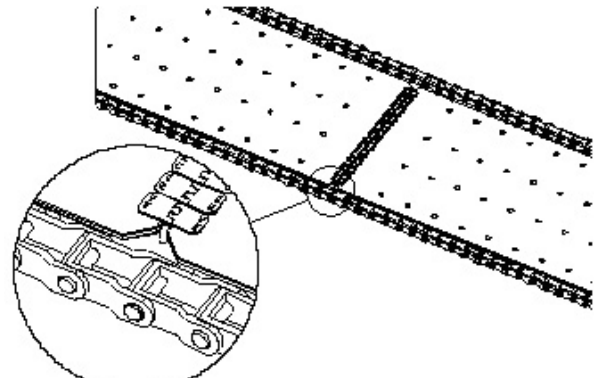


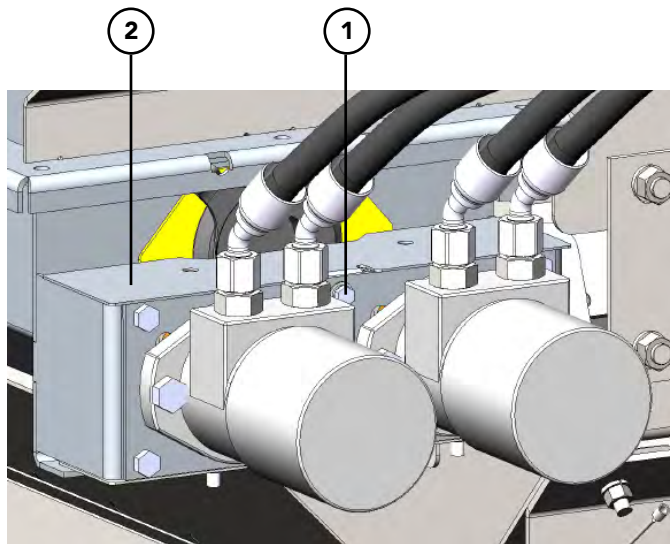
Figure 4 - Conveyor Belt Connecting Pin Installation

Replace MultiBin Metering Roller

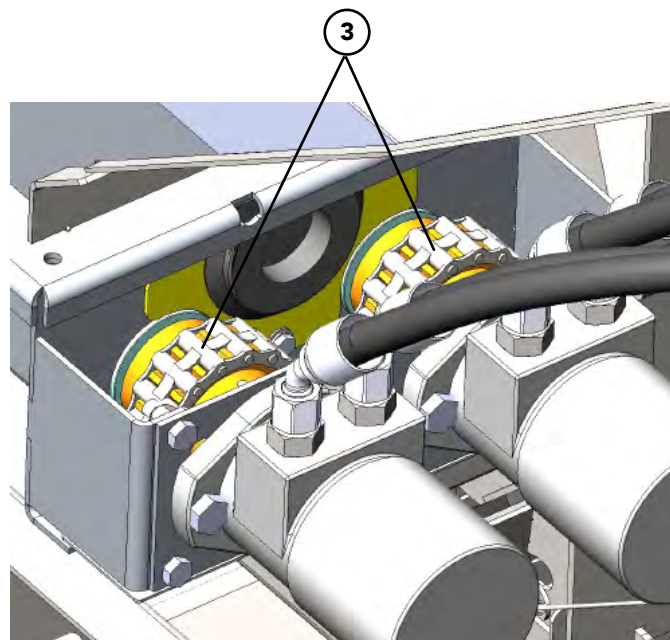
⚠ WARNING

Avoid serious injury from injection of pressurized hydraulic fluid. Always relieve pressure before servicing hydraulic system. Never open hydraulic lines under pressure. Escaping fluid under pressure can penetrate the skin. Lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with this requirement could result in inadvertent activation of equipment resulting in death or serious injury.

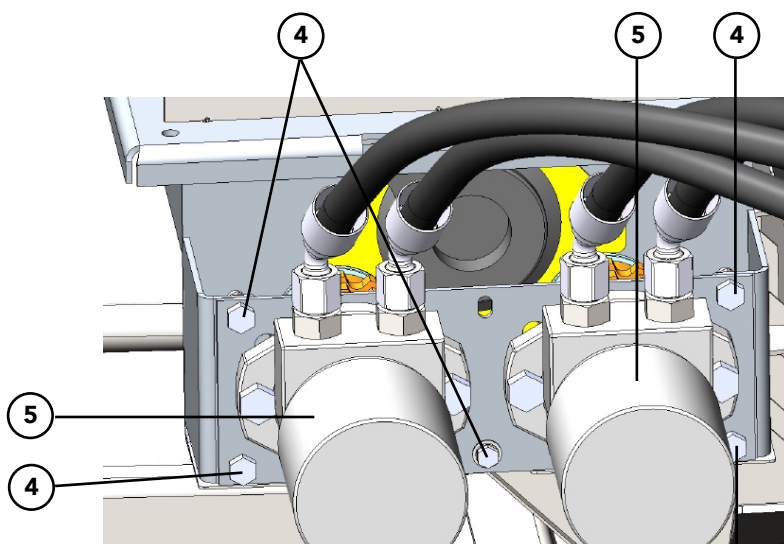
1. Remove hardware (1) and Top Plate (2).



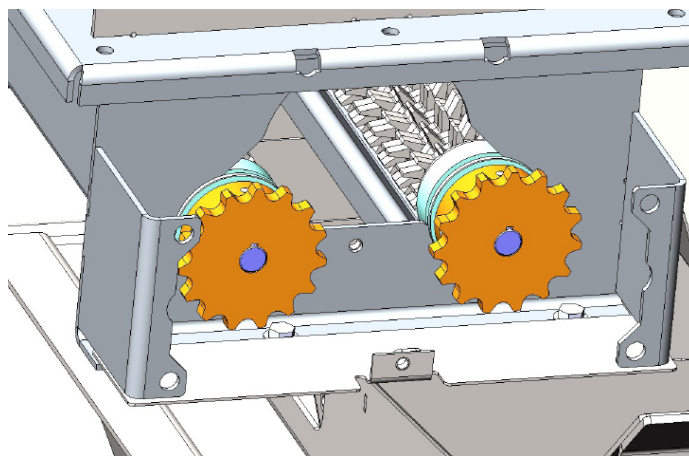
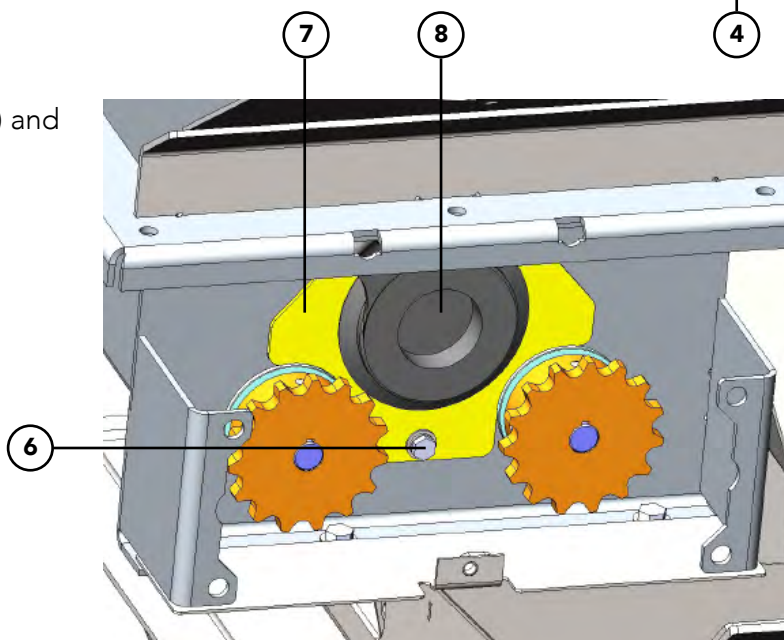
2. Brake Chains (3) and remove.



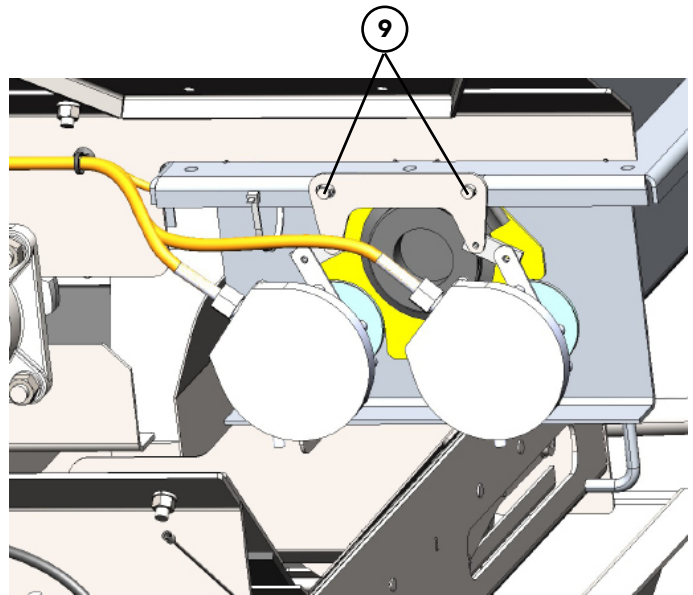
3. Remove hardware (4) and Motors (5).



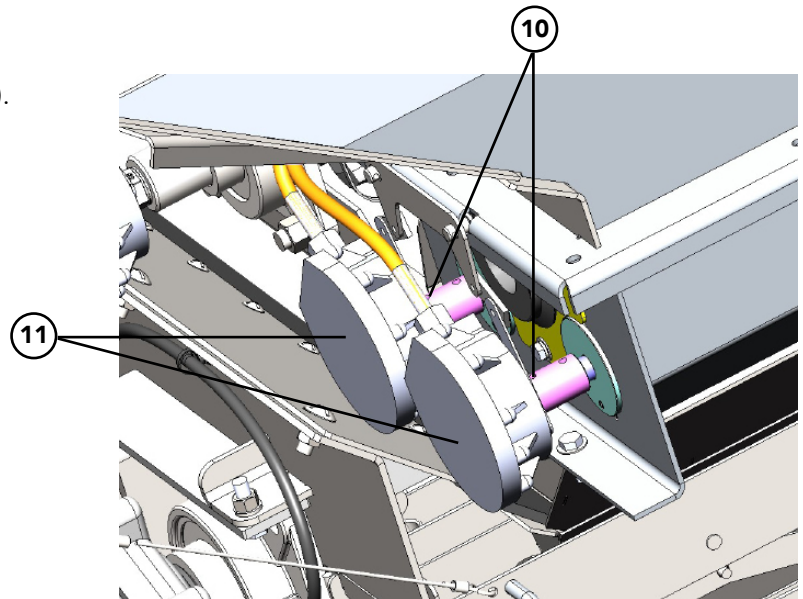
4. Remove hardware (6), Retainer Cover (7) and inspection plug (8).



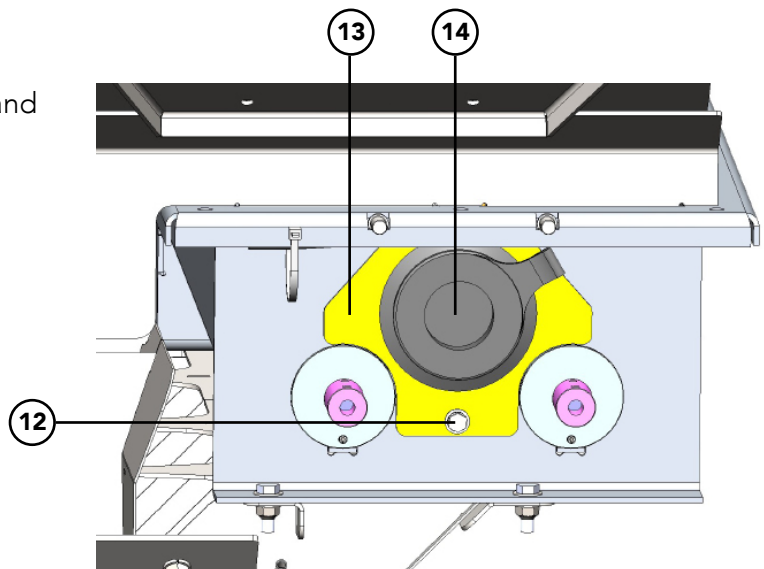
5. Remove Cotter Pins from Studs (9).



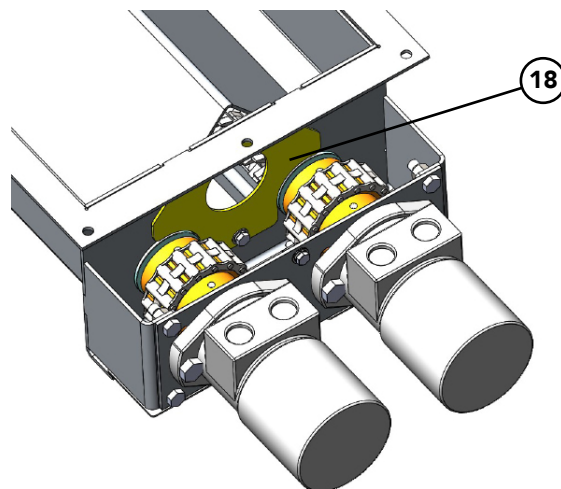
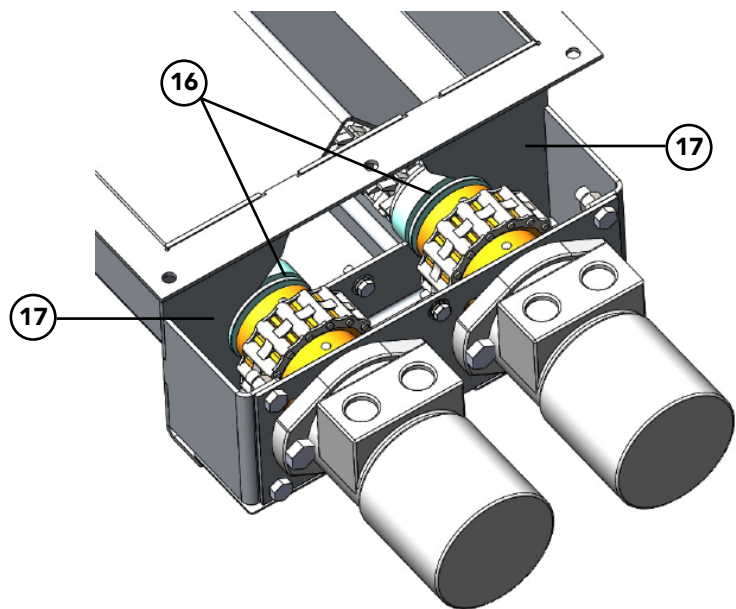
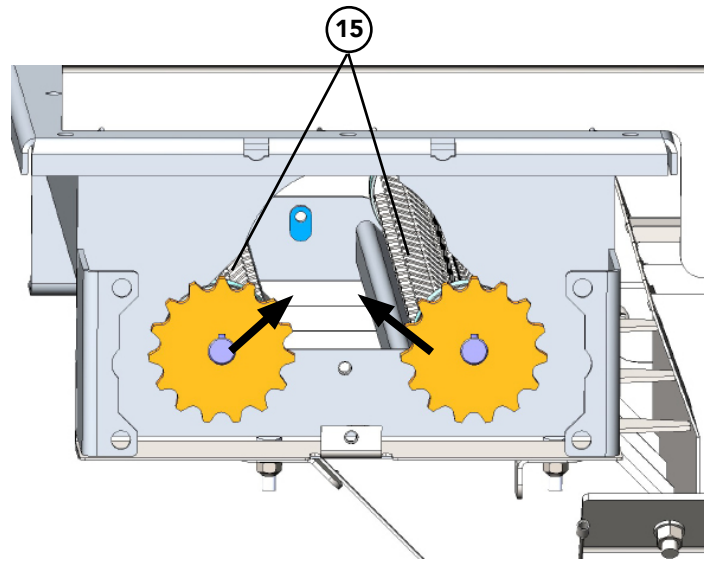
6. Remove Set Screws (10) and Encoders (11).



7. Remove hardware (12), Retainer Cover (13) and inspection plug (14).



8. Lift Roller Assemblies (15) up and inward to pull out.
9. Install parts in reverse order using the following special instructions:
 - Ensure Groove (16) is placed correctly on Plate (17).
 - Ensure Cover (18) is placed correctly in groove.
 - Ensure all hardware is torqued to proper specification.



Spinner Fins

Visually inspect spinner fins daily for build-up of material and wear. Spinner discs and fins must be kept clean and polished. Even a small build-up of material on a spinner can significantly affect the spread pattern. Rough, bent or worn fins will produce poor spread patterns. Replace worn fins and discs as needed. See Fin Kit Installation Instructions for replacement part numbers and instructions.

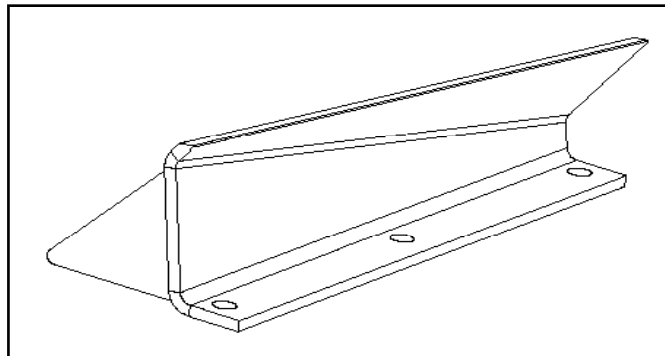


Figure 5 - Fin

Spinner Deflectors

Visually inspect spinner deflectors daily for build-up of material and damage. Clean as needed. Even a small build-up of material on a spinner deflector can affect the spread pattern. If damaged, bent or otherwise, replace. See parts manual for replacement part numbers.

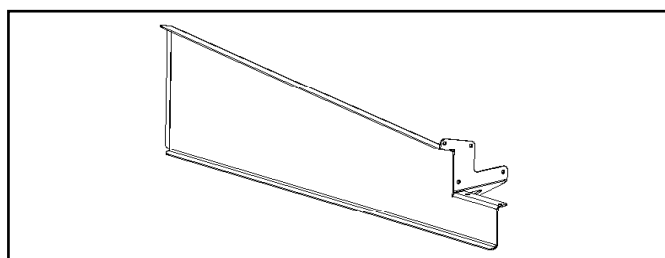


Figure 6 - Spinner Deflector

Hillside & Material Dividers

Visually inspect material divider and hillside dividers (as equipped) daily for build-up of material and wear. Any build-up of material on divider components can affect performance. Clean as needed. Replace worn or damaged parts as necessary. See parts manual for replacement part numbers.

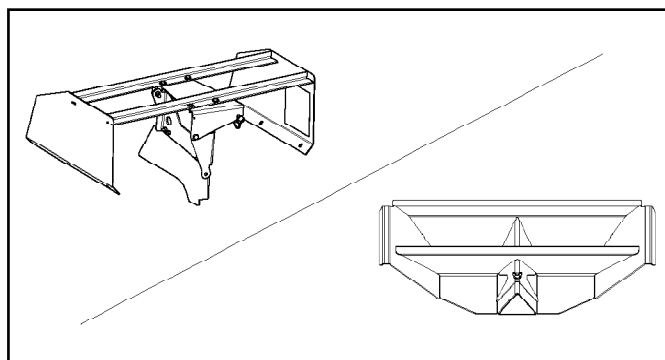


Figure 7 - Hillside & Material Dividers

Vane Assembly

Visually inspect vane assembly for buildup of material and wear. Ensure all vanes are free of buildup and swing freely. Clean vanes and remove blockages as necessary. See parts manual for replacement parts.

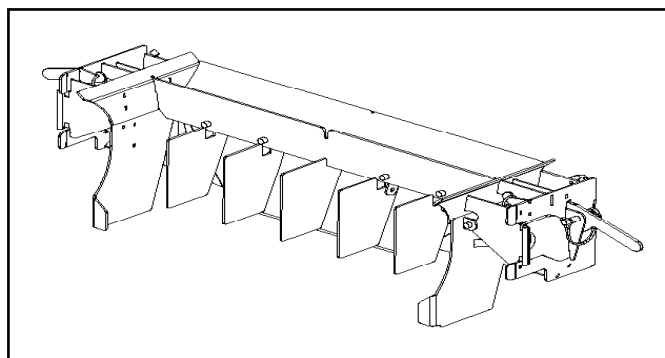


Figure 8 - Vane Assembly

Conveyor Gearcase

Drain oil in a new unit after first two weeks (or not more than 100 hours) of operation, and flush gear case thoroughly with light oil. Refer to "Lubricant and Hydraulic Oil Specifications" section for proper grade oil and recommended amounts of lubricant. After initial change, oil should be changed every 2,000 hours of operation or annually, whichever occurs first. Check gearcase oil level monthly.

Bin Sensor

⚠ WARNING

Stay out of the spreader. Do not climb on spreader. Use a portable ladder to inspect, clean and maintain the bin sensor from outside the spreader. Failure to do so could result in injury from falling.

NOTICE

Wipe sensor clean periodically to prevent accumulation of product. Avoid wet material as it may stick to sensor. If material sticks to sensor it won't warn user when bin is low.

Clean sensor with long handled brush or hose from outside of spreader. Do not aim high pressure sprayer directly at sensor—it could damage the components.

Lubrication of Bearings

Grease in a bearing acts to prevent excessive wear of parts, protects ball races, and balls from corrosion and aids in preventing excessive heat within the bearing. It is very important the grease maintain its proper consistency during operation. It must not be fluid and it must not channel.

Make sure all fittings are thoroughly cleaned before grease is injected. Points to be lubricated by means of a grease gun have standard grease fittings.

Lubricate bearings by pumping grease slowly until it forms a slight bead around the seals. This bead indicates adequate lubrication and also provides additional protection against the entrance of dirt.

Fasteners

Tighten all screws fasteners to recommended torques after first week of operation and annually thereafter. If loose fasteners are found at anytime, tighten to recommended torque. Replace any lost or damaged fasteners or other parts immediately. Check body mounting hardware every week.

Clean-Up

NOTICE

High pressure wash can inject water and/or fertilizer into control components, causing damage. Use caution when cleaning these areas.

Thoroughly wash unit every two to three days during the operating season to maintain minimal maintenance operation. Hose unit down under pressure to free all sticky and frozen material.

It is important the unit be thoroughly cleaned at the end of each operating season. All lubrication and maintenance instructions should be closely followed. Repaint worn spots to prevent formation of rust. MULTIBIN Meter Wheel(s): Pull inspection plug on right hand side of micro assembly. Blow out with compressed air.

NOTICE

The lubricant distributor and/or supplier is to be held responsible for results obtained from their products. Procure lubricants from distributors and/or suppliers of unquestionable integrity, supplying known and tested products. Do not jeopardize your equipment with inferior lubricants. No specific brands of oil are recommended. Use only products qualified under the following oil viscosity specifications and classification recommended by reputable oil companies.

Hydraulic System

Use premium quality lubricants with 100-200 SUS or 20-43 cSt viscosity at operating temperatures. The hydraulic fluid's specifications in the table below are for normal operating conditions. Extreme environments or dirty conditions may require the use of different oils. Consult your New Leader dealer or the Product Support Department at Highway Equipment Company for systems operating outside normal conditions.

Ideal Oil Operating Temperature	115-158°F (46.11-70° C)
Recommended Premium Lubricant	Multi-Purpose Agriculture Hydraulic & Transmission Oil
Lubricant Specifications Viscosity Index Viscosity at 40°C, cst Viscosity at 100°C, cst	Greater than 130 Less than 68 Greater than 9
Acceptable Fluid Example	Mobil 424

Gearcase Lubricant

Fill the gearcase with non-corrosive type extreme pressure (E.P.) gear oil conforming to MIL-L2105 B multi-purpose gear lubricating oil requirements (API Service GL 4) based on ambient temperatures listed below:

- Single Pinion: 1 Pint (.50 L)
- Dual Pinion, Planetary: 1.5 Pints (.70 L)

Ambient Temperature	Oil Type
Below 40°F (4.4°C)	SAE 80 E.P.
40° - 100° F (4.4° - 38° C)	SAE 90 E.P.
Above 100° F (38° C)	SAE 140 E.P.

Grease Gun Lubricant

Use a waterproof ball and roller bearing lithium base lubricant with a minimum melting point of 300°F (150° C). This lubricant should have a viscosity which assures easy handling in the pressure gun at prevailing atmospheric temperatures. The grease should conform to NLGI No. 2 consistency.

Conveyor Chain Oiler

Use a 75% diesel fuel and 25% SAE 10 oil mixture on the links and rollers.

⚠ WARNING

Shut off all power and allow all moving parts to come to rest before performing any maintenance operation.

The spreader should be regularly lubricated with the lubricants recommended in this manual in accordance with the following chart:

Location	Places	Method	Frequency
Hydraulic System			
Hydraulic Reservoir	1	Check Daily; Change Annually	
Filter	1	Check daily; Change when indicated	
Conveyor			
Idler Bearings (1, 2 - Front Bank)	2	Grease Gun	Weekly
Driveshaft Bearings (5, 6 - Rear Bank)	2		
Conveyor Chain Strands	1	Oil Mixture	Daily, After first 10 hours spreading
Gearcase	1	Gear Oil	Check Monthly; Change Annually
Bin 2 Insert Conveyor			
Idler Bearings (1, 3 - Rear Bank)	2	Grease Gun	Weekly
Driveshaft Bearings (2, 4 - Rear Bank)	2		
Idler Take -Up Screws	2	Hand Grease	Annually
Conveyor Chain Strands	2	Spray Lubricant	Annually

NOTE: Unusual conditions, such as excessive dust, temperature extremes or excessive moisture may require more frequent lubrication of specific parts.

*See "Lubricant and Hydraulic Oil Specifications" for types of lubricants and oil to be used.

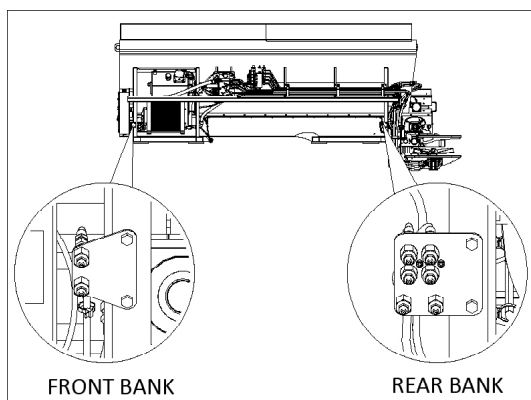


Figure 1 - Grease Banks

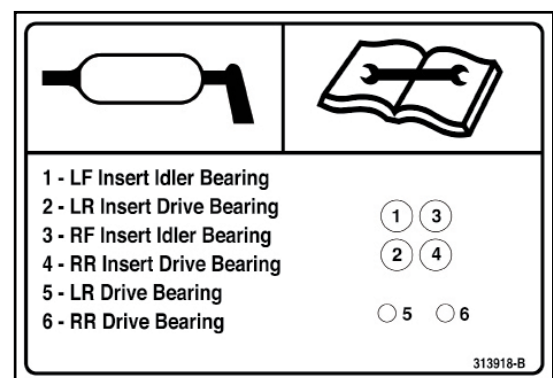


Figure 2 - Rear Grease Bank Decal

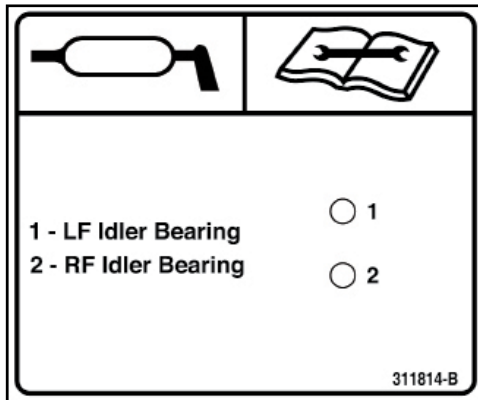


Figure 3 - Front Grease Bank Decal

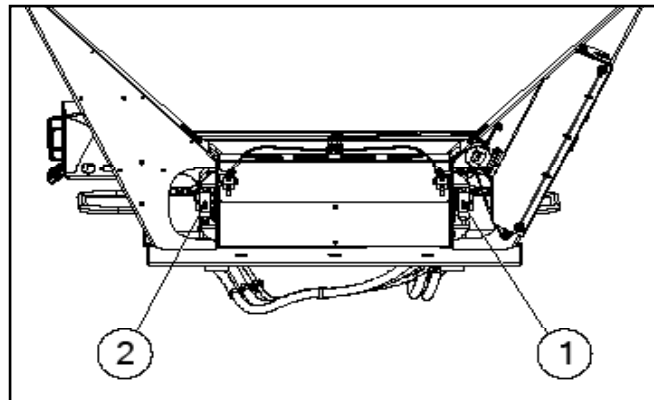


Figure 4 - Front Grease Locations

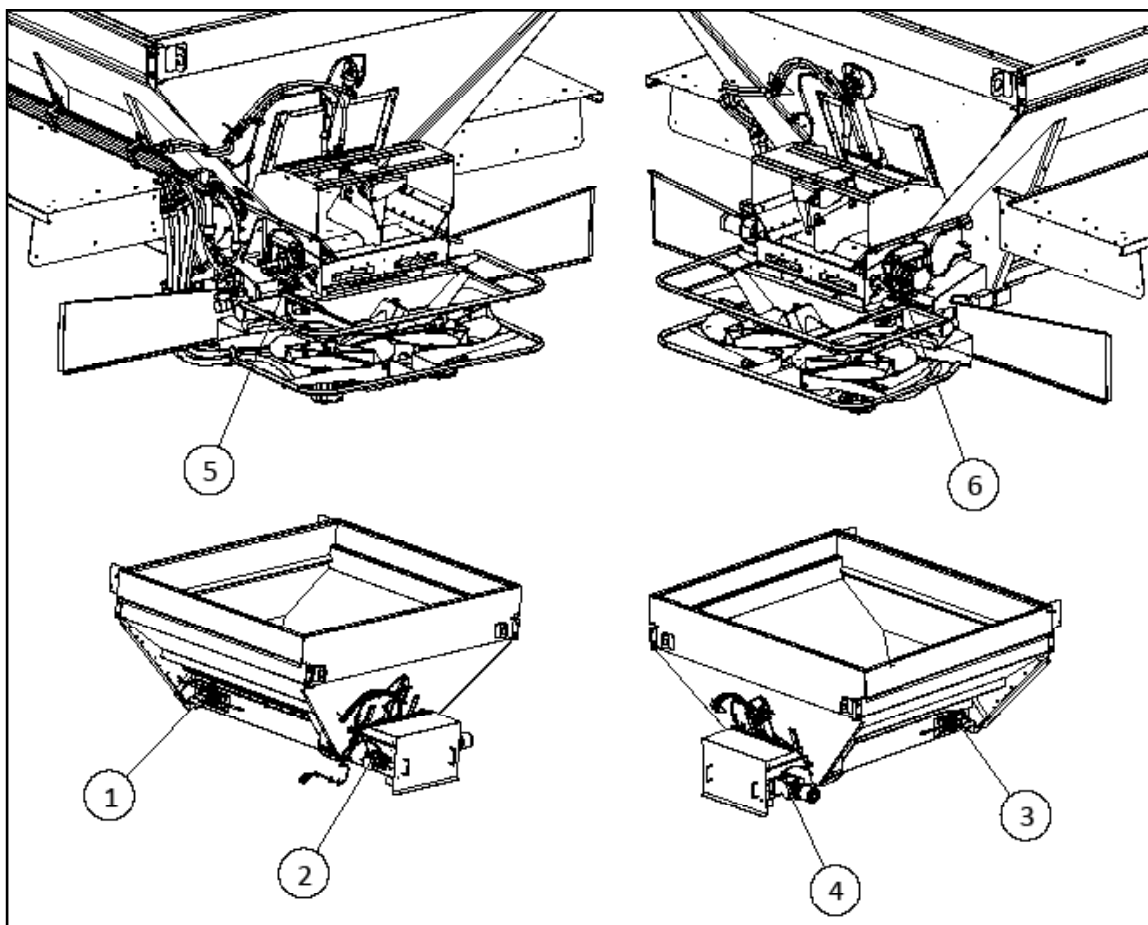


Figure 5 - Rear Grease Locations