

Operator's Manual

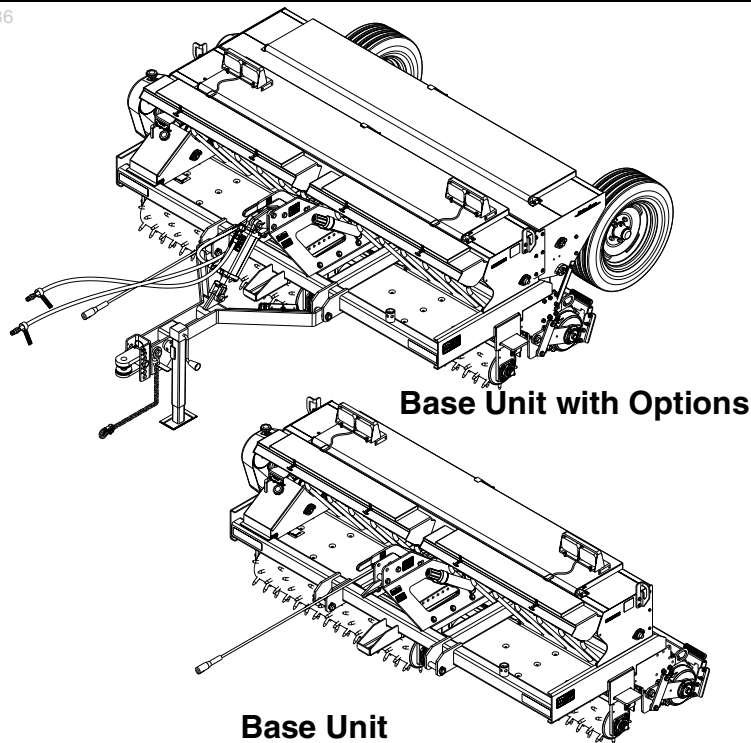
NTS2607, NTS2609, & NTS2611

No-Till Seeder



Read the operation manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!

73336



Illustrations may show optional equipment not supplied with standard unit.

ORIGINAL INSTRUCTIONS



Machine Identification


Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you, or the dealer, have added Options not originally ordered with the machine, or removed Options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements provided in the Specifications & Capacities Section of this manual with the Option(s) weight and measurements.

Model Number	
Serial Number	
Machine Height	
Machine Length	
Machine Width	
Machine Weight	
Delivery Date	
First Operation	
Accessories	<hr/> <hr/> <hr/>

Dealer Contact Information

Name: _____
Street: _____
City/State: _____
Telephone: _____
Email: _____

 California Proposition 65 WARNING: Cancer and reproductive harm - www.P65Warnings.ca.gov

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Listed below are common practices that may or may not be applicable to the products described in this manual.

Safety at All Times

Careful operation is your best assurance against an accident.

All operators, no matter how much experience they may have, should carefully read this manual and other related manuals, or have the manuals read to them, before operating the power machine and this implement.

- ▲ Thoroughly read and understand the "Safety Label" section. Read all instructions noted on them.
- ▲ Do not operate the equipment while under the influence of drugs or alcohol as they impair the ability to safely and properly operate the equipment.
- ▲ The operator should be familiar with all functions of the tractor and attached implement, and be able to handle emergencies quickly.
- ▲ Make sure all guards and shields appropriate for the operation are in place and secured before operating the implement.
- ▲ Keep all bystanders away from equipment and work area.
- ▲ Start tractor from the driver's seat with hydraulic controls in neutral.
- ▲ Operate tractor and controls from the driver's seat only.
- ▲ Never dismount from a moving tractor or leave tractor unattended with engine running.
- ▲ Do not allow anyone to stand between tractor and implement while backing up to implement.
- ▲ Keep hands, feet, and clothing away from power-driven parts.
- ▲ While transporting and operating equipment, watch out for objects overhead and along side such as fences, trees, buildings, wires, etc.
- ▲ Do not turn tractor so tight as to cause hitched implement to ride up on the tractor's rear wheel.
- ▲ Store implement in a safe and secure area where children normally do not play. When needed, secure implement against falling with support blocks.



Look for the Safety Alert Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety and extra precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. Hazard control, and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

Be Aware of Signal Words

A signal word designates a degree or level of hazard seriousness. They are:

- ▲ **DANGER:** Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
- ▲ **WARNING:** Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
- ▲ **CAUTION:** Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

Be Aware of Special Notices

Special notices are intended to point out important and helpful information that should be followed. They are usually placed inside a box. They are:

- IMPORTANT:** Indicates that equipment or property damage could result if instructions are not followed.
- NOTE:** Indicates supplementary explanations that will be helpful when using the equipment.

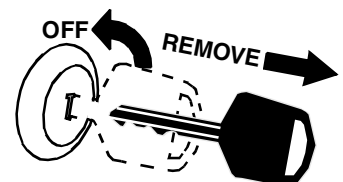
Safety Precautions for Children

Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to implements and their work.

- ▲ Never assume children will remain where you last saw them.
- ▲ Keep children out of the work area and under the watchful eye of a responsible adult.
- ▲ Be alert and shut the implement and tractor down if children enter the work area.
- ▲ Never carry children on the tractor or implement. There is not a safe place for them to ride. They may fall off and be run over or interfere with the control of the power machine.
- ▲ Never allow children to operate the power machine, even under adult supervision.
- ▲ Never allow children to play on the power machine or implement.
- ▲ Use extra caution when backing up. Before the tractor starts to move, look down and behind to make sure the area is clear.

Tractor Shutdown & Storage

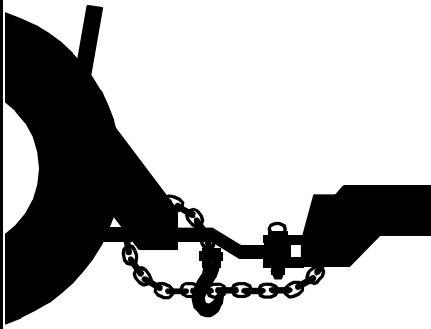
- ▲ If engaged, disengage power take-off.
- ▲ Park on solid, level ground and lower implement until it is flat on the ground or on non-concrete support blocks.
- ▲ Put tractor in park or set park brake.
- ▲ Turn off engine and remove ignition key to prevent unauthorized starting.
- ▲ Relieve all hydraulic pressure to auxiliary hydraulic lines.
- ▲ Wait for all components to stop before leaving operator's seat.
- ▲ Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.



Listed below are common practices that may or may not be applicable to the products described in this manual.

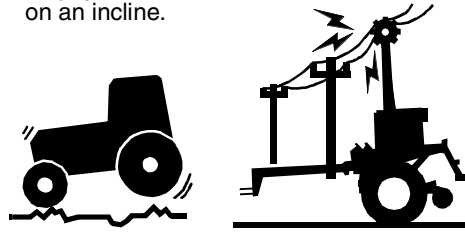
Use A Safety Chain

- ▲ A safety chain will help control drawn machinery should it separate from the tractor drawbar.
- ▲ Use a chain with the strength rating equal to or greater than the gross weight of the towed implement.
- ▲ Attach the chain to the tractor drawbar support or other specified anchor location. Allow only enough slack in the chain to permit turning.
- ▲ Always hitch the implement to the machine towing it. Do not use the safety chain to tow the implement.



Transport Safely

- ▲ Comply with federal, state, and local laws.
- ▲ Use towing vehicle and trailer of adequate size and capacity. Secure equipment towed on a trailer with tie downs and chains.
- ▲ Sudden braking can cause a towed trailer to swerve unexpectedly. Reduce speed if towed trailer is not equipped with brakes.
- ▲ Avoid contact with any overhead utility lines or electrically charged conductors.
- ▲ Always drive with load on end of loader arms low to the ground.
- ▲ Always drive straight up and down steep inclines with heavy end of skid steer on the "uphill" side.
- ▲ Engage park brake when stopped on an incline.



- ▲ Maximum transport speed for an attached equipment is 20 mph (32 km/h). **DO NOT EXCEED.** Never travel at a speed which does not allow adequate control of steering and stopping. Some rough terrains require a slower speed.

- ▲ As a guideline, use the following maximum speed weight ratios for attached equipment:

20 mph (32 km/h) when weight of attached equipment is less than or equal to the weight of machine towing the equipment.

10 mph (16 km/h) when weight of attached equipment exceeds weight of machine towing equipment but not more than double the weight.

- ▲ **IMPORTANT:** Do not tow a load that is more than double the weight of the vehicle towing the load.



Tire Safety

- ▲ Tire changing can be dangerous and must be performed by trained personnel using the correct tools and equipment.
- ▲ Always properly match the wheel size to the properly sized tire.
- ▲ Always maintain correct tire pressure. Do not inflate tires above recommended pressures shown in the Operator's Manual.
- ▲ When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.
- ▲ Securely support the implement when changing a wheel.
- ▲ When removing and installing wheels, use wheel handling equipment adequate for the weight involved.
- ▲ Make sure wheel bolts have been tightened to the specified torque.



Practice Safe Maintenance

- ▲ Understand procedure before doing work. Refer to the Operator's Manual for additional information.
- ▲ Work on a level surface in a clean dry area that is well-lit.
- ▲ Lower implement to the ground and follow all shutdown procedures before leaving the operator's seat to perform maintenance.
- ▲ Do not work under any hydraulically supported equipment. It can settle, suddenly leak down, or be lowered accidentally. If it is necessary to work under the equipment, securely support it with stands or suitable blocking beforehand.
- ▲ Use properly grounded electrical outlets and tools.
- ▲ Use correct tools and equipment for the job that are in good condition.
- ▲ Allow equipment to cool before working on it.

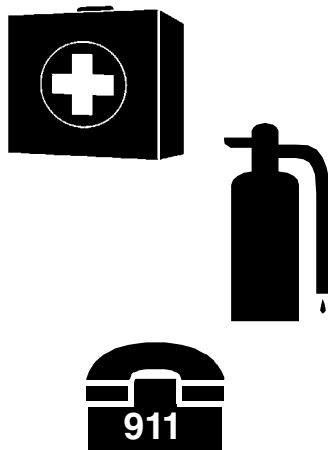
- ▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on implement.
- ▲ Inspect all parts. Make certain parts are in good condition & installed properly.
- ▲ Replace parts on this implement with genuine Great Plains parts only. Do not alter this implement in a way which will adversely affect its performance.
- ▲ Do not grease or oil implement while it is in operation.
- ▲ Remove buildup of grease, oil, or debris.
- ▲ Always make sure any material and waste products from the repair and maintenance of the implement are properly collected and disposed.
- ▲ Remove all tools and unused parts from equipment before operation.
- ▲ Do not weld or torch on galvanized metal as it will release toxic fumes.



Listed below are common practices that may or may not be applicable to the products described in this manual.

Prepare for Emergencies

- ▲ Be prepared if a fire starts.
- ▲ Keep a first aid kit and fire extinguisher handy.
- ▲ Keep emergency numbers for doctor, ambulance, hospital, and fire department near the phone.



Wear Personal Protective Equipment (PPE)

- ▲ Wear protective clothing and equipment appropriate for the job such as safety shoes, safety glasses, hard hat, dust mask, and ear plugs.
- ▲ Clothing should fit snug without fringes and pull strings to avoid entanglement with moving parts.
- ▲ Prolonged exposure to loud noise can cause hearing impairment or hearing loss. Wear suitable hearing protection such as earmuffs or earplugs.
- ▲ Operating a machine safely requires the operator's full attention. Avoid wearing headphones while operating equipment.



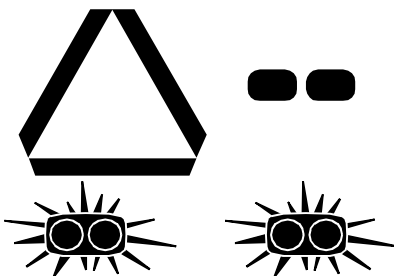
Avoid High Pressure Fluids

- ▲ Escaping fluid under pressure will penetrate the skin or eyes causing serious injury.
- ▲ Relieve all residual pressure before disconnecting hydraulic lines or performing work on the hydraulic system.
- ▲ Make sure all hydraulic fluid connections are properly tightened/torqued and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- ▲ Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
- ▲ Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
- ▲ **DO NOT DELAY.** If an accident occurs, seek immediate emergency medical care or gangrene may result.



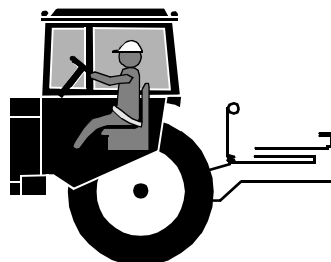
Use Safety Lights and Devices

- ▲ A slow moving power machine can create a hazard when driven on public roads. They are difficult to see, especially at night. Use the Slow Moving Vehicle (SMV) sign when on public roads.
- ▲ Flashing warning lights and turn signals are recommended whenever driving on public roads.



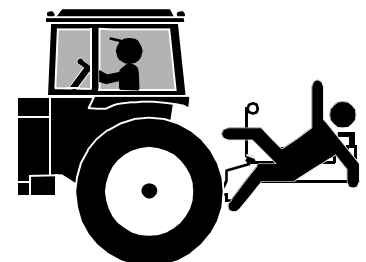
Use Seat Belt and ROPS

- ▲ Great Plains recommends the use of a CAB or roll-over-protective-structures (ROPS) and seat belt in almost all power machines. Combination of a CAB or ROPS and seat belt will reduce the risk of serious injury or death if the power machine should be upset.
- ▲ If ROPS is in the locked-up position, fasten seat belt snugly and securely to help protect against serious injury or death from falling and machine overturn.



Keep Riders Off Machinery

- ▲ Never carry riders on the tractor or implement.
- ▲ Riders obstruct operator's view and interfere with the control of the power machine.
- ▲ Riders can be struck by objects or thrown from the equipment.
- ▲ Never use the tractor or implement to lift or transport riders.



Listed below are common practices that may or may not be applicable to the products described in this manual.

Avoid crystalline Silica (quartz) Dust

Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis).

There are guidelines which should be followed if crystalline silica (quartz) is present in the dust.



- ▲ Be aware of and follow OSHA (or other local, State, or Federal) guidelines for exposure to airborne crystalline silica.
- ▲ Know the work operations where exposure to crystalline silica may occur.
- ▲ Participate in air monitoring or training programs offered by the employer.
- ▲ Be aware of and use optional equipment controls such as water sprays, local exhaust ventilation, and enclosed cabs with positive pressure air conditioning if the machine has such equipment. Otherwise respirators shall be worn.
- ▲ Where respirators are required, wear a respirator approved for protection against crystalline silica containing dust. Do not alter respirator in any way. Workers who use tight-fitting respirators can not have beards/mustaches which interfere with the respirator seal to the face.
- ▲ If possible, change into disposable or washable work clothes at the work site; shower and change into clean clothing before leaving the work site.
- ▲ Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.
- ▲ Store food, drink, and personal belongings away from the work area.
- ▲ Wash hands and face before eating, drinking, smoking, or applying cosmetics after leaving the exposure area.

Handle Chemicals Properly

- ▲ Protective clothing should be worn.
- ▲ Handle all chemicals with care.
- ▲ Follow instructions on container label.
- ▲ Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil, and property.
- ▲ Inhaling smoke from any type of chemical fire can be a serious health hazard.
- ▲ Store or dispose of unused chemicals as specified by the chemical manufacturer.



Dig Safe - Avoid Underground Utilities

- ▲ **USA: Call 811**
CAN: digsafecanada.ca
Always contact your local utility companies (electrical, telephone, gas, water, sewer, and others) before digging so that they may mark the location of any underground services in the area.
- ▲ Be sure to ask how close you can work to the marks they positioned.



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Important Safety Information

Safety Labels

Your No-Till Seeder comes equipped with all safety labels in place. They were designed to help you safely operate your implement. Read and follow their directions.

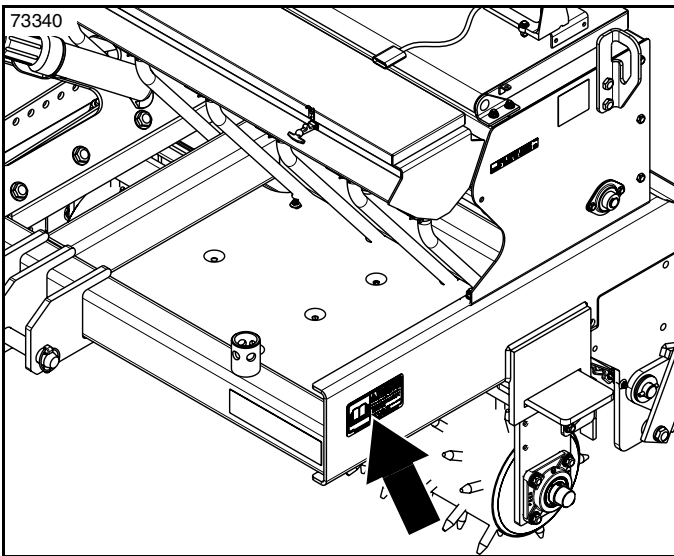
1. Keep all safety labels clean and legible.
2. Refer to this section for proper label placement. Replace all damaged or missing labels. Order new labels from your nearest Great Plains dealer. To find your nearest dealer, visit our dealer locator at www.greatplainsag.com.
3. Some new equipment installed during repair requires safety labels to be affixed to the replaced component as

specified by Great Plains. When ordering new components make sure the correct safety labels are included in the request.

4. Refer to this section for proper label placement.

To install new labels:

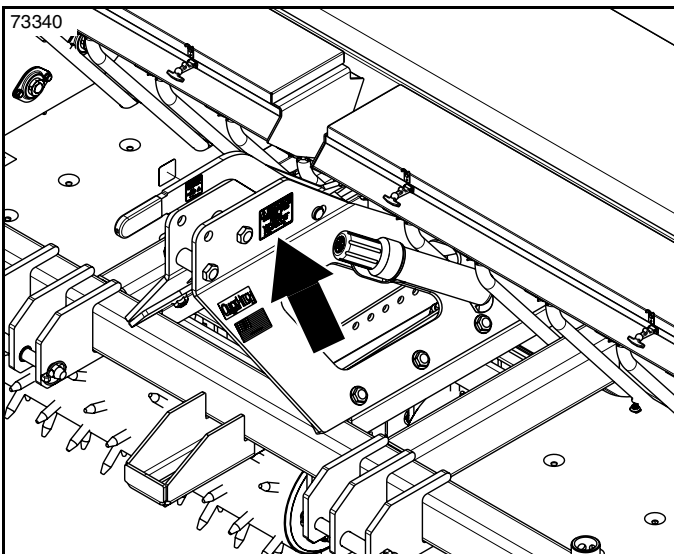
- a. Clean surface area where label is to be placed.
- b. Spray soapy water onto the cleaned area.
- c. Peel backing from label and press label firmly onto the surface.
- d. Squeeze out air bubbles with edge of a credit card or with a similar type of straight edge.



838-293C

Warning: Read Operator's Manual - General Warning

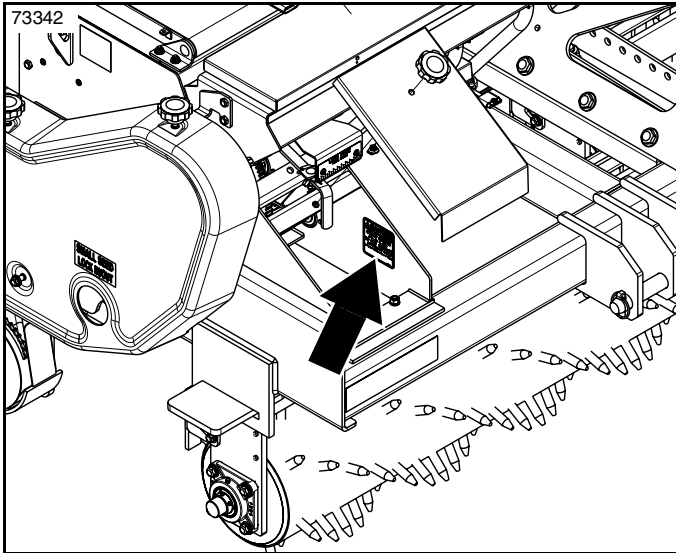
1 Place: On the front left side of the mainframe



818-337C

Warning: Excessive Speed Hazard

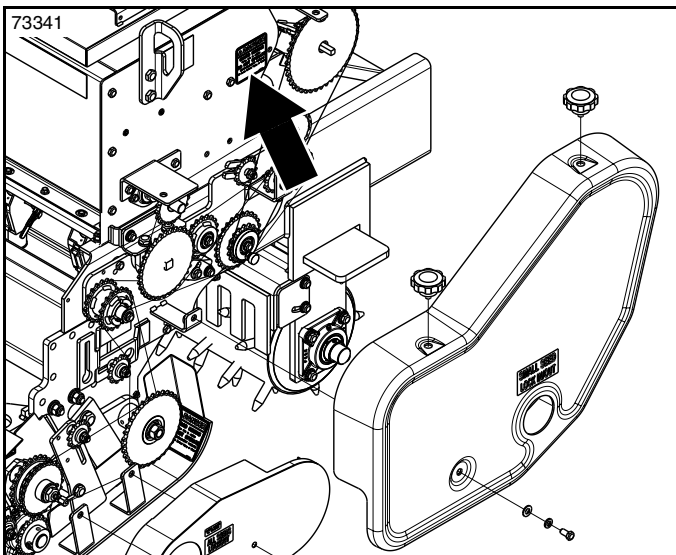
1 Place: On the 3-point hitch frame



70358

818-543C

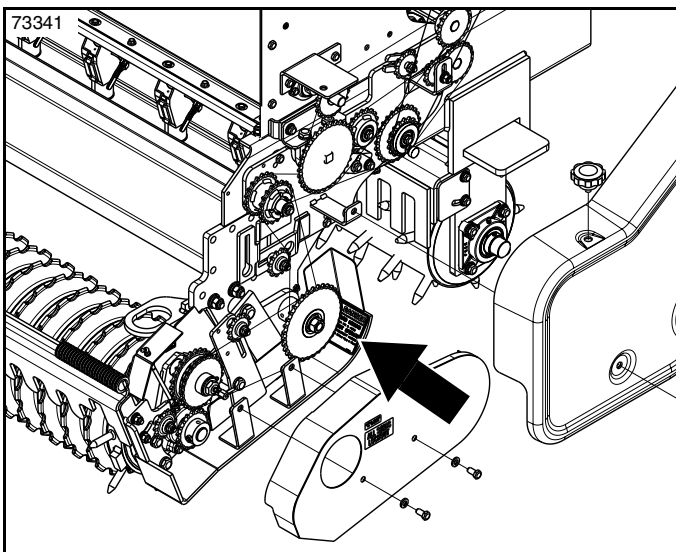
Danger: Guard Missing Hazard - Do not Operate
1 Place: Beneath transmission cover



70358

818-543C

Danger: Guard Missing Hazard - Do not Operate
1 Place: Behind grass seedbox drive guard

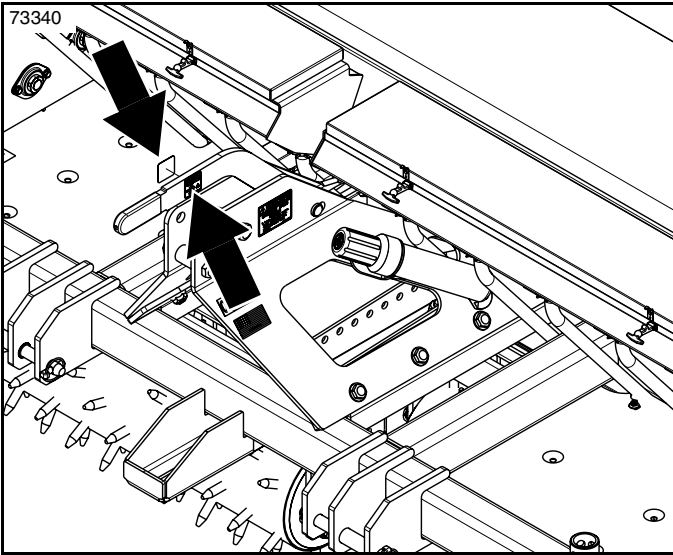


70358

818-543C

Danger: Guard Missing Hazard - Do not Operate
1 Place: Behind all seeds drive guard

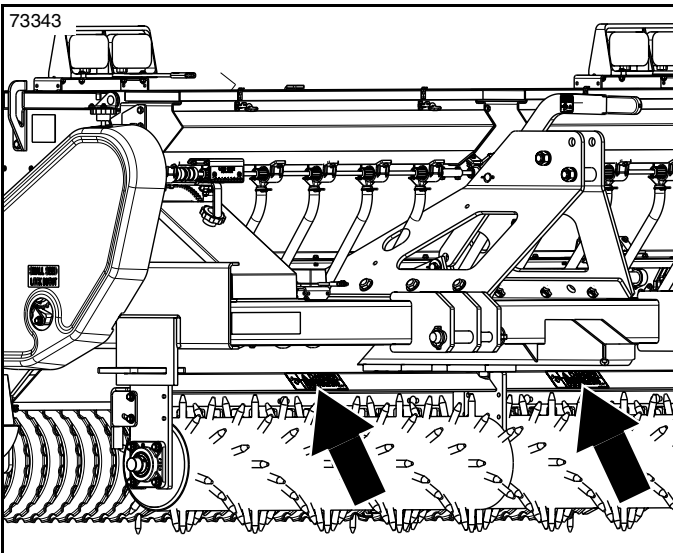
70589



858-765C

Warning: Pinch Point Hazard

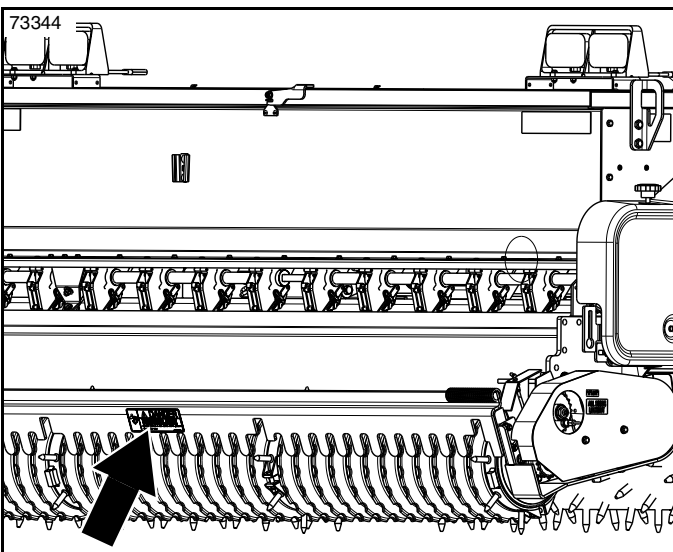
2 Places: Both sides of Spike Roller adjustment lever



818-254C

Danger: Entanglement Hazard

2 Places: On front spike rollers



818-254C

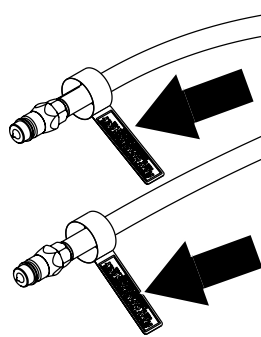
Danger: Entanglement Hazard

1 Place: On rear roller scraper (NTS2607)

2 Places: On rear roller scrapers (NTS2609 & NTS2611)

Main Seedbox Shown

39982



Tow Option

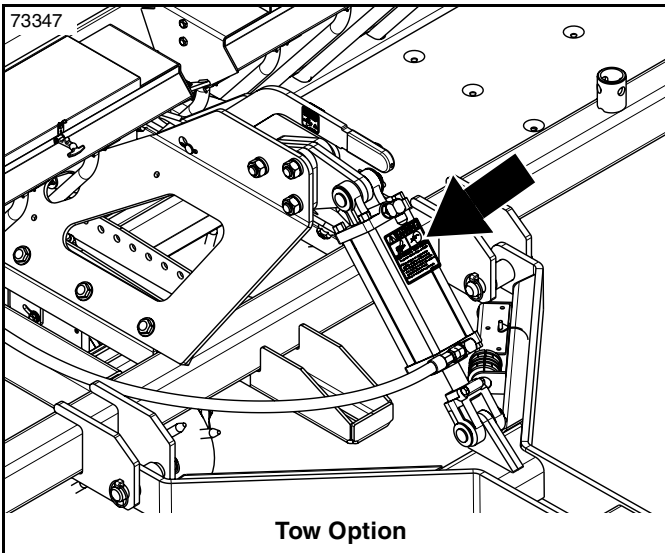
**ATTACH TO TRACTOR HYDRAULICS WITH
FLOAT CAPABILITIES ONLY
SEE OPERATOR'S MANUAL FOR
COMPLETE DETAILS**

858-816C

NOTICE: Attach to tractors hydraulics with Float Capabilities only.

2 Places: End of hydraulic hoses with quick couplers

73347



Tow Option



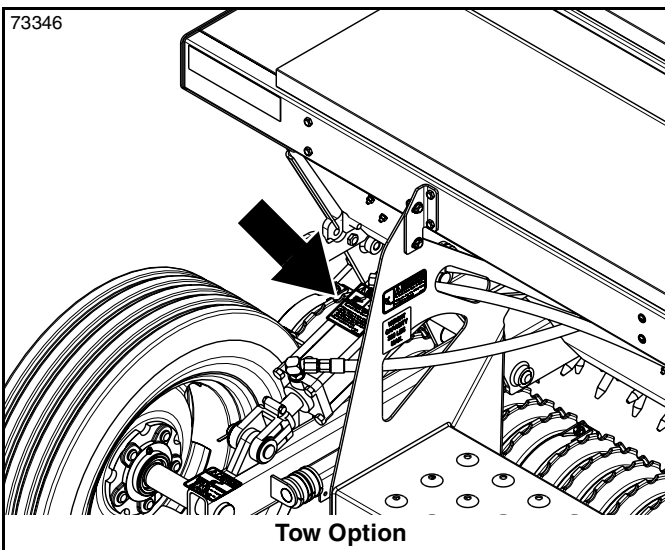
70372

818-339C

Warning: High Pressure Fluid Hazard

1 Place: On the front hydraulic lift cylinder

73346



Tow Option



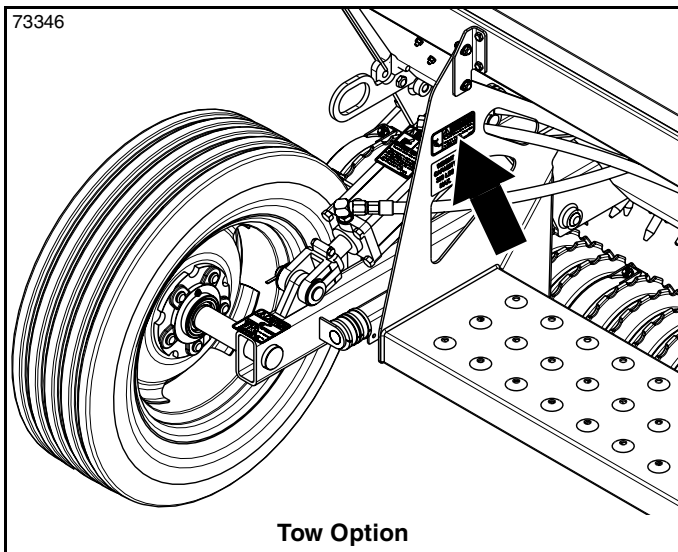
70372

818-339C

Warning: High Pressure Fluid Hazard

2 Places: On the rear hydraulic lift cylinders

73346



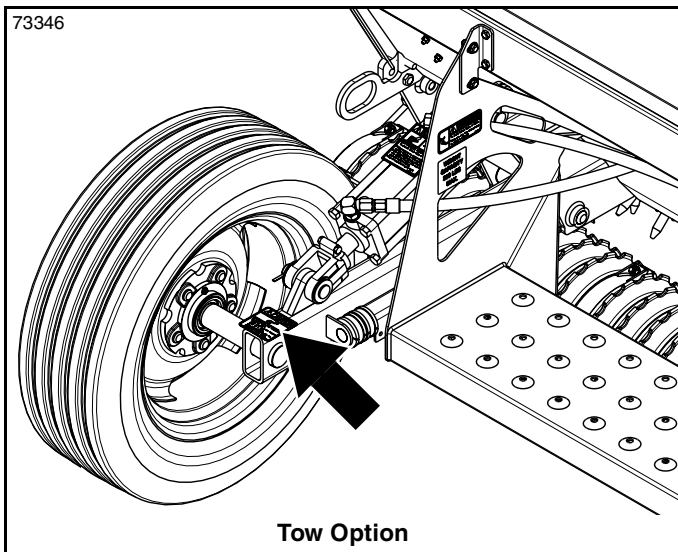
70885

838-102C

Warning: Falling hazard walking on walk board

2 Places: At each end of walk board

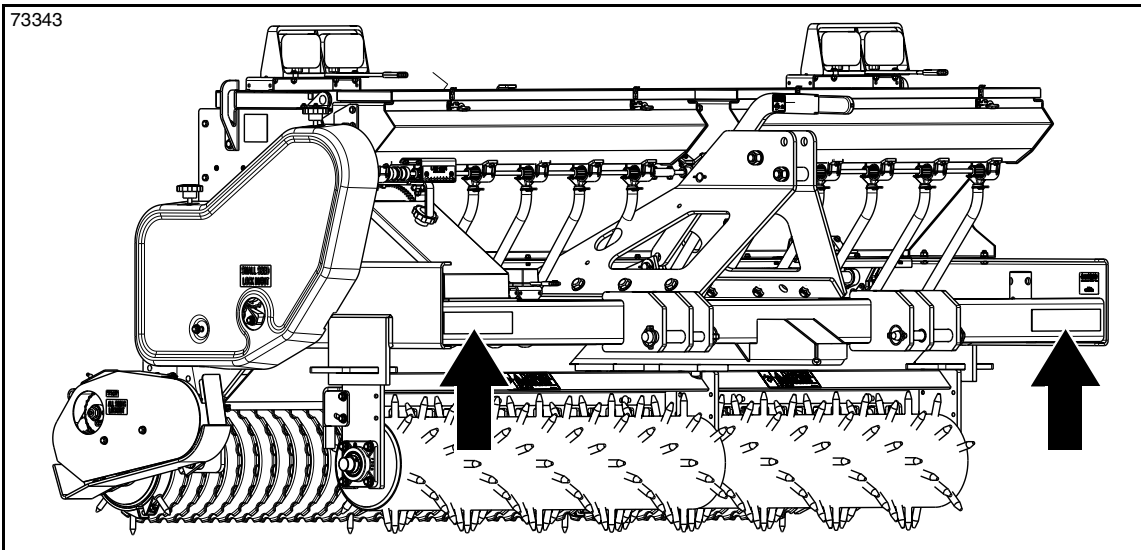
73346



818-398C

Caution: Standing on Tires Hazard

2 Places: On rear axle lift arms

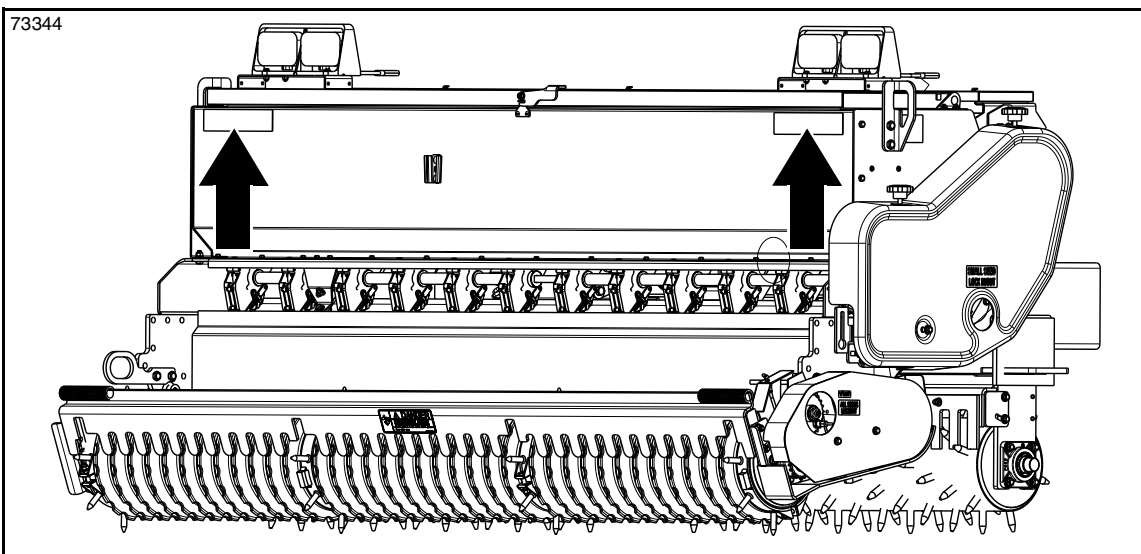


73138

838-615C

Amber Reflector: 2" x 9"

2 Places: Front side of main frame



Main Seedbox Shown



838-614C

Red Reflector: 2" x 9"

2 Places: Back left rear and right rear of main seedbox or if included, native grass seedbox

Great Plains welcomes you to the growing family of new product owners. This NTS Seeder has been designed with care and built by skilled workers using quality materials. Proper assembly, maintenance, and safe operating practices will help you get years of satisfactory use from this implement.

Application

The NTS Series Seeders have the capabilities to seed different grasses, Legumes, small seeds, and other food plot mixes. See “**Seed Rate Charts**” on pages 40, 47, and 55 for a detailed list of seeds each seedbox is designed for seeding. The NTS Series Seeders are ideal for renovating pastures, grassy medians, grassy parkings, reclaiming right-of-ways, and seeding food plots.

See “**Specifications & Capacities**” on page 68 and “**Features & Benefits**” on page 70 for additional information and performance enhancing options.

Patented Lockout Clutch

The lockout clutch on the main drive sprocket is patented. See “**All-Seeds Drive Lock In/Out Clutch**” on page 33 for additional details.

Using This Manual

- This Operator's Manual is designed to help familiarize you with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.
- The information contained within this manual was current at the time of printing. Some parts may change slightly to assure you of the best performance.
- To order a new Operator's or Parts Manual, contact your authorized dealer. Manuals can also be downloaded, free-of-charge, from our website at www.greatplainsag.com

Terminology

“Right” or “Left” as used in this manual is determined by the direction the operator faces while sitting in the operator's seat looking forward unless otherwise stated.

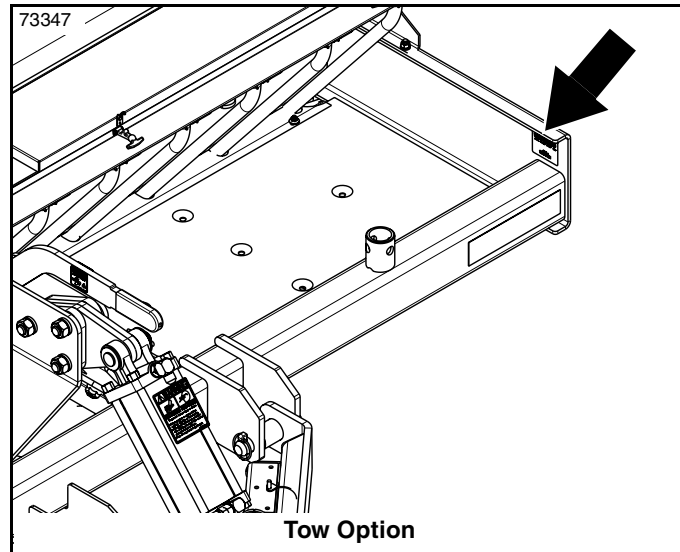
Owner Assistance

The dealer should complete the Online Warranty Registration at the time of purchase. This information is necessary to provide you with quality customer service.

The parts on your NTS Seeder have been specially designed by Great Plains and should only be replaced with genuine Great Plains parts. Contact a Great Plains dealer if customer service or repair parts are required. Your Great Plains dealer has trained personnel, repair parts, and equipment needed to service the implement.

Serial Number

For quick reference and prompt service, record model and serial number on the inside cover page and again on the warranty page. Always provide model number and serial number when ordering parts and in all correspondences with your Great Plains dealer. For location of your serial number plate, see Figure 1.



Serial Number Plate Location
Figure 1

Further Assistance

Your dealer wants you to be satisfied with your new NTS Seeder. If for any reason you do not understand any part of this manual or are not satisfied with the service received, the following actions are suggested:

1. Discuss any problems you have with your implement with your dealership service personnel so they can address the problem.
2. If you are still not satisfied, seek out the owner or general manager of the dealership, explain the question/problem, and request assistance.
3. For further assistance write to:

Great Plains Service Department
1525 East North Street
P.O. Box 5060
Salina, Ks. 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.

Tractor Requirements

WARNING

To avoid serious injury or death:

- Do not use a tractor that is too small. Small tractors can be pushed around and flipped over by the weight of the attached implement.
- Lightweight tractors with rear attached implements may need weights added to the front to maintain steering control. Consult your tractor Operator's Manual to determine proper weight requirements and maximum weight limitations.

IMPORTANT: The lower 3-point arms must be stabilized to prevent side-to-side movement. Most tractors have sway blocks or adjustable chains for this purpose.

Make certain tractor's 3-point lifting capacity and weight is capable of lifting and controlling the seeder under all operating conditions. Refer to "**Specifications & Capacities**" on page 68 for seeder weight.

Tractor horsepower and hitch category should be within the range noted below. Tractors outside the horsepower range must not be used.

Pull-Type Hitch Minimum Horsepower

NTS2607	60 hp (45 kW)
NTS2609	80 hp (60 kW)
NTS26011	100 hp (75 kW)

3-Point Hitch Minimum Horsepower

NTS2607	70 hp (52 kW)
NTS2609	90 hp (67 kW)
NTS26011	110 hp (82 kW)

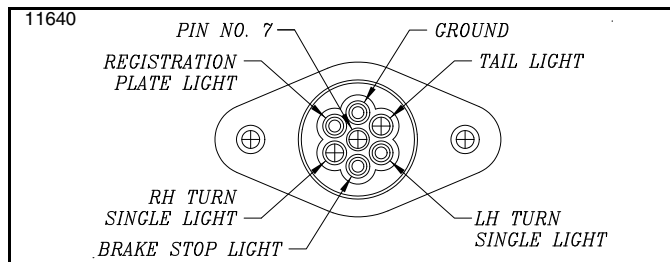
3-Point Hitch Category

NTS2607 without Native Seedbox	Cat. I
NTS2607, NTS2609, & NTS2611	Cat. II

Hydraulic Hook-up

Pull-Type Hitch	Duplex outlet with factory float
3-Point Hitch	None

Electrical Hook-up (See Figure 1-1) 7-Pin Outlet



Tractor 7-Pin Electrical Outlet
Figure 1-1

Quick Hitch Compatibility

IMPORTANT: Use a quick hitch designed to lift and transport the seeder fully loaded. Using a quick hitch not designed to handle the seeder weight can damage your quick hitch, seeder, and/or tractor.

The NTS Seeders are quick hitch compatible. Make sure your quick hitch lift capacity is rated for picking up and transporting a fully loaded seeder. Use Land Pride's QH20 Quick Hitch or one that is compatible.

Torque Requirements

Refer to "**Torque Values Chart for Common Bolt Sizes**" on page 72 to determine correct torque values when tightening hardware. See "**Additional Torque Values**" at bottom of chart for exceptions to common torque values.

Dealer Preparations

This NTS Seeder has been mostly assembled at the factory. Some preparation will be necessary to attach the seeder to the customer's tractor. Make sure the intended tractor conforms to "**Tractor Requirements**" listed on this page.

Go through the "**Pre-Assembly Checklist**" below before assembling the NTS Seeder. Speed up the assembly task and make the job safer by having all needed parts and equipment readily at hand.

Pre-Assembly Checklist

	Check	Reference
<input type="checkbox"/>	All major frame components	Operator's Manual
<input type="checkbox"/>	Location of fasteners and pins. NOTE: All hardware from the factory has been installed in its proper location. If a part is temporarily removed for assembly reasons, remember where it goes. Keep parts separated.	Operator's Manual 329-173M
<input type="checkbox"/>	Be sure the part gets used in the correct location. Use parts manual to identify location of parts that have been removed. By double checking while you assemble, you will lessen the chance of using a part incorrectly that may be needed later.	Parts Manual 329-1731P
<input type="checkbox"/>	All working parts are moving freely, bolts are tight and cotter pins are spread.	Operator's Manual
<input type="checkbox"/>	All grease fittings are in place and lubricated.	Page 64
<input type="checkbox"/>	Proper take-up and alignment of all drive chains.	Page 58
<input type="checkbox"/>	Safety decals are correctly located and legible. Replace if damaged.	Pages 6-11

Sling Bracket

IMPORTANT:

Reference Figure 1-2: Using lift chains that pull at an angle to the sling brackets will bend the brackets and can damage the seedbox.

Reference Figure 1-3: Always use a spreader bar to keep lift chains vertical while lifting the seeder off the ground.

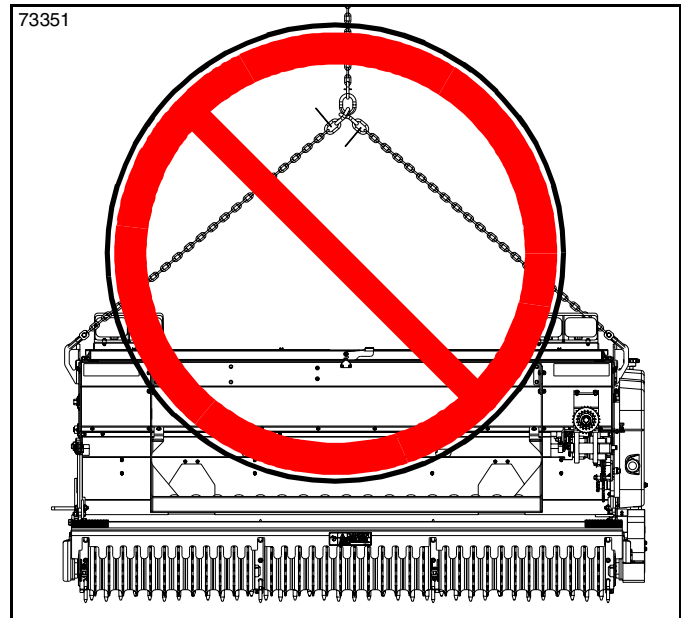
Refer to Figure 1-3:

The sling brackets on the grass seedbox provide lifting points for hooking lift chains (#1) and lifting the NTS Seeder off the ground. The chains should be hooked to a spreader bar vertically above the grass seedbox sling brackets. Make sure lift chains (#1) stay vertical while lifting the seeder.

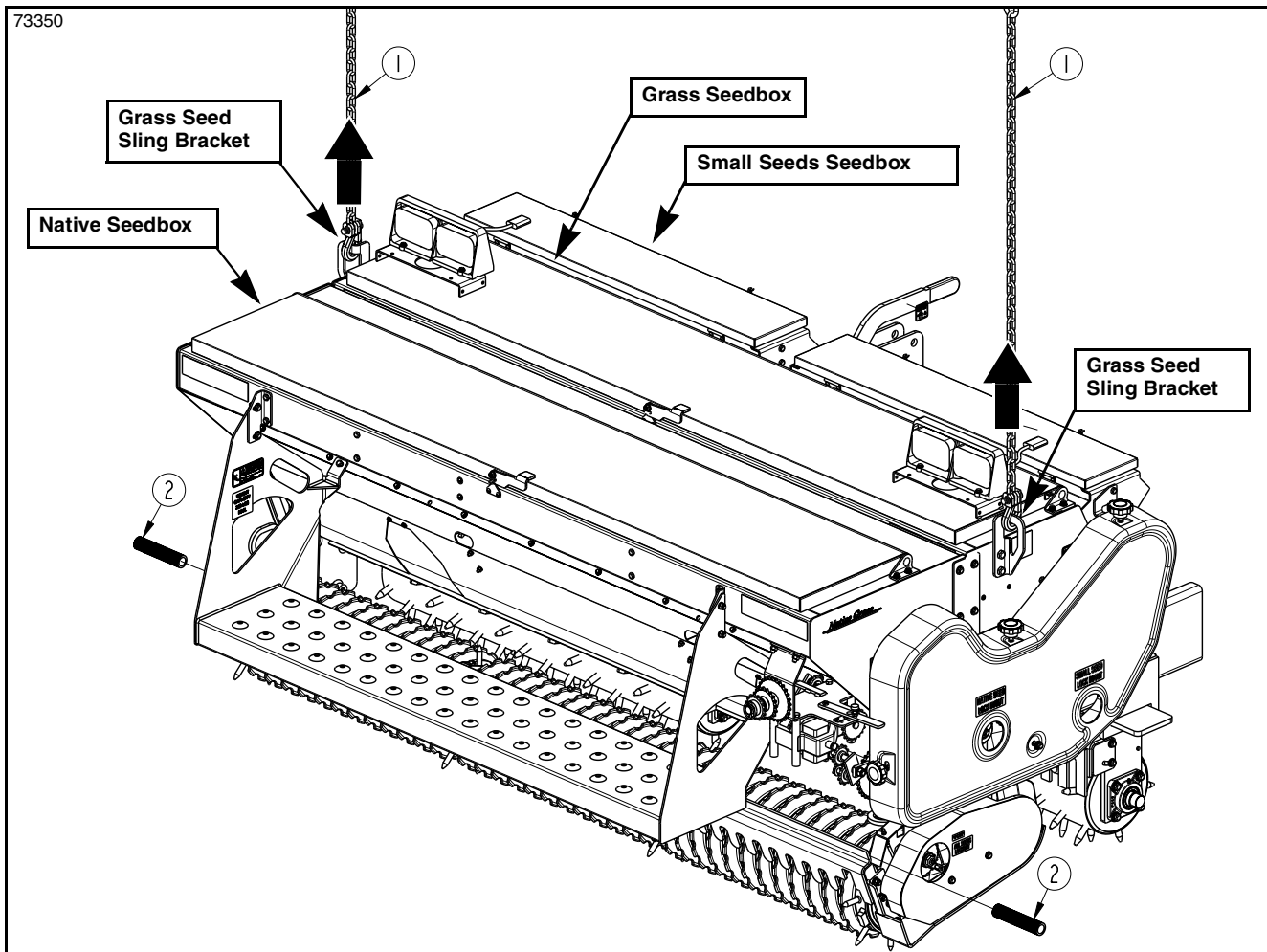
Flex Guard Hose

Refer to Figure 1-3:

Remove all flex guard hoses (#2) mounted on the rear roller scraper and discard.



Improper Lifting Method
Figure 1-2



Proper Lifting Method Using Grass Seed Sling Brackets
Figure 1-3

Small Seeds Zero Adjustment Set-up

NOTE: Reference Figure 1-4 & Figure 1-6: Seed cups (#9) are illustrated with a cut-out in the sprocket to illustrate seed cup washers (#6) and seed cup sleeves (#7) located inside the cups.

Refer to Figure 1-4:

The small seeds seed cups (#9) must be checked to make sure all cup sleeves (#7) are against seed cup sprocket washers (#6) with seed rate adjustment lever (#1) set at 0. Start by checking the right-hand small seeds seedbox with the 0-100 guide scale (#3).

Adjust Right-Hand Small Seeds Seedbox

Refer to Figure 1-4:

1. Loosen wing nut (#11).
2. Move adjustment lever (#1) to 100 on guide scale (#3) and back to 0.
3. **Refer to Figure 1-5 & Figure 1-6:** Open the right-hand small seeds seedbox lid and inspect all cup sleeves (#7) to verify they are against sprocket washers (#6). Sprockets (#5) should not be visible.

Refer to Figure 1-4, Figure 1-5, & Figure 1-6:

4. Make the following adjustments if cup sleeves (#7) are not against sprocket washers (#6) or if seed rate adjustment lever (#1) stops before it gets to 0:
 - a. Loosen set screws in lock collars (#2).
 - b. Move drive shaft (#4) toward lock collars (#2) until it stops. It will stop when one or more sleeves (#7) come against sprocket washers (#6).
 - c. Hold drive shaft (#4) in this position and move adjustment lever (#1) to 0.
 - d. Tighten set screws in lock collars (#2) to the correct torque.
5. If adjustment lever (#1) is at 0 and some of the cup sleeves (#7) are not against sprocket washers (#6), then adjust those cups as follows:
 - a. Loosen hex nuts (#8) and move seed cups (#9) away from seed sprockets (#5) until they stop.
 - b. Tighten 1/4"-20 hex nuts (#8) to the correct torque for GR5 bolts (#10).
 - c. When completed, tighten wing nut (#11).

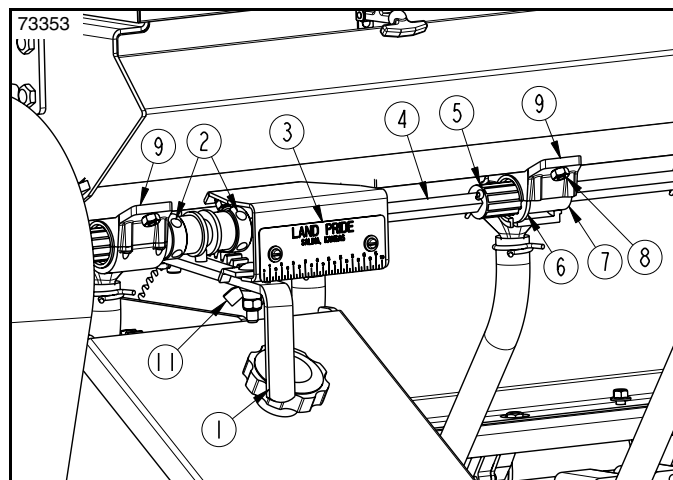
Adjust Left-Hand Small Seeds Seedbox

Refer to Figure 1-4:

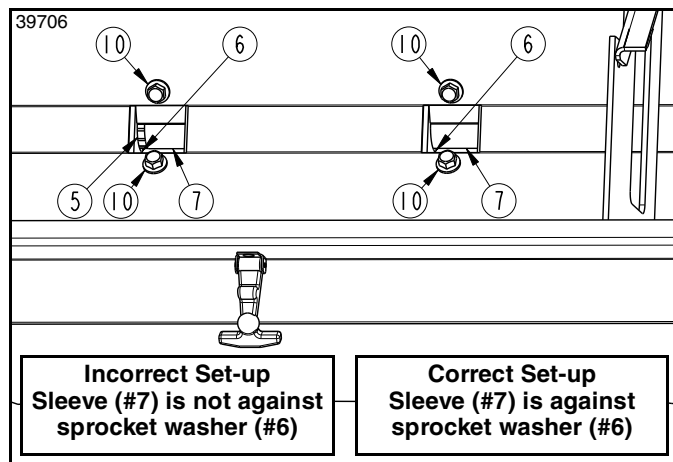
1. Loosen wing nut (#11). Move seed rate adjustment lever (#1) to 100 and back to 0.

Refer to Figure 1-4, Figure 1-5, & Figure 1-6:

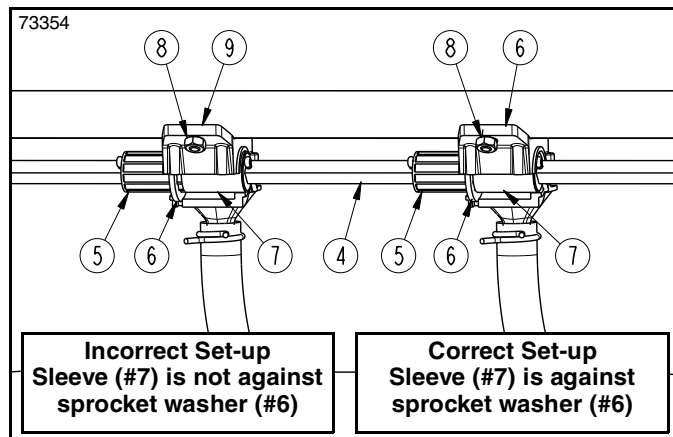
2. Open the left-hand small seeds seedbox lid and verify cup sleeves (#7) are against washers (#6) and sprockets (#5) are not visible.
3. If some of the cup sleeves (#7) are not against sprocket washers (#6), then adjust those cups as instructed in steps 5a-5c above.



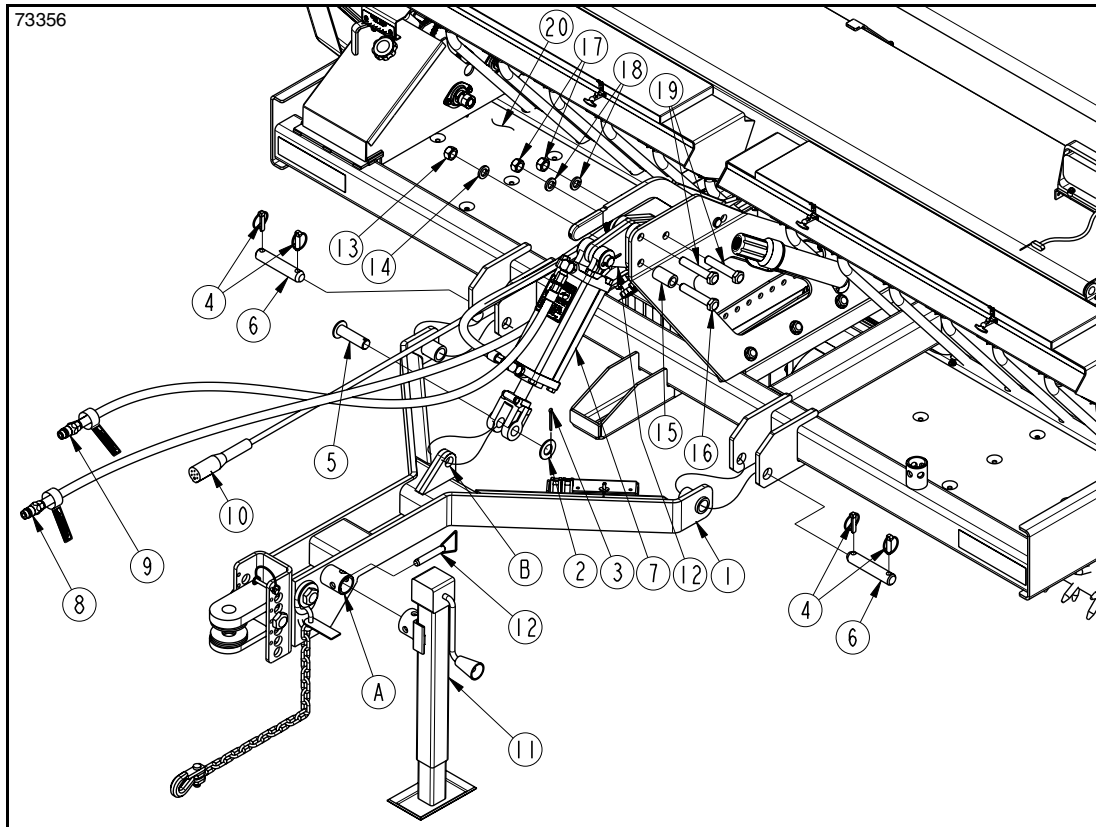
Small Seeds Zero Adjustment Set-up
Figure 1-4



Small Seeds Seed Cups Viewed From Inside The Seedbox
Figure 1-5



Small Seeds Seed Cups Viewed From Beneath Seedbox
Figure 1-6



Tow Hitch Option Assembly
Figure 1-7

Tow Hitch Option

Refer to Figure 1-7:

IMPORTANT: Do not raise spike rollers off the ground with park jack (#11).

Hydraulic cylinder (#7), cylinder mount (#12), and mounting hardware (#17, #18, & #19) are shipped stored on weight tray (#20). Spacer (#15) is attach to the top center clevis for shipping purposes only.

1. Remove hardware (#13, #14, & #16) from the top center clevis. Discard spacer (#15).
2. Attach cylinder (#7) and top link mount (#12) to the center clevis hitch with existing 3/4"-10 x 4 GR5 bolts (#16 & #19), lock washers (#14, & #18), and nuts (#13 & #17). Tighten nuts to the correct torque.
3. Attach hitch (#1) to lower 3-point clevises with hitch pins (#6). Secure hitch pins with linchpins (#4).
4. Remove detent pin (#12) and rotate park jack (#11) in jack mount "A" until near vertical. Fully insert detent pin (#12) through park jack and park jack mount.
5. Extend or retract park jack (#11) until rod end of hydraulic lift cylinder (#7) is in align with hole "B" in the hitch lug.
6. Insert clevis pin (#5) and secure with flat washer (#2) and cotter pin (#3). Bend one or more legs of cotter pin to keep pin from falling out.

7. Coil hydraulic hoses (#8 & #9) and wire harness (#10). Store coiled loops on the seeder.

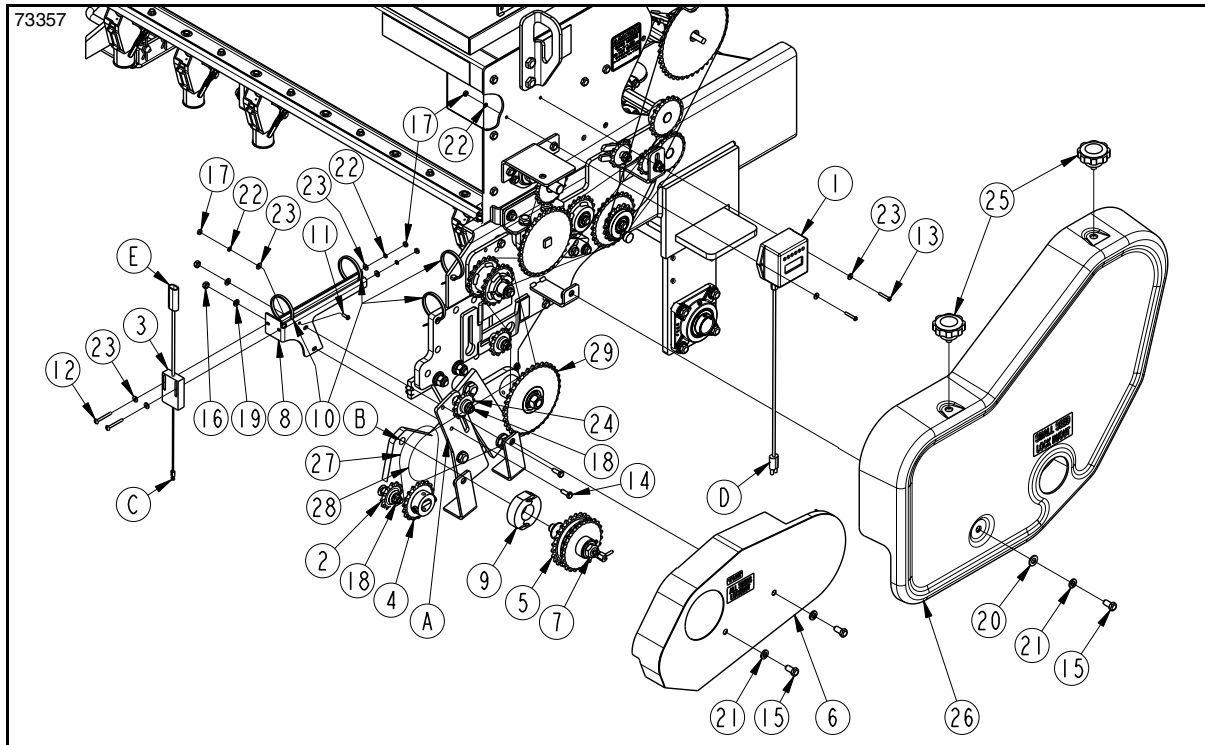
Acremeter Option

NOTE: Refer to "Electronic Acremeter (Option)" on page 56 and instruction manual no. 194-074M for detailed programming and operating instructions.

Refer to Figure 1-8 on page 17:

1. Remove upper guard (#26) as follows:
 - a. Remove bolt (#15), lock washer (#21), flat washer (#20), hand knobs (#25) and guard (#26).
 - b. Set guard (#26) and attaching hardware (#15, #20, #21, & #25) aside for reuse later.
2. Remove lower guard (#6) as follows:
 - a. Remove bolts (#15), flat washers (#21), and guard (#6).
 - b. Set guard (#6) and attaching hardware (#15 & #21) aside for reuse later.
3. Loosen nut (#18) securing idler sprocket (#24) and remove roller chain (#28).
4. Loosen nut (#18) securing idler sprocket (#2) and remove roller chain (#27).

NOTE: Keep greasable pivot bolt (#7) and all-seeds drive sprocket with lockout clutch (#5) together.



Acrometer Option Assembly
Figure 1-8

5. Unscrew greasable pivot bolt (#7) and remove all seed drive sprocket with lockout clutch (#5). Keep greasable pivot bolt (#7) inserted in drive sprocket.
6. Slide snap-on actuator (#9) over hub of lockout sprocket (#5).
7. Attach sprocket and actuator assembly (#5 & #9) to bracket "B" with pivot bolt (#7). Tighten 5/8"-11 GR8 pivot bolt (#7) to the correct torque.
8. Attach Counter Pickup (#3) to pickup mount (#8) with 8-32 x 1 1/2" round head screws (#12) and flat washer (#23).
9. Secure screws (#12) with flat washers (#23), lock washers (#22), and hex nuts (#17). Draw nuts up snug, do not tighten at this time.
10. Attach ground cable eyelet "C" to back side of mount (#8) with 8-32 x 1/2" round head screw (#11), flat washer (#23), lock washer (#22), and nut (#17). Tighten hex nut to the correct torque.
11. Attach mount (#8) to the back side of bracket "A" by inserting 1/4"-20 x 3/4" GR 5 bolts (#14) through bracket "A", mount (#8), lock washers (#19) and hex nuts (#16). Tighten hex nuts to the correct torque.
12. Adjust counter pickup (#3) to be 1/8" above the highest surface on snap-on actuator (#9) and tighten nuts (#17) to the correct torque.
13. Attach Acrometer console (#1) to the seedbox side panel with 8-32 x 1" round head screws (#13), flat washers (#23), lock washers (#22), and nuts (#17). Tighten hex nuts to the correct torque.
14. Install roller chain (#27) on drive sprocket (#4) and the all-seeds drive sprocket (#5).
15. Adjust chain take-up with idler sprocket (#2) and tighten nut (#18) to the correct torque.
16. Install roller chain (#28) on the all-seeds drive sprocket (#5) and driven sprocket (#29).
17. Adjust chain take-up with idler sprocket (#24) and tighten nut (#18) to the correct torque.
18. Secure electrical cables "C", "D" & "E" to pickup mount (#8) with cable ties (#10). Two other cable ties are available for securing the wiring away from the sprockets and roller chains.
19. Connect cable ends D & E together.
20. Make sure wiring is clear of chains, sprockets, and possible pinch points. Make any necessary adjustments to the cable layout and then tighten zip ties (#10).
21. For additional instructions, refer to the included Acrometer instruction sheet.
22. Attach lower guard (#6) with bolts (#15) and flat washers (#21). Tighten bolts to the correct torque.
23. Attach upper guard (#26) with hand knobs (#25), bolt (#15), lock washer (#21), and flat washer (#20). Tighten bolt (#15) to the correct torque. Hand tighten knobs.

Hydraulic Plumbing For Tow Option

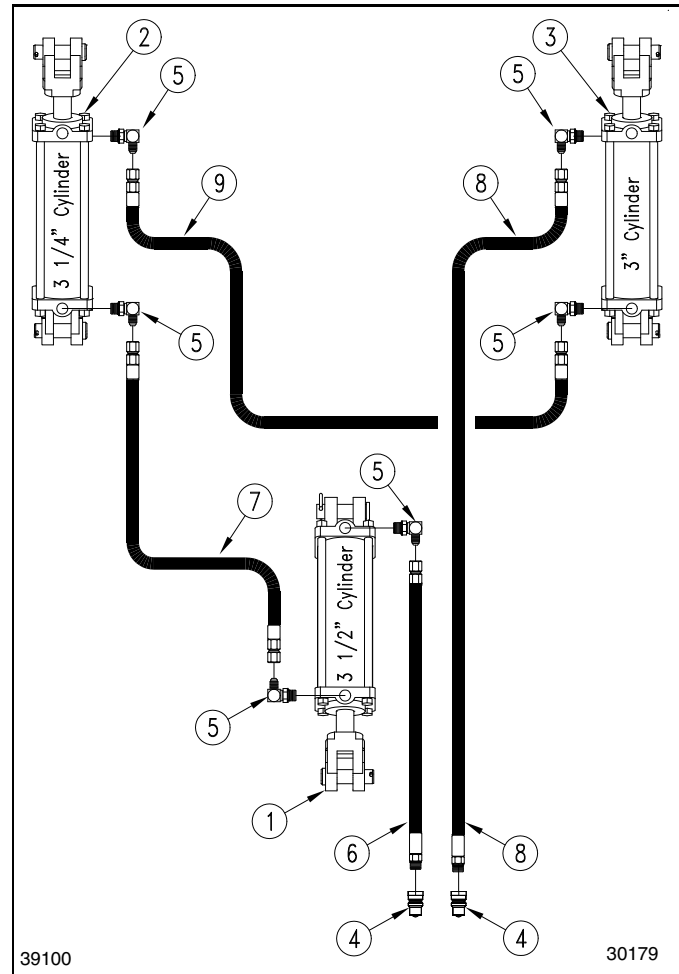
Refer to Figure 1-9:

WARNING

To avoid serious injury or death:

Hydraulic fluid under high pressure will penetrate the skin or eyes causing a serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Use a piece of cardboard or wood rather than hands when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. **DO NOT DELAY.**

The seeder operating/transporting height is controlled by three re-phasing hydraulic lift cylinders (#1, #2, & #3) which are plumbed together to operate in unison. The seeder will not lift properly if rephasing cylinders are plumbed incorrectly. See Figure 1-9 to verify plumbing. Make sure couplings (#4) are attached to hydraulic lift cylinders (#1 & #3).



Rephasing Deck Lift Cylinders and Plumbing
Figure 1-9

Refer to Figure 1-9:

1. Rephasing hydraulic cylinder 3.50" x 6" x 1.25" TIE
2. Rephasing hydraulic cylinder 3.25" x 6" x 1.25" TIE
3. Rephasing hydraulic cylinder 3.00" x 6" x 1.25" TIE
4. Quick disconnect poppet type coupling, 3/4" FORB male
5. Elbow, 3/4" MJIC x 3/4" MORB
6. 3/8" Hydraulic hose, 72" long x 3/4" MORB x 3/4" FJIC
7. NTS2607: 3/8" Hydraulic hose, 82" long x 3/4" FJIC
NTS2609: 3/8" Hydraulic hose, 99" long x 3/4" FJIC
NTS2611: 3/8" Hydraulic hose, 129" long x 3/4" FJIC
8. NTS2607: 3/8" Hyd. hose, 175" lg. x 3/4" MORB X 3/4" FJIC
NTS2609: 3/8" Hyd. hose, 188" lg. x 3/4" MORB X 3/4" FJIC
NTS2611: 3/8" Hyd. hose, 198" lg. x 3/4" MORB X 3/4" FJIC

Without Native Seedbox

9. NTS2607: 3/8" Hydraulic hose, 82" (208 cm) x 3/4" FJIC
NTS2609: 3/8" Hydraulic hose, 99" (252 cm) x 3/4" FJIC
NTS2611: 3/8" Hydraulic hose, 129" (328 cm) x 3/4" FJIC

With Native Seedbox

9. NTS2607: 3/8" Hydraulic hose, 59" (150 cm) x 3/4" FJIC
NTS2609: 3/8" Hydraulic hose, 73" (185 cm) x 3/4" FJIC
NTS2611: 3/8" Hydraulic hose, 99" (252 cm) x 3/4" FJIC

Purge Hydraulic System

DANGER

To avoid serious injury or death:

- Never remove or install a hydraulic cylinder with hydraulics to the cylinders under pressure. The seeder will drop suddenly. Also, air trapped in a new or repaired cylinder can drop the seeder suddenly when raising and lowering the unit. Either situation can damage to the seeder and cause serious bodily injury or death.
- Do not use a park jack to support the seeder during purging operations. The seeder can fall while purging the hydraulic system. Instead, hook seeder to a tractor drawbar to help stabilize the unit while purging the hydraulic system.
- Make sure the implement is lowered to the ground and all hydraulic pressure is relieved before hooking-up or disconnecting any hydraulic lines, fittings, or cylinders.

IMPORTANT: Be sure tractor reservoir is filled properly before operating hydraulic cylinders. If tractor reservoir is low on hydraulic fluid, there is a chance of drawing air into the system causing jerky or uneven cylinder movements.

1. Hook seeder to the tractor drawbar. Refer to steps 1-13 under “**Hook-up Pull-Type Seeder**” on page 24. Do not attach hydraulic hoses to the tractor duplex at this time.
2. Remove park jack and store it on the seeder frame. Refer to “**Store Park Jack**” on page 25.
3. With barrel end of all three hydraulic cylinders pinned to their respective mounting lugs and all hydraulic fittings are tight, unpin cylinder rods from their mounting lugs.
4. Tip rod end of all three hydraulic cylinders up as much as possible and in some fashion hold cylinders in this position without restricting rod movement.

IMPORTANT: Attach hydraulic hoses only to tractor hydraulics with float capabilities. **Tractor hydraulics for the seeder must be locked in float position while lowering the seeder and while seeding, otherwise the seeder can be damaged.**

5. Attach hydraulic hoses to the tractor duplex outlet with float capabilities.
6. With tractor started, engage hydraulics until the hydraulic cylinder at the front of the seeder is fully extended.
7. Disengage hydraulics, and wait one minute. This will allow any trapped air to migrate toward the re-phasing port.
8. Repeat steps 6 & 7 for each of the two remaining hydraulic cylinders.
9. Engage hydraulics again and hold engaged for two full minutes.
10. After two minutes have passed, cycle hydraulic cylinders by fully retracting and extending them. End with cylinder rods fully extended.
11. Shut tractor engine off and remove switch key.
12. Remove supports holding cylinder rods in the tipped up position.
13. Return to the tractor and retract cylinders slowly until cylinder rod clevises align with mounting lugs.
14. Shut tractor engine off and remove switch key.
15. Pin cylinder rods to their respective mounting lugs.
16. When all three rod ends are pinned securely, restart tractor and engage hydraulics to lift seeder until cylinder rods are full extended. Hold tractor lever in the engaged position for one minute.
17. With cylinders fully extended, shut tractor engine off and remove switch key.
18. Check and refill tractor hydraulic reservoir if needed.

Operating Checklist

Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training involved in the operation, transport, storage, and maintenance of the seeder. Therefore, it is absolutely essential that no one operates the NTS Seeder unless they have read, fully understood, and are totally familiar with the Operator's Manual. Make sure the operator has paid particular attention to:

- **Important Safety Information**, page 1-11
- **Section 1: Assembly & Set-up**, page 13
- **Section 2: Operating Instructions**, page 20
- **Section 3: Roller Adjustments**, page 36
- **Section 8: Maintenance & Lubrication**, page 58

Perform the following inspections before using your seeder.

Operating Checklist

✓	Check	Page
	Read and follow all Safety Rules carefully. Refer to "Important Safety Information".	1
	Make sure all guards and shields are in place. See guards (#4 & #22) in Figure 1-8 on page 17 and cover (#5) in Figure 2-13 on page 33.	17 33
	Read and follow all operating instructions. Refer to Section 2: Operating Instructions.	20
	Read and follow Tractor Hook-up instructions.	22 24
	Set the grass seedbox transmission to the correct speed range. Refer to Grass Seeds Transmission.	32
	Make all required adjustments. Refer to Section 3: Roller Adjustments.	36
	Adjust seed rate for Grass Seed. See Section 4: Grass Seed Rate Adjustment.	37
	Adjust seed rate for Small Seed. Refer to Section 5: Small Seed Rate Adjustment	46
	Adjust seed rate for Native Seed. Refer to Section 6: Native Seed Rate Adjustment	54
	Read and follow all maintenance instructions. Refer to Section 8: Maintenance & Lubrication.	58
	Inspect seed cups and seed tubes for foreign matter.	62
	Lubricate seeder as needed. Refer to Lubrication Points.	64
	Make sure the Native Seed gearbox is properly lubricated. See Gearbox for the Native Seedbox.	67
	Check seeder initially and periodically for loose bolts and pins. Refer to Torque Values Chart.	72

General Safety

The following are general operating safety alerts. Read and understand them before hooking-up to the seeder.

DANGER

To avoid serious injury or death:

- All guards and shields must be installed and in good working condition. Loose clothing caught on rotating components can pull a person into the machinery. Hands and other body extremities can become entangled in the machinery.
- Do not allow anyone near the tractor or implement while they are operating. Stop operation if bystanders are too close. They can be hit by flying projectiles, become entangled in the equipment, or ran over.
- Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to hydraulics is off.

WARNING

To avoid serious injury or death:

- Allow only persons to operate this implement who have fully read and comprehended this manual, and who have been properly trained in the safe operation of this implement. Serious injury or death can result from the inability to read, understand, and follow instructions provided in this manual.
- Operate only power machines equipped with a certified Roll-Over Protective Structure (ROPS) and seat belt. Keep folding ROPS in the "locked up" position when appropriate. If ROPS is in the locked up position, fasten seat belt snugly and securely to help protect against serious injury or death from falling and machine overturn.
- Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.
- Always be aware of your footing and surroundings when working on or around the seeder. Be especially careful while standing on the walkway. Something as simple as a misstep can cause a person to fall and become seriously injured.
- Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting the implement back into service.
- Never carry riders on the implement or tractor. Riders can obstruct the operator's view, interfere with controls, be pinched by moving components, become entangled in rotating components, struck by objects, thrown about, fall off and be run over, etc.
- Do not operate and/or travel across inclines where the tractor and/or implement can rollover. Consult your tractor's manual for acceptable inclines the tractor is capable of traveling across.

Section 2: Operating Instructions

- Do not use implement to lift objects; to pull objects such as fence posts, stumps, etc; or to push objects. The unit is not designed or guarded for these uses.
- Do not use implement as a man lift or work platform. It is not properly designed or guarded for this use.
- Never make contact with underground utilities such as electrical power lines, gas lines, phone lines, etc. They can cause serious injury or death from electrocution, explosion, or fire. Always call 811 (USA) before digging so that they can mark the location of underground services in the area. For contact information, see Dig Safe in the "Important Safety Information" starting on page 1.
- Avoid exposure to dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis). Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica.

CAUTION

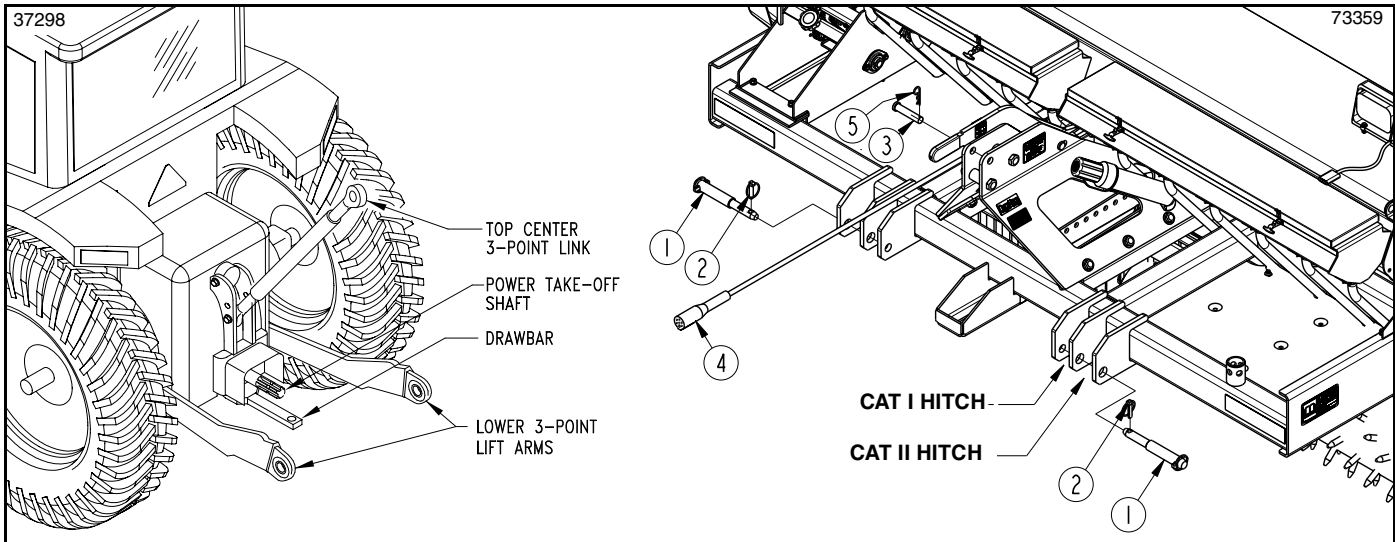
To avoid minor or moderate injury:

- Do not use front spike rollers, rear roller, or tires as a step. They can move suddenly causing a falling hazard against metal protruding objects even when they appear to be solid against the ground.
- Do not step or climb on the frame, rollers, or optional wheels to fill the grass seedbox. Climbing on the seeder to fill the seedbox can result in a falling hazard.
- Use lid over center lock when lid is in the up position. Keep others away when raising or lowering the lid and keep all body parts out of the way when lowering the lid. The lid could come down on body parts.

Tractor Shutdown Procedure

The following are basic tractor shutdown procedures. Follow these procedures and any additional shutdown procedures provided in your tractor Operator's Manual before leaving the operator's seat.

1. Reduce engine speed and disengage power take-off if engaged.
2. Park tractor and implement on level, solid ground.
3. Lower implement to ground or onto non-concrete support blocks.
4. Put tractor in park or set park brake, turn off engine, and remove switch key to prevent unauthorized starting.
5. Relieve all hydraulic pressure to auxiliary hydraulic lines.
6. Wait for all components to come to a complete stop before leaving the operator's seat.
7. Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.



Tractor Hook-up to 3-Point Seeder
Figure 2-1

Hook-up 3-Point Seeder

Refer to Figure 2-1:f

WARNING

To avoid serious injury or death:

Lightweight tractors with rear attached implements may need weights added to the front to maintain steering control.

Consult your tractor Operator's Manual to determine proper weight requirements and maximum weight limitations.

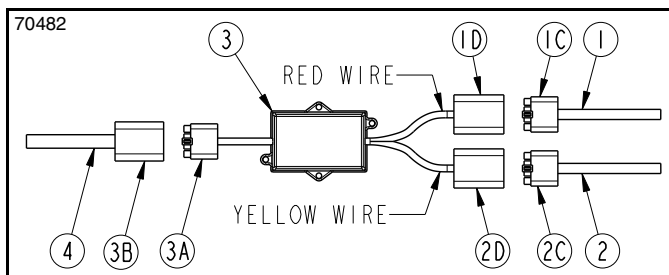
NOTE: Land Pride's Quick Hitch can be attached to the tractor to provide quick and easy 3-point hook-up and detachment. Be sure to read "**Quick Hitch Compatibility**" on page 13 before hooking-up with a quick hitch. See your nearest Land Pride dealer to purchase a Quick Hitch.

A 3-point Category II hitch is required unless the seeder is Model NTS2607 without the Native Seedbox. Refer to "**Tractor Requirements**" on page 13 for detailed hitch requirements. The tractor's lower 3-point arms must be stabilized to prevent side-to-side movement. Most tractors have sway blocks or adjustable chains for this purpose.

1. Slowly back tractor up to the seeder while using the 3-point hydraulic control lever to lower and position holes in the lift arms between Cat. I or Cat. II clevis plates and in-line with clevis plate hitch holes.
2. Shut tractor down properly before dismounting. Refer to "**Tractor Shutdown Procedure**" on page 21.
3. Attach lower lift arms to clevises with hitch pin (#1) and secure with linchpins (#2). Make sure retainer is rotated down to secure linchpins.
4. Adjust length of top center 3-point link to align center link hitch hole with upper hitch hole on the seeder.

NOTE: Center hitch pin (#3) and hitch pin keeper (#5) are customer supplied.

5. Attach top center link to the seeder using **customer supplied 3/4" diameter hitch pin (#3) and hitch pin keeper (#5)**.
6. Start tractor and slowly operate controls to raise and lower seeder to make sure the seeder clears the tractor tires, frame, and drawbar.
7. If drawbar interferes with seeder, shut tractor down properly and the move drawbar out of the way or remove it from the tractor. Refer to Tractor Operator's Manual for instructions on moving or removing drawbar.
8. If not parked on level ground, restart tractor and move to level ground.
9. Lower seeder until unit is resting on the ground.
10. Shut tractor down properly before dismounting.
11. Place a level across the main frame running from left to right.
12. Manually adjust one of the lower lift arms up or down until seeder is level from left to right.
13. Rotate level 90 degrees and adjust length of upper center 3-point link to level seeder from front to back. Final adjustment of the center link will be made later in the field. See "**Level Seeder With 3-Point Mount**" on page 27.
14. Hook-up lead wire harness (#4) to the tractor's 7-way round pin receiver. See Figure 1-1 on page 13.
15. Remove slow moving vehicle sign from the back of the tractor and insert it in the mounting socket on the back of the rear seedbox. Refer to "**Transporting**" on page 26 for detailed instructions.



Enhance Module Wire Connections For LED Lights

Figure 2-2

Check LED Lights

Refer to Figure 2-2:

Check LED lights to make certain they are operating correctly.

IMPORTANT: Connectors on wire harness (#1 & #2) are labeled "Light" on one end and "Enhancer" on the other end. Ends labeled "Light" connect to the LED lights. Ends labeled "Enhancer" connect to enhance module (#3).

IMPORTANT: Connector (#1D) has a Red wire and connects to wire harness (#1) on the right side of the implement. Connector (#2D) has a yellow wire and connects to wire harness (#2) on the left side of the implement.

1. It is best to have a second person available to verify the lights are operating correctly. Start tractor and operate lights as follows:
 - a. Turn on head lights to verify red lights illuminate.
 - b. Turn on flasher lights to verify amber light are blinking on and off.
2. If lights did not operate properly, recheck hook-up of wire harness (#1, #2, & #4) to enhance module (#3).
 - Make sure connector (#1D) with a red wire is connected to the right-hand wire harness (#1).
 - Make sure connector (#2D) with a yellow wire is connected to the left-hand wire harness (#2).
 - Make sure connector (#3B) on the lead wire harness (#4) is connected to connector (#3A) on enhance module (#3).
3. Check wire harness routing to make sure wires will not be pinched as the seeder is raised and lowered.
4. Add cable ties to wire harness (#1, #2, & #4) as needed to secure them in place.

Check Tractor Clearance

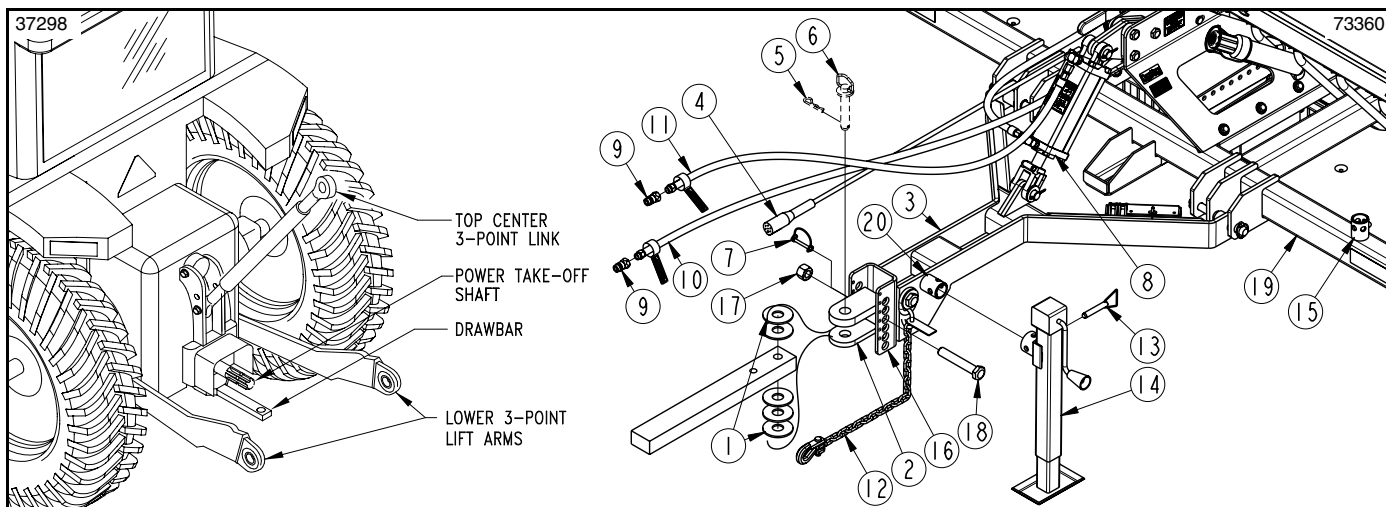
Refer to Figure 2-1 on page 22:

1. Shut tractor down properly. See "Tractor Shutdown Procedure" on page 21.
2. Adjust front rollers all the way forward. Refer to "Front Spike Roller Angle" on page 36 for detailed instructions.
3. From the tractor seat, slowly raise and lower seeder with hydraulic 3-point lift while watching for drawbar clearance, tire clearance, and 3-point clearance.
4. If drawbar interferes, shut tractor down properly.
5. Move drawbar back, to one side, or remove drawbar.

Unhook 3-Point Seeder

Refer to Figure 2-1 on page 22:

1. Clean seedboxes, seed cups, and drop tubes before unhooking seeder. Refer to "Long-Term Storage" on page 62.
2. Park tractor and seeder on level, solid ground. Preferably store seeder inside a shed to keep moisture away from the seedboxes.
3. Shut tractor down before dismounting. Refer to "Tractor Shutdown Procedure" on page 21.
4. Chock front and back rollers to keep unit from moving.
5. Disconnect lead wire harness (#4). Coil harness up and store on the seeder frame with plug end hanging down to keep moisture out.
6. Remove hitch pin keeper (#5) and hitch pin (#3). Store center link in tractor storage hook.
7. Reinstall hitch pin (#3) and keeper (#5) in the seeder's upper 3-point center clevis.
8. Remove linchpins (#2) and hitch pins (#1).
9. Start tractor and drive forward several feet and then shut tractor down properly before dismounting. Refer to "Tractor Shutdown Procedure" on page 21.
10. Replace hitch pins (#1) in the seeder's lower 3-point clevises. Secure with linchpin (#2).
11. **Refer to Figure 2-7 on page 27:** Remove slow moving vehicle sign (#5) from the back of the seeder and insert it in the mounting socket on the back of the tractor.



Tractor Hook-up to Pull-Type Seeder

Figure 2-3

Hook-up Pull-Type Seeder

Refer to Figure 2-3:

WARNING

To avoid serious injury or death:

Lightweight tractors with rear attached implements may need weights added to the front to maintain steering control.

Consult your tractor Operator's Manual to determine proper weight requirements and maximum weight limitations.

IMPORTANT: Detent pin (#13) must be fully inserted and secured before working on or around a seeder that is not hooked to the tractor drawbar.

IMPORTANT: (Drawbar to Clevis Height)

If clevis (#2) does not align properly with tractor drawbar during hook-up, the clevis height must be adjusted in hitch channel (#16). Do not adjust clevis height with park jack (#14). Using park jack to adjust clevis height can cause hydraulic lift cylinders to not function properly in the field.

1. Make certain park jack (#14) is properly attached to jack mount (#20) and secured with detent pin (#13).
2. Adjust park jack as follows:
 - If seeder is resting on the ground, adjust park jack (#14) to support mainframe (#19) level. Do not adjust park jack to align clevis (#2) with tractor drawbar. Clevis height will be adjusted later in step 7.
 - If seeder was unhooked while raised off the ground, do not adjust park jack (#14) to align clevis (#2) with tractor drawbar. Clevis height will be adjusted later in step 7.
3. Store tractor's upper center 3-point link in its storage hook.
4. Start tractor and raise 3-point lift arms fully up.

5. Carefully back tractor within close proximity of clevis (#2).
6. Shut tractor down properly before dismounting. Refer to "Tractor Shutdown Procedure" on page 21.
7. Hold clevis (#2) level. If tractor drawbar is higher or lower than clevis, adjust clevis in hitch channel (#16).
 - a. Remove nylock nut (#17) and bolt (#18).
 - b. Move clevis (#2) up or down until clevis (#2) is up one hole above tractor drawbar height.
 - c. Attach clevis (#2) to clevis hitch channel (#16) with existing 1"-8 x 6" GR5 bolt (#18) and nylock nut (#17). Draw nylock nut up snug. Do not tighten.
8. Rotate clevis (#2) level and insert wire retaining pin (#7) as follows:
 - If hydraulic lift cylinder (#8) is retracted as shown, insert wire retaining pin (#7) in one of the holes on the right side of clevis (#2).
 - If hydraulic lift cylinder (#8) is fully extended insert wire retaining pin (#7) in one of the holes on the left side of clevis (#2).
9. Start tractor and continue to back tractor toward the seeder until hole in tractor drawbar and holes in seeder clevis hitch (#2) are aligned.
10. Shut tractor down properly before dismounting.

NOTE: Hitch pin (#6) and keeper (#5) are customer supplied. The number of flat washers (#1) required will depend on tractor drawbar thickness. Not using flat washers can cause increased drawbar wear.

11. Attach seeder to tractor drawbar by inserting customer supplied hitch pin (#6) through upper plate of clevis (#2), two upper washers (#1), tractor drawbar, as many lower washers (#1) as possible, and lower plate of clevis (#2). Secure hitch pin with customer supplied hitch pin keeper (#5).

12. Remove wire retaining pin (#7) and store in pin hole furthest from clevis (#2) or with the tractor.
13. Attach hitch safety chain (#12) to the tractor. Adjust chain length to remove all slack except what is necessary to permit turning. Lock chain hook securely to the safety chain.



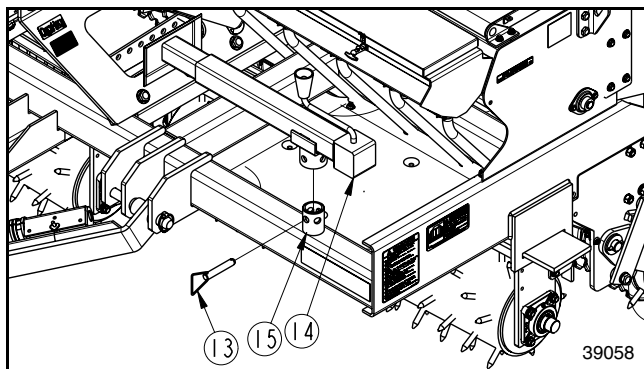
WARNING

To avoid serious injury or death:

Hydraulic fluid under high pressure will penetrate the skin or eyes causing a serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Use a piece of cardboard or wood rather than hands when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.

IMPORTANT: Attach hydraulic hoses (#9 & #11) only to tractor hydraulics with float capabilities. Factory float must be used while seeding seeds or the unit can be damaged.

14. Connect hydraulic hoses (#10 & #11) to the tractor duplex outlet with factory float. Factory float must be used while seeding seeds.
15. Hook-up lead wire harness (#4) to the tractor's 7-way round pin receiver. See Figure 1-1 on page 13.
16. **Refer to Figure 2-6 on page 26:** Remove slow moving vehicle sign from the mounting socket on the back of the tractor and insert it in the mounting socket (#5) on the back of the seedbox.



Store Park Jack Before Traveling
Figure 2-4

Store Park Jack

Refer to Figure 2-3 on page 24:

IMPORTANT: Remove park jack (#14) from the hitch to protect it from damage caused by dragging the jack or turning the tractor tire into the jack.

1. Lower park jack (#14) until the hitch weight is supported by the tractor drawbar.
2. Remove detent pin (#13) and park jack (#14).

Refer to Figure 2-4:

3. Attach park jack (#14) to storage mount (#15) on the seeder main frame with detent pin (#13).
4. If seeder was stored raised fully up, the transport locks should be installed on all hydraulic lift cylinders. If transport locks are not installed, they should be installed before transporting the seeder. Refer to "Install Transport Locks and Spacers" on page 26.
5. Check LED lights to verify they are operating correctly. Refer to "Check LED Lights" on page 23.

IMPORTANT: Do not remove transport locks from hydraulic lift cylinders until ready to seed grass.

Unhook Pull-Type Seeder

Refer to Figure 2-3 on page 24:

1. Clean seedboxes, seed cups, and drop tubes before unhooking seeder. Refer to "Long-Term Storage" on page 62.
2. Park tractor and seeder on level, solid ground. Preferably store seeder inside a shed to keep moisture away from the seedboxes.
3. Lower seeder down until it is resting on the front and rear rollers or raise seeder up and install transport locks. For detailed instructions. See "Install Transport Locks and Spacers" on page 26.
4. Place tractor in park or set its park brake, shut tractor engine off, and move hydraulic control lever back and forth several times to release all hydraulic pressure. Remove switch key before dismounting.
5. Place chocks in front and in back of the rear tires.
6. Attach park jack (#14) to jack mount (#20) with detent pin (#13). If seeder is unhooked with rollers resting on the ground, fully insert detent pin horizontally as shown. If seeder is unhooked raised fully up, fully insert detent pin vertically.
7. Disconnect lead wire harness (#4) from the tractor. Coil harness up and store on the seeder frame with plug end hanging down to keep moisture out.
8. Disconnect hydraulic hoses (#10 & #11) from the tractor duplex outlet and store quick disconnect couplers and hoses on the seeder frame.
9. Remove hitch pin keeper (#5), hitch pin (#6), and flat washers (#1). Be careful not to lose washers and hitch pin keeper.
10. Start tractor and drive forward several feet.
11. Shut tractor down properly before dismounting. Refer to "Tractor Shutdown Procedure" on page 21.
12. Replace hitch pin (#6) and flat washers (#1) in seeder clevis hitch. Secure them in place with hitch pin keeper (#5).
13. Store wire retainer pin (#7) in the highest pin hole available in the hitch channel.
14. Continue unhook instructions on the next page.

15. Refer to Figure 2-7 on page 27: Remove slow moving vehicle sign (#5) from the back of the seeder and insert it in the mounting socket on the back of the tractor.

Install Transport Locks and Spacers

Refer to Figure 2-5:

1. Park seeder hitched to a tractor on level, solid ground. Place tractor in park or set park brake.
2. Using the tractor hydraulic control lever, raise seeder until hydraulic lift cylinder (#7) is fully extended.
3. Shut tractor off and remove switch key before dismounting.
4. Remove stroke control spacer (#4B) from storage rack (#1) and attach it to cylinder rod (#7A).
5. Remove wire retaining pin (#3) and transport lock (#2) from storage rack (#1) and attach it to cylinder rod (#7A) above stroke control spacer (#4B).

Refer to Figure 2-6:

6. Repeat steps 2-5 to install spacers (#4A & #4B) and transport locks (#2) on the rear cylinder rods (#7A).
7. Start tractor, and lower seeder down until seeder is resting on transport locks (#2) and stroke control spacers (#4A & #4B).

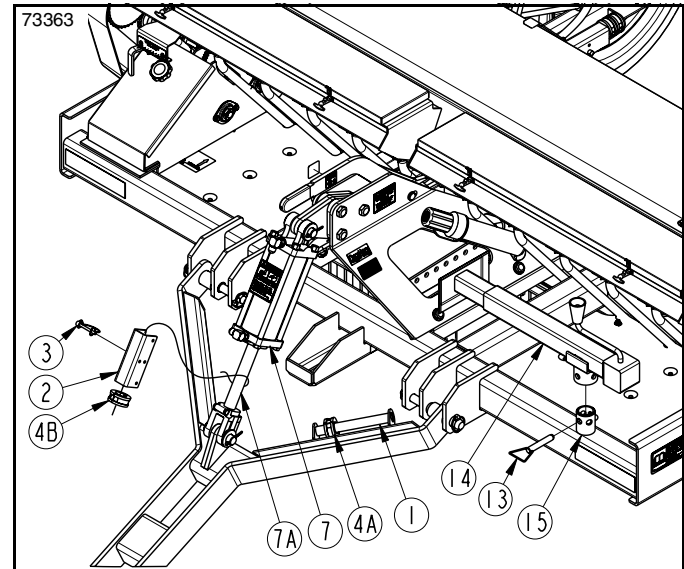
Transporting

WARNING

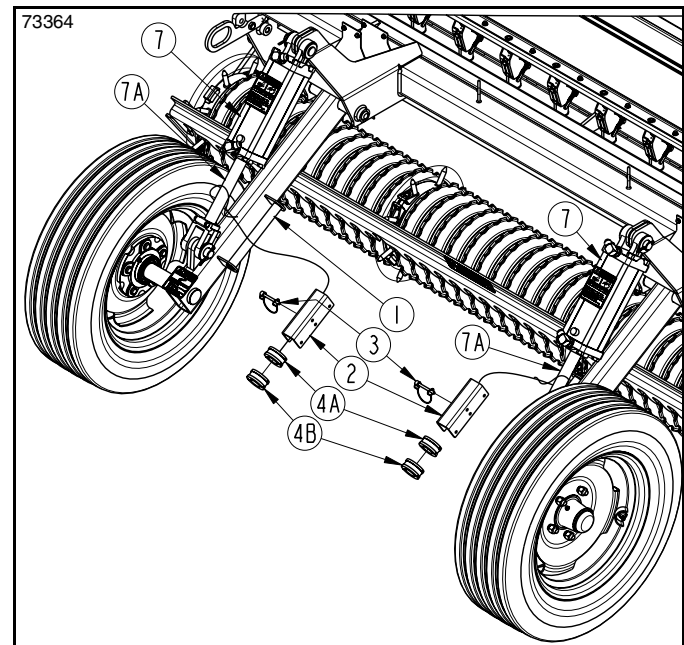
To avoid serious injury or death:

- Always raise implement and set transport locks before transporting from one work site to another and before traveling on public roadways. The implement can lower if not secured in the up position with transport locks.
- Reduce ground speed when turning and leave enough clearance to avoid making contact with obstacles such as buildings, trees, fences, etc.
- Select a safe ground speed that will allow adequate control of steering and stopping. Never exceed 20 mph (32 km/h) with attached equipment. Rough terrain requires a slower speed.
- Do not operate and/or travel across inclines where the tractor and/or implement can rollover. Consult your tractor's manual for acceptable inclines the tractor is capable of traveling across.
- Transport on public roadways with the tractor's slow moving vehicle sign mounted on the back of the implement. It is possible for the implement to block viewing of the sign by approaching vehicles if mounted on the tractor.
- When traveling on roadways, travel in such a way that other vehicles may pass you safely. Always use LED lights, clean reflectors, and a slow moving vehicle sign that is visible from the back to warn operators in other vehicles of your presence. Always comply with all federal, state, and local laws.

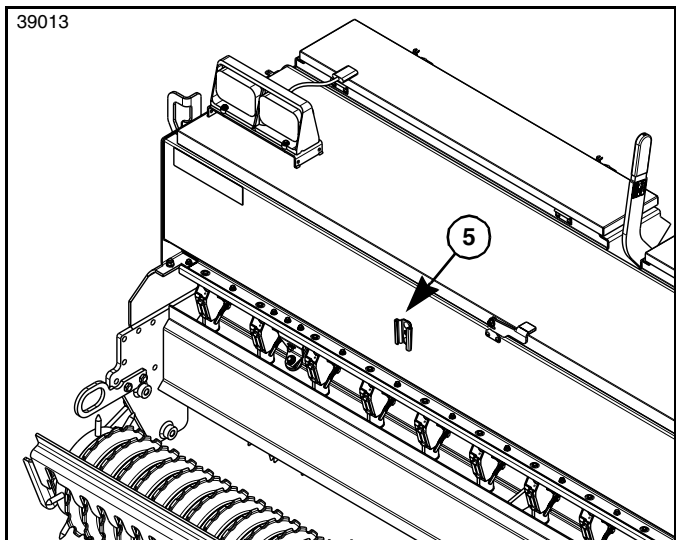
- When implement is wider than the tractor, take care to make sure it does not make contact with oncoming traffic and roadside obstructions.



Front Transport Lock
Figure 2-5



Rear Transport Locks
Figure 2-6



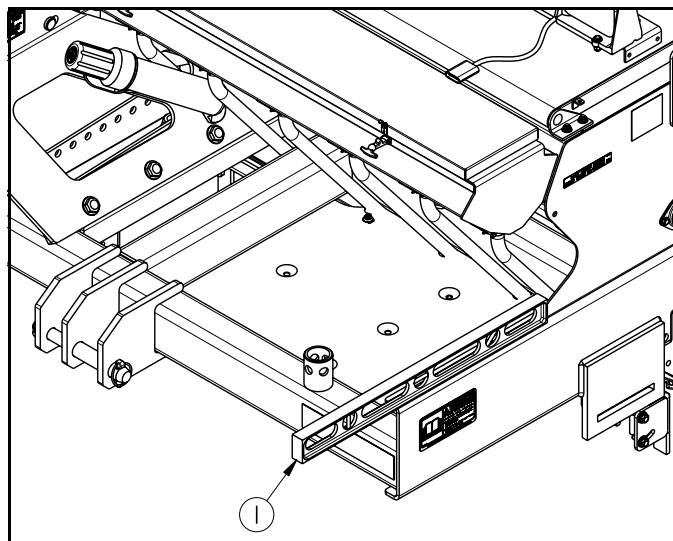
Slow Moving Vehicle Mounting Socket
Figure 2-7

IMPORTANT: The slow moving vehicle sign should not be used when transporting equipment on a truck or trailer exceeding speeds of 25 mph. Cover or remove the sign when hauling the NTS Seeder.

NOTE: If needed, a slow moving vehicle sign can be purchased from your nearest Great Plains dealer. Refer to **"Slow Moving Vehicle Sign (Accessory)"** on page 56.

Refer to Figure 2-7:

1. Relocate slow moving vehicle sign from back of your tractor to mounting socket (#5) on the back of the seeder.
2. With tractor in park or park brake set, start tractor and operate tractor control lever to raise seeder fully up for transporting. Skip to step 5 if transporting with a 3-point mounted seeder.
3. Before transporting the pull-type seeder, store park jack on the seeder main frame. See **"Store Park Jack"** on page 25 for detailed instructions,
4. Install transport locks and stroke control spacers before traveling with pull-type unit. For detailed instructions, see **"Install Transport Locks and Spacers"** on page 26.
5. Start tractor and select a safe ground travel speed when transporting from one area to another. Do not exceed 20 miles per hour travel speed.
6. When traveling on roadways, transport in such a way that faster moving vehicles may pass you safely.
7. Reduce tractor ground speed when turning. Leave enough clearance so that the seeder does not contact obstacles such as buildings, trees, or fences.
8. Shift tractor to a lower gear when traveling over rough or hilly terrain.



Level 3-Point Mount Seeder
Figure 2-8

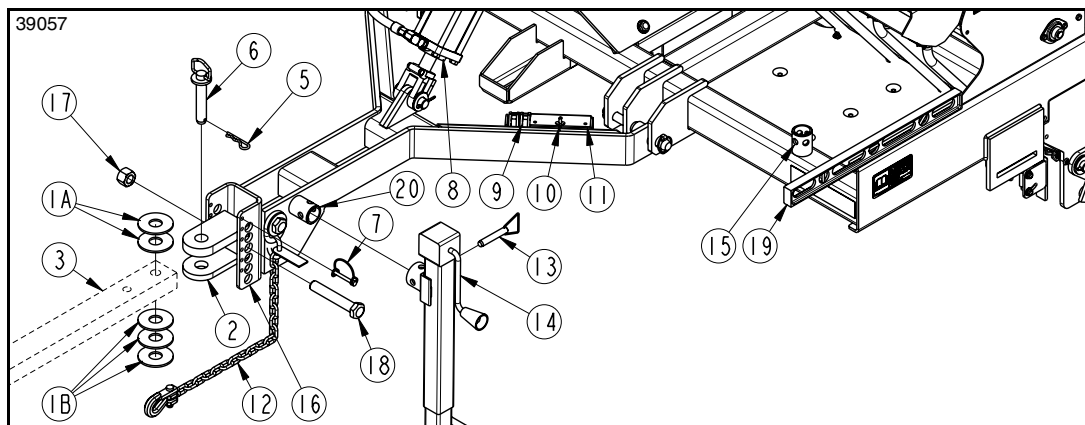
Level Seeder With 3-Point Mount

Refer to Figure 2-8:

Leveling the seeder should be done in the field you wish to seed. This is because the seeder should be leveled with front spikes penetrating the soil while the rear packer roller rests on top of the soil.

IMPORTANT: Front spike rollers will not function properly unless the frame is level with the ground.

1. Enter field to be seeded.
2. Lower seeder and pull ahead 15 feet or until both front and rear rollers are fully engaged in the ground.
3. Shut tractor down properly before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 21.
4. Place a level (#1) across the mainframe from front to back as shown.
5. Manually adjust length of upper center 3-point link to level the seeder from front to back. Refer to the tractor's Operator Manual for instructions on adjusting upper center 3-point link.
6. Pull ahead another 15 feet and repeat steps 4 & 5.



Align Clevis With Tractor Drawbar
Figure 2-8

Level Seeder With Pull Hitch

IMPORTANT: Front spike rollers will not function properly unless the frame is level with the ground.

1. Transport to the field with seeder attached. For detailed instructions, see **"Transporting"** on page 26.
2. Park seeder on solid, level ground and raise the seeder fully up.
3. Without changing height of implement, shut tractor down before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 21.

Refer to Figure 2-8:

4. Remove wire retaining pins (#10), transport locks (#11), and stroke control spacers (#9) from all three hydraulic lift cylinders and store on nearby storage racks as shown. Secure transport locks to storage racks with wire retaining pins (#10).

IMPORTANT: Always operate seeder with transport wheels on the ground and seeder level to prevent dirt build-up and seeder damage.

5. Start tractor and lower seeder to the ground using factory float. Keep tractor hydraulic lever in factory float while seeding.
6. Pull ahead 15 feet or until both front and rear rollers are fully engaged in the ground and then stop.
7. Without changing height of implement, shut tractor down before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 21.

Refer to Figure 2-8:

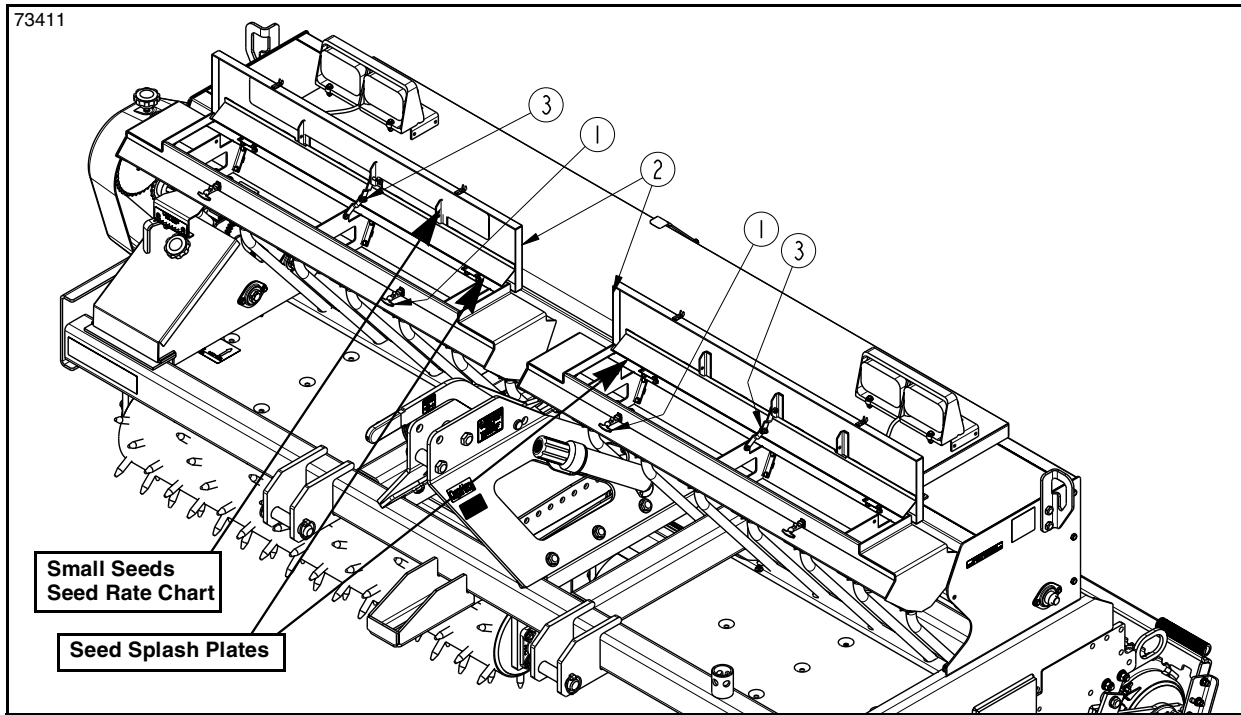
8. Place a level (#19) on the mainframe from front to back to verify frame is level (parallel) with the ground.
9. If frame is not parallel with the ground, unhook tractor from seeder as follows:
 - a. Attach park jack (#14) to jack mount (#16) with detent pin (#13). Insert detent pin horizontally as shown. Make sure detent pin is fully inserted.

- b. Extend jack (#14) to remove load from tractor drawbar (#3).
- c. Leave hydraulic hoses (not shown) connected to the tractor unless they are too short to allow the tractor to move forward 6" without the seeder attached to the tractor. If hydraulic hoses are too short, then disconnect the hoses from the tractor as follows:
 - Move hydraulic control lever back and forth several times to release all hydraulic pressure.
 - Disconnect hydraulic hoses from the tractor and store coupler ends on the seeder frame to keep dirt off them.
- d. Unhook safety chain (#12) from the tractor.
- e. Unhook seeder from the tractor drawbar by removing hitch pin keeper (#5), hitch pin (#6), and flat washers (#1A & #1B). Be careful not to lose washers, hitch pin, and hitch pin keeper.
- f. Start tractor and drive forward until drawbar (#1) is removed from clevis (#2). If hydraulic hoses are attached, be careful not to pull them tight.
- g. Shut tractor down before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 21.

10. Adjust park jack (#14) up or down until the seeder's main frame is level (parallel) with the ground.

IMPORTANT: Clevis (#2) should be in line with the tractor drawbar during field operation to reduce wear on the drawbar.

11. Check clevis hitch (#2). The clevis plates should be in line with the drawbar. If not, then readjust clevis hitch height up or down as follows:
 - a. Remove nylock nut (#17) and bolt (#18).
 - b. Move clevis (#2) until the clevises upper and lower plates are parallel with the tractor drawbar.
 - c. Attach clevis (#2) to hitch channel (#16) with existing 1"-8 x 6" GR5 bolt (#18) and nylock nut (#17). Draw nylock nut up snug. Do not tighten.



Small Seeds Seedbox (Shown with 3-Point Option)

Figure 2-9

- d. To protect wire retaining pin (#7) from being bent, move pin to the hole furthest from the clevis or store pin with the tractor.
12. Hook-up tractor to the seeder. Refer to “**Hook-up Pull-Type Seeder**” on page 24 for detailed instructions. Make sure there are two upper flat washers (#1A) above the drawbar and the remaining washers (#1B) between the drawbar and lower clevis plate.
13. Repeat steps 5-12 until seeder mainframe and clevis plates pull level (parallel) with the ground.

Fill Small Seeds Seedbox

WARNING

To avoid serious injury or death:

- Always lower NTS Seeder, rollers, and optional wheels to the ground before filling and checking seed level in the small seeds seedbox. This will keep the rear rollers (#3, front spike rollers, and optional wheels from turning while working around them.

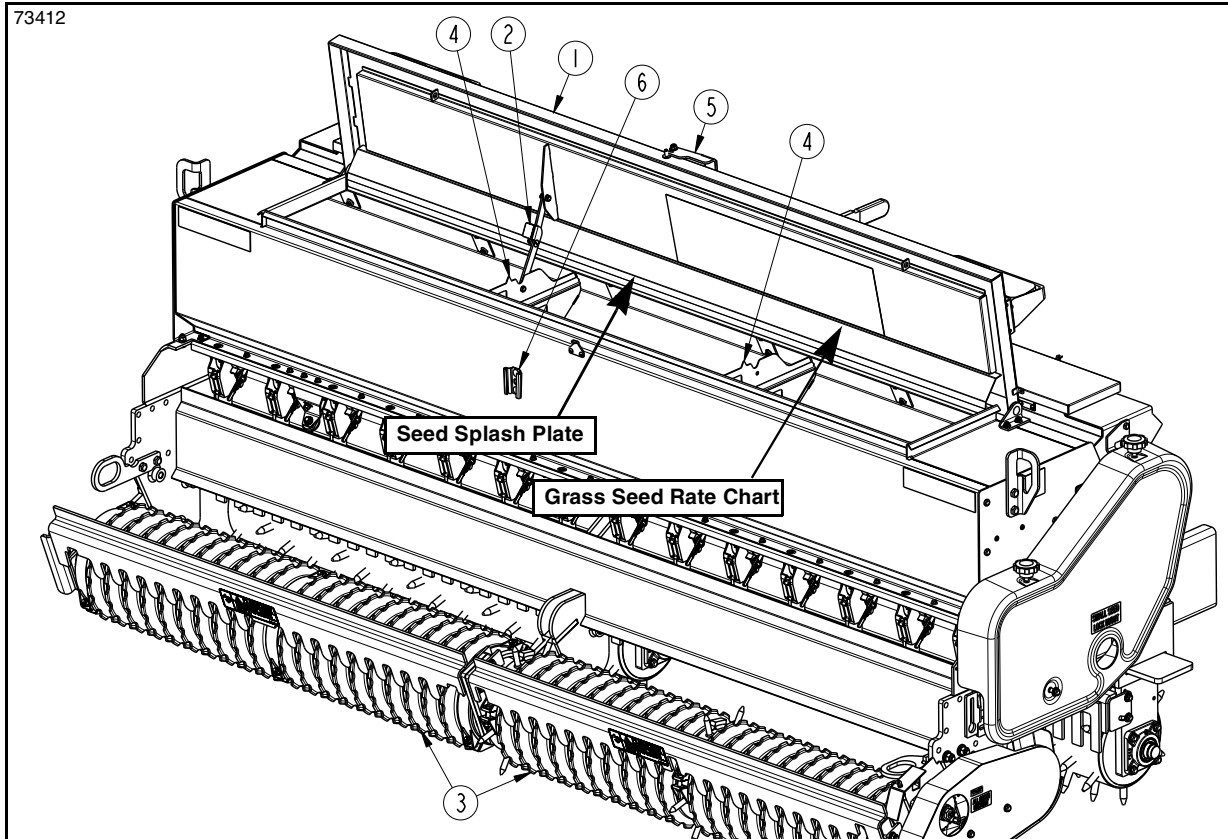
CAUTION

To avoid minor or moderate injury:

- Do not step or climb on the frame, rollers, or optional wheels to fill the grass seedbox. Climbing on the seeder to fill the seedbox can result in a falling hazard.
- Use lid over center lock when lid is in the up position. Keep others away when raising or lowering the lid and keep all body parts out of the way when lowering the lid. The lid could come down on body parts.

Refer to Figure 2-9:

1. Before filling the small seeds seedbox, always lower the NTS Seeder down to the ground and then shut the tractor down before dismounting. Refer to “**Tractor Shutdown Procedure**” on page 21.
2. Release lid latch handles (#1) and open small seeds seedbox lids (#2) until over center latch arms (#3) have locked in place. Doing this will keep the lid from falling while filling the box.
3. Fill seedbox from the front while standing on the ground. **Do not** step or climb on the frame to fill the small seeds seedbox. **Make sure** the spike rollers are on the ground so they cannot turn while filling the box.
4. Open a bag of small seeds and pour them into the seedbox.
5. Make certain the seedbox is filled uniformly to ensure one side does not run out of product ahead of the other side.
6. Close lid by pulling on latch arm (#3) with one hand while holding the lid up with the other hand. Lower lid gently while keeping hands and fingers clear of pinch points.
7. Lock lid down with lid latch handles (#1) to keep moisture out.



Grass Seedbox (Shown with 3-Point Option)
Figure 2-10

Filling Grass Seedbox

WARNING

To avoid serious injury or death:

- Always lower NTS Seeder, rollers, and optional wheels to the ground before filling and checking seed level in the grass seedbox. This will keep the rear rollers (#3), front spike rollers, and optional wheels from turning while working around them.
- A walkway is provided with the optional native seedbox. When provided, use the walkway to fill the grass seedbox. Always be aware of your position on the walkway to protect against falling.

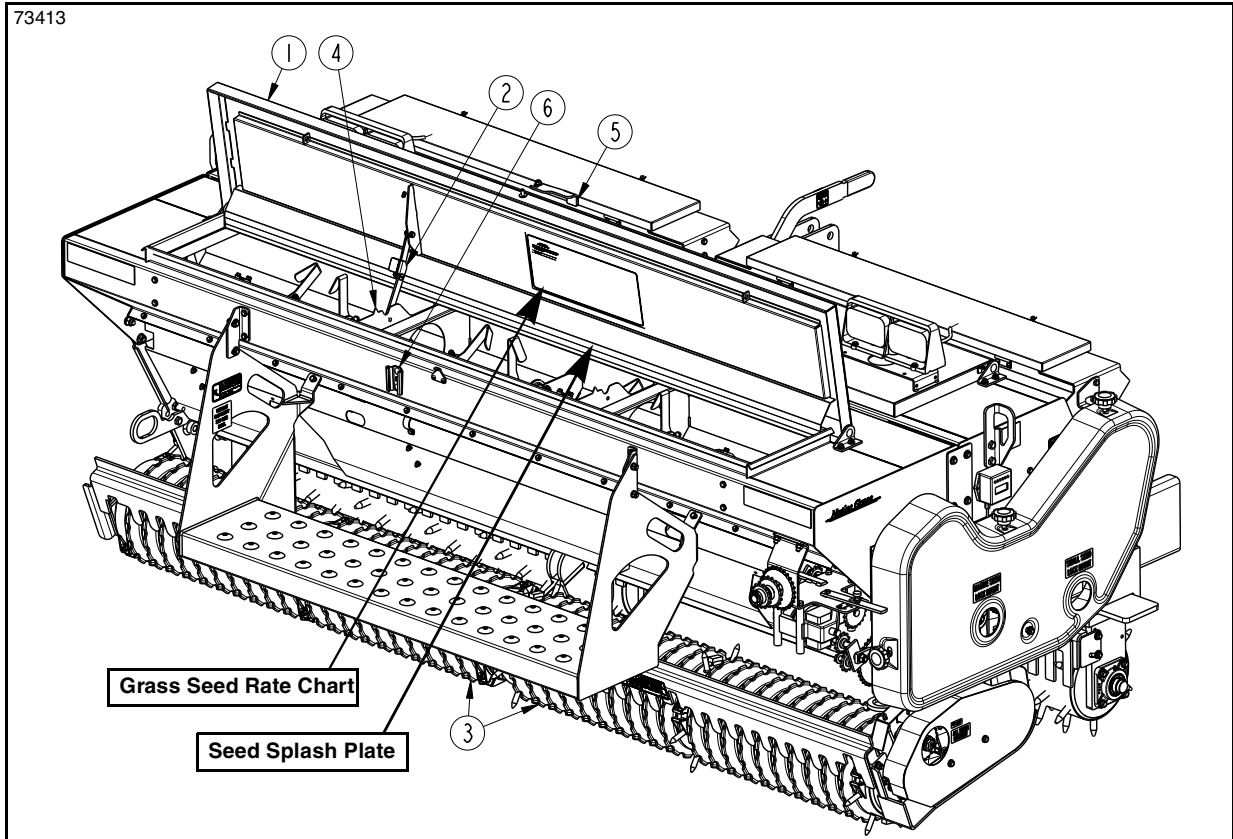
CAUTION

To avoid minor or moderate injury:

- Do not step or climb on the frame, rollers, or optional wheels to fill the grass seedbox. Climbing on the seeder to fill the seedbox can result in a falling hazard.
- Use lid over center lock when lid is in the up position. Keep others away when raising or lowering the lid and keep all body parts out of the way when lowering the lid. The lid could come down on body parts.

Refer to Figure 2-10:

1. Before filling the grass seedbox, always lower the NTS Seeder down to the ground and then shut the tractor down before dismounting. Refer to "**Tractor Shutdown Procedure**" on page 21.
2. Release lid latch handle (#5) and open seedbox lid (#1) until over center latch arm (#2) has locked in place. Doing this will keep the lid from falling while filling the box.
3. If the seeder is equipped with the native seedbox option, use walk board on the rear to access the grass seedbox. If native seedbox option is not included, fill the grass seedbox from the rear while standing on the ground. **Do not** step or climb on rear rollers (#3) or tires, if applicable, to fill the seedbox. See "**Warning Alert**" above step 1.
4. The bag opener (#4) (sharp point on top of the baffle plate located inside the seedbox) can be used to tear open seed bags.
5. Fill seedbox uniformly to ensure one side does not run out of product ahead of the other side.
6. Close lid (#1) by pulling on handle (#2) with one hand while holding the lid up with the other hand. Gently lower the lid while keeping hands and fingers clear of pinch points.
7. Lock lid down with lid latch handle (#5) to keep moisture out.



Native Seedbox (shown with 3-Point Option)

Figure 2-11

Filling Native Seedbox

WARNING

To avoid serious injury or death:

- Always lower NTS Seeder, rollers, and optional wheels to the ground before filling and checking seed level in the native seedbox. This will keep the rear rollers (#3), front spike rollers, and optional wheels from turning while working around them.
- Use the walkway to fill the native seedbox. Always be aware of your position on the walkway to protect against falling.

CAUTION

To avoid minor or moderate injury:

- Do not step or climb on the frame, rollers, or optional wheels to fill the grass seedbox. Climbing on the seeder to fill the seedbox can result in a falling hazard.
- Use lid over center lock when lid is in the up position. Keep others away when raising or lowering the lid and keep all body parts out of the way when lowering the lid. The lid could come down on body parts.

Refer to Figure 2-11:

1. Before filling the native seedbox, always lower the NTS Seeder down to the ground and then shut the tractor down before dismounting. Refer to “**Tractor Shutdown Procedure**” on page 21.
2. Release lid latch handle (#5) and open seedbox lid (#1) until over center latch arm (#2) has locked in place. Doing this will keep the lid from falling while filling the box.
3. Fill seedbox from the rear while standing on the walkway. **Do not** step or climb on rear rollers (#3) or tires, if applicable, to fill the seedbox. See “**Warning Alert**” above.
4. The bag opener (#4) (sharp point on top of baffle plate located inside the seedbox) can be used to tear open seed bags.
5. Fill seedbox uniformly to ensure one side does not run out of product ahead of the other side.
6. Close lid (#1) by pulling on handle (#2) with one hand while holding the lid up with the other hand. Gently lower the lid while keeping hands and fingers clear of pinch points.
7. Lock lid down with lid latch handle (#5) to keep moisture out.

How the Seeder Works

The following is a brief description of how your NTS Seeder works.

The power to drive the seed cups comes from the rear roller turning against the ground while traveling. Power is transmitted from the rear roller through roller chains to the seed cups. Seed is metered out of the cups at a rate proportional to the distance traveled. This ensures that the rate applied remains constant as ground speed is varied.

The front rollers cultivate the soil, crush clods, press down small stones and forms a seedbed. They can be angled from 0 degrees (non-aggressive) to approximately 18 degrees (very aggressive).

The condition of soil and type of vegetation will determine front roller angle. Soil that has already been worked will not require as aggressive an angle as hard soil or soil with unwanted vegetation. The all-seeds drive sprocket can be locked out to allow the seeder to be used to work the ground without dropping seed. Grass that you plan to seed over should have the front rollers set at 0 degrees or at a slight angle to remove thatch.

Seeds drop in front of the rear roller to allow the roller to firm the soil around the seeds. The rear roller assembly floats up and down to follow field terrain.

Grass Seedbox:

Refer to Figure 2-12:

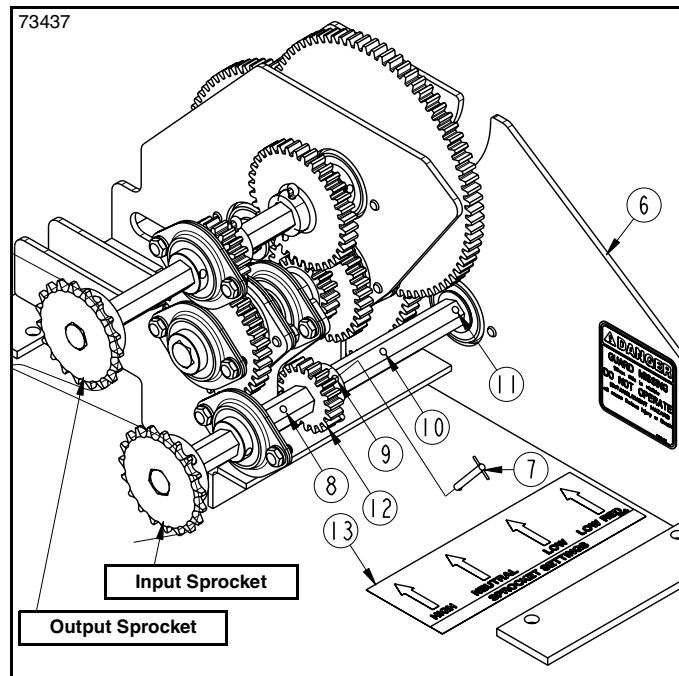
Cup metering speed can be adjusted to either a high, low, or low range reduction by changing the position of drive gear (#12) in the grass seeds transmission. The rate seed falls through the grass seed cups is adjustable using the seed rate adjustment lever located at the front left side of the seeder. See “**Grass Seed Rate Adjustments**” on page 38

Small Seeds Seedbox:

The rate seed falls through the small seeds seed cups is adjustable using the seed rate adjustment lever located at the front right side of the seeder. For calculating small seed rates, see “**Small Seeds Seed Rate Adjustments**” on page 46.

Native Seedbox:

The rate seed falls through the seed tray is adjustable using the 4 speed gearbox and 4 sprockets located at the back right side of the seeder (see Figure 6-1 on page 54). For calculating native seed rates, refer to “**Native Seed Rate Chart**” on “**Native Seed Rate Adjustments**” on page 54.



Grass Seeds Transmission

Figure 2-12

Grass Seeds Transmission

Refer to Figure 2-12:

IMPORTANT: See Figure 4-2 on page 38.
Never operate grass seedbox with seed rate adjustment lever set on 0. Setting the adjustment lever on 0 will damage the seed cups.

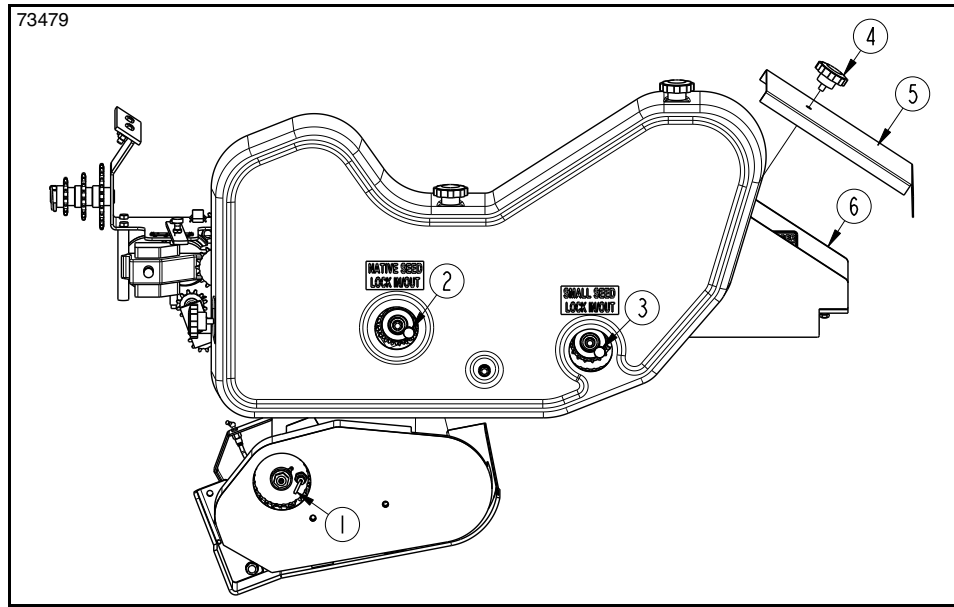
The grass seeds transmission shown in Figure 2-12 drives the grass seeds seedbox cup shaft. Decal (#13) illustrates the different positions gear (#12) can be positioned for varying the seed discharge rates.

There are three grass seeds discharge rates. They are high range, low range, and low range reduction. Each range and seed drop rate are explained in detail. Refer to “**Grass Seed Rate Adjustments**” on page 38 and “**Grass Seed Rate Charts**” starting on page 40.

Gear (#12) should be adjusted to neutral when not using the grass seedbox. Adjust the gear as follows:

Refer to Figure 2-13 on page 33:

1. Park tractor and seeder on a level surface where the unit can be safely lowered to ground level.
2. Shut tractor down following “**Tractor Shutdown Procedure**” on page 21 before dismounting.
3. Disengage the All Seeds drive lock in/out clutch by setting the clutch to the lock-out position. Refer to “**All-Seeds Drive Lock In/Out Clutch**” on page 33.
4. Remove knob (#4) and cover (#5) from grass seeds transmission box (#6).



Engage / Disengage Drive Chains
Figure 2-13

Refer to Figure 2-12 on page 32:

5. Pull ball detent pin (#7) from drive gear (#12) and adjust the drive gear as follows.
 - High Range: Adjust drive gear to hole (#8).
 - Neutral: Adjust drive gear to hole (#9). Drive gear is shown in neutral position.
 - Low Range: Adjust drive gear to hole (#10).
 - Low Reduction Range: Adjust drive gear to hole (#11).
6. Insert ball detent pin (#7) in gear (#12) and through hole (#8, #9, #10, or #11) depending on which drive range is selected. Make sure the pin is fully inserted and the detent ball has emerged on the far side of drive gear (#12).
7. Engage All Seeds drive lock in/out clutch by setting the clutch to the lock-in position.

Refer to Figure 2-13:

8. Replace transmission cover (#5) and secure with knob (#4). Hand tighten knob.

All-Seeds Drive Lock In/Out Clutch

Refer to Figure 2-13:

Soil that is very hard or with a lot of unwanted vegetation may require several passes with the front rollers set at a very aggressive tillage angle before seeding begins. The all-seeds drive sprocket has a patented lockout clutch with lock in/out pin (#1). Disengage all-seeds lock in/out pin while making these passes. Engage all-seeds lock in/out pin when ready to start seeding. See “**Lock In/Out Pin Operation**” on this page for detailed instructions.

Native Seeds Lock In/out Sprocket

Refer to Figure 2-13:

The native seedbox has a drive sprocket with lock in/out pin (#2). Engage the pin when using the seedbox and disengage the pin when the seedbox is not in use. Refer to “**Lock In/Out Pin Operation**” on this page.

Small Seeds Lock In/out Sprocket

Refer to Figure 2-13:

IMPORTANT: See Figure 5-1 on page 46.

Never operate small seeds seedbox with seed rate adjustment lever set on 0. Setting the adjustment lever on 0 will damage the seed cups

The small seeds seedbox has a drive sprockets with lock in/out pin (#3). Engage the pin when using the seedbox and disengage the pin when the seedbox is not in use. Refer to “**Lock In/Out Pin Operation**” below.

Lock In/Out Pin Operation

Refer to Figure 2-13:

1. Shut tractor down properly before dismounting. Refer to “**Tractor Shutdown Procedure**” on page 21.
2. There are three drive sprockets with lock in/out pins:
 - All-seeds sprocket with lock in/out pin (#1).
 - Native seeds sprocket with lock in/out pin (#2)
 - Small seeds sprocket with lock in/out pin (#3).
3. **Disengage** any of the three drive sprockets by pulling out on the lock in/out pin and rotating it one-quarter of a turn in either direction.
4. **Engage** any of the three drive sprockets by rotating the lock in/out pin until you can feel it pop in. Do not pull on the pin while rotating it.

Operating the Seeder

Read and understand “**General Safety**” alerts on page 20 before operating the seeder.

IMPORTANT: Never make turns with any of the rollers in contact with the ground. Always lift unit up off the ground when making turns.

IMPORTANT: Attach seeder to a tractor before calibrating it for proper seed dispersal rate.

1. Contact your local utility services to mark the location of any under ground utility services in the area. Thoroughly inspect the work area yourself for buried pipelines, sprinkler heads, and any unforeseen objects underground. Mark any potential hazards.
2. Clear area to be seeded of rocks, branches, and other foreign objects on top the ground. Mark any potential hazards.
3. Lock out the small seeds seedbox and/or native seedbox if they are not being used to spread seed. If the grass seedbox is not being used to spread seed, place its transmission in neutral.
4. If using the grass seedbox, calibrate seed flow range and cup setting based on “**Grass Seed Rate Adjustments**” and “**Calibrate Grass Seed Dispersal**” on page 38 in this manual.
5. If using the small seedbox, calibrate seed cup setting based on “**Small Seeds Seed Rate Adjustments**” and “**Calibrate Small Seeds Dispersal**” on page 46 in this manual.
6. If using the native seedbox, calibrate seed discharge rate based on “**Native Seed Rate Adjustments**” and “**Calibrate Native Seed Dispersal**” on page 54 in this manual.
7. Make sure each seed cup door handle is set at the same height across the seeder. The highest position is usually used for grass seedbox only.
8. Be sure all bolts and nuts are tight.
9. Be certain all guards are in place and secure.
10. Tall grass and weeds should be mowed before seeding.
11. Never allow anyone to ride on the seeder.
12. Adjust front rollers to desired angle. Make some practice runs with main drive sprocket locked out to determine the best roller angle for your application.
13. Lock out the all-seeds drive sprocket if more than one pass is required to prepare a seed bed before seeding.
14. Re-engage the All-Seeds drive sprocket when ready to seed.
15. Do not make turns while seeder is on the ground.
16. Seeding should not be done in wet conditions as soil will stick to the rollers.

IMPORTANT: Attach hydraulic hoses only to the tractor hydraulics with float capabilities. **Tractor hydraulics for the seeder must be locked into float position while lowering the seeder and while seeding or the seeder can be damaged.**

17. **Tow Package Only:** Make sure hydraulic hoses are attached to the tractor duplex outlet with factory float. Lower seeder down using factory float and keep tractor hydraulic control lever in factory float while seeding seeds.
18. **Three Point Hook-up:** Lower seeder down until resting on its rollers.
19. At first, begin seeding at a slow forward speed and increase speed until desired speed is achieved. Maximum speed will vary according to soil conditions.
20. After seeding the first 10 or 15 feet, stop and check to see that the seeder is adjusted properly.

Section 2: Operating Instructions

General Operating Instructions

Once you have read the Operator's Manual, properly attached the seeder to the tractor, ran through the Operating Checklist, filled the box with seed, and calibrated the unit for proper seed rate delivery, it's time to do some serious seeding.

Tow Package Only: Make sure hydraulic hoses are attached to the tractor duplex outlet with factory float. Place control lever to raise and lower the seeder in float position while lowering the seeder and seeding seeds.

The power to drive the NTS Seeder comes from the forward momentum of the tractor. Lock in/out drive systems transfers that power from the ground driven rear packer assembly to the various seedboxes through chain driven sprockets and the grass seeds transmission. The seed rate remains constant in direct proportion to the distance traveled and is affected very little by actual ground speed.

There are holes on the side of the chain drive guards for accessing the lock in/out pins for the All Seeds Drive System, Small Seeds Drive, and Native Seeds Drive. The Grass Seeds Drive System uses a transmission to select a speed range. Set the transmission in neutral to lock out its drive system. You should lock out the All Seeds Drive System and any seedbox that is not being used before transporting your NTS Seeder.

To disengage the small seeds and/or grass seeds drive system, pull out on the system lock in/out pin and rotate it one-quarter of a turn in either direction. To engage their drive systems, rotate the lock in/out pin until you can feel it pop in. Do not pull out on the pin while engaging it.

You should always engage the All Seeds Drive System when ready to start seeding. At the same time, you should check the various seedbox drive systems to make sure the seedboxes in use are engaged and the seedboxes not in use are disengaged.

The front spiked rollers open up the soil profile as they pass over areas to be seeded. The more the front rollers are angled, the more aggressive the cultivating action will be. Seed is then delivered at the precise predetermined rate through the wind guarded seed drop area between the front and rear rollers. The rear roller then presses seed into firm contact with the soil to promote a superbly high germination rate. Seeding should not be attempted in wet or muddy conditions.

Now that you understand how it works, it is time to begin seeding. You may want to make a few passes with the All Seeds Drive System locked out just to make sure your front rollers are adjusted to the proper angle, and to determine correct ground speed for cultivating the soil profile to your expectations. Ridging of loose soil is

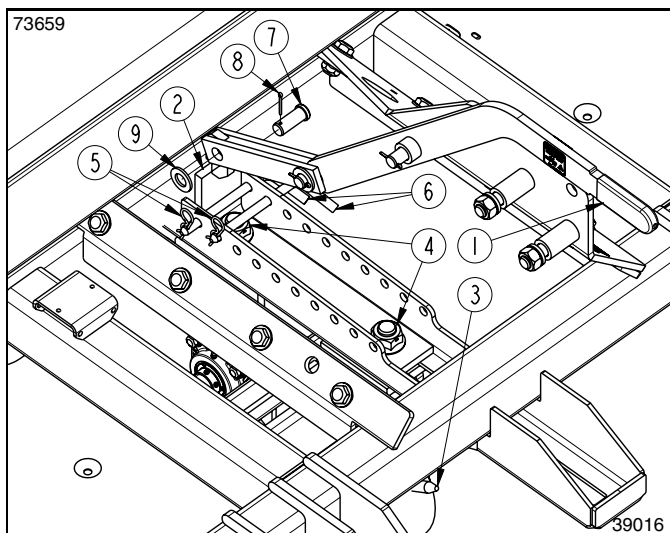
possible when the front rollers are set at an angle and your ground speed is too fast. Slow your ground speed to eliminate ridging. Re-engage the All Seeds Drive System once you are satisfied that the proper amount of soil opening action is being achieved.

You should already have removed any large stones or obstacles from the area you plan to seed. Line the tractor up for the first pass and choose a tractor gear selection that will deliver a ground speed of approximately 3-5 mph. Lower the seeder slowly to the ground and begin driving forward, slowly at first until you get comfortable with what you are doing. As you approach the end of the pass you are seeding, slow down and come to a stop while simultaneously raising the seeder off of the ground. With the seeder raised, line up for your next pass and repeat the process. Finish seeding by making back and forth passes across the turnaround areas.

If you expect to develop a uniform seeding pattern, look back often and avoid making turns with your seeder on the ground. The more experienced you become the better you will get at developing beautiful seed plots and beautiful lawns.

Whenever you are done seeding always clean the seeder out and perform all maintenance prescribed in the Operator's Manual. Never leave seed stored in the hopper for prolonged periods. Never dismount your tractor without first coming to a full stop, turning off the tractor, and setting the park brake. Never allow riders on the tractor when working with any rear mounted implement installed.

With a little practice you should get very good at developing lush green stands of grass with your Great Plains NTS Seeder.



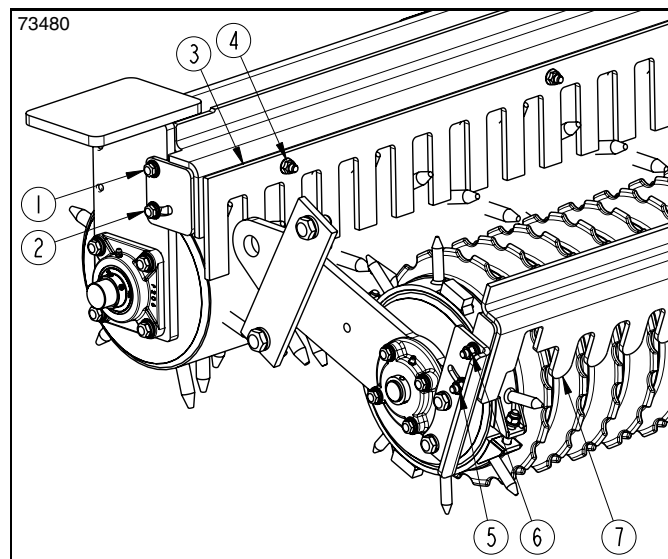
Front Spike Roller Adjustment
(Gang Slide #2 Shown Positioned Fully Back)
Figure 3-1

Front Spike Roller Angle

Refer to Figure 3-1:

NOTE: Gang slide (#2) is shown in its furthest back position. In this position, both bent pins (#6) are in front of the gang slide as shown. In all other positions, one bent pin is in back of the gang slide and the other is in front of the gang slide.

1. Lower the seeder frame onto support blocks to keep the front rollers just above ground level and allowing them to move freely.
 2. Shut tractor down before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 21.
 3. Remove bent pins (#6).
- IMPORTANT:** Locknuts (#4) are factory adjusted to allow gang slide (#2) to move easily with minimum gap between the locknuts and gang slide.
4. If needed, readjust flange locknuts (#4) as follows:
 - a. Remove cotter pin (#8), flat washer (#9) and clevis pin (#7).
 - b. With an extension, tighten locknuts (#4) until they are snug against gang slide (#2) and then back-off 1/3 turn (2 hex flats). Additional back-off may be required if the gang slide does not move easily.
 - c. Replace clevis pin (#7), flat washer (#9), and cotter pin (#8). Bend one or more legs of the cotter pin to keep it from falling out.
 5. Operate roller angle lever (#1) to position front rollers (#3) to the desired angle.
 6. Replace bent pins (#6) with one on each side of gang slide (#2). Secure bent pins with hair pin cotters (#5).
 7. Start tractor, remove support blocks, and lower seeder to ground level.



Mud Scraper Adjustments
Figure 3-2

Mud Scrapers

Refer to **"Torque Values Chart for Common Bolt Sizes"** on page 72 when tightening hardware.

Refer to Figure 3-2:

Adjust Front Mud Scrapers

1. With the front rollers off the ground, loosen 3/8"-16 hex bolts (#1 & #2) at both ends of the left front mud scraper (#3).
2. Rotate teeth of the mud scraper towards the front roller to increase removal of mud and debris and away if scraper teeth are interfering with the roller.
3. Tighten the four 3/8"-16 GR5 hex head bolts (#1 & #2) to the correct torque.
4. Repeat steps 1, 2, & 3 above for the right front mud scraper.
5. Loosen hex flange locknuts (#4) and adjust front scrapers (#3) left or right to align slots up with the roller spikes. Rotate spike rollers one or more full revolutions to verify spikes are not touching the scraper teeth.
6. Tighten 3/8"-16 hex flange locknuts (#4) to the correct torque.

Adjust Rear Mud Scrapers

1. Loosen 3/8"-16 hex locknuts (#5 & #6) at both ends of the rear mud scraper (#7).
2. Rotate teeth of mud scraper toward the front roller to increase removal of mud and debris and away if scraper teeth are interfering with the roller.
3. Tighten the four 3/8"-16 GR5 hex head bolts and locknuts (#5 & #6) to the proper torque.

Grass Seedbox Drive Speed Ranges

The grass seedbox can operate using any one of its three drive speed ranges to accommodate different grass seed sizes and dispersal rates. They are high range, low range, and low range reduction. The Low Range Reduction speed is good for seeding food plots to draw in wild life animals. See "**Grass Seeds Transmission**" on page 32 for detailed operating instructions.

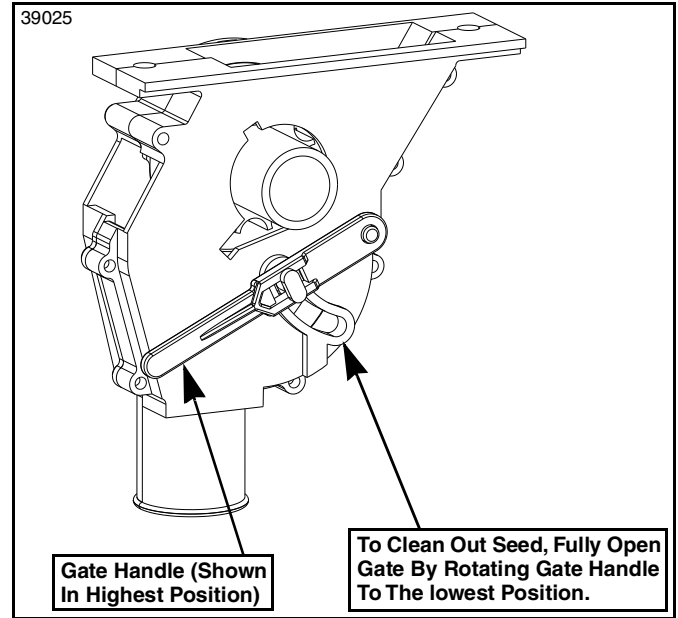
Use the "**English Seed Rate Charts**" beginning on page 40 or "**Metric Seed Rate Charts**" beginning on page 43 to determine which speed range is correct for your specific grass seed.

Grass Seedbox Cup Gate Setting

Refer to Figure 4-1:

Each seed cup is equipped with a four-position gate. The highest gate handle position shown is for smaller seeds, the second and third positions are for larger seeds. The fourth position (handle rotated fully down below the bottom tab) sets the gate at wide open to allow complete clean-out of seed cup.

Seed rate charts are based on the gate handle being set in the highest position. Typically, most seeds will use the highest gate handle position. If using larger seed and the seed is not discharging properly, try using one of the other two gate handle positions.



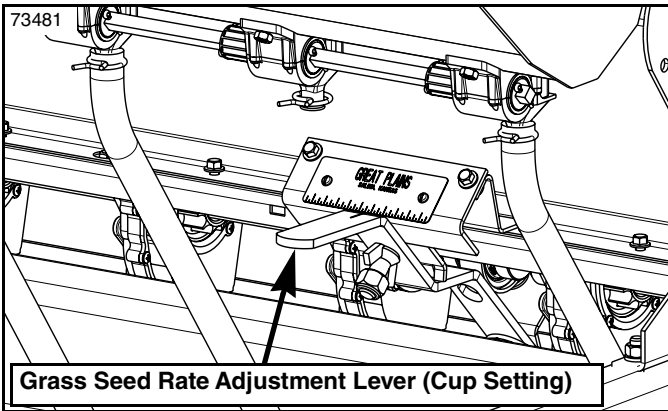
Seed Cup Settings
Figure 4-1

IMPORTANT: Never operate grass seeds seedbox with seed rate adjustment lever set at 0. Always place the grass seeds transmission in neutral shown in Figure 2-12 on page 32 to stop seed cups from turning and from discharging product. Allowing any of the seed cups to turn with adjustment lever set at 0 will damage the cups.

IMPORTANT: Most applications for this seeder require the gate handle be placed in the highest position.

Make Sure all gate handles are in the same position before seeding.

Do Not set gate handles in the fourth position with seed rate adjustment lever to the widest open position (See Figure 4-2 on page 38) with seed in the box unless complete clean out is desired.



Grass Seed Rate Adjustment Lever
Figure 4-2

Grass Seed Rate Adjustments

NOTE: To determine seed rates for seeds not listed in the charts, compare weight and size to those listed and use a similar setting. Follow steps 1 to 10 to calibrate seed rate.

1. Use English seed charts on pages 40-42 and Metric seed charts on pages 43-45 to help determine seeding rate.
 - a. Decide which drive range is required (low or high range). If necessary, change the grass seeds transmission speed to accommodate correct speed range. See “**Grass Seeds Transmission**” on page 32.
 - b. **Refer to Figure 4-2:** Move seed rate adjustment lever to cup setting number obtained from the seed rate charts. For best results, first move adjustment lever all the way to the left and then to the desired setting. Increase setting if seed is lighter than average. Decrease setting if seed is heavier than average.
2. **Refer to Figure 2-13 on page 33:** Disengage small seeds with lock in/out pin (#5) and native seeds with lock in/out pin (#3).
3. Continue with “**Calibrate Grass Seed Dispersal**” below.

Calibrate Grass Seed Dispersal

IMPORTANT: Seed rates provided in the charts may be inconsistent with actual seeding rates due to seed size, weight, treatment, moisture content, ratio of inert material to seed, different seed mixtures, humidity, and ground preparation. Minor adjustments to the cup setting may be needed to compensate. We recommend that you test and adjust your seeder using the calibration procedures listed below to help ensure an accurate seeding rate.

1. Attach seed rate crank to the all seeds drive sprocket. Refer to “**Seed Rate Crank Instructions**” on page 39.

2. Poor seed over the three seed cups at the outboard end of the seeder. **Do not** allow any seed to reach the other cups.
3. Crank rear roller clockwise to make sure the drive system is working properly and the seed cups are free from foreign matter.
4. Place a drop cloth under the seeder to collect all of the seeds that are metered out.

Model No	No. of Rear Roller Rotations to Cover			
	1/10 Acre	1000 Sq. Ft.	1/20 Hectare	100 Sq. M
NTS2607	266	61	329	66
NTS2609	207	48	256	52
NTS2611	169	39	209	42

5. Crank rear roller clockwise the number of rotations noted in the table above. Be sure to check the three feed cups to make sure each cup has plenty of seed coming into it.
6. Weigh the seed which has been metered out and divide that weight by three to get the number of pounds or kilograms per seed cup.

NOTE: If total weight for 3 seed cups is in ounces, divide that weight by 48 instead of 3.

7. Next, multiply number of pounds or kilograms per seed cup by the number of seed cups on the grass seeds seedbox to arrive at weight “A”.
8. If Weight “A” is calculated based on:
 - 1/10 acre, then “A” x 10 = lbs/acre
 - 1000 sq ft, then “A” x 43.56 = lbs/acre
 - 1000 sq ft, then “A” x 1 = lbs/1000 sq ft
 - 1/20 hectare, then “A” x 20 = kgs/hectare
 - 100 sq meters, then “A” x 100 = kgs/hectare
 - 100 sq meters, then “A” x 10 = kgs/1000 sq m

NOTE: Field conditions will affect seeding rates. Check amount of seed being used by noting size of area being seeded, amount of seed added to the seeder, and level of seed in the seedbox.

Minor adjustments to the seed rate adjustment lever may be necessary if the seeder is seeding more or less seed than desired.

9. If calculated grass seed rate is different than the suggested settings in the charts, then increase or decrease the seed cup adjustment lever shown in Figure 4-2.
10. Repeat calibration procedure if seed cup adjustment lever position was moved in the step above.
11. Remove and store seed rate crank. For detailed instructions, refer to “**Store Seed Rate Crank**” on page 39.

Seed Rate Crank Instructions

Pull-Type Seeder

1. Raise seeder fully up. Without lower the seeder, shut tractor down following "**Tractor Shutdown Procedure**" on page 21.
2. Dismount tractor and install all cylinder stops. Refer to "**Install Transport Locks and Spacers**" on page 26.

Three Point Mount Seeder

Refer to Figure 4-5:

1. Raise seeder up until the rear rollers are approximately 10" (25 cm) off the ground.
2. Without lower the seeder, shut tractor down following "**Tractor Shutdown Procedure**" on page 21.
3. Dismount tractor and place jack stands (#5) under lower chain guard (#4) on the drive end and under the rear roller bearing mount on the opposite end.
4. Return to the tractor and lower the seeder onto the jack stands (#5).

Install Seed Rate Crank

Refer to Figure 4-3:

1. Loosen knobs (#1) and remove crank (#2) from the seeder's A-frame hitch.

Refer to Figure 4-4:

2. Remove hex bolts (#11), lock washers (#10), and metal guard (#9). Set guard and hardware aside.
3. Slide bushing (#2) onto drive sprocket hub (#7). Make sure slot (#8) slides fully onto bolt (#6).
4. Tighten knobs (#1) to the bottom of chain guard (#4).
5. Make sure the all seeds drive sprocket lock in/out pin (#3) is fully engaged.
6. Turn seed rate crank (#2) clockwise to calibrate seed dispersal rate. Refer to:
 - "**Calibrate Grass Seed Dispersal**" on page 38.
 - "**Calibrate Small Seeds Dispersal**" on page 46.
 - "**Calibrate Native Seed Dispersal**" on page 54.

Store Seed Rate Crank

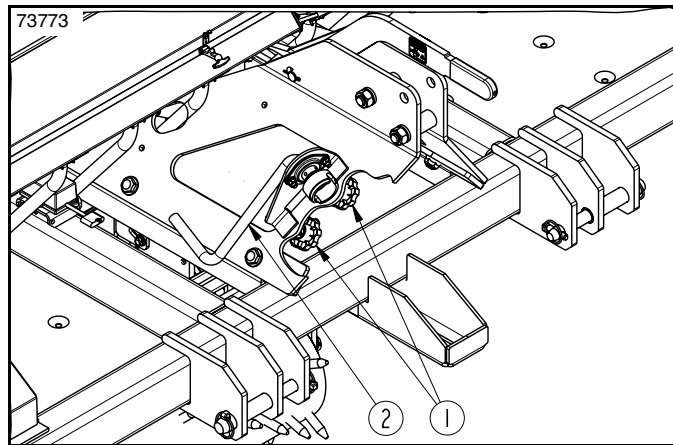
Refer to Figure 4-5:

1. Loosen knobs (#1) and remove seed rate crank (#2) from lower chain guard (#4).
2. Replace metal guard (#9) with lock washers (#10) and 3/8"-16 GR5 bolts (#11). Tighten bolts to the correct torque.

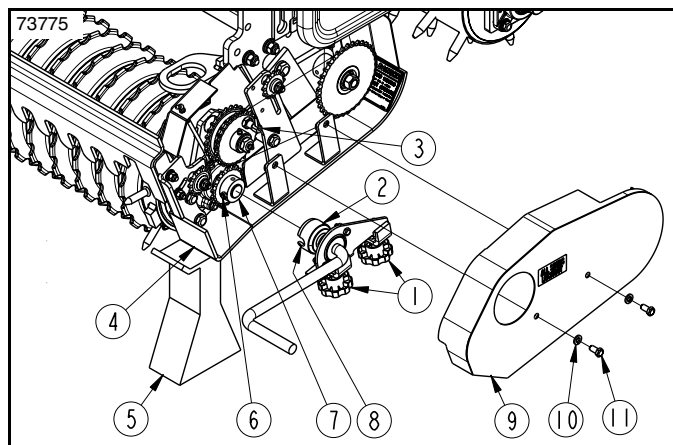
Refer to Figure 4-3:

3. Install seed rate crank (#2) to the A-frame hitch as shown. Tighten hand knobs (#1) to secure it.
4. If pull type, leave cylinder locks installed until it is required that they be removed.
5. If 3-point mount, start tractor and raise seeder up and slowly drive forward until jack stands (#5) are clear.

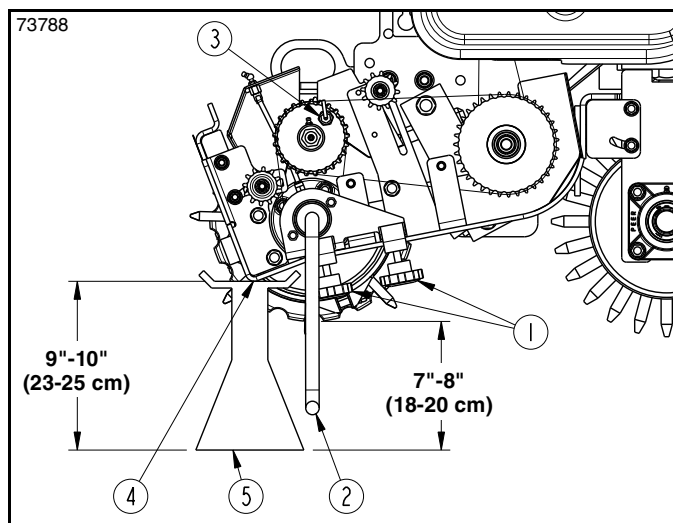
6. Shut tractor down following "**Tractor Shutdown Procedure**" on page 21 before dismounting.
7. Store jack stands (#5) for safe keeping.



Seed Rate Crank Storage Location
Figure 4-3



Seed Rate Crank Operation
Figure 4-4



Rear Roller Height Off the Ground
Figure 4-5

Table of Contents

Section 4: Grass Seed Rate Adjustment



Grass Seed Rate Chart (English)

Pounds per 1000 square foot and pounds per acre

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Alfalfa (Pounds per Acre)																				
High Range	54	125	198	269	341	412	485	555	626	699	769	842	913	985	1056	1129	1199	1270	1343	1413
Low Range	17	40	63	85	108	131	154	176	198	221	244	267	289	312	335	358	380	402	425	448
Low Range w/Reduction	3.13	7.36	11.59	15.64	19.87	24.10	28.34	32.38	36.43	40.66	44.90	49.13	53.18	57.41	61.64	65.87	69.92	73.97	78.20	82.43
Alfalfa (Pounds per 1000 Square Feet)																				
High Range	1.2	2.9	4.5	6.2	7.8	9.2	11.1	12.8	14.4	16.1	17.7	19.4	21	22.6	24.3	25.9	27.6	29.2	30.9	32.5
Low Range	0.4	0.9	1.4	2	2.5	3	3.5	4	4.6	5.1	5.6	6.1	6.6	7.2	7.7	8.2	8.7	9.2	9.8	10.3
Low Range w/Reduction	0.07	0.17	0.26	0.37	0.46	0.55	0.64	0.74	0.85	0.94	1.03	1.12	1.21	1.32	1.42	1.51	1.60	1.69	1.80	1.90
Bent Grass (Pounds per Acre)																				
High Range	37	80	115	152	185	206	239	265	293	326	358	380	413	439	467	499	528	554	586	619
Low Range	17	29	42	54	66	77	89	99	110	122	131	140	149	159	168	175	184	191	198	205
Low Range w/Reduction	3.13	5.34	7.73	9.94	12.14	14.17	16.38	18.22	20.24	22.45	24.10	25.76	27.42	29.26	30.91	32.20	33.86	35.14	36.43	37.72
Bent Grass (Pounds per 1000 Square Feet)																				
High Range	0.8	1.8	2.6	3.5	4.2	4.7	5.5	6.1	6.7	7.5	8.2	8.7	9.5	10.1	11.5	12.1	12.7	12.7	13.5	14.2
Low Range	0.4	0.7	1	1.2	1.5	1.8	2	2.3	2.5	2.8	3	3.2	3.4	3.6	3.9	4	4.2	4.4	4.5	4.7
Low Range w/Reduction	0.07	0.13	0.18	0.22	0.28	0.33	0.37	0.42	0.46	0.52	0.55	0.59	0.63	0.66	0.72	0.74	0.77	0.81	0.83	0.86
Bermuda - Unhulled (Pounds per Acre)																				
High Range	61	101	161	206	250	295	341	386	430	475	521	565	610	654	701	745	789	834	880	925
Low Range	19	32	51	65	79	93	108	122	136	150	165	179	193	207	222	236	250	264	279	293
Low Range w/Reduction	3.50	5.89	9.38	11.96	14.54	17.11	19.87	22.45	25.02	27.60	30.36	32.94	35.51	38.09	40.85	43.42	46.00	48.58	51.34	53.91
Bermuda - Unhulled (Pounds per 1000 Square Feet)																				
High Range	1.4	2.3	3.7	4.7	5.8	6.8	7.8	8.9	9.9	10.9	12	13	14	15	16.1	17.1	18.1	19.2	20.2	21.3
Low Range	0.4	0.7	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.8	3.8	4.1	4.4	4.8	5.1	5.4	5.7	6.1	6.4	6.7
Low Range w/Reduction	0.07	0.13	0.22	0.28	0.33	0.39	0.46	0.52	0.57	0.70	0.70	0.75	0.81	0.88	0.94	0.99	1.05	1.12	1.18	1.23
Buffalo Grass Sharps Improved (Pounds per Acre)																				
High Range	0	0	22	52	76	106	130	159	185	213	241	259	293	321	352	371	395	417	430	434
Low Range	0	0	13	21	29	38	46	56	65	73	83	92	99	109	118	127	134	143	147	150
Low Range w/Reduction	0.00	0.00	2.39	3.86	5.34	6.99	8.46	10.30	11.96	13.43	15.27	16.93	18.22	20.06	21.71	23.37	24.66	26.31	27.05	27.60
Buffalo Grass Sharps Improved (Pounds per 1000 Square Feet)																				
High Range	0	0	0.5	1.2	1.7	2.4	3	3.6	4.2	4.9	5.5	6.2	6.7	7.4	8.1	8.5	9.1	9.6	9.9	10
Low Range	0	0	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.4	3.5
Low Range w/Reduction	0.00	0.00	0.06	0.09	0.13	0.17	0.20	0.24	0.28	0.31	0.35	0.39	0.42	0.46	0.50	0.53	0.57	0.61	0.63	0.64
Clover - Red (Pounds per Acre)																				
High Range	77	143	202	263	321	380	438	499	557	616	676	734	793	852	913	971	1030	1090	1149	1207
Low Range	24	45	64	83	102	120	139	158	177	195	214	233	251	270	289	308	326	346	364	383
Low Range w/Reduction	4.42	8.28	11.78	15.27	18.77	22.08	25.58	29.07	32.57	35.88	39.38	42.87	46.18	49.68	53.18	56.67	59.98	63.66	66.98	70.47
Clover - Red (Pounds per 1000 Square Feet)																				
High Range	1.8	3.3	4.6	6	7.4	8.7	1.1	11.5	12.8	14.2	15.5	16.9	18.2	19.6	21	22.3	23.7	25.1	26.4	27.8
Low Range	0.6	1	1.5	1.9	2.3	2.8	3.2	3.6	4.1	4.5	4.9	5.4	5.8	6.2	6.6	7.1	7.5	7.9	8.4	8.8
Low Range w/Reduction	0.11	0.18	0.28	0.35	0.42	0.52	0.59	0.66	0.75	0.83	0.90	0.99	1.07	1.14	1.21	1.31	1.38	1.45	1.55	1.62
Clover - White (Pounds per Acre)																				
High Range	77	151	224	297	372	444	517	592	664	737	812	884	957	1032	1104	1177	1252	1324	1397	1472
Low Range	24	48	71	94	118	141	164	187	211	234	257	280	303	327	350	373	397	420	443	466
Low Range w/Reduction	4.42	8.83	13.06	17.30	21.71	25.94	30.18	34.41	38.82	43.06	47.29	51.52	55.75	60.17	64.40	68.63	73.05	77.28	81.51	85.74
Clover - White (Pounds per 1000 Square Feet)																				
High Range	1.8	3.5	5.2	6.8	8.5	10.2	11.9	13.6	15.3	16.9	18.7	20.3	22	23.7	25.4	27.1	28.8	30.4	32.1	33.8
Low Range	0.6	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.8	5.4	5.9	6.4	7	7.5	8	8.6	9.1	9.6	10.2	10.7
Low Range w/Reduction	0.11	0.20	0.29	0.40	0.50	0.59	0.70	0.79	0.88	0.99	1.09	1.18	1.29	1.38	1.47	1.58	1.67	1.77	1.88	1.97
Fescue - Fine Blade, Turf Type (Pounds per Acre)																				
High Range	20	46	75	103	131	160	188	216	242	271	299	327	355	384	412	440	468	497	525	553
Low Range	6	15	24	33	42	51	60	69	77	86	95	104	113	122	131	140	148	157	166	175
Low Range w/Reduction	1.10	2.76	4.42	6.07	7.73	9.38	11.04	12.70	14.17	15.82	17.48	19.14	20.79	22.45	24.10	25.76	27.23	28.89	30.54	32.20
Fescue - Fine Blade, Turf Type (Pounds per 1000 Square Feet)																				
High Range	0.5	1.1	1.7	2.4	3	3.7	4.3	5	5.6	6.2	6.9	7.5	8.2	8.8	9.5	10.1	10.8	11.4	12.1	12.7
Low Range	0.1	0.3	0.5	0.7	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	3.8	4
Low Range w/Reduction	0.02	0.06	0.09	0.13	0.18	0.22	0.26	0.29	0.33	0.37	0.40	0.44	0.48	0.52	0.55	0.59	0.63	0.66	0.70	0.74
Fescue K-31 (Pounds per Acre)																				
High Range	0	21	50	83	113	140	165	186	223	243	272	305	328	355	382	408	433	439	450	454
Low Range	0	6	15	26	35	44	51	58	69	76	84	95	102	110	118	127	134	136	140	141
Low Range w/Reduction	0.00	1.10	2.76	4.78	6.44	8.10	9.38	10.67	12.70	13.98	15.46	17.48	18.77	20.24	21.71	23.37	24.66	25.02	25.76	25.94
Fescue K-31 (Pounds per 1000 Square Feet)																				
High Range	0	0.5	1.1	1.9	2.6	3.2	3.8	4.3	5.1	5.6	6.3	7	7.5	8.2	8.8	9.4	10	10.1	10.3	10.4
Low Range	0	0.1	0.4	0.6	0.8	1	1.2	1.3	1.6	1.7	1.9	2.2	2.3	2.5	2.7	2.9	3.1	3.1	3.2	3.2
Low Range w/Reduction	0.00	0.02	0.07	0.11	0.15	0.18	0.22	0.24	0.29	0.31	0.35	0.40	0.42	0.46	0.50	0.53	0.57	0.57	0.59	0.59
Kentucky Blue Grass (Pounds per Acre)																				
High Range	23	48	73	103	125	155	178	205	227	250	274	293	322	334	365	387	406	426	442	455
Low Range	8	16	24	34	41	51	58	67	74	82	90	96	106	109	119	127	133	140	145	149
Low Range w/Reduction	1.47	2.94	4.42	6.26	7.54	9.38	10.67	12.33	13.62	15.09	16.56	17.66	19.50	20.06	21.90	23.37	24.47	25.76	26.68	27.42
Kentucky Blue Grass (Pounds per 1000 Square Feet)																				
High Range	0.5	1.1	1.7	2.4	2.9	3.6	4.1	4.7	5.2	5.7	6.3	6.7	7.4	7.7	8.4	8.9	9.3	9.8	10.1	10.5
Low Range	0.2	0.4	0.5	0.8	0.9	1.2	1.3	1.5	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.9	3.1	3.2	3.3	3.4
Low Range w/Reduction	0.04	0.07	0.09	0.15	0.17	0.22	0.24	0.28	0.31	0.35	0.39	0.40	0.44	0.46	0.50	0.53	0.57	0.59	0.61	0.63

Pounds per 1000 square foot and pounds per acre

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

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Section 4: Grass Seed Rate Adjustment



Grass Seed Rate Chart (English)

Pounds per 1000 square foot and pounds per acre

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Teff (Pounds per Acre)																				
High Range	29.8	87.4	135.8	217.6	299.3	355.5	454.1	525.5	597.9	668.5	728.3	812.6	883.0	937.9	1023.5	1125.2	1193.5	1277.6	1399.2	1438.5
Low Range	10.6	20.7	39.1	59.2	85.1	108.7	132.6	152.1	174.9	195.3	218.1	234.4	253.3	274.0	296.2	317.2	336.1	367.1	391.4	402.8
Low Range w/Reduction	2.0	3.8	7.2	10.9	15.7	20.0	24.4	28.0	32.2	35.9	40.1	43.1	46.6	50.4	54.5	58.4	61.8	67.6	72.0	74.1
Teff (Pounds per 1000 Square Feet)																				
High Range	0.69	2.03	3.15	5.05	6.94	8.24	10.53	12.19	13.87	15.50	16.89	18.85	20.48	21.75	23.74	26.09	27.68	29.63	32.45	33.36
Low Range	0.25	0.48	0.91	1.37	1.97	2.52	3.08	3.53	4.06	4.53	5.06	5.44	5.87	6.35	6.87	7.36	7.79	8.51	9.08	9.34
Low Range w/Reduction	0.05	0.09	0.17	0.25	0.36	0.46	0.57	0.65	0.75	0.83	0.93	1.00	1.08	1.17	1.26	1.35	1.43	1.57	1.67	1.72
Wheat (Pounds per Acre)																				
High Range	82.3	92.5	168.2	268.3	376.7	454.1	576.4	669.6	774.3	873.4	966.6	1069.0	1171.7	1304.5	1419.1	1558.5	1651.9	1823.7	1951.5	1991.9
Low Range	22.0	26.4	46.1	80.2	113.6	139.5	172.6	202.6	232.8	262.1	296.0	333.5	359.4	393.5	431.5	468.0	499.6	541.0	571.5	581.9
Low Range w/Reduction	4.0	4.9	8.5	14.8	20.9	25.7	31.8	37.3	42.8	48.2	54.5	61.4	66.1	72.4	79.4	86.1	91.9	99.5	105.2	107.1
Wheat (Pounds per 1000 Square Feet)																				
High Range	1.91	2.15	3.90	6.22	8.74	10.53	13.37	15.53	17.96	20.26	22.42	24.79	27.17	30.25	32.91	36.14	38.31	42.29	45.26	46.19
Low Range	0.51	0.61	1.07	1.86	2.63	3.23	4.00	4.70	5.40	6.08	6.86	7.73	8.33	9.13	10.01	10.85	11.59	12.55	13.25	13.49
Low Range w/Reduction	0.09	0.11	0.20	0.34	0.48	0.60	0.74	0.86	0.99	1.12	1.26	1.42	1.53	1.68	1.84	2.00	2.13	2.31	2.44	2.48
Oats (Pounds per Acre)																				
High Range	21.5	37.8	72.2	128.1	197.9	274.5	335.6	415.5	506.8	611.4	695.2	780.3	862.8	963.2	1017.5	1108.4	1225.8	1346.9	1388.6	1446.0
Low Range	5.4	9.6	17.9	31.6	50.5	67.5	89.0	112.5	129.1	151.9	175.7	203.9	224.8	252.8	285.4	314.3	340.7	377.3	381.6	427.7
Low Range w/Reduction	1.0	1.8	3.3	5.8	9.3	12.4	16.4	20.7	23.8	27.9	32.3	37.5	41.4	46.5	52.5	57.8	62.7	69.4	70.2	78.7
Oats (Pounds per 1000 Square Feet)																				
High Range	0.50	0.88	1.67	2.97	4.59	6.37	7.78	9.64	11.75	14.18	16.12	18.10	20.01	22.34	23.60	25.70	28.43	31.24	32.20	33.53
Low Range	0.13	0.22	0.41	0.73	1.17	1.57	2.06	2.61	2.99	3.52	4.07	4.73	5.21	5.86	6.62	7.29	7.90	8.75	8.85	9.92
Low Range w/Reduction	0.02	0.04	0.08	0.13	0.22	0.29	0.38	0.48	0.55	0.65	0.75	0.87	0.96	1.08	1.22	1.34	1.45	1.61	1.63	1.82
Sorghum (Pounds per Acre)																				
High Range	48.1	59.0	92.1	188.9	296.5	394.8	496.7	601.8	712.0	841.4	951.1	1082.0	1204.1	1330.9	1462.8	1603.6	1756.7	1919.7	1932.1	1956.4
Low Range	16.0	18.4	32.3	62.4	100.4	134.5	166.9	202.6	239.8	270.1	313.1	356.5	398.7	439.6	476.6	522.4	583.9	613.4	676.6	745.9
Low Range w/Reduction	3.0	3.4	6.0	11.5	18.5	24.8	30.7	37.3	44.1	49.7	57.6	65.6	73.4	80.9	87.7	96.1	107.4	112.9	124.5	137.2
Sorghum (Pounds per 1000 Square Feet)																				
High Range	1.12	1.37	2.14	4.38	6.88	9.16	11.52	13.96	16.51	19.51	22.06	25.09	27.92	30.86	33.92	37.19	40.74	44.52	44.81	45.37
Low Range	0.37	0.43	0.75	1.45	2.33	3.12	3.87	4.70	5.56	6.26	7.26	8.27	9.25	10.19	11.05	12.11	13.54	14.23	15.69	17.30
Low Range w/Reduction	0.07	0.08	0.14	0.27	0.43	0.57	0.71	0.86	1.02	1.15	1.34	1.52	1.70	1.88	2.03	2.23	2.49	2.62	2.89	3.18
Millet (Pounds per Acre)																				
High Range	11.9	65.7	141.3	211.1	276.3	346.7	427.9	508.6	588.3	672.2	736.3	835.7	923.6	989.3	1073.2	1167.9	1260.0	1331.4	1414.7	1439.0
Low Range	6.0	15.8	42.7	60.0	84.1	103.7	127.5	151.1	172.8	198.2	219.7	241.4	269.3	296.2	322.6	357.3	388.6	425.3	459.2	488.7
Low Range w/Reduction	1.1	2.9	7.9	11.0	15.5	19.1	23.5	27.8	31.8	36.5	40.4	44.4	49.6	54.5	59.4	65.7	71.5	78.3	84.5	89.9
Millet (Pounds per 1000 Square Feet)																				
High Range	0.28	1.52	3.28	4.90	6.41	8.04	9.92	11.80	13.64	15.59	17.08	19.38	21.42	22.94	24.89	27.08	29.22	30.88	32.81	33.37
Low Range	0.14	0.37	0.99	1.39	1.95	2.41	2.96	3.50	4.01	4.60	5.09	5.60	6.25	6.87	7.48	8.29	9.01	9.86	10.65	11.33
Low Range w/Reduction	0.03	0.07	0.18	0.26	0.36	0.44	0.54	0.64	0.74	0.85	0.94	1.03	1.15	1.26	1.38	1.52	1.66	1.81	1.96	2.09
Sunflower (Pounds per Acre)																				
High Range	0.00	0.00	32.86	49.67	85.12	146.95	190.16	247.08	299.34	345.13	403.86	457.68	516.66	571.00	605.15	688.45	770.99	857.66	921.30	946.92
Low Range	0.00	0.00	9.57	20.18	32.60	54.07	65.71	79.69	106.33	124.96	148.51	168.94	188.35	198.96	220.69	239.32	265.45	282.52	306.58	310.98
Low Range w/Reduction	0.00	0.00	1.76	3.71	6.00	9.95	12.09	14.66	19.57	22.99	27.32	31.09	34.66	36.61	40.61	44.03	48.84	51.98	56.41	57.22
Sunflower (Pounds per 1000 Square Feet)																				
High Range	0.00	0.00	0.76	1.15	1.97	3.41	4.41	5.73	6.94	8.00	9.37	10.61	11.98	13.24	14.03	15.97	17.88	19.89	21.37	21.96
Low Range	0.00	0.00	0.22	0.47	0.76	1.25	1.52	1.85	2.47	2.90	3.44	3.92	4.37	4.61	5.12	5.55	6.16	6.55	7.11	7.21
Low Range w/Reduction	0.00	0.00	0.04	0.09	0.14	0.23	0.28	0.34	0.45	0.53	0.63	0.72	0.80	0.85	0.94	1.02	1.13	1.21	1.31	1.33
Hemp (Pounds per Acre)																				
High Range	0.00	39.07	143.07	228.71	326.25	418.87	519.51	615.49	705.79	823.76	922.34	1030.48	1144.58	1256.34	1366.82	1510.92	1646.24	1766.80	1887.88	1990.59
Low Range	0.00	9.06	30.27	61.32	87.71	117.98	147.21	177.22	203.10	234.40	261.82	292.35	327.28	356.77	386.79	428.18	463.80	495.45	532.45	550.81
Low Range w/Reduction	0.00	1.67	5.57	11.28	16.14	21.71	27.09	32.61	37.37	43.13	48.18	53.79	60.22	65.65	71.17	78.79	85.34	91.16	97.97	101.35
Hemp (Pounds per 1000 Square Feet)																				
High Range	0.00	0.91	3.32	5.30	7.57	9.71	12.05	14.27	16.37	19.10	21.39	23.90	26.54	29.14	31.70	35.04	38.18	40.97	43.78	46.16
Low Range	0.00	0.21	0.70	1.42	2.03	2.74	3.41	4.11	4.71	5.44	6.07	6.78	7.59	8.27	8.97	9.93	10.76	11.49	12.35	12.77
Low Range w/Reduction	0.00	0.04	0.13	0.26	0.37	0.50	0.63	0.76	0.87	1.00	1.12	1.25	1.40	1.52	1.65	1.83	1.98	2.11	2.27	2.35

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

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Section 4: Grass Seed Rate Adjustment



Grass Seed Rate Chart (Metric)

Kilograms per 1000 square meter and Kilograms per hectare

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Alfalfa (Kilograms per Hectare)																				
High Range	60	140	222	301	382	461	543	621	700	782	860	942	1021	1102	1181	1263	1341	1421	1503	1581
Low Range	19	45	70	95	121	147	172	197	222	247	273	299	323	349	375	401	425	450	475	501
Low Range w/Reduction	3.5	8.3	12.9	17.5	22.3	27.0	31.6	36.2	40.8	45.4	50.2	55.0	59.4	64.2	69.0	73.8	78.2	82.8	87.4	92.2
Alfalfa (Kilograms per 1000 Square Meters)																				
High Range	6	14	22	30	38	45	54	62	70	79	86	95	103	110	119	126	135	143	151	159
Low Range	2	4	7	10	12	15	17	20	22	25	27	30	32	35	38	40	42	45	48	50
Low Range w/Reduction	0.4	0.7	1.3	1.8	2.2	2.8	3.1	3.7	4.0	4.6	5.0	5.5	5.9	6.4	7.0	7.4	7.7	8.3	8.8	9.2
Bent Grass (Kilograms per Hectare)																				
High Range	41	90	129	170	207	230	267	296	328	365	401	425	462	491	522	558	591	620	656	693
Low Range	19	32	47	60	74	86	100	111	123	136	147	157	167	178	188	196	206	214	222	229
Low Range w/Reduction	3.5	5.9	8.6	11.0	13.6	15.8	18.4	20.4	22.6	25.0	27.0	28.9	30.7	32.8	34.6	36.1	37.9	39.4	40.8	42.1
Bent Grass (Kilograms per 1000 Square Meters)																				
High Range	4	9	13	17	21	23	27	30	33	37	40	42	46	49	56	59	62	62	66	69
Low Range	2	3	5	6	7	9	10	11	12	14	15	16	17	18	19	20	21	21	22	23
Low Range w/Reduction	0.4	0.6	0.9	1.1	1.3	1.7	1.8	2.0	2.2	2.6	2.8	2.9	3.1	3.3	3.5	3.7	3.9	3.9	4.0	4.2
Bermuda Unhulled (Kilograms per Hectare)																				
High Range	68	113	180	230	280	330	382	432	481	531	583	632	682	732	784	834	883	933	985	1035
Low Range	21	36	57	73	88	104	121	136	152	168	185	200	216	232	248	264	280	295	312	328
Low Range w/Reduction	3.9	6.6	10.5	13.4	16.2	19.1	22.3	25.0	28.0	30.9	34.0	36.8	39.7	42.7	45.6	48.6	51.5	54.3	57.4	60.4
Bermuda Unhulled (Kilograms per 1000 Square Meters)																				
High Range	7	11	18	23	28	33	38	43	48	53	59	63	68	73	79	83	88	94	99	104
Low Range	2	3	6	7	9	10	12	14	15	19	19	20	21	23	25	26	28	30	31	33
Low Range w/Reduction	0.4	0.6	1.1	1.3	1.7	1.8	2.2	2.6	2.8	3.5	3.5	3.7	3.9	4.2	4.6	4.8	5.2	5.5	5.7	6.1
Buffalo Grass (Kilograms per Hectare)																				
High Range	0	0	25	58	85	119	145	178	207	238	270	290	328	359	394	415	442	467	481	486
Low Range	0	0	15	23	32	43	51	63	73	82	93	103	111	122	132	142	150	160	164	168
Low Range w/Reduction	0.0	0.0	2.8	4.2	5.9	7.9	9.4	11.6	13.4	15.1	17.1	19.0	20.4	22.4	24.3	26.1	27.6	29.4	30.2	30.9
Buffalo Grass (Kilograms per 1000 Square Meters)																				
High Range	0	0	2	6	8	12	15	18	21	24	27	30	33	36	40	42	44	47	48	49
Low Range	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	17
Low Range w/Reduction	0.0	0.0	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.1
Clover - Red (Kilograms per Hectare)																				
High Range	86	160	226	294	359	425	490	558	623	689	756	821	887	953	1021	1086	1152	1219	1286	1350
Low Range	27	50	72	93	114	134	156	177	198	218	239	261	281	302	323	345	365	387	407	429
Low Range w/Reduction	5.0	9.2	13.2	17.1	21.0	24.7	28.7	32.6	36.4	40.1	44.0	48.0	51.7	55.6	59.4	63.5	67.2	71.2	74.9	78.9
Clover - Red (Kilograms per 1000 Square Meters)																				
High Range	9	16	22	29	36	42	49	56	62	69	76	83	89	96	103	109	116	123	129	136
Low Range	3	5	7	9	11	14	16	18	20	22	24	26	28	30	32	35	37	39	41	43
Low Range w/Reduction	0.6	0.9	1.3	1.7	2.0	2.6	2.9	3.3	3.7	4.0	4.4	4.8	5.2	5.5	5.9	6.4	6.8	7.2	7.5	7.9
Clover - White (Kilograms per Hectare)																				
High Range	86	169	251	332	416	497	578	662	743	825	908	989	1071	1155	1235	1317	1401	1481	1563	1647
Low Range	27	54	79	105	132	158	183	209	236	262	288	313	339	366	392	417	444	470	496	521
Low Range w/Reduction	5.0	9.9	14.5	19.3	24.3	29.1	33.7	38.5	43.4	48.2	53.0	57.6	62.4	67.3	72.1	76.7	81.7	86.5	91.3	95.9
Clover - White (Kilograms per 1000 Square Meters)																				
High Range	9	17	25	33	42	50	58	66	75	83	91	99	107	116	124	132	141	148	157	165
Low Range	3	5	8	11	13	16	19	21	23	26	29	31	34	37	39	42	44	47	50	52
Low Range w/Reduction	0.6	0.9	1.5	2.0	2.4	2.9	3.5	3.9	4.2	4.8	5.3	5.7	6.3	6.8	7.2	7.7	8.1	8.6	9.2	9.6
Fescue - Fine Blade, Turf Type (Kilograms per Hectare)																				
High Range	22	51	84	115	147	179	210	242	271	303	335	366	397	430	461	492	524	556	587	619
Low Range	7	17	27	37	47	57	67	77	86	96	106	116	126	136	147	157	166	176	186	196
Low Range w/Reduction	1.3	3.1	5.0	6.8	8.6	10.5	12.3	14.2	15.8	17.7	19.5	21.3	23.2	25.0	27.0	28.9	30.5	32.4	34.2	36.1
Fescue - Fine Blade, Turf Type (Kilograms per 1000 Square Meters)																				
High Range	2	5	8	12	15	18	21	24	27	30	34	37	40	43	46	49	53	56	59	62
Low Range	0	1	2	3	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Low Range w/Reduction	0.0	0.2	0.4	0.6	0.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.3	3.5	3.7
Fescue K-31(Kilograms per Hectare)																				
High Range	0	23	56	93	126	157	185	208	249	272	304	341	367	397	427	456	484	491	503	508
Low Range	0	7	17	29	39	49	57	65	77	85	94	106	114	123	132	142	150	152	157	158
Low Range w/Reduction	0.0	1.3	3.1	5.3	7.2	9.0	10.5	12.0	14.2	15.6	17.3	19.5	21.0	22.6	24.3	26.1	27.6	28.0	28.9	29.1
Fescue K-31 (Kilograms per 1000 Square Meters)																				
High Range	0	2	5	9	13	16	19	21	25	27	31	34	37	40	43	46	49	49	50	51
Low Range	0	0	5	3	4	5	6	6	8	8	9	11	11	12	13	14	15	15	16	16
Low Range w/Reduction	0.0	0.0	0.9	0.6	0.7	0.9	1.1	1.1	1.5	1.5	1.7	2.0	2.0	2.2	2.4	2.6	2.8	2.8	2.9	2.9
Kentucky Blue Grass (Kilograms per Hectare)																				
High Range	26	54	82	115	140	173	199	229	254	280	307	328	360	374	408	433	454	477	495	509
Low Range	9	18	27	38	46	57	65	75	83	92	101	107	119	122	133	142	149	157	162	167
Low Range w/Reduction	1.7	3.3	5.0	7.0	8.5	10.5	12.0	13.8	15.3	16.9	18.6	19.7	21.9	22.4	24.5	26.1	27.4	28.9	29.8	30.7
Kentucky Blue Grass (Kilograms per 1000 Square Meters)																				
High Range	2	5	8	12	14	18	20	23	25	28	31	33	36	38	41	43	45	48	49	51
Low Range	1	2	2	4	4	6	6	7	8	9	10	11	12	12	13	14	15	16	16	17
Low Range w/Reduction	0.2	0.4	0.4	0.7	0.7	1.1	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.2	2.4	2.6	2.8	2.9	2.9	3.1

Table of Contents

Section 4: Grass Seed Rate Adjustment



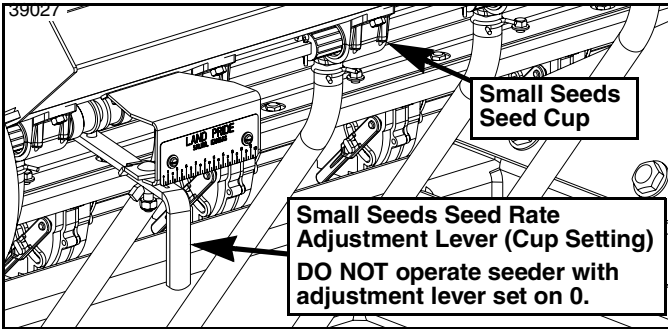
Grass Seed Rate Chart (Metric)

Kilograms per 1000 square meter and Kilograms per hectare

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Lovegrass - Sand (Kilograms per Hectare)																				
High Range	100	157	214	271	328	384	441	498	555	612	669	726	783	840	897	953	1035	1093	151	1209
Low Range	31	49	68	86	104	122	140	158	176	194	211	230	248	266	284	302	320	338	357	375
Low Range w/Reduction	5.7	9.0	12.5	15.8	19.1	22.4	25.8	29.1	32.4	35.7	38.8	42.3	45.6	48.9	52.3	55.6	58.9	62.2	65.7	69.0
Lovegrass - Sand (Kilograms per 1000 Square Meters)																				
High Range	10	16	21	27	33	39	44	50	56	62	67	73	79	84	90	96	104	110	116	122
Low Range	3	5	7	9	10	12	14	16	18	20	21	23	25	27	28	30	32	34	36	38
Low Range w/Reduction	0.6	0.9	1.3	1.7	1.8	2.2	2.6	2.9	3.3	3.7	3.9	4.2	4.6	5.0	5.2	5.5	5.9	6.3	6.6	7.0
Lovegrass - Weeping (Kilograms per Hectare)																				
High Range	122	197	253	321	384	443	501	561	619	678	736	795	854	913	971	1030	1089	1148	1206	1268
Low Range	39	63	81	102	122	140	159	178	196	215	234	252	271	290	308	327	345	364	383	402
Low Range w/Reduction	7.2	11.6	14.9	18.8	22.4	25.8	29.3	32.8	36.1	39.6	43.1	46.4	49.9	53.4	56.7	60.2	63.5	67.0	70.5	74.0
Lovegrass - Weeping (Kilograms per 1000 Square Meters)																				
High Range	12	20	25	32	39	44	50	56	62	68	74	80	85	91	98	104	109	115	121	127
Low Range	4	6	8	10	12	14	16	18	20	21	23	25	27	29	31	33	35	37	38	40
Low Range w/Reduction	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.7	3.9	4.2	4.6	5.0	5.3	5.7	6.1	6.4	6.8	7.0	7.4
Orchard Grass (Kilograms per Hectare)																				
High Range	4	7	11	17	23	30	38	46	55	65	74	84	95	105	115	126	136	145	155	164
Low Range	1	2	4	5	8	10	14	17	20	24	28	32	37	41	45	49	53	57	61	65
Low Range w/Reduction	0.2	0.4	0.7	0.9	1.5	1.8	2.6	3.1	3.7	4.4	5.2	5.9	6.8	7.5	8.3	9.0	9.8	10.5	11.2	12.0
Orchard Grass (Kilograms per 1000 Square Meters)																				
High Range	0	1	1	2	2	3	4	5	6	6	7	8	9	11	12	13	14	15	15	16
Low Range	0	0	0	1	1	1	1	2	2	2	3	3	4	4	5	5	5	6	6	6
Low Range w/Reduction	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.6	0.7	0.7	0.9	0.9	0.9	1.1	1.1	1.1
Rye Grass - Annual (Kilograms per Hectare)																				
High Range	23	66	106	147	188	228	271	312	352	393	434	477	517	558	599	641	682	723	763	804
Low Range	8	21	34	47	59	73	86	98	112	124	138	151	164	177	190	204	216	229	242	255
Low Range w/Reduction	1.5	3.9	6.3	8.6	10.9	13.4	15.8	18.0	20.6	22.8	25.4	27.8	30.2	32.6	35.0	37.5	39.7	42.1	44.5	46.9
Rye Grass - Annual (Kilograms per 1000 Square Meters)																				
High Range	2	6	11	15	19	23	27	31	35	40	43	48	52	56	60	64	68	73	77	81
Low Range	1	2	3	5	6	7	9	10	11	13	14	15	17	18	19	21	21	23	24	25
Low Range w/Reduction	0.2	0.4	0.6	0.9	1.1	1.3	1.7	1.8	2.0	2.4	2.6	2.8	3.1	3.3	3.5	3.9	3.9	4.2	4.4	4.6
Rye Grass - Perennial (Kilograms per Hectare)																				
High Range	40	86	129	175	219	262	308	352	395	441	486	531	574	619	665	707	752	798	840	885
Low Range	13	27	41	55	69	83	97	112	125	140	154	168	182	196	210	224	238	253	266	281
Low Range w/Reduction	2.4	5.0	7.5	10.1	12.7	15.3	17.8	20.6	23.0	25.8	28.3	30.9	33.5	36.1	38.6	41.2	43.8	46.6	48.9	51.7
Rye Grass - Perennial (Kilograms per 1000 Square Meters)																				
High Range	4	9	13	18	22	26	30	35	40	44	49	53	58	62	66	71	76	80	84	89
Low Range	1	3	4	5	7	8	10	11	13	14	16	17	18	20	21	22	24	25	27	28
Low Range w/Reduction	0.2	0.6	0.7	0.9	1.3	1.5	1.8	2.0	2.4	2.6	2.9	3.1	3.3	3.7	3.9	4.0	4.4	4.6	5.0	5.2
Sudan Grass (Kilograms per Hectare)																				
High Range	39	77	116	157	201	247	294	343	394	446	500	555	611	668	726	785	845	905	966	1027
Low Range	20	32	46	62	80	99	120	142	165	188	212	236	259	282	304	325	345	364	380	395
Low Range w/Reduction	3.7	5.9	8.5	11.4	14.7	18.2	22.1	26.1	30.4	34.6	39.0	43.4	47.7	51.9	55.9	59.8	63.5	67.0	69.9	72.7
Sudan Grass (Kilograms per 1000 Square Meters)																				
High Range	4	8	12	16	20	25	29	34	39	45	50	56	61	67	73	79	84	91	97	103
Low Range	2	3	5	6	8	10	12	14	16	19	21	24	26	28	30	33	35	36	38	39
Low Range w/Reduction	0.4	0.6	0.9	1.1	1.5	1.8	2.2	2.6	2.9	3.5	3.9	4.4	4.8	5.2	5.5	6.1	6.4	6.6	7.0	7.2
Vetch (Kilograms per Hectare)																				
High Range	87	151	214	274	338	401	464	527	587	651	714	778	838	901	964	1027	1089	1151	1218	1278
Low Range	23	43	63	82	101	121	140	159	178	198	217	236	255	275	294	313	333	352	373	392
Low Range w/Reduction	4.2	7.9	11.6	15.1	18.6	22.3	25.8	29.3	32.8	36.4	39.9	43.4	46.9	50.6	54.1	57.6	61.3	64.8	68.6	72.1
Vetch (Kilograms per 1000 Square Meters)																				
High Range	9	15	21	27	34	40	46	53	59	65	72	78	84	90	97	103	109	116	123	128
Low Range	2	4	6	8	10	12	14	16	18	20	22	24	25	27	29	31	34	35	37	39
Low Range w/Reduction	0.4	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.6	5.0	5.3	5.7	6.3	6.4	6.8	7.2
Wheatgrass - Crested (Kilograms per Hectare)																				
High Range	25	40	57	75	91	106	124	140	156	171	190	206	222	239	255	271	289	305	321	337
Low Range	8	13	18	23	29	34	39	45	49	55	60	65	70	76	81	86	92	96	102	106
Low Range w/Reduction	1.5	2.4	3.3	4.2	5.3	6.3	7.2	8.3	9.0	10.1	11.0	12.0	12.9	14.0	14.9	15.8	16.9	17.7	18.8	19.5
Wheatgrass - Crested (Kilograms per 1000 Square Meters)																				
High Range	2	4	6	7	9	11	13	14	16	17	19	21	22	24	25	27	29	31	32	34
Low Range	1	1	2	2	3	3	4	4	5	5	6	6	7	8	8	9	9	10	10	11
Low Range w/Reduction	0.2	0.2	0.4	0.4	0.6	0.6	0.7	0.7	0.9	0.9	1.1	1.1	1.3	1.5	1.5	1.7	1.7	1.8	1.8	2.0
Wheatgrass - Western (Kilograms per Hectare)																				
High Range	8	27	46	65	85	104	123	142	161	180	200	219	238	257	276	296	316	335	354	373
Low Range	2	9	15	21	27	32	39	45	51	57	64	69	75	82	87	94	100	106	112	119
Low Range w/Reduction	0.4	1.7	2.8	3.9	5.0	5.9	7.2	8.3	9.4	10.5	11.8	12.7	13.8	15.1	16.0	17.3	18.4	19.5	20.6	21.9
Wheatgrass - Western (Kilograms per 1000 Square Meters)																				
High Range	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
Low Range	0	1	1	2	2	3	4	4	5	6	6	7	7	8	9	9	10	11	11	12
Low Range w/Reduction	0.0	0.2	0.2	0.4	0.4	0.6	0.7	0.7	0.9	1.1	1.1	1.3	1.3	1.5	1.7	1.7	1.8	2.0	2.0	2.2

Kilograms per 1000 square meter and Kilograms per hectare

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.



Small Seed Rate Adjustment Lever
Figure 5-1

Small Seeds Seed Rate Adjustments

Refer to Figure 5-1:

IMPORTANT: Never operate small seeds seedbox with seed rate adjustment lever set at 0. Always disengage lock in/out pin (#3) shown in Figure 2-13 on page 33 to stop seed cups from turning. Allowing any of the seed cups to turn with the adjustment lever set at 0 will damage the cups.

NOTE: Before filling the small seeds seedbox, make sure all seed cups will fully close when moving seed rate adjustment lever to 0. Any seed cup that will not fully close will discharge seeds at a higher rate. See "Small Seeds Zero Adjustment Set-up" on page 15 for detailed instructions.

1. Use English charts on page 47 and Metric charts on page 50 to help determine seeding rate.
2. Move small seeds seed rate adjustment lever to cup setting number obtained in the seed rate charts. For best results, first move adjustment lever all the way to the left and then to the desired setting. Increase setting if seed is lighter than average. Decrease setting if seed is heavier than average.
3. **Refer to Figure 2-13 on page 33:** Engage small seeds with lock in/out pin (#3). Disengage native seeds lock in/out pin (#2) and set grass seeds transmission in neutral. Refer to "Grass Seeds Transmission" on page 32.
4. Continue with "Calibrate Small Seeds Dispersal" below.

Calibrate Small Seeds Dispersal

NOTE: Seeding rates will vary greatly with variations in seed size, seed treatment, weight of seed, soil surface condition, and rear roller slippage. We recommend that you test and adjust your seeder using the calibration procedures listed below to help ensure an accurate seeding rate.

1. Attach seed rate crank to the all seeds drive sprocket. Refer to "Seed Rate Crank Instructions" on page 39.

2. Poor seed over the three seed cups at the outboard end of the seeder. **Do not** allow any seed to reach the other cups.
3. Pull seed tubes out of the three seed cup drops.
4. Crank rear roller to make sure drive system is working properly and that the feed cups are free from foreign matter.
5. Place a container under the three seed tubes to gather seed as it is metered.

Model No	No. of Rear Roller Rotations to Cover			
	1/10 Acre	1000 Sq. Ft.	1/20 Hectare	100 Sq. M
NTS2607	266	61	329	66
NTS2609	207	48	256	52
NTS2611	169	39	209	42

6. Crank rear roller the number of rotations noted in the table above. Check the three cups to make sure each cup has plenty of seed coming into it.
7. Weigh the seed which has been metered out and divide that weight by three to get the number of pounds or kilograms per seed cup.

NOTE: If total weight for 3 seed cups is in ounces, divide that weight by 48 instead of 3.

8. Next, multiply number of pounds or kilograms per seed cup by the number of seed cups on the small seeds seedbox to arrive at weight "A".
9. If weight "A" is calculated based on:
1/10 acre, then "A" x 10 = lbs/acre
1000 sq ft, then "A" x 43.56 = lbs/acre
1000 sq ft, then "A" x 1 = lbs/1000 sq ft
1/20 hectare, then "A" x 20 = kgs/hectare
100 sq meters, then "A" x 100 = kgs/hectare
100 sq meters, then "A" x 10 = kgs/1000 sq m
10. If calculated grass seed rate is different than the suggested settings in the charts, then increase or decrease the seed cup adjustment lever.

NOTE: Field conditions will affect seeding rates. Check amount of seed being used by noting size of area being seeded, amount of seed added to the seeder, and level of seed in the seedbox.

Minor adjustments to the seed rate adjustment lever may be necessary if seeder is seeding more or less seed than desired.

11. If calculated seed rate varies greatly with the suggested settings in the charts, then increase or decrease the seed cup adjustment lever shown in Figure 5-1.
12. Repeat calibration procedure if seed cup adjustment lever was moved in step 11 above.
13. Remove and store seed rate crank. For detailed instructions, refer to "Store Seed Rate Crank" on page 39.

Small Seed Rate Chart (English)

Pounds per acre and pounds per 1000 square foot

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Alfalfa (Pounds per Acre)																				
	0.0	2.4	3.9	5.3	6.7	8.2	9.7	10.9	12.3	13.9	15.3	16.7	18.2	19.4	21.1	22.4	23.7	25.3	26.6	28.0
Alfalfa (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6
Alsike Clover (Pounds per Acre)																				
	0.0	0.0	0.0	0.0	0.0	0.9	3.5	5.7	8.7	12.2	14.4	16.5	18.3	21.3	23.9	28.3	30.0	32.2	35.2	39.1
Alsike Clover (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9
Bent Grass (Pounds per Acre)																				
	0.0	0.0	1.3	2.4	3.2	4.0	5.1	6.1	6.8	7.8	8.2	8.8	9.3	9.8	10.3	10.7	11.1	11.6	11.7	11.9
Bent Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
Bermuda (Pounds per Acre)																				
	0.0	0.9	1.4	2.0	2.5	3.0	3.7	4.3	4.7	5.3	5.5	5.9	6.2	6.7	7.2	7.9	8.7	9.8	10.4	11.3
Bermuda (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Biologic Brassica (Pounds per Acre)																				
	0.0	0.4	3.0	4.3	6.1	8.7	9.1	11.3	11.7	14.4	17.4	18.7	20.4	23.1	24.8	26.1	27.4	30.4	33.1	35.7
Biologic Brassica (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.8
Biologic Chicory (Pounds per Acre)																				
	2.2	3.0	6.1	6.1	8.7	10.0	12.2	14.8	15.2	18.3	19.1	21.3	23.9	26.1	27.0	29.6	30.9	33.1	34.4	36.1
Biologic Chicory (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8
Biologic New Zealand Clover Plus (Pounds per Acre)																				
	3.0	5.7	6.5	8.7	10.9	13.0	14.8	17.8	20.4	23.1	26.1	27.0	30.0	33.1	35.7	37.4	40.5	43.1	46.1	47.8
Biologic New Zealand Clover Plus (Pounds per 1000 Square Feet)																				
	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1
Biologic New Zealand Full Draw (Pounds per Acre)																				
	0.0	0.0	0.0	0.0	0.4	3.5	7.0	8.7	12.6	15.2	16.5	20.0	22.2	24.8	25.2	27.4	29.1	35.2	41.3	41.8
Biologic New Zealand Full Draw (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.9	1.0
Biologic New Zealand Maximum (Pounds per Acre)																				
	2.9	3.5	5.2	7.8	9.6	11.7	14.4	17.8	20.4	23.1	25.2	27.0	29.6	32.2	33.5	36.5	37.4	41.3	43.5	
Biologic New Zealand Maximum (Pounds per 1000 Square Feet)																				
	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0
Birdsfoot Trefoil (Pounds per Acre)																				
	0.0	1.9	3.9	6.1	8.5	10.9	13.1	15.5	17.7	20.1	22.5	24.9	27.4	29.8	32.4	34.9	37.3	39.5	41.9	44.3
Birdsfoot Trefoil (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0
Brown Top Millet (Pounds per Acre)																				
	0.0	0.0	0.4	3.0	3.0	6.1	6.1	8.7	9.6	12.6	13.5	16.1	18.3	20.4	21.3	24.4	25.2	27.0	30.0	30.9
Brown Top Millet (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Canary Grass (Pounds per Acre)																				
	0.0	1.7	3.3	4.8	6.5	8.2	9.9	11.6	13.3	15.0	16.9	18.9	20.6	22.8	24.4	26.4	28.2	30.3	32.0	33.9
Canary Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8
Coated Centipede (Pounds per Acre)																				
	3.0	3.9	6.1	8.3	9.6	12.2	13.9	16.1	18.3	21.7	24.4	26.5	30.0	32.2	35.7	38.3	41.3	43.1	50.9	51.8
Coated Centipede (Pounds per 1000 Square Feet)																				
	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.2	1.2

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

Small Seed Rate Chart (English)

Pounds per acre and pounds per 1000 square foot

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Evolved Harvest Provide (Pounds per Acre)																				
	0.0	2.6	5.7	6.1	9.6	12.2	14.8	17.8	20.0	23.9	27.0	30.0	33.1	36.5	40.0	43.1	47.8	52.2	53.9	58.3
Evolved Harvest Provide (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.2	1.3
Evolved Harvest Rack Force Alfalfa Forage (Pounds per Acre)																				
	0.4	2.6	3.5	6.5	9.1	11.3	13.9	15.7	18.7	22.2	24.8	27.4	30.4	35.2	38.3	40.9	43.5	47.0	50.0	54.8
Evolved Harvest Rack Force Alfalfa Forage (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.3
Evolved Harvest Shot Plot (Pounds per Acre)																				
	0.0	0.4	1.3	3.5	6.5	7.8	9.6	11.7	13.0	15.2	17.4	19.6	21.7	24.4	25.7	27.8	30.4	32.2	34.4	37.4
Evolved Harvest Shot Plot (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9
Evolved Harvest Throw & Gro (Pounds per Acre)																				
	0.0	0.0	0.0	0.4	2.2	2.6	3.5	6.1	9.1	11.3	12.6	14.4	14.4	16.5	18.3	19.6	22.2	22.6	23.5	25.2
Evolved Harvest Throw & Gro (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6
Fescue (Pounds per Acre)																				
	0.0	0.0	1.1	1.7	2.4	3.1	4.0	5.1	6.1	6.9	7.7	8.4	9.0	9.5	10.1	10.5	10.9	11.2	11.7	12.1
Fescue (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Imperial Alfa-Rack Plus (Pounds per Acre)																				
	0.0	0.4	3.5	6.1	9.1	10.0	12.2	15.2	18.3	19.6	23.5	25.2	27.8	30.9	33.5	36.5	39.6	41.8	49.6	47.8
Imperial Alfa-Rack Plus (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.1
Imperial NO-Plow (Pounds per Acre)																				
	0.0	0.0	2.2	3.5	6.1	7.0	12.6	12.6	15.2	17.4	18.3	20.9	23.1	24.8	26.5	29.1	30.0	32.6	35.2	
Imperial NO-Plow (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8
Imperial Whitetail Chicory Plus (Pounds per Acre)																				
	0.4	0.4	3.5	6.1	8.7	10.0	12.6	15.2	18.3	20.9	23.9	27.0	29.6	31.3	33.9	37.0	40.0	42.2	45.2	48.3
Imperial Whitetail Chicory Plus (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1
Imperial Whitetail Clover (Pounds per Acre)																				
	0.0	3.0	3.9	6.5	9.6	11.7	14.8	16.1	18.7	21.3	23.9	27.0	29.6	32.6	35.7	37.0	40.0	45.2	45.2	48.3
Imperial Whitetail Clover (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1
Imperial Whitetail Double Cross (Pounds per Acre)																				
	0.0	3.0	3.9	6.5	8.3	11.3	13.0	16.1	18.3	21.3	23.9	26.1	29.6	32.6	34.8	37.0	40.5	42.6	45.7	48.3
Imperial Whitetail Double Cross (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1
Imperial Whitetail Extreme (Pounds per Acre)																				
	0.0	0.0	0.0	0.0	0.0	0.9	2.6	3.0	5.7	6.1	6.1	7.8	8.7	9.1	10.0	10.4	11.3	13.5	14.4	17.0
Imperial Whitetail Extreme (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4
Imperial Whitetail Winter Greens (Pounds per Acre)																				
	2.6	2.6	3.5	6.5	7.0	10.9	12.6	15.7	17.4	19.6	22.2	24.4	26.5	29.1	31.8	28.7	34.4	35.2	38.7	42.2
Imperial Whitetail Winter Greens (Pounds per 1000 Square Feet)																				
	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1.0
Kentucky Blue Grass (Pounds per Acre)																				
	0.0	0.3	1.4	2.0	3.4	3.9	4.8	5.5	6.2	6.9	7.6	8.1	8.8	9.4	9.9	10.0	11.1	11.6	12.1	12.6
Kentucky Blue Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

Small Seed Rate Chart (English)

Pounds per acre and pounds per 1000 square foot

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Ladino Clover (Pounds per Acre)																				
	0.7	1.9	3.6	5.2	6.7	8.7	10.8	12.8	14.5	16.2	18.2	20.1	21.5	23.2	24.9	26.5	28.3	30.3	32.4	33.9
Ladino Clover (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8
Lettuce (Pounds per Acre)																				
	0.0	0.0	0.0	0.0	2.6	3.0	3.0	6.1	6.1	6.5	8.3	9.1	9.6	12.2	12.2	13.9	15.2	15.7	17.8	19.1
Lettuce (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Lovegrass Weeping (Pounds per Acre)																				
	0.4	2.2	6.1	7.0	8.7	10.4	10.9	13.0	13.9	16.1	17.4	18.7	20.4	21.7	23.1	24.8	27.0	27.4	29.1	30.4
Lovegrass Weeping (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Orchard Grass (Pounds per Acre)																				
	0.0	0.0	0.2	0.7	1.0	1.5	1.7	2.2	2.7	3.1	3.6	3.9	4.4	4.8	5.3	5.6	6.1	6.3	6.8	7.0
Orchard Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Red Clover (Pounds per Acre)																				
	0.2	2.2	4.1	6.1	8.0	9.9	12.1	14.0	16.0	17.9	19.9	21.8	23.7	25.9	27.8	29.8	31.7	33.6	35.6	37.8
Red Clover (Pounds per 1000 Square Feet)																				
	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9
Red Top Grass (Pounds per Acre)																				
	0.0	0.7	1.5	2.2	3.4	4.4	5.3	6.1	7.0	8.0	8.7	9.2	9.9	10.4	11.1	11.9	12.8	13.6	14.5	15.3
Red Top Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4
Rye (Pounds per Acre)																				
	0.0	0.4	2.0	3.8	5.9	7.8	9.4	11.2	13.0	14.8	16.3	18.1	19.6	21.6	23.5	24.9	26.7	28.4	32.3	37.4
Rye (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.9
Sweet Clover (Pounds per Acre)																				
	0.0	1.7	3.8	5.8	7.9	9.9	12.6	14.6	16.9	18.9	21.1	23.0	24.9	27.1	29.3	31.4	33.4	35.6	37.5	39.5
Sweet Clover (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9
Sudan Grass (Pounds per Acre)																				
	0.0	0.0	2.4	3.6	6.8	9.0	11.9	14.0	16.9	19.4	21.8	24.2	26.6	29.1	31.5	33.9	36.6	38.7	41.2	43.6
Sudan Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0
Timothy Grass (Pounds per Acre)																				
	0.0	1.0	2.7	4.1	5.8	7.5	9.4	11.4	13.3	15.3	17.2	19.1	21.1	23.0	25.2	26.9	29.1	31.0	32.7	34.6
Timothy Grass (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8
Turnips - Purple Top (Pounds per Acre)																				
	0.0	1.8	3.4	4.6	6.2	8.0	9.2	10.9	12.6	14.3	15.9	17.7	19.4	21.1	23.0	24.7	26.1	28.1	30.0	32.1
Turnips - Purple Top (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Winfred Brassica Rape (Pounds per Acre)																				
	0.0	0.0	2.2	3.5	6.1	9.6	11.7	13.9	16.1	17.4	19.6	23.1	23.9	26.5	28.7	29.6	31.3	32.6	33.9	36.1
Winfred Brassica Rape (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.8	0.8
Zenith Zoysia Grass Seed (Pounds per Acre)																				
	0.0	0.0	0.4	3.0	3.5	5.7	7.0	7.8	9.1	11.7	12.2	14.8	15.2	17.8	19.1	21.7	23.1	24.8	25.7	29.1
Zenith Zoysia Grass Seed (Pounds per 1000 Square Feet)																				
	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

Small Seed Rate Chart (Metric)

Kilograms per hectare and kilograms per 1000 square meters

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Alfalfa (Kilograms per Hectare)																				
	0.0	2.7	4.4	5.9	7.5	9.2	10.9	12.2	13.8	15.6	17.1	18.7	20.4	21.7	23.6	25.1	26.6	28.4	29.8	31.4
Alfalfa (Kilograms per 1000 Square Meters)																				
	0.0	0.3	0.4	0.6	0.8	0.9	1.1	1.2	1.4	1.6	1.7	1.9	2.0	2.2	2.4	2.5	2.7	2.8	3.0	3.1
Alsike Clover (Kilograms per Hectare)																				
	0.0	0.0	0.0	0.0	0.0	1.0	3.9	6.4	9.8	13.7	16.1	18.5	20.5	23.9	26.8	31.7	33.6	36.1	39.5	43.8
Alsike Clover (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.0	1.4	1.6	1.8	2.1	2.4	2.7	3.2	3.4	3.6	3.9	4.4
Bent Grass (Kilograms per Hectare)																				
	0.0	0.0	1.5	2.7	3.6	4.5	5.7	6.8	7.6	8.7	9.2	9.9	10.4	11.0	11.5	12.0	12.4	13.0	13.1	13.3
Bent Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.1	0.3	0.4	0.4	0.6	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3
Bermuda (Kilograms per Hectare)																				
	0.0	1.0	1.6	2.2	2.8	3.4	4.1	4.8	5.3	5.9	6.2	6.6	6.9	7.5	8.1	8.9	9.8	11.0	11.7	12.7
Bermuda (Kilograms per 1000 Square Meters)																				
	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3
Biologic Brassica (Kilograms per Hectare)																				
	0.0	0.4	3.4	4.8	6.8	9.8	10.2	12.7	13.1	16.1	19.5	21.0	22.9	25.9	27.8	29.3	30.7	34.1	37.1	40.0
Biologic Brassica (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.3	0.5	0.7	1.0	1.0	1.3	1.3	1.6	2.0	2.1	2.3	2.6	2.8	2.9	3.1	3.4	3.7	4.0
Biologic Chicory (Kilograms per Hectare)																				
	2.5	3.4	6.8	6.8	9.8	11.2	13.7	16.6	17.0	20.5	21.4	23.9	26.8	29.3	30.3	33.2	34.6	37.1	38.6	40.5
Biologic Chicory (Kilograms per 1000 Square Meters)																				
	0.2	0.3	0.7	0.7	1.0	1.1	1.4	1.7	1.7	2.1	2.1	2.4	2.7	2.9	3.0	3.3	3.5	3.7	3.9	4.0
Biologic New Zealand Clover Plus (Kilograms per Hectare)																				
	3.4	6.4	7.3	9.8	12.2	14.6	16.6	20.0	22.9	25.9	29.3	30.3	33.6	37.1	40.0	41.9	45.4	48.3	51.7	53.6
Biologic New Zealand Clover Plus (Kilograms per 1000 Square Meters)																				
	0.3	0.6	0.7	1.0	1.2	1.5	1.7	2.0	2.3	2.6	2.9	3.0	3.4	3.7	4.0	4.2	4.5	4.8	5.2	5.4
Biologic New Zealand Full Draw (Kilograms per Hectare)																				
	0.0	0.0	0.0	0.0	0.4	3.9	7.8	9.8	14.1	17.0	18.5	22.4	24.9	27.8	28.2	30.7	32.6	39.5	46.3	46.9
Biologic New Zealand Full Draw (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.0	0.0	0.4	0.8	1.0	1.4	1.7	1.8	2.2	2.5	2.8	2.8	3.1	3.3	3.9	4.6	4.7
Biologic New Zealand Maximum (Kilograms per Hectare)																				
	3.3	3.9	5.8	8.7	10.8	13.1	16.1	16.6	20.0	22.9	25.9	28.2	30.3	33.2	36.1	37.5	40.9	41.9	46.3	48.8
Biologic New Zealand Maximum (Kilograms per 1000 Square Meters)																				
	0.3	0.4	0.6	0.9	1.1	1.3	1.6	1.7	2.0	2.3	2.6	2.8	3.0	3.3	3.6	3.8	4.1	4.2	4.6	4.9
Birdsfoot Trefoil (Kilograms per Hectare)																				
	0.0	2.1	4.4	6.8	9.5	12.2	14.7	17.4	19.8	22.5	25.2	27.9	30.7	33.4	36.3	39.1	41.8	44.3	47.0	49.7
Birdsfoot Trefoil (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.4	0.7	1.0	1.2	1.5	1.7	2.0	2.3	2.5	2.8	3.1	3.3	3.6	3.9	4.2	4.4	4.7	5.0
Brown Top Millet (Kilograms per Hectare)																				
	0.0	0.0	0.4	3.4	3.4	6.8	6.8	9.8	10.8	14.1	15.1	18.0	20.5	22.9	23.9	27.3	28.2	30.3	33.6	34.6
Brown Top Millet (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.3	0.3	0.7	0.7	1.0	1.1	1.4	1.5	1.8	2.1	2.3	2.4	2.7	2.8	3.0	3.4	3.5
Canary Grass (Kilograms per Hectare)																				
	0.0	1.9	3.7	5.4	7.3	9.2	11.1	13.0	14.9	16.8	18.9	21.2	23.1	25.6	27.3	29.6	31.6	34.0	35.9	38.0
Canary Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	2.7	3.0	3.2	3.4	3.6	3.8
Coated Centipede (Kilograms per Hectare)																				
	3.4	4.4	6.8	9.3	10.8	13.7	15.6	18.0	20.5	24.3	27.3	29.7	33.6	36.1	40.0	42.9	46.3	48.3	57.1	58.1
Coated Centipede (Kilograms per 1000 Square Meters)																				
	0.3	0.4	0.7	0.9	1.1	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.4	3.6	4.0	4.3	4.6	4.8	5.7	5.8

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

Small Seed Rate Chart (Metric)

Kilograms per hectare and kilograms per 1000 square meters

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Evolved Harvest Provide (Kilograms per Hectare)																				
	0.0	2.9	6.4	6.8	10.8	13.7	16.6	20.0	22.4	26.8	30.3	33.6	37.1	40.9	44.8	48.3	53.6	58.5	60.4	65.3
Evolved Harvest Provide (Kilograms per 1000 Square Meters)																				
	0.0	0.3	0.6	0.7	1.1	1.4	1.7	2.0	2.2	2.7	3.0	3.4	3.7	4.1	4.5	4.8	5.4	5.9	6.0	6.5
Evolved Harvest Rack Force Alfalfa Forage (Kilograms per Hectare)																				
	0.4	2.9	3.9	7.3	10.2	12.7	15.6	17.6	21.0	24.9	27.8	30.7	34.1	39.5	42.9	45.8	48.8	52.7	56.0	61.4
Evolved Harvest Rack Force Alfalfa Forage (Kilograms per 1000 Square Meters)																				
	0.0	0.3	0.4	0.7	1.0	1.3	1.6	1.8	2.1	2.5	2.8	3.1	3.4	3.9	4.3	4.6	4.9	5.3	5.6	6.1
Evolved Harvest Shot Plot (Kilograms per Hectare)																				
	0.0	0.4	1.5	3.9	7.3	8.7	10.8	13.1	14.6	17.0	19.5	22.0	24.3	27.3	28.8	31.2	34.1	36.1	38.6	41.9
Evolved Harvest Shot Plot (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.1	0.4	0.7	0.9	1.1	1.3	1.5	1.7	2.0	2.2	2.4	2.7	2.9	3.1	3.4	3.6	3.9	4.2
Evolved Harvest Throw & Gro (Kilograms per Hectare)																				
	0.0	0.0	0.0	0.4	2.5	2.9	3.9	6.8	10.2	12.7	14.1	16.1	16.1	18.5	20.5	22.0	24.9	25.3	26.3	28.2
Evolved Harvest Throw & Gro (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.7	1.0	1.3	1.4	1.6	1.6	1.8	2.1	2.2	2.5	2.5	2.6	2.8
Fescue (Kilograms per Hectare)																				
	0.0	0.0	1.2	1.9	2.7	3.5	4.5	5.7	6.8	7.7	8.6	9.4	10.1	10.6	11.3	11.8	12.2	12.6	13.1	13.6
Fescue (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4
Imperial Alfa-Rack Plus (Kilograms per Hectare)																				
	0.0	0.4	3.9	6.8	10.2	11.2	13.7	17.0	20.5	22.0	26.3	28.2	31.2	34.6	37.5	40.9	44.4	46.9	55.6	53.6
Imperial Alfa-Rack Plus (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.4	0.7	1.0	1.1	1.4	1.7	2.1	2.2	2.6	2.8	3.1	3.5	3.8	4.1	4.4	4.7	5.6	5.4
Imperial NO-Plow (Kilograms per Hectare)																				
	0.0	0.0	2.5	3.9	6.8	7.8	10.2	14.1	14.1	17.0	19.5	20.5	23.4	25.9	27.8	29.7	32.6	33.6	36.5	39.5
Imperial NO-Plow (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.2	0.4	0.7	0.8	1.0	1.4	1.4	1.7	2.0	2.1	2.3	2.6	2.8	3.0	3.3	3.4	3.7	3.9
Imperial Whitetail Chicory Plus (Kilograms per Hectare)																				
	0.4	0.4	3.9	6.8	9.8	11.2	14.1	17.0	20.5	23.4	26.8	30.3	33.2	35.1	38.0	41.5	44.8	47.3	50.7	54.1
Imperial Whitetail Chicory Plus (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.4	0.7	1.0	1.1	1.4	1.7	2.1	2.3	2.7	3.0	3.3	3.5	3.8	4.1	4.5	4.7	5.1	5.4
Imperial Whitetail Clover (Kilograms per Hectare)																				
	0.0	3.4	4.4	7.3	10.8	13.1	16.6	18.0	21.0	23.9	26.8	30.3	33.2	36.5	40.0	41.5	44.8	50.7	50.7	54.1
Imperial Whitetail Clover (Kilograms per 1000 Square Meters)																				
	0.0	0.3	0.4	0.7	1.1	1.3	1.7	1.8	2.1	2.4	2.7	3.0	3.3	3.7	4.0	4.1	4.5	5.1	5.1	5.4
Imperial Whitetail Double Cross (Kilograms per Hectare)																				
	0.0	3.4	4.4	7.3	9.3	12.7	14.6	18.0	20.5	23.9	26.8	29.3	33.2	36.5	39.0	41.5	45.4	47.7	51.2	54.1
Imperial Whitetail Double Cross (Kilograms per 1000 Square Meters)																				
	0.0	0.3	0.4	0.7	0.9	1.3	1.5	1.8	2.1	2.4	2.7	2.9	3.3	3.7	3.9	4.1	4.5	4.8	5.1	5.4
Imperial Whitetail Extreme (Kilograms per Hectare)																				
	0.0	0.0	0.0	0.0	0.0	1.0	2.9	3.4	6.4	6.8	6.8	8.7	9.8	10.2	11.2	11.7	12.7	15.1	16.1	19.1
Imperial Whitetail Extreme (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.6	0.7	0.7	0.9	1.0	1.0	1.1	1.2	1.3	1.5	1.6	1.9
Imperial Whitetail Winter Greens (Kilograms per Hectare)																				
	2.9	2.9	3.9	7.3	7.8	12.2	14.1	17.6	19.5	22.0	24.9	27.3	29.7	32.6	35.6	32.2	38.6	39.5	43.4	47.3
Imperial Whitetail Winter Greens (Kilograms per 1000 Square Meters)																				
	0.3	0.3	0.4	0.7	0.8	1.2	1.4	1.8	2.0	2.2	2.5	2.7	3.0	3.3	3.6	3.2	3.9	3.9	4.3	4.7
Kentucky Blue Grass (Kilograms per Hectare)																				
	0.0	0.3	1.6	2.2	3.8	4.4	5.4	6.2	6.9	7.7	8.5	9.1	9.9	10.5	11.1	11.2	12.4	13.0	13.6	14.1
Kentucky Blue Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.2	0.2	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.2	1.3	1.4	1.4

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.

Small Seed Rate Chart (Metric)

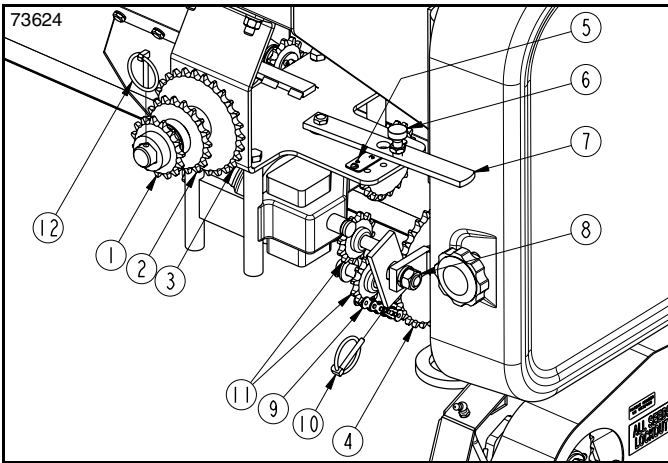
Kilograms per hectare and kilograms per 1000 square meters

Cup Setting	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Ladino Clover (Kilograms per Hectare)																				
	0.8	2.1	4.0	5.8	7.5	9.8	12.1	14.3	16.3	18.2	20.4	22.5	24.1	26.0	27.9	29.7	31.7	34.0	36.3	38.0
Ladino Clover (Kilograms per 1000 Square Meters)																				
	0.1	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.3	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
Lettuce (Kilograms per Hectare)																				
	0.0	0.0	0.0	0.0	2.9	3.4	3.4	6.8	6.8	7.3	9.3	10.2	10.8	13.7	13.7	15.6	17.0	17.6	20.0	21.4
Lettuce (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.7	0.7	0.7	0.9	1.0	1.1	1.4	1.4	1.6	1.7	1.8	2.0	2.1
Lovegrass Weeping (Kilograms per Hectare)																				
	0.4	2.5	6.8	7.8	9.8	11.7	12.2	14.6	15.6	18.0	19.5	21.0	22.9	24.3	25.9	27.8	30.3	30.7	32.6	34.1
Lovegrass Weeping (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.7	0.8	1.0	1.2	1.2	1.5	1.6	1.8	2.0	2.1	2.3	2.4	2.6	2.8	3.0	3.1	3.3	3.4
Orchard Grass (Kilograms per Hectare)																				
	0.0	0.0	0.2	0.8	1.1	1.7	1.9	2.5	3.0	3.5	4.0	4.4	4.9	5.4	5.9	6.3	6.8	7.1	7.6	7.8
Orchard Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8
Red Clover (Kilograms per Hectare)																				
	0.2	2.5	4.6	6.8	9.0	11.1	13.6	15.7	17.9	20.1	22.3	24.4	26.6	29.0	31.2	33.4	35.5	37.7	39.9	42.4
Red Clover (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.5	0.7	0.9	1.1	1.4	1.6	1.8	2.0	2.2	2.4	2.7	2.9	3.1	3.3	3.6	3.8	4.0	4.2
Red Top Grass (Kilograms per Hectare)																				
	0.0	0.8	1.7	2.5	3.8	4.9	5.9	6.8	7.8	9.0	9.8	10.3	11.1	11.7	12.4	13.3	14.3	15.2	16.3	17.1
Red Top Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7
Rye (Kilograms per Hectare)																				
	0.0	0.4	2.2	4.3	6.6	8.7	10.5	12.6	14.6	16.6	18.3	20.3	22.0	24.2	26.3	27.9	29.9	31.8	36.2	41.9
Rye (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.6	4.2
Sweet Clover (Kilograms per Hectare)																				
	0.0	1.9	4.3	6.5	8.9	11.1	14.1	16.4	18.9	21.2	23.6	25.8	27.9	30.4	32.8	35.2	37.4	39.9	42.0	44.3
Sweet Clover (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.4	0.7	0.9	1.1	1.4	1.6	1.9	2.1	2.4	2.6	2.8	3.0	3.3	3.5	3.7	4.0	4.2	4.4
Sudan Grass (Kilograms per Hectare)																				
	0.0	0.0	2.7	4.0	7.6	10.1	13.3	15.7	18.9	21.7	24.4	27.1	29.8	32.6	35.3	38.0	41.0	43.4	46.2	48.9
Sudan Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.3	0.4	0.8	1.0	1.3	1.6	1.9	2.2	2.4	2.7	3.0	3.3	3.5	3.8	4.1	4.3	4.6	4.9
Timothy Grass (Kilograms per Hectare)																				
	0.0	1.1	3.0	4.6	6.5	8.4	10.5	12.8	14.9	17.1	19.3	21.4	23.6	25.8	28.2	30.2	32.6	34.7	36.7	38.8
Timothy Grass (Kilograms per 1000 Square Meters)																				
	0.0	0.1	0.3	0.5	0.7	0.8	1.1	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.8	3.0	3.3	3.5	3.7	3.9
Turnips - Purple Top (Kilograms per Hectare)																				
	0.0	2.0	3.8	5.2	6.9	9.0	10.3	12.2	14.1	16.0	17.8	19.8	21.7	23.6	25.8	27.7	29.3	31.5	33.6	36.0
Turnips - Purple Top (Kilograms per 1000 Square Meters)																				
	0.0	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.4	3.6
Winfred Brassica Rape (Kilograms per Hectare)																				
	0.0	0.0	2.5	3.9	6.8	10.8	13.1	15.6	18.0	19.5	22.0	25.9	26.8	29.7	32.2	33.2	35.1	36.5	38.0	40.5
Winfred Brassica Rape (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.2	0.4	0.7	1.1	1.3	1.6	1.8	2.0	2.2	2.6	2.7	3.0	3.2	3.3	3.5	3.7	3.8	4.0
Zenith Zoysia Grass Seed (Kilograms per Hectare)																				
	0.0	0.0	0.4	3.4	3.9	6.4	7.8	8.7	10.2	13.1	13.7	16.6	17.0	20.0	21.4	24.3	25.9	27.8	28.8	32.6
Zenith Zoysia Grass Seed (Kilograms per 1000 Square Meters)																				
	0.0	0.0	0.0	0.3	0.4	0.6	0.8	0.9	1.0	1.3	1.4	1.7	1.7	2.0	2.1	2.4	2.6	2.8	2.9	3.3

IMPORTANT: Do Not operate seed rate adjustment lever at -0- cup setting. Seed cup damage may occur.



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Drive Sprocket Location and Storage Placement
Figure 6-1

Native Seed Rate Adjustments

The setting should be **INCREASED** for lighter than average seed and **DECREASED** for heavier than average seed.

Refer to BFigure 6-1 and Native Seed Rate Chart on page 55:

- To adjust seed rate, first find the desired pounds/acre or kilograms per hectare using the **"Native Seed Rate Chart"** on page 55. Determine which drive sprocket (#1, #2, #3, #4, or #5) and gearbox drive number setting (#5) are required. If needed, change drive sprocket (#4) and drive number setting (#5):
 - Loosen chain idler nut (#8) and remove drive chain (#9) from drive sprocket (#4).
 - Remove linchpin (#10) and drive sprocket (#4). If a linchpin is not provided, loosen two set screws on drive sprocket (#4) and remove drive sprocket.
 - Replace drive sprocket (#4) with the selected drive sprocket (#1, #2, or #3).
 - Secure drive sprocket (#4) with linchpin (#10). If linchpin is not provided, tighten the two set screws on the drive sprocket.
 - Reinstall drive chain (#9) and adjust chain take-up (#11). See **"Native Grass Seed Gearbox Drive Chain #5"** on page 59 for detailed instructions.
 - Set gearbox drive lever (#7) to the selected drive number (#5) by pulling up on lock pin (#6) and adjusting lever to the correct number.
 - Release lock pin (#6). Make sure lock pin is fully down and lever (#7) is locked from movement.
 - Place removed sprocket (#4) on the sprocket storage holder (#12). Secure all four unused sprockets on the holder with linchpin (#12).
- Refer to Figure 2-13 on page 33:** Engage native seeds with lock in/out pin (#2). If applicable, disengage small seeds with lock in/out pin (#5) and set grass seeds transmission shown in Figure 2-12 on page 32 to neutral.

- Continue with **"Calibrate Native Seed Dispersal"**.

Calibrate Native Seed Dispersal

NOTE: Seeding rates will vary greatly with variations in seed size, seed treatment, weight of seed, soil surface condition, and rear roller slippage. We recommend that you test and adjust your seeder using the calibration procedures listed below to help ensure an accurate seeding rate.

- Attach seed rate crank to the all seeds drive sprocket. See **"Seed Rate Crank Instructions"** on page 39.
- Partition off the outer end of the box so that seed can be placed only over three discharge openings.
- Pour seed over the three discharge openings. **Do not** allow any seed to reach the other openings.
- Crank rear roller assembly to verify that the drive system is working properly and that the discharge openings are free from foreign matter.
- Place a container under the three discharge openings to gather all the seeds as they are metered.

Model No	No. of Rear Roller Rotations to Cover			
	1/10 Acre	1000 Sq. Ft.	1/20 Hectare	100 Sq. M
NTS2607	255	57	315	61
NTS2609	211	48	260	52
NTS2611	162	37	200	40

- Crank rear roller assembly the number of rotations noted in the table above. Check the three discharge openings to make sure each opening has plenty of seed coming into it.
- Weigh the seed which has been metered out and divide that weight by three to get the number of pounds or kilograms per discharge opening.

NOTE: If total weight for 3 seed openings is in ounces, divide that weight by 48 instead of 3.

- Next, multiply number of pounds or kilograms per seed opening by the number of seed openings in the native seedbox to arrive at weight "A".
- If weight "A" is calculated based on:
 1/10 acre, then "A" x 10 = lbs/acre
 1000 sq ft, then "A" x 43.56 = lbs/acre
 1/20 hectare, then "A" x 20 = kgs/hectare
 100 sq meters, then "A" x 100 = kgs/hectare
- If calculated seed rate is different than the suggested settings in the chart, then change gearbox drive number and/or drive sprocket accordingly.
- Repeat calibration procedure if the gearbox drive number or drive sprocket was changed in step 10 above.
- Remove and store seed rate crank. Refer to **"Store Seed Rate Crank"** on page 39.

Native Seed Rate Chart

(See Notes Below)	Drive Sprockets			
	15 Teeth	19 Teeth	27 Teeth	33 Teeth
1	2.8 lbs. / acre 3.1 kgs. / hectare	3.5 lbs. / acre 3.9 kgs. / hectare	5.0 lbs. / acre 5.6 kgs. / hectare	6.2 lbs. / acre 6.9 kgs. / hectare
2	5.8 lbs. / acre 6.5 kgs. / hectare	7.3 lbs. / acre 8.2 kgs. / hectare	10.4 lbs. / acre 11.7 kgs. / hectare	12.7 lbs. / acre 14.2 kgs. / hectare
3	8.6 lbs. / acre 9.6 kgs. / hectare	10.9 lbs. / acre 12.2 kgs. / hectare	15.5 lbs. / acre 17.4kgs. / hectare	19.0 lbs. / acre 21.3 kgs. / hectare
4	14.1 lbs. / acre 15.8 kgs. / hectare	17.8 lbs. / acre 20 kgs. / hectare	25.4 lbs. / acre 28.5kgs. / hectare	31.0 lbs. / acre 34.7 kgs. / hectare

Notes:

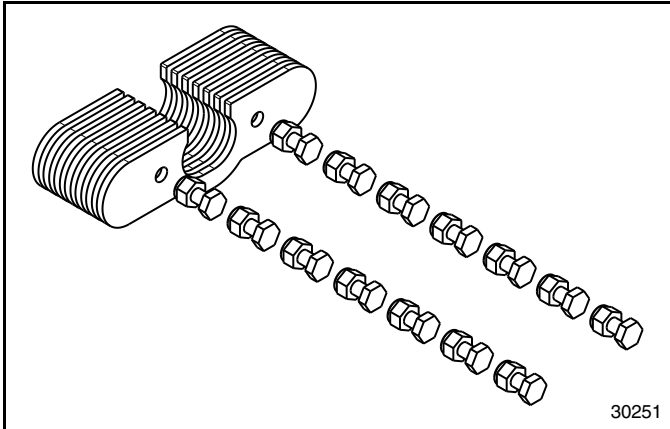
1. List of native seeds vary from region to region. See your local county extension office for list of native seeds in your region.
2. Seeding rates vary greatly with variations in types of seeds being seeded. The seed rate chart above is based on a seed mix of 5.7# of pure live seed per 11.1# of bulk. The pure live seed mix was Big Blue -1.5#, Little Blue -.8#, Side Oats Grama -.6#, Western Wheat Grass -1#, Switch Grass -.3#, and Indian Grass - 1.5#.
3. Factors which will affect seeding rates are: weight, size, relative humidity, and moisture content of the seed, ratio of inert material to seed, different proportions of seed types affecting density, and ground preparation.
4. To help insure an accurate seeding rate, Great Plains recommends that you test and adjust your seeder per the seed rate calibration procedures provided on page 54.

Agitation Extension Kit (Accessory)

Refer to Figure 7-1:

Extended agitator paddles can be added to your existing paddles in the Grass Seedbox to help break-up bridging of light fluffy seed across the seedbox discharge opening. See your nearest Great Plains dealer to order the correct kit for your seeder.

- 313-506A AGITATOR EXTENSION KIT, 7' BOX WIDTH
- 313-875A AGITATOR EXTENSION KIT, 9' BOX WIDTH
- 313-876A AGITATOR EXTENSION KIT, 11' BOX WIDTH

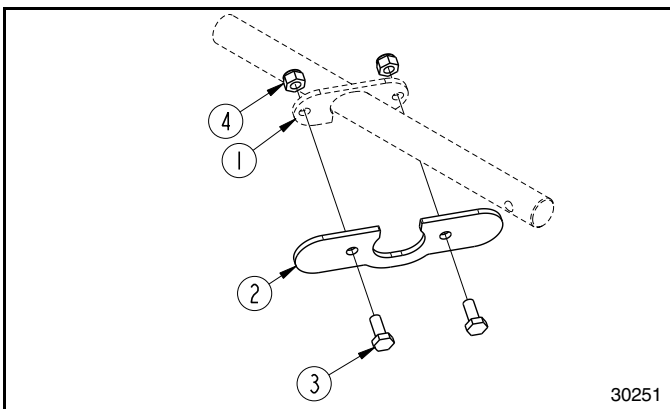


Agitator Extension Kit
Figure 7-1

Refer to Figure 7-2:

Install extended agitator paddles to existing paddles in the grass seedbox as follows:

1. Attach extension paddles (#2) to existing paddles as shown with 1/4"-20 x 5/8" GR5 cap screws (#3) and hex nylock nuts (#4).
2. Tighten all nylock nuts to the correct torque.



Assembly of Agitator Extension Paddles
Figure 7-2

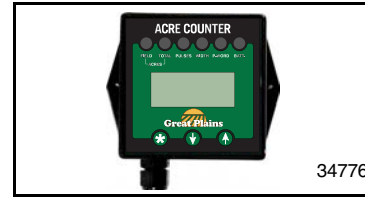


Figure 7-3

Electronic Acremeter (Option)

Refer to Figure 7-3:

The Acremeter is programed to count rear roller shaft rotations and display it as acres or hectares. This meter should be used only when seeding full width.

NOTE: Unusual conditions and/or non-standard row spacings can cause the Acremeter tally to vary somewhat from actual number of acres or hectares seeded.

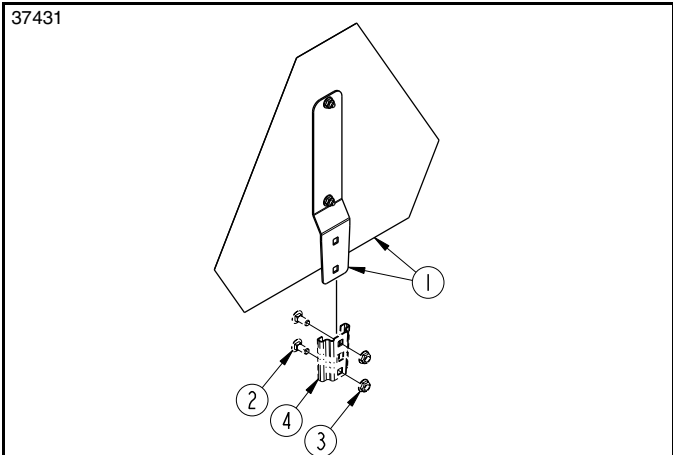
Refer to Electronic Acremeter Manual No. 194-074M for detailed programming and operating instructions.

Slow Moving Vehicle Sign (Accessory)

Refer to Figure 7-4:

Great Plains offers as an accessory, the slow moving vehicle sign with mounting blade (#1) for tractors not equipped with a removable sign or when the tractor's sign does not fit Great Plains mounting socket (#4).

If you have need for mounting this sign on other equipment, mounting hardware (#2, #3, & #4) can be purchased separately from your nearest Great Plains dealer.



Item	Part No.	Description
1	316-362S	SMV SIGN WITH MOUNTING BLADE
2	802-092C	RHSNB 5/16-18X3/4 GR5
3	803-177C	NUT HEX FLG TP LK 5/16-18ZNYCR
4	890-401C	SMV MOUNTING SOCKET

Slow Moving Vehicle Sign
Figure 7-4



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Maintenance

Proper servicing and adjustments are key to the long life of any implement. Check all bolts for tightness after several hours of operation. Replace worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer. With careful inspection and routine maintenance, you can avoid costly downtime and repair.

! DANGER

To avoid serious injury or death:

- Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to hydraulics is off.

! WARNING

To avoid serious injury or death:

- Make sure controls are all in neutral position or park before starting the power machine.
- Always shut tractor down using "Tractor Shutdown Procedure" provided in this manual before servicing, adjusting, cleaning, or maintaining this implement.
- Allow only persons to perform maintenance on this implement who have been properly trained in its safe operation.
- Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting the implement back into service.
- Do not alter implement or replace parts on the implement with other brands. Other brands may not fit properly or meet OEM (Original Equipment Manufacturer) specifications. They can weaken the integrity and impair the safety, function, performance, and life of the implement. Replace parts only with genuine OEM parts.

Roller Chains and Sprockets

Your drive system uses standard #40 roller chain and is designed for low maintenance.

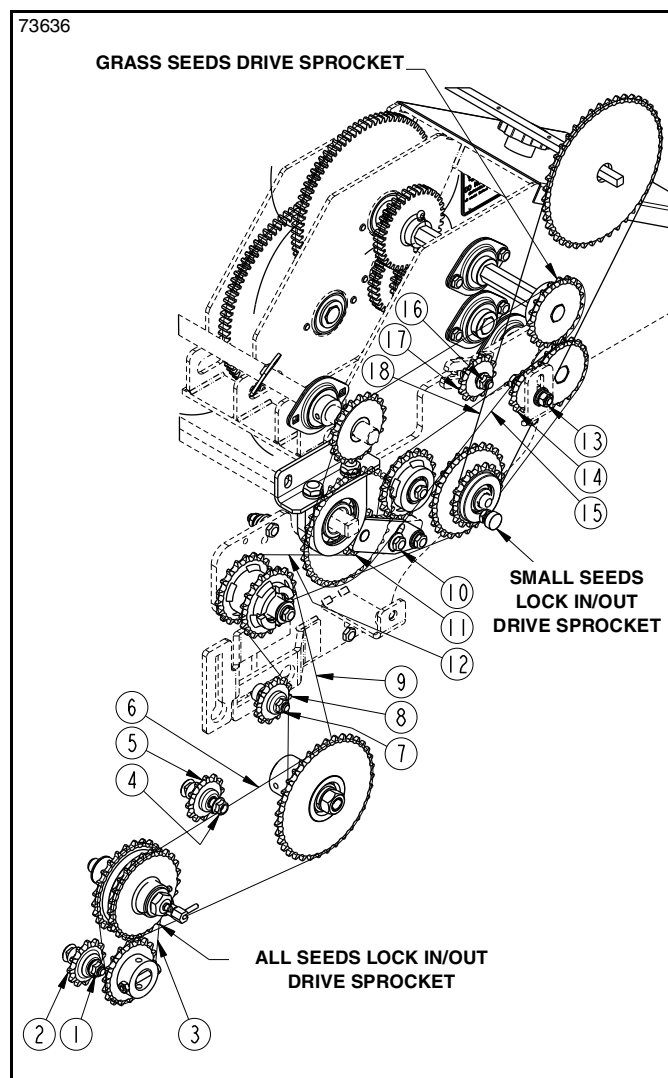
General Maintenance

1. Inspect all chains and sprockets for wear and replace as needed.
2. Clean and lubricate all roller chains with chain lubricant as needed.

All Seeds Drive Chains #3, #6, & #9

Refer to Figure 8-1:

1. Check tension of chain (#3). If needed loosen 3/8"-16 locknut (#1) and adjust idler sprocket (#2) to tighten/loosen chain (#3).
2. Tighten locknut (#1) to the correct torque.
3. Check chain (#3) to ensure it is not over-tightened.



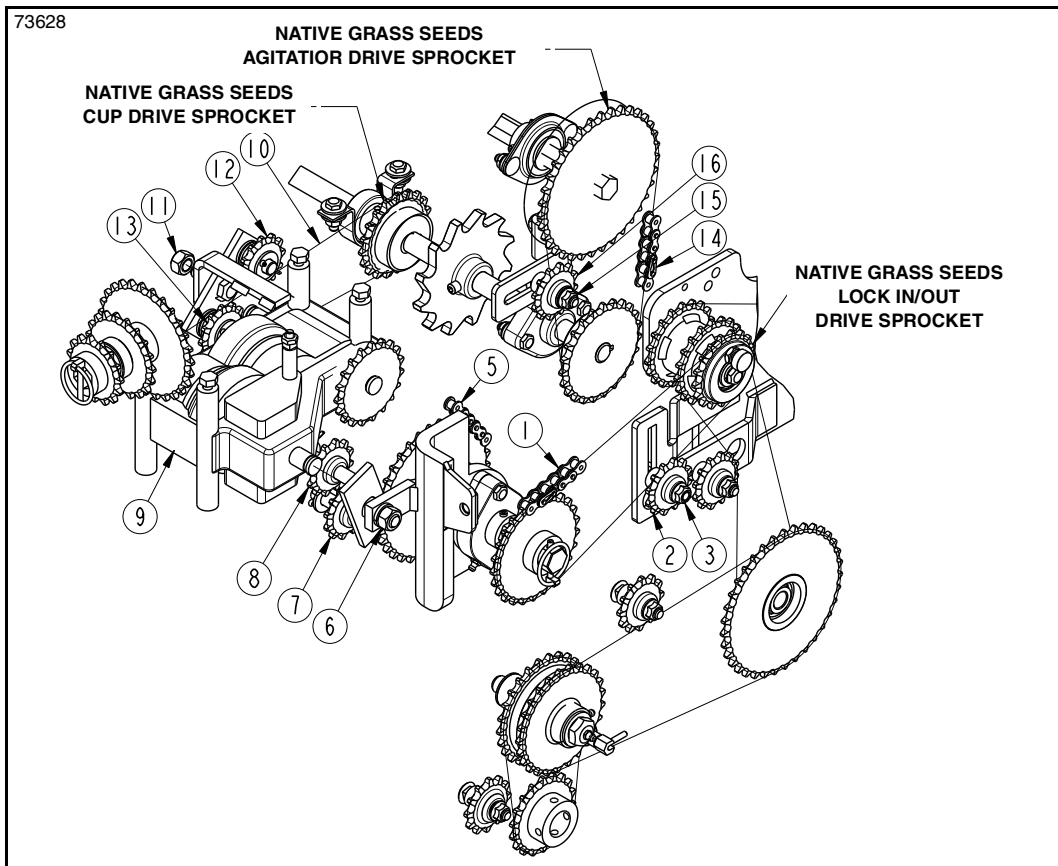
All Seeds, Grass Seeds, & Small Seed Chain
Figure 8-1

4. Check tension of chain (#6). If needed loosen 3/8"-16 locknut (#4) and adjust sprocket (#5) to tighten/loosen chain (#6).
5. Tighten locknut (#4) to the correct torque.
6. Check chain (#6) to ensure it is not over-tightened.
7. Check tension of chain (#9). If needed loosen 3/8"-16 locknut (#7) and adjust sprocket (#8) to tighten/loosen chain (#9).
8. Tighten locknut (#7) to the correct torque.
9. Check chain (#9) to ensure it is not over-tightened.

Grass Seeds Drive Chain #12

Refer to Figure 8-1:

1. Check tension of chain (#12). If needed loosen 3/8"-16 GR5 bolt (#10) and adjust sprocket (#11) to tighten/loosen chain (#12).
2. Tighten bolt (#10) to the correct torque.
3. Check chain (#12) to ensure it is not over-tightened.



Native Grass Seed Drive
Figure 8-2

Transmission Drive Chain #15

Refer to Figure 8-1 on page 58:

1. Check tension of chain (#15). If needed, loosen 3/8"-16 locknut (#13) and adjust sprocket (#14) to tighten/loosen chain (#15).
2. Tighten locknut (#13) to the correct torque.
3. Check chain (#15) to ensure it is not over-tightened.

Small Seeds Drive Chain #18

Refer to Figure 8-1 on page 58:

1. Check tension of chain (#18). If needed, loosen 3/8"-16 locknut (#16) and adjust sprocket (#17) to tighten/loosen chain (#18).
2. Tighten locknut (#16) to the correct torque.
3. Check chain (#18) to ensure it is not over-tightened.

Native Seedbox

Refer to Figure 8-2:

Native Grass Seed Main Drive Chain #1

1. Check take-up of chain (#1). If needed, loosen 3/8"-16 flange nut (#3) and adjust sprocket (#2) in or out to adjust chain take-up.
2. Tighten nut (#3) to the correct torque.
3. Check chain (#1) to ensure it is not over-tightened.

Native Grass Seed Gearbox Drive Chain #5

1. Check take-up of chain (#5). If needed, loosen 1/2"-13 nut (#6) and adjust sprockets (#7 & #8) to adjust chain take-up.
2. Tighten nut (#6) to the correct torque.
3. Check chain (#5) to ensure it is not over-tightened.

Native Grass Seed Cup Drive Chain #10

1. Check take-up of chain (#10). If needed, loosen 1/2"-13 nut (#11) and adjust sprockets (#12 & #13) to adjust chain take-up.
2. Tighten nut (#11) to the correct torque.
3. Recheck chain (#10) to ensure it is not over-tightened.

Native Grass Seed Agitator Drive Chain #14

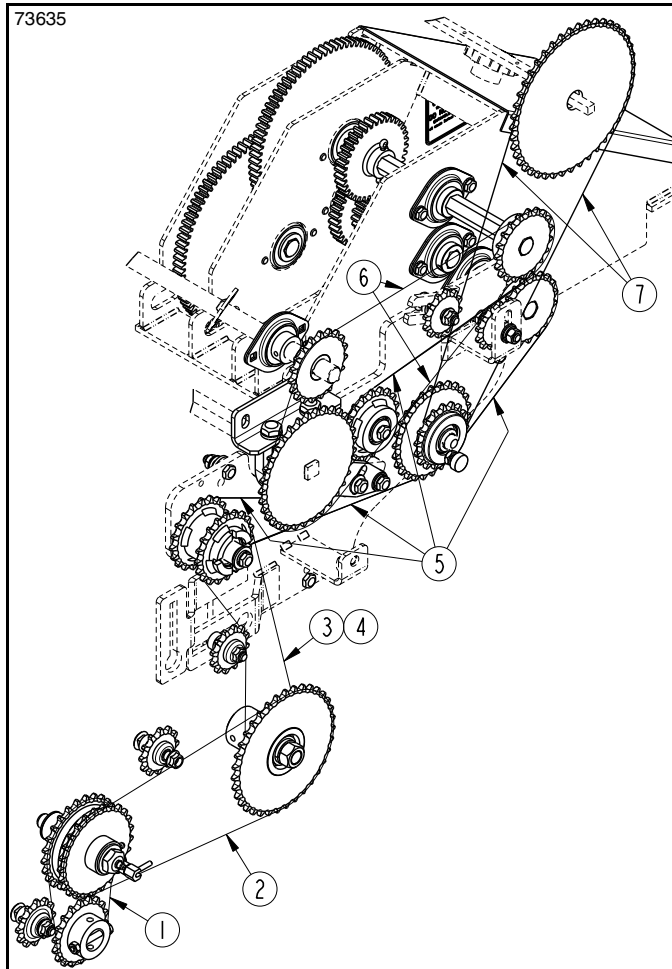
1. Check take-up of chain (#14). If needed, loosen 3/8"-16 flange nut (#15) and adjust sprocket (#16) in or out to adjust chain take-up.
2. Tighten nut (#15) to the correct torque.
3. Check chain (#14) to ensure it is not over-tightened.

Roller Chain Part Numbers

Roller chains will change pitch length as they wear. This will cause the chains to climb on the sprockets and increase sprocket wear. Have your Great Plains dealer inspect chains for wear frequently. Always replace worn roller chains when needed.

All, Grass, and Small Seeds Drive Chains

Refer to Figure 8-3:



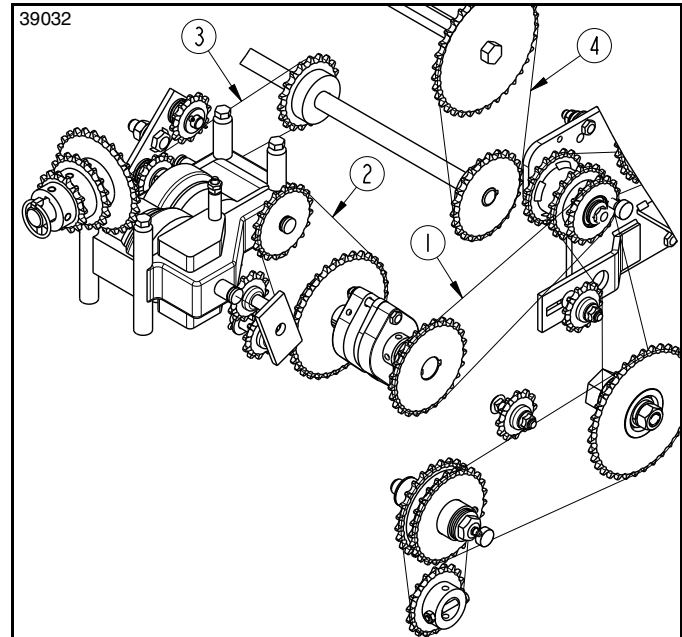
ALL SEEDS DRIVE CHAINS (#1, #2, #3,)
TRANSMISSION DRIVE CHAIN (#5)
GRASS SEEDS DRIVE CHAIN (#6)
SMALL SEEDS DRIVE CHAIN (#7)

Item	Part No.	Description
1	809-307C	CHAIN RL #40 X 40 PITCH W/CON
2	809-060C	CHAIN RL #40 X 66 PITCH W/CON
3	809-060C	CHAIN RL #40 X 66 PITCH W/CON
4	809-091C	CHAIN RL #40 X 8 PITCH W/CON
5	809-268C	CHAIN RL #40 X 103 PITCH W/CON
6	809-269C	CHAIN RL #40 X 84 PITCH W/CON
7	809-267C	CHAIN RL #40 X 93 PITCH W/CON

All Seeds Roller Chains
Figure 8-3

Native Seeds Drive Chains

Refer to Figure 8-4:



NATIVE SEEDS DRIVE CHAINS (#1, #2, #3,)

Item	Part No.	Description
1	809-115C	CHAIN RL #40 X 60 PITCH W/CON
2	809-309C	CHAIN RL #40 X 54 PITCH W/CON
3	809-133C	CHAIN RL #40 X 62 PITCH W/CON
4	809-037C	CHAIN RL #40 X 58 PITCH W/CON

Native Grass Seeds Roller Chains
Figure 8-4

Front Spike Rollers

The front spike rollers should turn freely. If they do not, investigate and remove the cause.

Trash build-up between spikes can prevent spikes from penetrating the soil properly. Clean trash from spike rollers as needed.

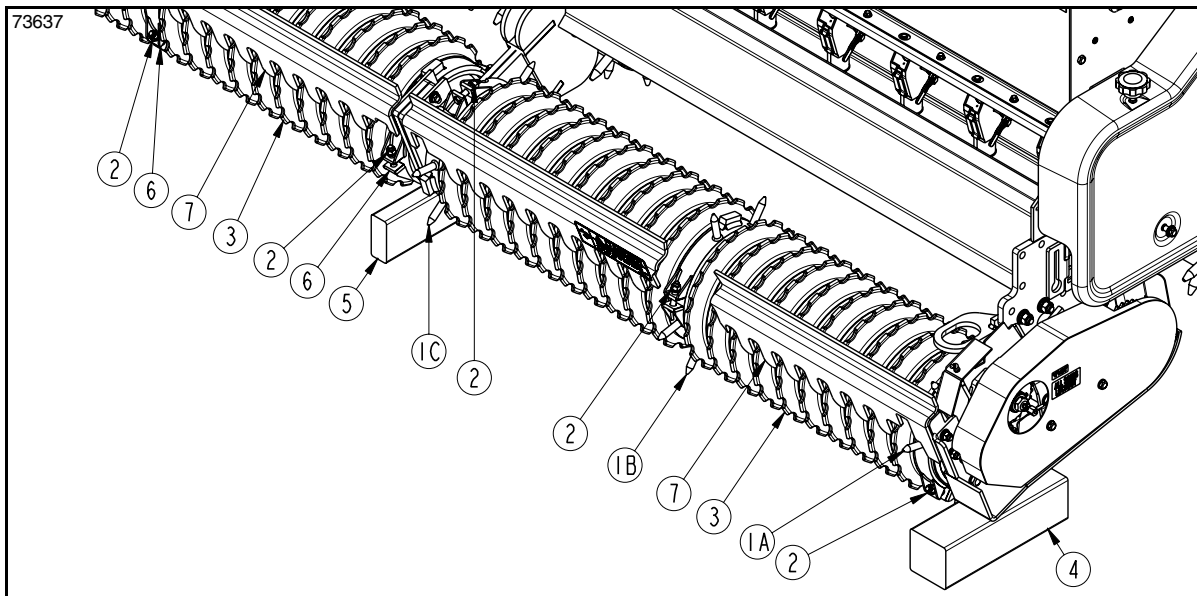
Rear Packer Roller

Refer to Figure 8-5 on page 61:

The rear packer roller assemblies should be free to float up and down while follow the field terrain. The rear roller wheels (#3) should turn freely. If the assembly does not float or the roller wheels do not turn, investigate and remove the cause.

The edges of the rear roller wheels (#3) will wear as they slip against one another. Paint on the edges will wear off in the first 20 hours of operation. This edge wearing causes gaps that should be removed to prevent accelerated rear wheel wear.

IMPORTANT: Remove gaps between the rear rollers wheels after the first 10-20 hours of operation and as needed thereafter to extend roller wheel life.



Roller Wheel Adjustment (NTS2609 Shown)

Figure 8-5

IMPORTANT: Use only support blocks that are made of solid hard wood or steel. Do not use concrete blocks. Support blocks must support the spikes off the ground and must not interfere with rear roller wheel and spike rotation.

1. Park tractor and seeder on flat level ground, slow engine to an idle, and place gear selector in park or set park brake.
2. With tractor control lever, raise seeder high enough to place support blocks (#4) under both ends of the rear packer roller. See **"Important"** note above.
3. Shut tractor engine off and remove switch key before dismounting tractor.
4. Place a solid support block (#4) under the right-hand skid shoe as shown and a second support block (#4) under the far left-hand bearing support (not shown).
5. **Reference NTS2609 and NTS2611 seeders only:** Place a 1 1/2" (4 cm) wide solid support block (#5) under the middle bearing support.
6. Restart tractor and lower seeder until the rear roller assembly is resting on the support blocks.
7. Shut tractor engine off and remove its switch key.
8. Check spiked roller clamps (#2) and rear roller wheels (#3) to ensure they all rotate freely. If they do not rotate freely, repeat steps 2-8.
9. Loosen 3/8"-16 hex nuts (#2) on all plain rear roller clamps (#6) and all spike roller clamps (#1A, #1B, #1C, & #1D). Note, clamp (#1D) is not included with NTS2609 shown in Figure 8-5.

IMPORTANT: Adjust spiked roller clamp bolts 60° clockwise from the previously tightened clamp to ensure continuous spike engaged with the ground.

10. Adjust rear rollers (#3) as follows. Do not exceed notched clearances in the rear scraper bars (#7).

NTS2607

- a. Slide all rear roller wheels (#3) and spiked roller clamps (#6) towards the center of the rear packer roller assembly until all slack is removed.
- b. Continue with step 11 below.

NTS2609 & NTS2611

- a. On the left-hand rear roller assembly, slide all roller wheels (#3) and plain roller clamps (#6) toward the center until all slack is removed.
- b. Tighten all nuts (#2) on the plain roller clamps (#6) to the correct torque.
- c. On the right-hand rear roller assembly, slide all roller wheels (#3) and spiked roller clamps (#1A, #1B, #1C, & #1D) toward the center until all slack is removed.
- d. Continue with step 11 below.
11. Tighten nuts (#2) on roller clamp (#1A) to the correct torque for a 3/8"-16 GR5 bolt.
12. Rotate clamp (#1B) 60° clockwise from clamp (#1A) and tighten its nuts (#2) to the correct torque.
13. Rotate clamp (#1C) 60° clockwise from clamp (#1B) and tighten its nuts (#2) to the correct torque.
14. If included, rotate clamp (#1D) 60° clockwise from clamp (#1C) and tighten its nuts (#2) to the correct torque.
15. Restart tractor and raise seeder up. Pull ahead several feet and lower seeder to the ground.
16. Shut tractor engine off and remove switch key.
17. Store support blocks for future roller wheel adjustments.

Hydraulic System

WARNING

To avoid serious injury or death:

Hydraulic fluid under high pressure will penetrate the skin or eyes causing a serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Use a piece of cardboard or wood rather than hands when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.

One of the most important things you can do to prevent hydraulic system problems is to ensure your tractor's hydraulic reservoir remains free of dirt and other contaminations.

Use a clean cloth to wipe hose ends clean before attaching them to your tractor. Replace tractor hydraulic filter element at the prescribed intervals. These simple maintenances will go a long way to prevent occurrence of control valve and hydraulic cylinder problems.

Check for signs of damaged or worn hydraulic hoses, fittings and cylinders before each use of the cutter. Replace damaged components as needed. Order only genuine Great Plains parts from your local Great Plains dealer.

Long-Term Storage

Clean, inspect, service, and make necessary repairs to the implement when storing it for long periods and at the end of the season. This will help to ensure the unit is ready for field use the next time you hook-up to it.

DANGER

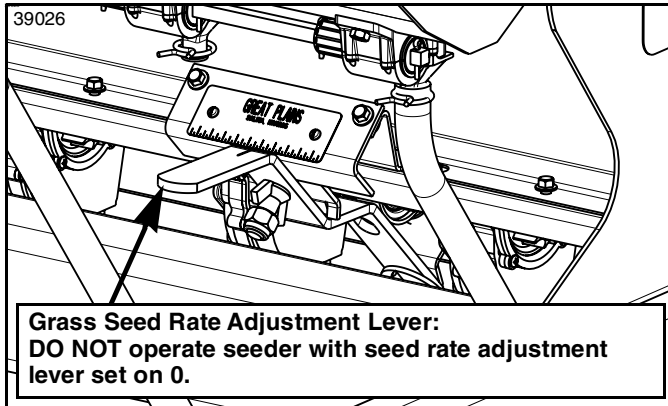
To avoid serious injury or death:

- *Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to hydraulics is off.*

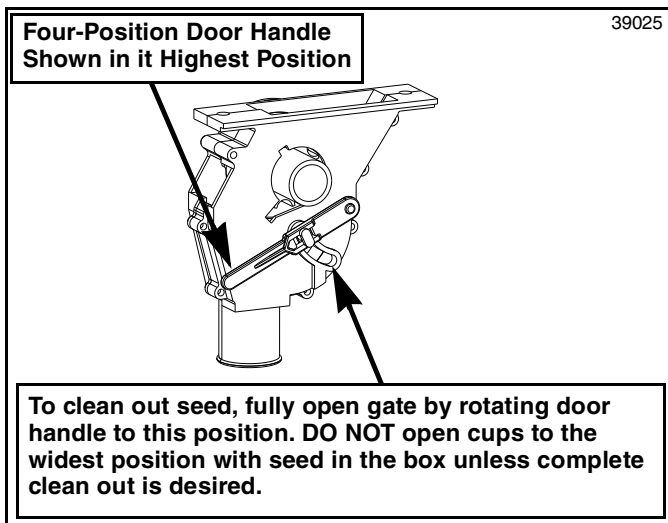
WARNING

To avoid serious injury or death:

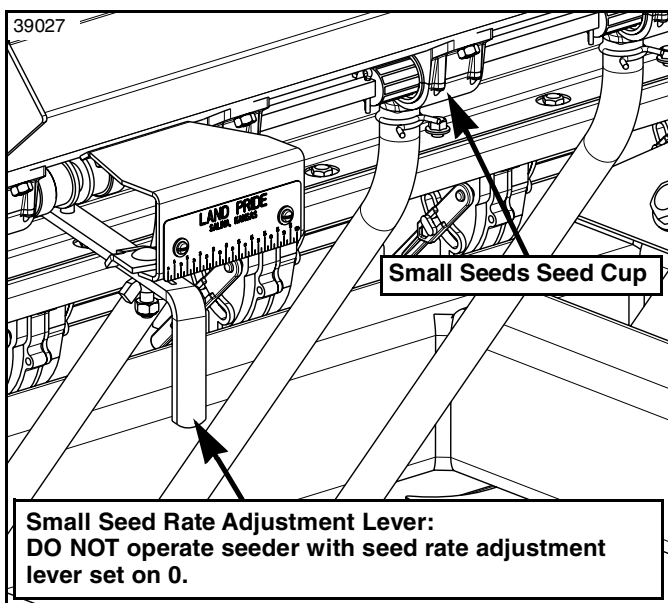
- *Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.*
1. Be sure all seedboxes are completely cleaned before storing. It is best to do this while still hooked to the tractor.
 - a. Scoop out any large quantities of seed left in the box. Finish by using a small broom or vacuum sweeper.
 - b. **Refer to Figure 8-6 on page 63:** Move grass seed rate adjustment lever all the way to the left (100) to fully open fluted seed cups.
 - c. **Refer to Figure 8-7 on page 63:** On all grass seed cups, lower four position door handles to the lowest position.
 - d. **Refer to Figure 8-8 on page 63:** Move small seeds rate adjustment lever all the way to the right (100) to fully open fluted seed cups.
 - e. Run seeder over the ground to power the fluted seed cups and to remove out-of-reach seeds.
 - f. Check drop tubes to make sure they are not clogged with seeds. Clean any drop tube that may have seeds plugged in them.
 - g. Make a final sweep or vacuum of the fluted seed cups to finish the cleaning job.
 - h. Seasonally, rinse each seed cup thoroughly with water spray from a garden hose. Allow seed cups to air dry completely before putting seeder back into service.
 2. Clean off all dirt and grease. Make sure rollers are clean of all dirt, trash, and debris.
 3. Inspect seeder for loose, damaged, or worn parts and adjust or replace if needed with genuine Great Plains parts. Do not alter Great Plains equipment. Altering equipment can hinder performance and/or cause damage to the equipment.
 4. Oil the square bore of the seed cup drive sprocket hub to prevent seizing as noted under Lubrication Points on page 64.



Grass Seed Rate Adjustment
Figure 8-6



Grass Seed Cup
Figure 8-7



Small Seed Rate Adjustment Lever and Seed Cups
Figure 8-8

5. Lubricate all grease fittings and roller chains as noted under Lubrication Points starting on page 64.
6. Repaint parts where paint is worn or scratched to prevent rust. Ask your Great Plains dealer for aerosol touch-up paint. Paint is also available in touch-up bottles with brush, quarts, and gallon sizes by adding TU, QT, or GL to the end of the aerosol part number.

Great Plains Aerosol Touch-up Paint

Part No. Part Description

821-070C	PAINT LP BLACK SPRAY CAN
821-058C	PAINT GREEN SPRAY CAN

7. Replace all damaged or missing decals.
8. Store seeder on a level, hard surface in a clean, dry place. Inside storage will reduce maintenance and make for a longer seeder life.
9. Follow all unhooking instructions. Refer to “Unhook Pull-Type Seeder” on page 25.

Ordering Replacement Parts

Great Plains offers equipment in factory standard Green with black highlights.

Special attention must be given to the green part number. The suffix number 81 must be included at the end of the part number. For example, if ordering a replacement part that is green, the part number should read 555-555C81. Galvanized and Black parts do not get a suffix number.

Lubrication Points

Lubrication Legend



Multi-purpose
spray lube



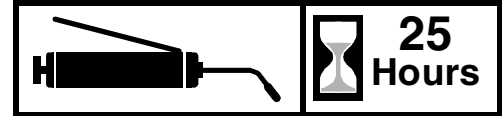
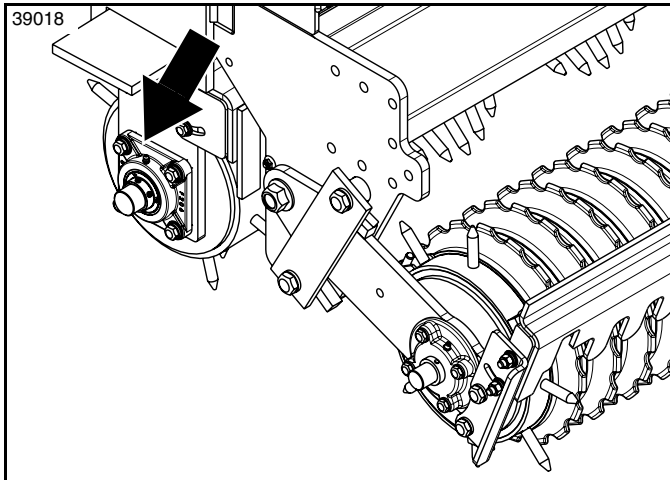
Multi-purpose
grease lube



Multi-purpose
oil lube



Intervals in hours at which
lubrication is required

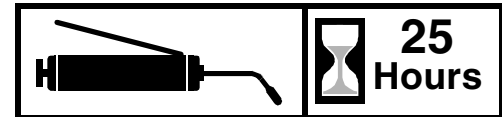
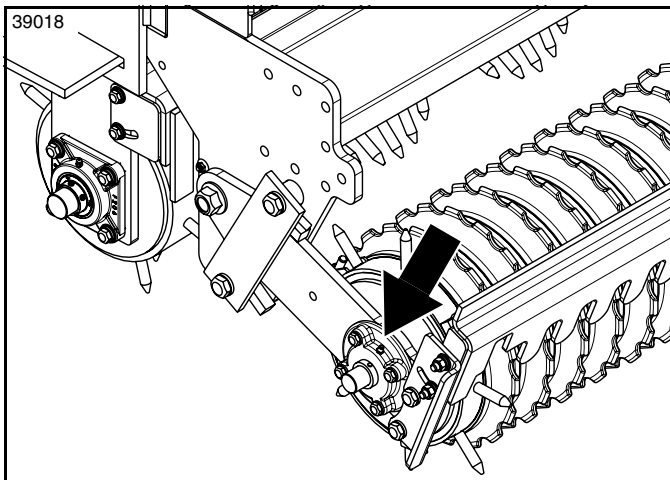


Front Roller Bearings

4 - Zerks (1 At each front roller end)

Type of Lubrication: Multi-purpose Grease

Quantity: 4 - 5 pumps

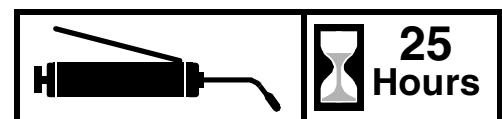
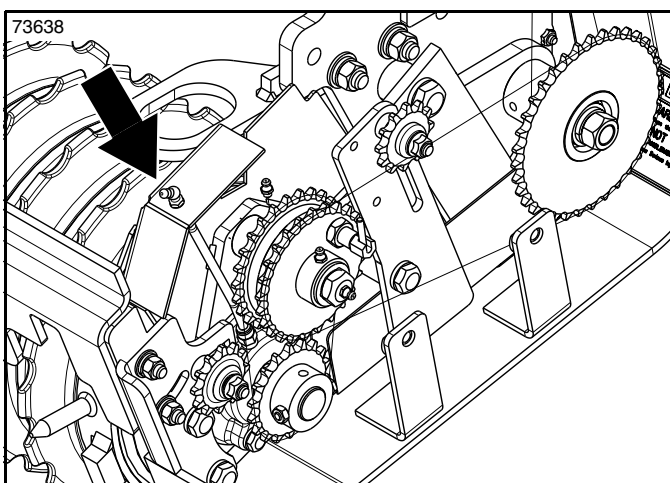


Rear Roller Left End Bearing

1 - Zerk

Type of Lubrication: Multi-purpose Grease

Quantity: 4 - 5 pumps

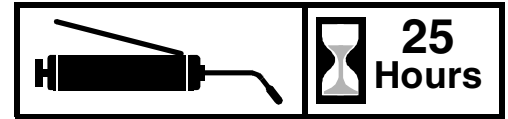
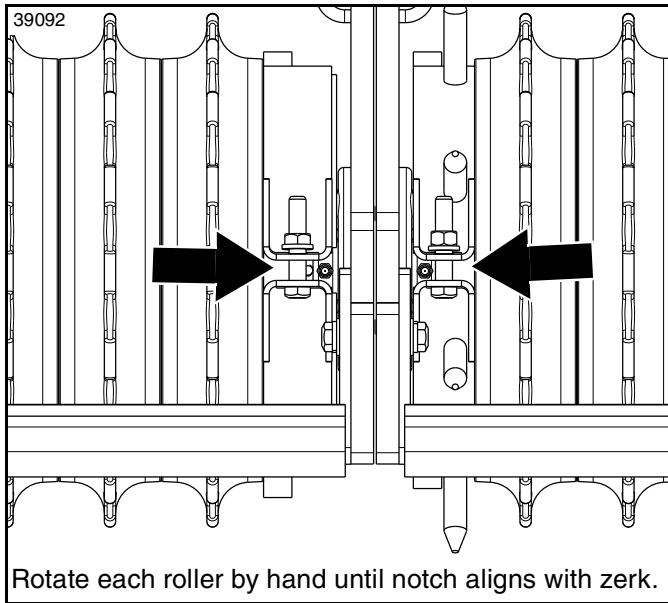


Rear Roller Right End Bearing

1 - Zerk

Type of Lubrication: Multi-purpose Grease

Quantity: 4 - 5 pumps



Rear Roller Center Bearings

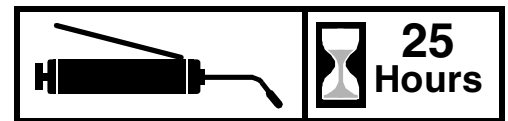
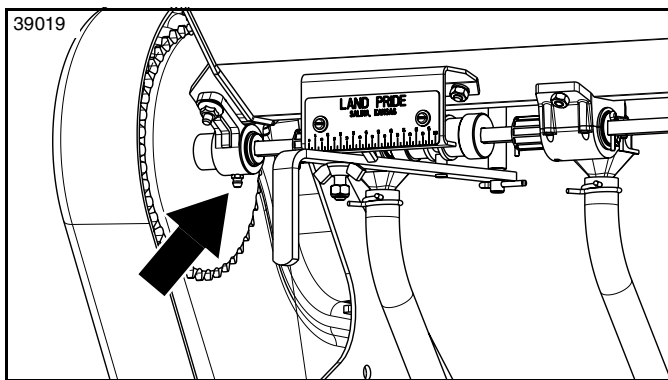
NTS2609 & NTS2611 only:

2 - Zerks (In the middle on rear rollers)

Rotate each roller by hand until notch aligns with zerk.

Type of Lubrication: Multi-purpose Grease

Quantity: 4 - 5 pumps

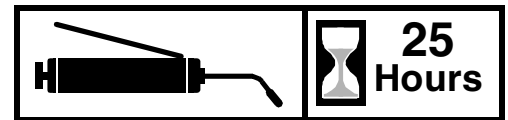
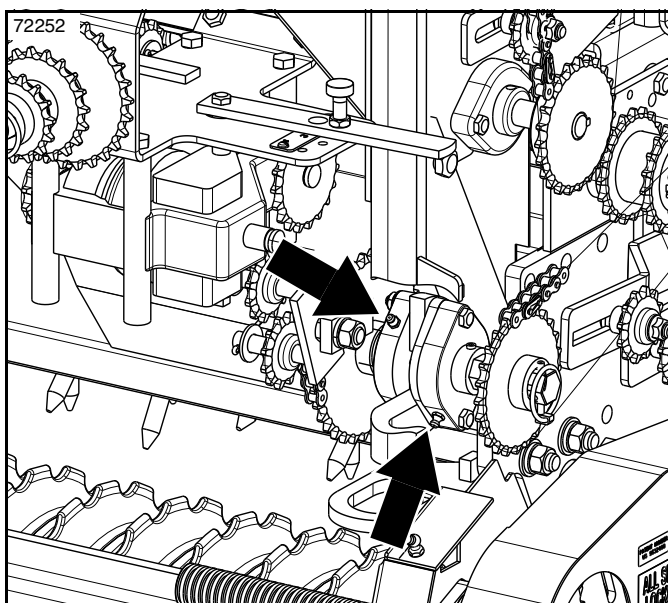


Small Seed Drive Sprocket Bearing

1 - Zerk

Type of Lubrication: Multi-purpose Grease

Quantity: 1 - 2 pumps

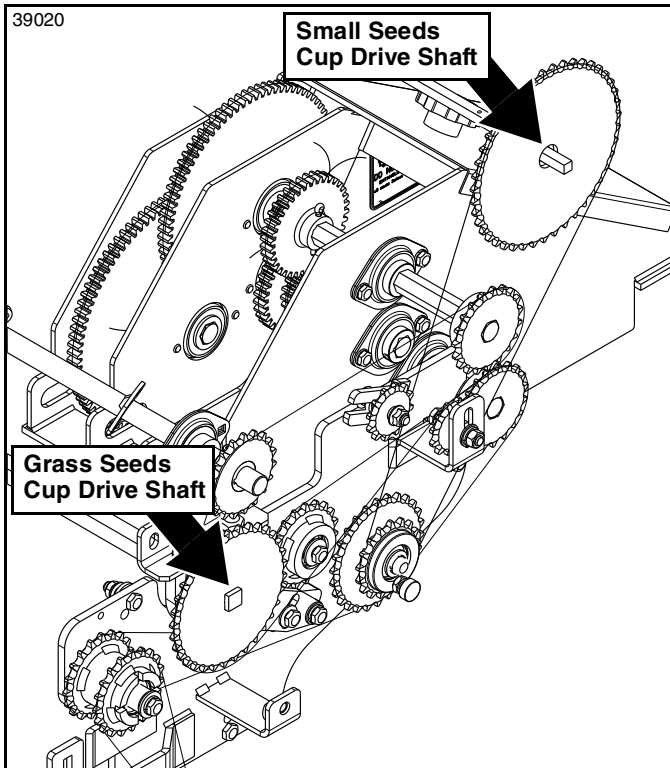


Native Seed Drive Sprocket Bearings

2 - Zerks

Type of Lubrication: Multi-purpose Grease

Quantity: 1 - 2 pumps every 25 hours the Native Seedbox is engaged.

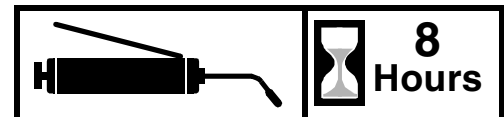
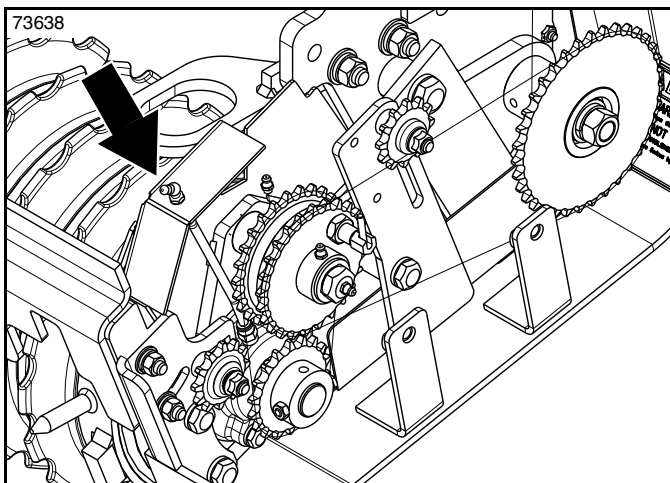


Seed Cup Drive Shafts

Reference: Small seed and grass seed cup drive shaft

Type of Lubrication: Oil

Quantity: Squirt a generous amount of oil on to the square drive shafts. Move seed rate adjustment levers back and forth to get oil back into the square bores.

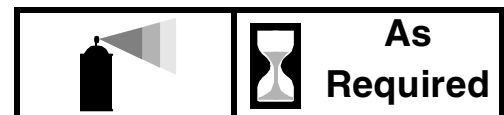
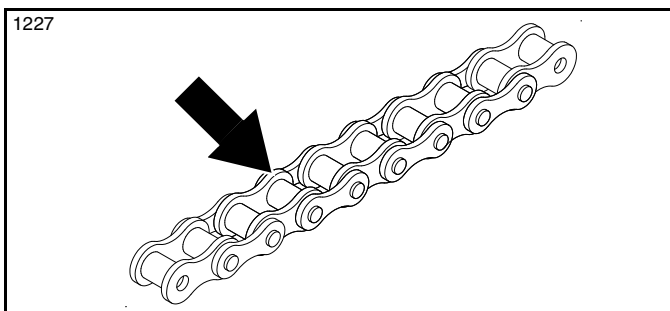


All Seeds Drive Sprocket

3 - Zerks

Type of Lubrication: Multi-purpose Grease

Quantity: 4 - 5 pumps



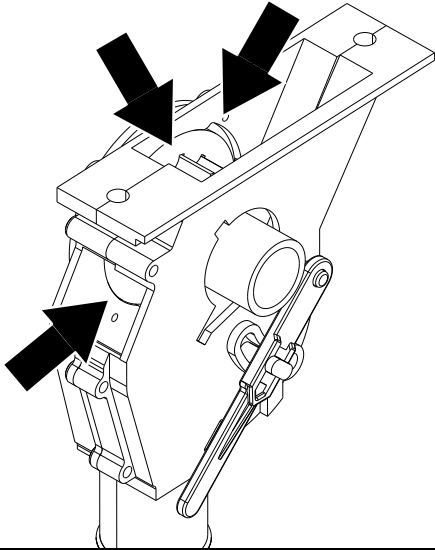
Roller Chains

See Roller Chains and Sprockets on page 58

Type of Lubrication: Chain Lubricant

Quantity: Coat Generously

39021



Graphite Powder



As Needed

Seed Cup Sprockets and Nylon Washers

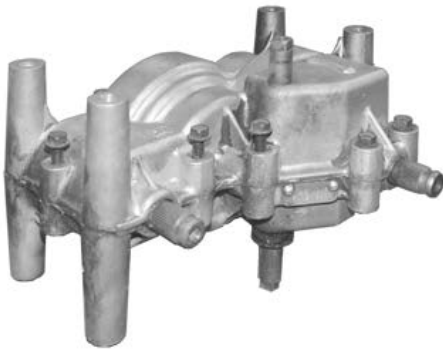
IMPORTANT: DO NOT use petroleum lubricant on plastic seed cups. Petroleum will absorb into the plastic and swell plastic components.

NOTE: Cleaning seed cups seasonally is often all that is required to keep seed cups working properly. See step 1 for “**Long-Term Storage**” on page 62

Type of Lubrication: Graphite Powder
Great Plains # 821-042C (1 lb. Container)

Quantity = Mix as needed, 1 teaspoon of powdered graphite for every bushel of seed in the seedbox.

14757



As Required

Gearbox for the Native Seedbox

The gearbox is lubricated and sealed at the factory. Under normal conditions, it does not require maintenance or lubrication.

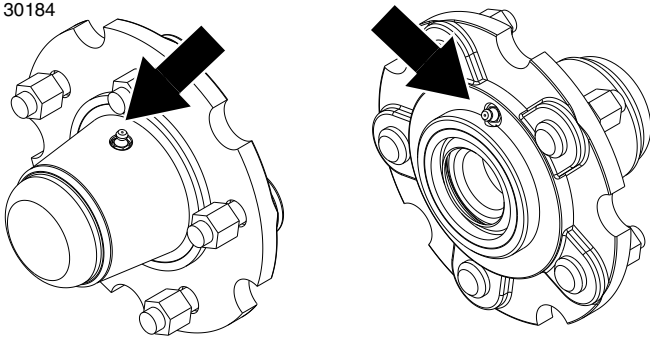
If gearbox has been opened, repack gears and bearings with a minimum of 7 oz. of gear lube, Part No. 788067.

Keep moisture and dirt out of gearbox. Inspect rubber seals on gearbox drive and shifter shafts. If needed, replace rubber seals.

Spread a small skin coat of anaerobic sealant (Locktite 525 or equivalent) to mating surfaces of the gearbox case before bolting them back together.

IMPORTANT: Use sparingly. Excess sealant may squeeze off the intended surface and into the bearings and gears causing them to lock up.

30184



50 Hours Repack Annually

Axle Hub Bearing

Type of Lubrication: Multi-Purpose Grease

Grease wheel bearings every 50 hours.

1 - zerk per wheel (zerk can be on either side)

Quantity = 2 pumps

Repack wheel bearings annually

Table of Contents

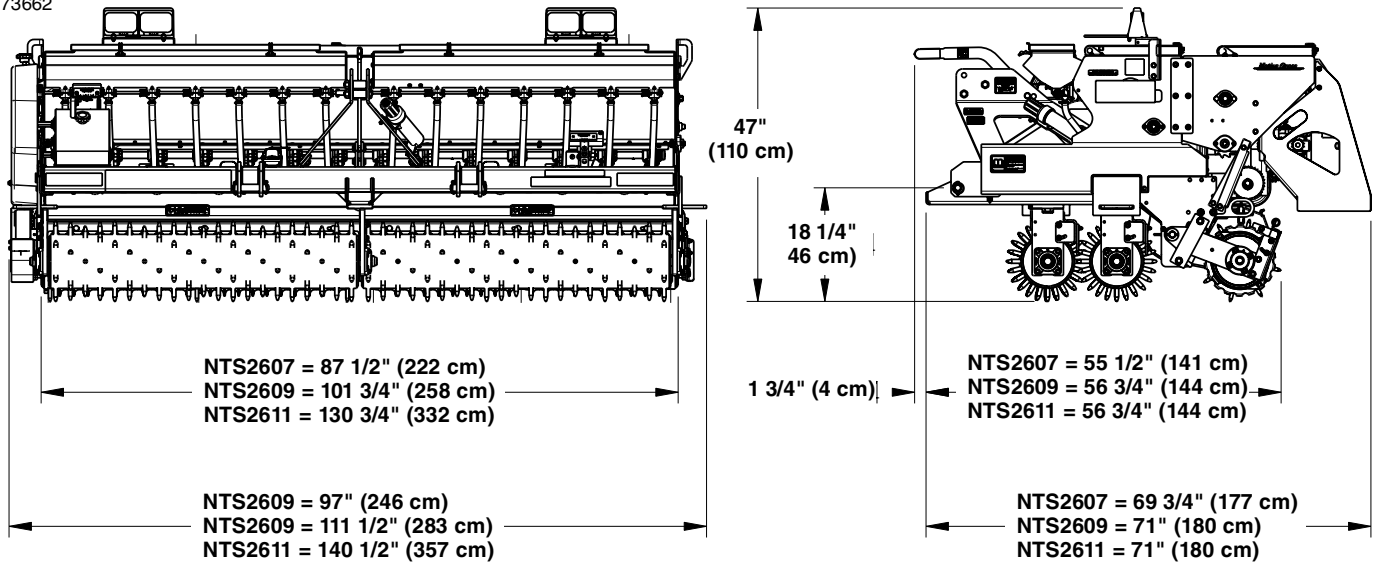
Section 9: Specifications & Capacities



NTS2607, NTS2609, & NTS2611

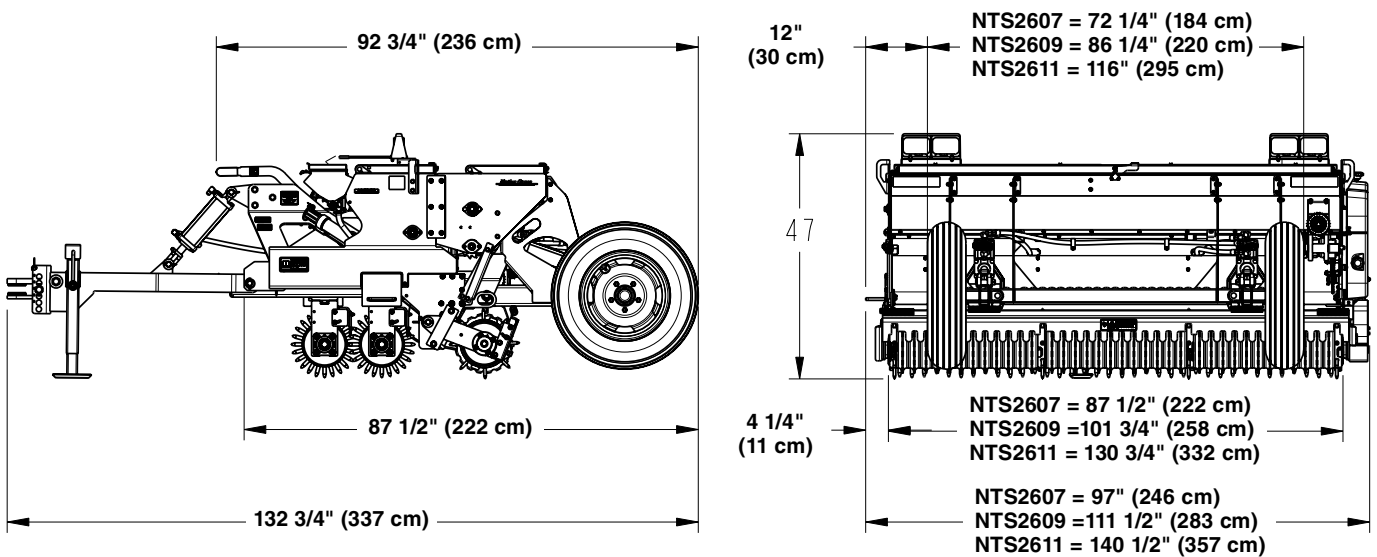
Specifications & Capacities						
Model Nos.	NTS2607		NTS2609		NTS2611	
Overall width	97" (246 cm)		111 1/2" (283 cm)		140 1/2" (357 cm)	
Seeding width (broadcast)	86" (218.44 cm)		100" (254 cm)		129" (327.7 cm)	
Weight w/o and with native seedbox 3-Point Pull type	W/o native 1878# (852 kg) 2,425# (1100 kg)	With native 2209# (1002 kg) 2800# (1270 kg)	W/o native 2,090# (948 kg) 2,728# (1237 kg)	With native 2513# (1140 kg) 3123# (1417 kg)	W/o native 2,650# (1202 kg) 3,320# (1506 kg)	With native 3,146# (1427 kg) 3,800# (1724 kg)
Main frame construction	3" x 4" Tube (7.6 x 10 cm)					
3-Point hitch option	Category I & II		Category II		Category II	
	Formed A-frame plates; Fits Land Pride Quick Hitch					
Pull package option	Includes tongue, park jack, hydraulic lift cylinders, hydraulic hoses, and fittings.					
Hydraulic lift cylinders	Master/slave: Hitch lift cylinder 3.5" x 6" (8.89 x 15.2 cm), Axle lift cylinders 3.25" x 6" (8.25 x 15.2 cm), and 3" x 6" (7.6 x 15.2 cm)					
Maximum hydraulic flow	27 gpm (102 Lpm))					
Maximum hydraulic pressure	3000 psi (20.7 mPa)					
Tires	2 ea - 6.70 x 15" SL				4 ea - 6.70 x 15" SL	
Tire rims	Five bolt holes on 5 1/2" (14 cm) bolt circle					
Tongue weight with all 3 seedboxes Seedboxes are without seed	1000 lbs (454 kg)		1055 lbs (478.5 kg)		1282 lbs (581.5 kg)	
Grass seedbox	Water tight construction with paddle type agitating above seed cups.					
Small seeds seedbox	Water tight construction.					
Optional: Native seedbox	Water tight construction with agitating paddles above seed cups, and rear walk board.					
Seedbox capacity:	Grass seed	7.5 bushels (264.3 L)	8.8 bushels (310.1 L)		11.3 bushels (398.2 L)	
	Small seed	1.7 bushels (59.9 L)	2.0 bushels (70.5 L)		2.6 bushels (91.6 L)	
	Native seed	8.5 bushels (299.5 L)	9.8 bushels (345.3)		12.7 bushels (447.5 L)	
Lift sling brackets:	Two on grass seedbox for lifting grass seedbox or complete NTS Seeder assembly.					
Seedbox lids	Heavy duty lid with seed splash guard.					
Individual seedbox lockouts	Spring loaded lock in/out pins for the small seeds seedbox and native seedbox drives.					
All seeds drive sprocket with patented lockout clutch	Spring loaded dogs in lockout clutch drives all seedboxes while traveling forward only. Spring loaded lock in/out pin engages and disengages power to all seedboxes.					
Number of seed cups	Grass seed	12	14		18	
	Small seed	12	14		18	
Seed cups:	Grass and small seed	Fluted for accurate metering				
	Native seed	Meter sprocket				
Seed cup settings	Grass seed	0 to 100 Adjustment lever, 4 position seed cup door, and high/low sprocket speed.				
	Small seed	0 to 100 Adjustment lever.				
	Native seed	4 Sprocket speeds and 4 gearbox speed changes.				
Seed cup drive	Rear roller ground drive metering with #40 roller chain,					
Grass seeds transmission speeds	High range, neutral, low range, and low reduction range					
Seed drop protection	Wind guarded					
Front rollers	Two 8 5/8" (21.91 cm) diameter spiked rollers capable of angling from 0 to 18 degrees each and mounted on 1 1/4" (3.18 cm) greasable ball bearings.					
Rear packer roller	Straight 11 3/8" diameter notched cast gray iron packer rings.					
Number of rear rollers	1		2		2	
Rear roller mounting	Mounted on floating 1" greasable ball bearings.					
Roller spikes	Constructed of replaceable 5/8" x 2" (1.6 x 5 cm) heat treated steel.					
Mud scrapers	Bolt on mud scrapers on front and rear rollers.					
Signal lights	LED (light-emitting diode)					
7 Pin connector	SAE J560 pin configuration					
Acrometer option	Digital, battery operated.					

73662



3-Point Hook-up With Native Seedbox

73664









Pull Type Hook-up with Native Seedbox

NTS2607, NTS2609, & NTS2611

Features	Benefits
Cat. I & II 3-point hitch option, QH adaptable	Fits a wide variety of tractors. Also fits Land Pride Quick Hitch for easy one person hook-up to tractor. Cat. I works with NTS2607 without Native Seedbox only.
Pull-hitch option	Allows for easier hook-up to tractor and is adaptable to smaller tractors. Rear tires help support seeder weight.
7 ft., 9 ft., & 11 ft. widths	Provides high productivity over wide areas on flat or gently sloping terrain.
Machine weight	Heavier unit weight provides for better spike penetration and seed-to-soil contact.
Lift hooks	Lift hooks on end of grass seedbox can be used with spreader bar for easy loading and unloading of the machine.
Large seedbox capacity	Keeps filling to a minimum and increases productivity.
Water-tight seedbox	Keeps moisture and rodents out of the seedbox.
Easy seedbox clean-out	Simply moving the flute lever to the proper position allows for easy clean-out and removal of all of the seeds in the seedbox.
Heavy duty seedbox lids with stay open support	Precision fit to keep water and rodents out and HD construction with integral prop support keeps lid from slamming shut in windy conditions.
Seed splash guards	Prevents seed from being spilled out between the lid and seedbox during hopper filling.
Wind guarded seed drops	Protects seed from blowing away and ensures uniform seed distribution across the full width of the seeder.
Grass seed cups	Proven fluted seed cups for highly accurate seed delivery.
Grass seed agitator	Prevents bridging and keeps seed flowing evenly to grass seed cups.
Native seed agitator	Aggressive paddle style agitator to keep fluffy native grass from bridging.
Powdered metal in fluted sprockets	Helps dissipate any heat buildup from fluted area and plastic seed cup housing.
Seed rate charts on underside of seedbox lids	Conveniently positioned as large durable decal under the seedbox lids for handy calibration reference.
Easy seed rate adjustment on grass and native seedbox	Proper seed rate adjustment lever positioning is conveniently indicated on the seed rates chart for ease of setting and adjustment with a high level of confidence.
#40 Roller chain drive	Provides for smooth and quiet running with a high degree of reliability. Adjustable idlers and slotted take-ups help keep the drive chains allow for chain take-up.
Three speed transmission for the grass seedbox	A simple and easy repositioning of the drive gear allows for three drive speeds (high, low, and low reduction) and one neutral position for locking out the grass seeds drive.
Grass seeds low reduction drive range	Uses less seed. Good for seeding food plots to draw in wild life animals.
Four-Speed transmission for Native seedbox	Easy and fast speed change, saves time from removing chains.
Spring loaded lock in/out pins on the small seeds and native seeds drive sprockets	Spring loaded lock in/out pins make it easy to lock out the small seedbox and/or native seedbox when not in use. Just pull out on lock in/out pin and turn it a quarter of a turn to disengage individual seedbox drive. Turn lock in/out pin another quarter of a turn to engage individual seedbox drive.
All seeds drive sprocket with Patented lockout clutch	Lockout clutch protects all seed cups from damage caused by turning backwards and while backing up with rear roller on the ground. Its spring loaded lock in/out pin makes it easy for the operator to engage and disengage power to all seedbox drive sprockets without engaging / disengaging individual seedbox drive sprockets.
Crab action spiked front rollers	Two 8" diameter front rollers can easily be angled from 0-18 degrees providing for more or less aggressive dethatching action or soil cultivation and seedbed preparation.
Mounted rear packer roller	Full length rear rollers come with cast steel and notched packer type rollers for maximum down pressure and seed to soil contact.
Ground driven metering	The rear roller serves as the primary seed meter drive providing a very high degree of accuracy, low maintenance costs, and long component life.
Mud scrapers	Reduces build-up of mud and debris on rollers when working in wet, sticky, or trashy soil.
LED Signal lights	LED lights are bright, long lasting, and resistant to vibration, unlike incandescent counterparts.
Acrometer option	Allows operator to see how many acres or hectares have been seeded.

Troubleshooting Chart

Problem	Cause
Uneven seed spacing or uneven stand.	Check for plugging in the seed cup.
	Reduce ground speed.
	Check for trash or mud buildup on rollers.
	Soil is too wet and is sticking to rollers.
All drive shafts are not turning.	The “All Seeds” patented lockout clutch with spring loaded lock in/out pin is not engaged. Engage the all seeds lock in/out pin to engage all drive shafts.
Grass seeds cup drive shaft is not turning.	Move grass seeds transmission gear from neutral to one of the three drive ranges. Refer to “ Grass Seeds Transmission ” on page 32.
Small seeds cup drive shaft not turning.	Small seeds lock in/out pin is not engaged. Engage pin to start shaft turning.
Native seeds cup drive shaft not turning.	Native Seeds lock in/out pin is not engaged. Engage pin to start shaft turning.
Actual seeding rate is different than desired.	Seed treatment will affect seeding rate if the chemicals buildup in seed cup. Unless cleaned regularly, this buildup can cause breakage of the seed cup shaft.
Feed cup sprocket locked up or twisted feed cup drive shaft.	Check for foreign matter lodged in seed cup sprocket.
Rollers not turning freely.	Check for trash or mud buildup on the rollers.

Torque Values Chart for Common Bolt Sizes													
Bolt Size (inches)	Bolt Head Identification						Bolt Size (Metric)	Bolt Head Identification					
													
	Grade 2	Grade 5	Grade 8				Class 5.8	Class 8.8	Class 10.9				
in-tpi ¹	N · m ²	ft-lb ³	N · m	ft-lb	N · m	ft-lb	mm x pitch ⁴	N · m	ft-lb	N · m	ft-lb	N · m	ft-lb
1/4" - 20	7.4	5.6	11	8	16	12	M 5 X 0.8	4	3	6	5	9	7
1/4" - 28	8.5	6	13	10	18	14	M 6 X 1	7	5	11	8	15	11
5/16" - 18	15	11	24	17	33	25	M 8 X 1.25	17	12	26	19	36	27
5/16" - 24	17	13	26	19	37	27	M 8 X 1	18	13	28	21	39	29
3/8" - 16	27	20	42	31	59	44	M10 X 1.5	33	24	52	39	72	53
3/8" - 24	31	22	47	35	67	49	M10 X 0.75	39	29	61	45	85	62
7/16" - 14	43	32	67	49	95	70	M12 X 1.75	58	42	91	67	125	93
7/16" - 20	49	36	75	55	105	78	M12 X 1.5	60	44	95	70	130	97
1/2" - 13	66	49	105	76	145	105	M12 X 1	90	66	105	77	145	105
1/2" - 20	75	55	115	85	165	120	M14 X 2	92	68	145	105	200	150
9/16" - 12	95	70	150	110	210	155	M14 X 1.5	99	73	155	115	215	160
9/16" - 18	105	79	165	120	235	170	M16 X 2	145	105	225	165	315	230
5/8" - 11	130	97	205	150	285	210	M16 X 1.5	155	115	240	180	335	245
5/8" - 18	150	110	230	170	325	240	M18 X 2.5	195	145	310	230	405	300
3/4" - 10	235	170	360	265	510	375	M18 X 1.5	220	165	350	260	485	355
3/4" - 16	260	190	405	295	570	420	M20 X 2.5	280	205	440	325	610	450
7/8" - 9	225	165	585	430	820	605	M20 X 1.5	310	230	650	480	900	665
7/8" - 14	250	185	640	475	905	670	M24 X 3	480	355	760	560	1050	780
1" - 8	340	250	875	645	1230	910	M24 X 2	525	390	830	610	1150	845
1" - 12	370	275	955	705	1350	995	M30 X 3.5	960	705	1510	1120	2100	1550
1-1/8" - 7	480	355	1080	795	1750	1290	M30 X 2	1060	785	1680	1240	2320	1710
1-1/8" - 12	540	395	1210	890	1960	1440	M36 X 3.5	1730	1270	2650	1950	3660	2700
1-1/4" - 7	680	500	1520	1120	2460	1820	M36 X 2	1880	1380	2960	2190	4100	3220
1-1/4" - 12	750	555	1680	1240	2730	2010	¹ in-tpi = nominal thread diameter in inches-threads per inch ² N · m = newton-meters ³ ft-lb= foot pounds ⁴ mm x pitch = nominal thread diameter in millimeters x thread pitch						
1-3/8" - 6	890	655	1990	1470	3230	2380							
1-3/8" - 12	1010	745	2270	1670	3680	2710							
1-1/2" - 6	1180	870	2640	1950	4290	3160							
1-1/2" - 12	1330	980	2970	2190	4820	3560							
Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above. All locknuts or lubricated fasteners: Use 75% of torque value. (i.e. 1/2"-13 GR5 = 76 ft-lb; 75% of 76 or .75 x 76 = 57 ft-lb)													
Additional Torque Values													
Front Roller Gang Slide (1" Hex Flange Locknuts)						Tighten 1" nuts until they make contact with gang slide and then back nuts off 1/3 revolution (2 hex flats). Some additional backing off of the nuts may be necessary to allow the gang slide to move easily. See “Front Spike Roller Angle” on page 36.							

Tire Inflation Chart	
Tire Size	Inflation PSI
6.70 x 15" SL	40



WARRANTY

Great Plains (a division of Great Plains Manufacturing, Inc.) warrants to the original purchaser that this Great Plains machine will be free from defects in material and workmanship for a period of one year (Parts & Labor) from the first use date when used as intended for personal use; ninety days for custom/commercial or rental use.

Second year limited warranty covers Parts ONLY (personal usage only, excluding labor and wear items). This warranty is limited to the replacement of any defective part by Great Plains. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

The following items and/or conditions are **NOT COVERED UNDER WARRANTY**: Failures resulting from the abuse or misuse of the equipment, failures occurring as a result of accidental damage or Force Majeure, failures resulting from alterations or modifications, failures caused by lack of normal maintenance as outlined in the operator's manual, repairs made by non-authorized personnel, items replaced or repaired due to normal wear (such as wear items and ground-engaging components including, but not limited to, disc blades, chisel points, tires, bushings, and scrapers), repeat repair due to improper diagnosis or improper repair by the dealer, temporary repairs, service calls and/or mileage to and from customer location, overtime premium, or unit hauling expenses. The warranty may be voided if the unit is towed at speeds in excess of 20 miles per hour (32 kilometers per hour), or failures occurring from soils with rocks, stumps, or other obstructions.

Great Plains reserves the right to make changes in materials or design of the product at any time without notice. The warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct or consequential or contingent to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its control. This warranty does not extend to crop loss, losses caused by planting or harvest delays or any expense or loss of labor, supplies, rental machinery, or for any other reason.

No other warranty of any kind whatsoever expressed or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This warranty is not valid unless registered by a certified Great Plains dealer.

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Great Plains, Mfg.
1525 E. North St.
P.O. Box 5060
Salina, KS 67402