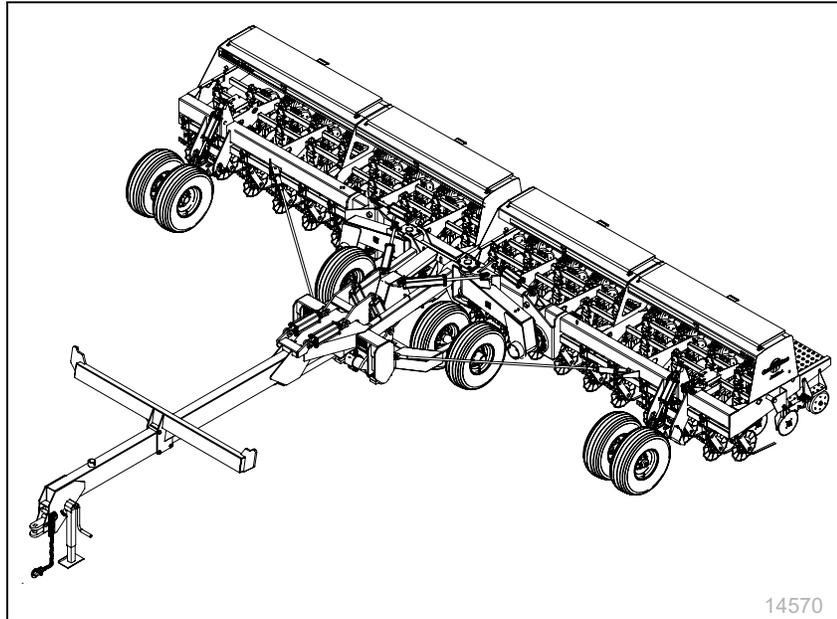


Operator Manual

2N-2410 and 2N-3010
Folding No-Till Drill



Read the operator 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!



Illustrations may show optional equipment not supplied with standard unit or may depict similar models where a topic is identical.

ORIGINAL INSTRUCTIONS



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Printed 2024-02-26

196-126M

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 with the option(s) weight and measurements.

| | |
|-----------------------------|-----------------------|
| Model Number | |
| Serial Number | |
| Machine Height | |
| Machine Length | |
| Machine Width | |
| Machine Weight | |
| Year of Construction | |
| Delivery Date | |
| First Operation | |
| Accessories | <hr/> <hr/> <hr/> |

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

Dealer's Customer No.: _____

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov



Table of Contents

| | | | |
|---|-----------|--|-----------|
| Important Safety Information | 1 | Electric Clutch Switch Adjustment..... | 31 |
| Safety Decals | 5 | Pull Cable Adjustments | 32 |
| INTRODUCTION | 13 | Weights | 32 |
| Description of Unit | 13 | Individual Coulters..... | 34 |
| Intended Usage | 13 | Opener Down-Pressure Adjustment..... | 35 |
| Models Covered | 13 | Press Wheel Adjustment..... | 35 |
| Document Family | 13 | Setting the Seeding Rate | 36 |
| Using This Manual..... | 13 | Small Seeds Attachment..... | 38 |
| Owner Assistance | 14 | Gauge-Wheel Drive Adjustment..... | 38 |
| Further Assistance | 14 | Disk Scraper Adjustment..... | 38 |
| Drill Preparation and Setup | 15 | Leveling Adjustment..... | 38 |
| Pre-start Checklist | 15 | Marker Adjustments | 39 |
| Hitch Height Adjustment..... | 15 | Disk Adjustment | 40 |
| Installing Drill Control Consoles..... | 16 | Coulter Tines..... | 40 |
| Frame Leveling Adjustment..... | 17 | Harrow Attachment Adjustment | 40 |
| Aligning Boxes..... | 18 | Seed-Lok..... | 41 |
| Operating Instructions | 19 | Troubleshooting | 42 |
| Pre-start Checklist | 19 | General Maintenance | 44 |
| Tractor Requirements..... | 19 | Cylinder Lock Channels | 45 |
| Hitching Tractor to Drill..... | 20 | Storage..... | 45 |
| Operating Control Console..... | 20 | Lubrication | 46 |
| Operating Electric Clutch Consoles..... | 21 | Optional Attachments Lubrication | 48 |
| Folding the Drill | 21 | Options | 50 |
| Unfolding the Drill | 22 | Coulter Tines..... | 50 |
| Lifting the Drill in the Field | 23 | Weight Brackets | 50 |
| Field Operations | 23 | Shaft Monitors | 50 |
| Opener Operation..... | 24 | Markers | 51 |
| Marker Operation | 24 | Small Seeds Attachment..... | 51 |
| Shaft Monitor Operation | 25 | Harrow Attachment | 52 |
| Electric Clutch Operation..... | 25 | Rear Mount Boom | 52 |
| Transporting | 25 | Seed Box Agitator | 52 |
| Parking | 25 | Seed-Lok Firming Wheels..... | 53 |
| Acremeter Operation | 26 | Seed-Cup Plugs | 53 |
| Operating Instructions | 26 | Hitch Options..... | 53 |
| Acremeter Screens..... | 27 | Specifications and Capacities | 54 |
| Adjustments | 29 | Appendix | 55 |
| No-Till Seeding..... | 29 | Electric Clutch Console and Wire Harness | 55 |
| Coulter Adjustments | 29 | Torque Values Chart | 55 |
| Hydraulic Depth Control | 30 | Tire Inflation Chart..... | 55 |

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Printed in the United States of America



Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, 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

Signal words designate a degree or level of hazard seriousness.

DANGER, and the color Safety Red, indicate an imminent hazard which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

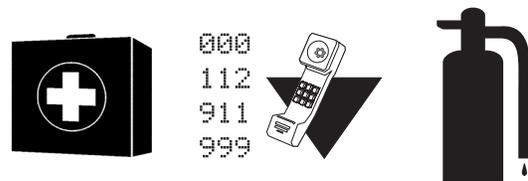
WARNING, and the color Safety Orange, indicate a potential hazard which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION, and the color Safety Yellow, indicate a potential hazard which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



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 phone.*



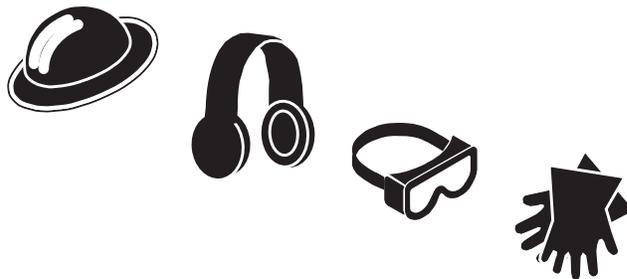
Be Familiar with Safety Decals

- ▲ *Read and understand "Safety Decals" on page 5, thoroughly.*
- ▲ *Read all instructions noted on the decals.*
- ▲ *Keep decals clean. Replace damaged, faded and illegible decals.*



Wear Protective Equipment

- ▲ *Wear protective clothing and equipment.*
- ▲ *Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.*
- ▲ *Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection such as earmuffs or earplugs.*
- ▲ *Because operating equipment safely requires your full attention, avoid wearing entertainment headphones while operating machinery.*



Handle Chemicals Properly

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

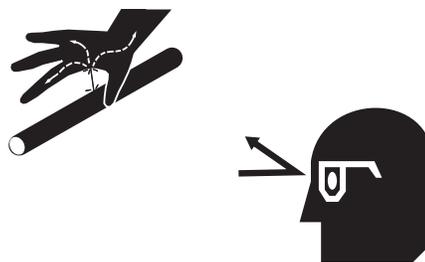
- ▲ *Read and follow chemical manufacturer's instructions.*
- ▲ *Wear protective clothing.*
- ▲ *Handle all chemicals with care.*
- ▲ *Avoid inhaling smoke from any type of chemical fire.*
- ▲ *Never drain, rinse or wash dispensers within 100 feet of a freshwater source, nor at a car wash.*
- ▲ *Store or dispose of unused chemicals as specified by chemical manufacturer.*
- ▲ *Dispose of empty chemical containers properly. Laws generally require power rinsing or rinsing three times, followed by perforation of the container to prevent re-use.*



Avoid High Pressure Fluids

Escaping fluid under pressure can penetrate the skin, causing serious injury.

- ▲ *Avoid the hazard by relieving pressure before disconnecting hydraulic lines.*
- ▲ *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.*
- ▲ *If an accident occurs, seek immediate medical attention from a physician familiar with this type of injury.*



Use A Safety Chain

- ▲ Use a safety chain to help control drawn machinery should it separate from tractor drawbar.
- ▲ Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
- ▲ Attach chain to tractor drawbar support or other specified anchor location. Allow only enough slack in chain to permit turning.
- ▲ Replace chain if any links or end fittings are broken, stretched or damaged.
- ▲ Do not use safety chain for towing.



Keep Riders Off Machinery

Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from the machine.

- ▲ Never allow children to operate equipment.
- ▲ Keep all bystanders away from machine during operation.



Use Safety Lights and Devices

Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.

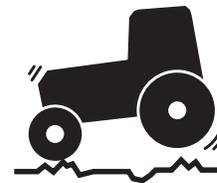
- ▲ Use flashing warning lights and turn signals whenever driving on public roads.
- ▲ Use lights and devices provided with implement.



Transport Machinery Safely

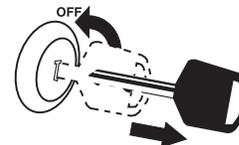
Maximum transport speed for implement is 20 mph (30 kph). Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- ▲ Ensure towing vehicle weighs at least $\frac{2}{3}$ (67%) of gross implement weight.
- ▲ Do not exceed 20 mph (30 kph). Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if drill is not equipped with brakes.
- ▲ Comply with state and local laws.
- ▲ Carry reflectors or flags to mark drill in case of breakdown on the road.



Shutdown and Storage

- ▲ Park on level ground.
- ▲ Unhitch and store the drill in an area where children normally do not play.



Tire Safety

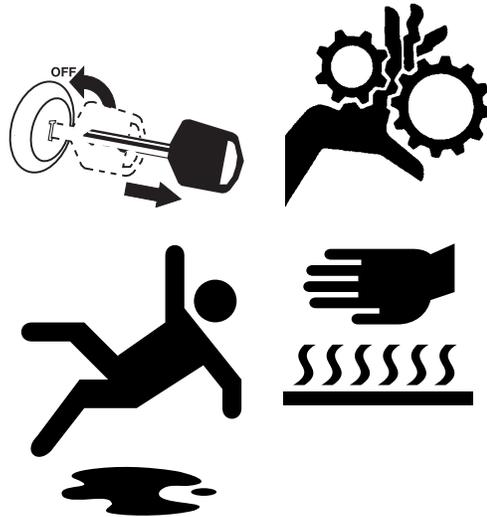
Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

- ▲ *When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.*
- ▲ *When removing and installing wheels, use wheel-handling equipment adequate for weight involved.*



Practice Safe Maintenance

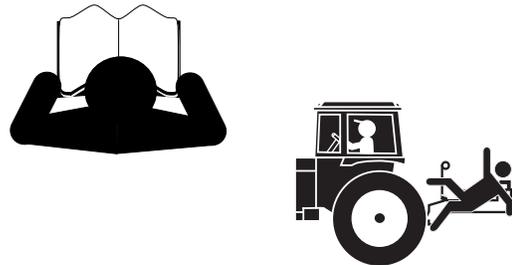
- ▲ *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual.*
- ▲ *Work in a clean, dry area.*
- ▲ *Lower the drill, put tractor in park, turn off engine, and remove key before performing maintenance. If work must be performed with implement raised, use blocks or jackstands rated for the drill weight.*
- ▲ *Make sure all moving parts have stopped and all system pressure is relieved.*
- ▲ *Allow drill to cool completely.*
- ▲ *Disconnect battery ground cable (-) before servicing or adjusting electrical systems.*
- ▲ *Welding: Disconnect battery ground. Avoid fumes from heated paint.*
- ▲ *Inspect all parts. Make sure parts are in good condition and installed properly.*
- ▲ *Remove buildup of grease, oil or debris.*
- ▲ *Remove all tools and unused parts from drill before operation.*



Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

- ▲ *Be familiar with all drill functions.*
- ▲ *Operate machinery from the driver's seat only.*
- ▲ *Do not leave drill unattended with tractor engine running.*
- ▲ *Do not stand between the moving tractor and drill during hitching.*
- ▲ *Keep hands, feet and clothing away from power-driven parts.*
- ▲ *Wear snug-fitting clothing to avoid entanglement with moving parts.*
- ▲ *Make sure all persons are clear of working area.*



Safety Decals

Safety Reflectors and Decals

Your implement comes equipped with all lights, safety reflectors and decals in place. They were designed to help you safely operate your implement.

- ▲ *Read and follow decal directions.*
- ▲ *Keep lights in operating condition.*
- ▲ *Keep all safety decals clean and legible.*
- ▲ *Replace all damaged or missing decals. Order new decals from your dealer. Refer to this section for proper decal placement.*
- ▲ *When ordering new parts or components, also request corresponding safety decals.*

Reflector: Slow Moving Vehicle (SMV)

(2N-2410 S/N C1977-)(2N-3010 S/N D2485-)

818-055C



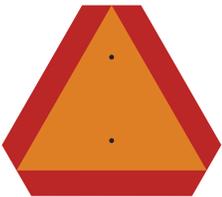
At rear of drill when folded

1 total

Reflector: Slow Moving Vehicle (SMV)

(2N-2410 S/N C1978+)(2N-3010 S/N D2486+)

818-055C

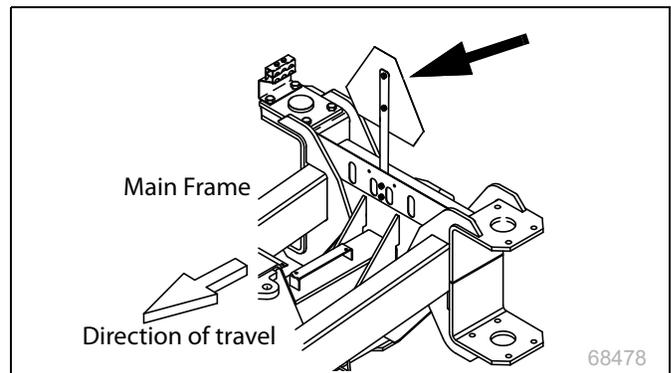
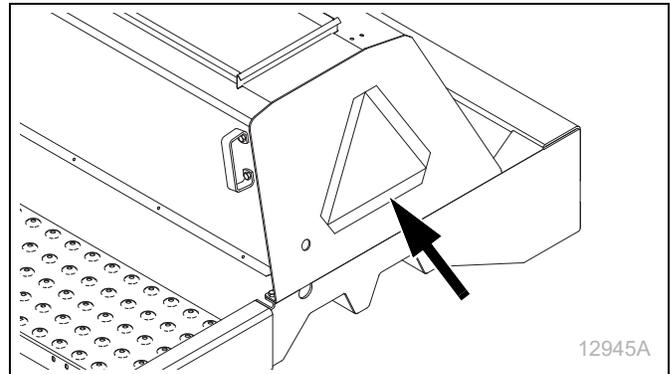


At rear of mainframe.

1 total

To install new decals:

1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

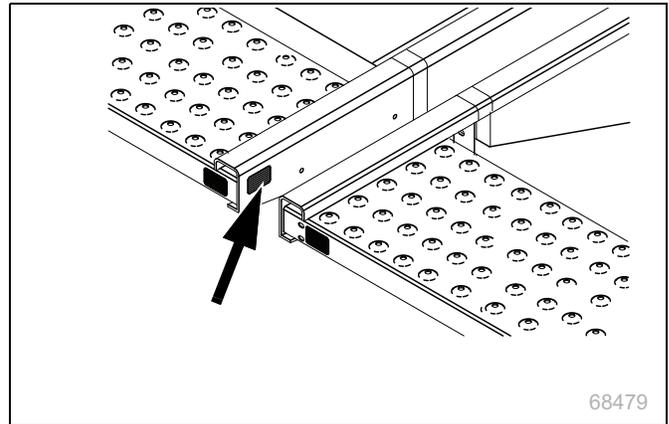


Reflectors: Red

818-230C



On side frames at inner ends of walkboard
2 total

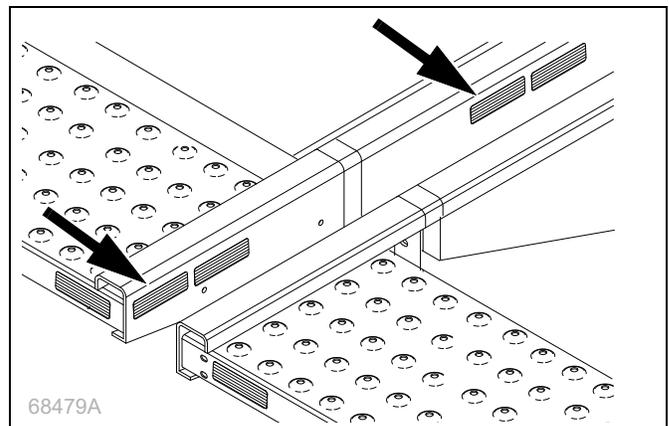


Reflectors: Red

838-266C



On side frames at inner ends of walkboard
4 total

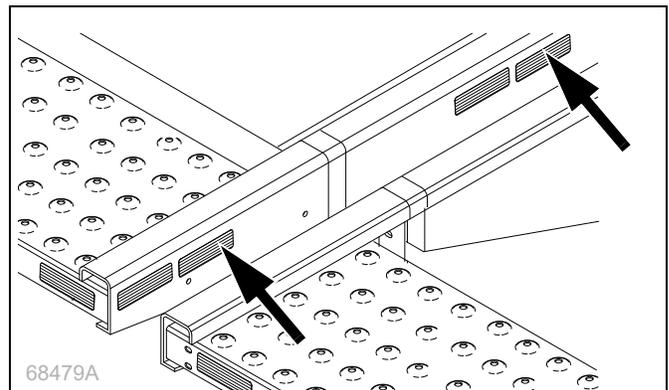


Reflectors: Daytime

838-267C



On side frames at inner ends of walkboard;
4 total



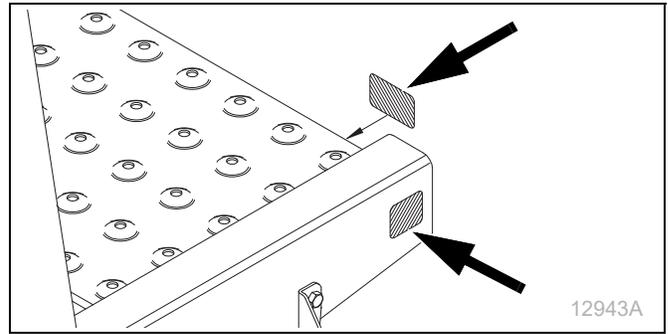
Reflectors: Amber

818-229C



On rear of walkboards at outer ends;
On side frames at outer ends of walkboard;

4 total



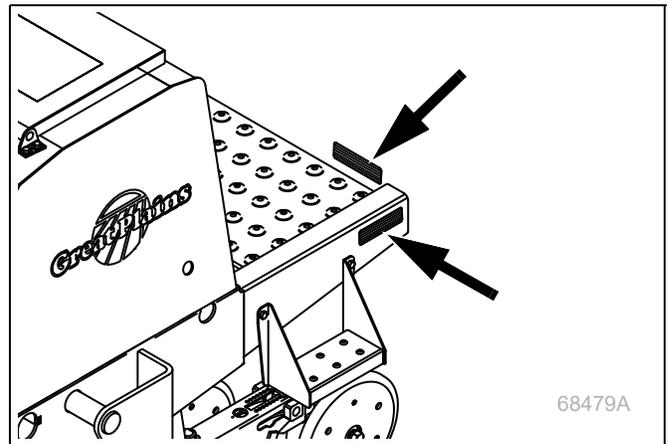
Reflectors: Amber

838-265C



On rear of walkboards at outer ends;
On side frames at outer ends of walkboard;

4 total



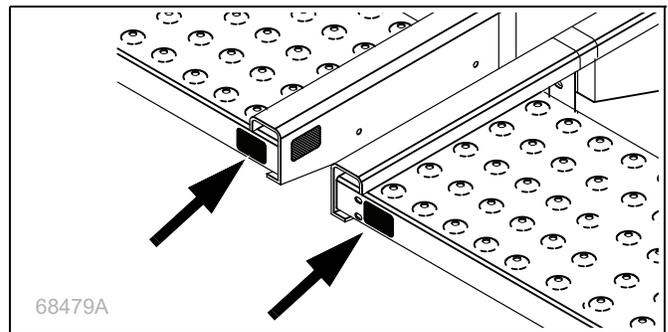
Reflectors: Amber

818-229C



On rear of walkboards at inner ends;

2 total



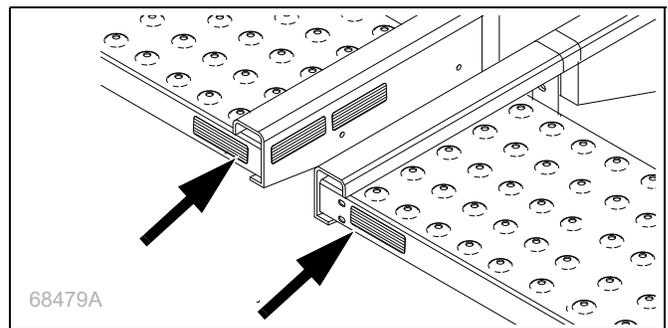
Reflectors: Amber

838-265C



On rear of walkboards at inner ends;

2 total

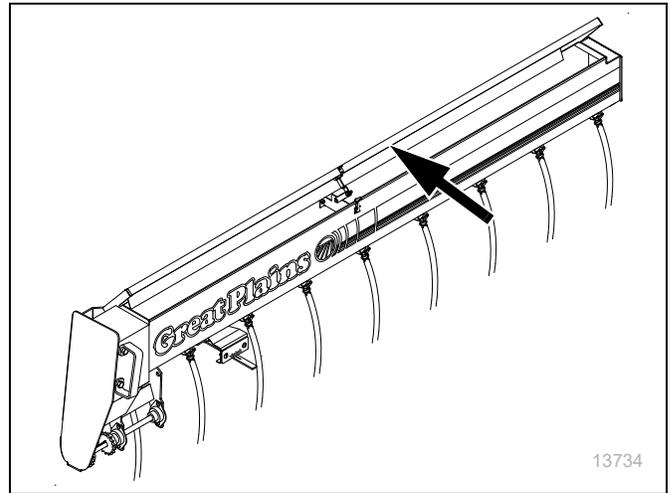


Danger: Chemical Hazard

838-467C



Inside drill box;
1 total



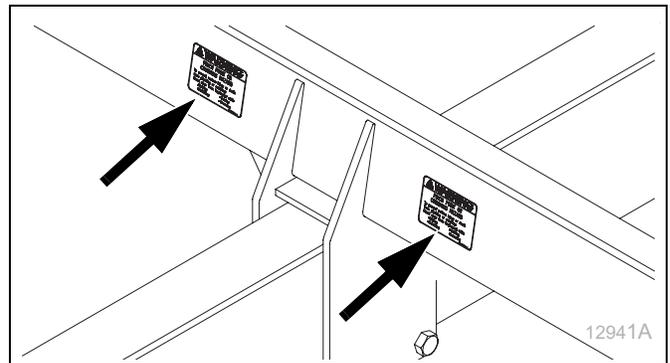
13734

Warning: Pinching/Crushing

818-045C



2 total



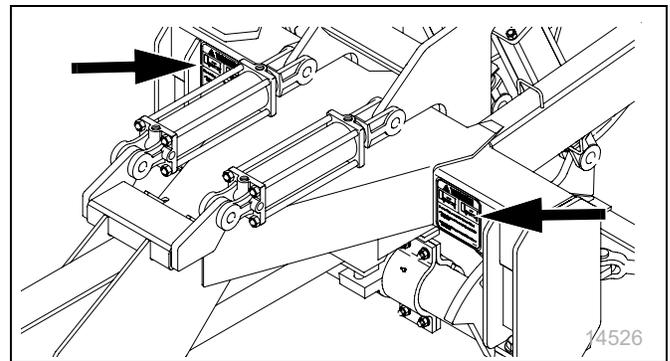
12941A

Warning: Transport Lock

818-477C



2 total



14526

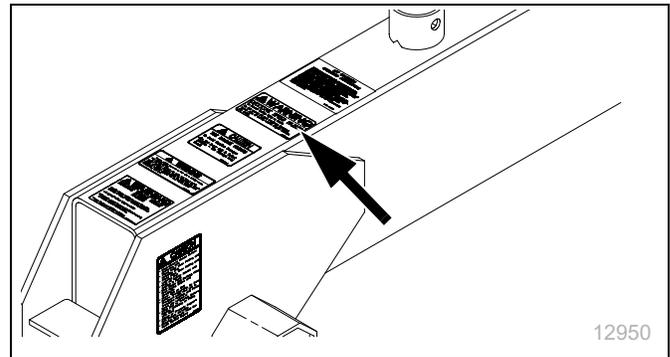
Warning: Speed

818-188C



On tongue tube near hitch

1 total



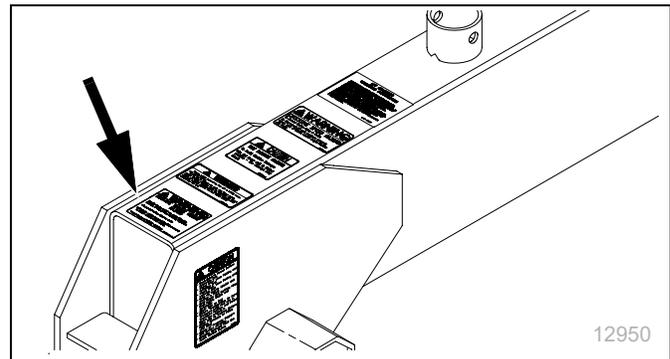
Warning: Negative Tongue Weight

818-019C



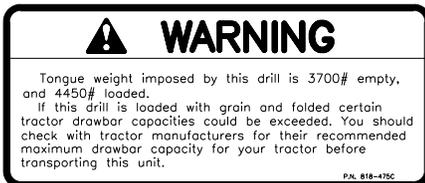
On tongue tube near hitch;

1 total

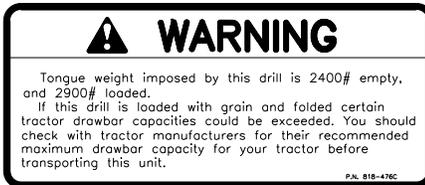


Warning: 30-Ft./24-Ft. Tongue Weight

818-475C (3010)/

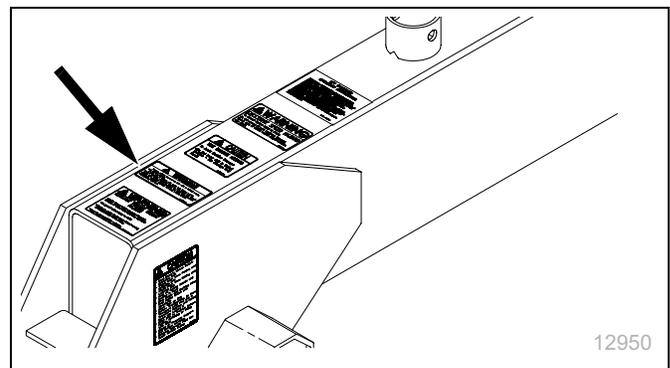


818-476C (2410)



On tongue tube near hitch;

1 total



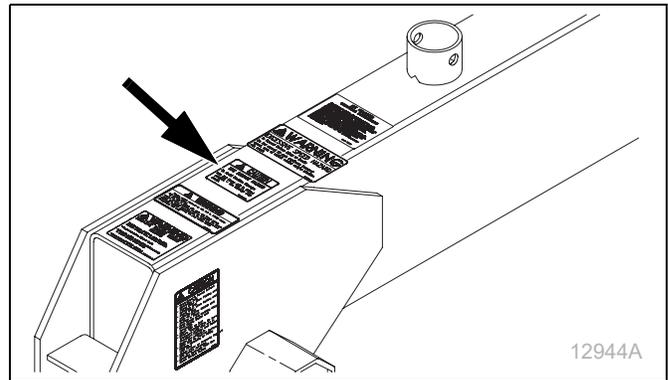
Caution: Lowering Drill

818-020C



On tongue tube near hitch

1 total



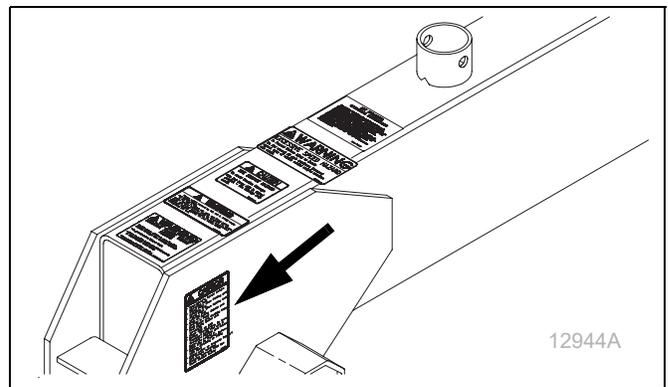
General Caution

818-587C



On tongue tube near hitch;

1 total



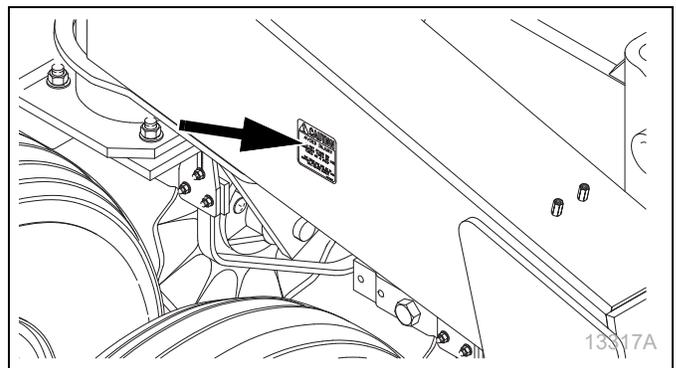
Caution: Tires Not A Step

818-398C



On side frames above tires;

2 total



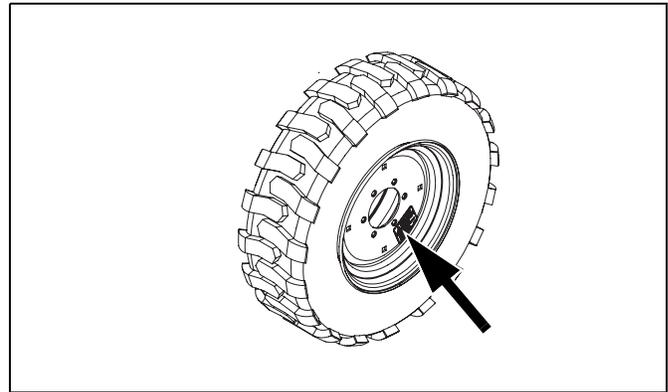
Caution: Tire Pressure and Torque

838-092C



Gauge wheel with 265/70B16.5 NHS skid steer tire;

4 total



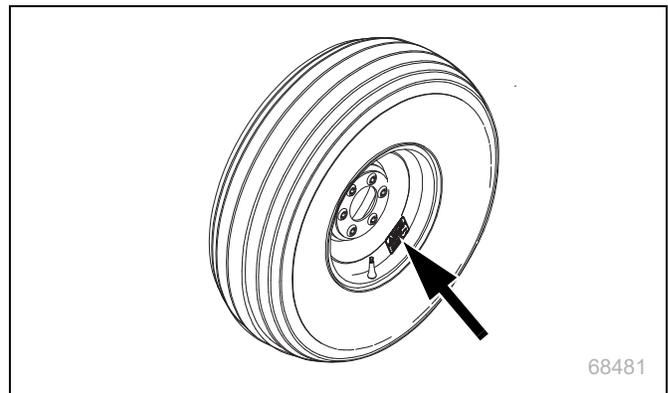
Caution: Tire Pressure and Torque

818-855C



Gauge wheel with 11L-15 X 8 PLY ribbed tire;

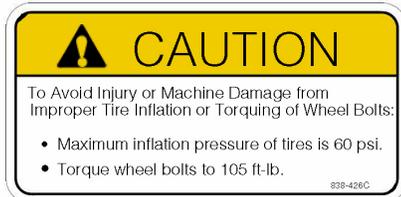
4 total



68481

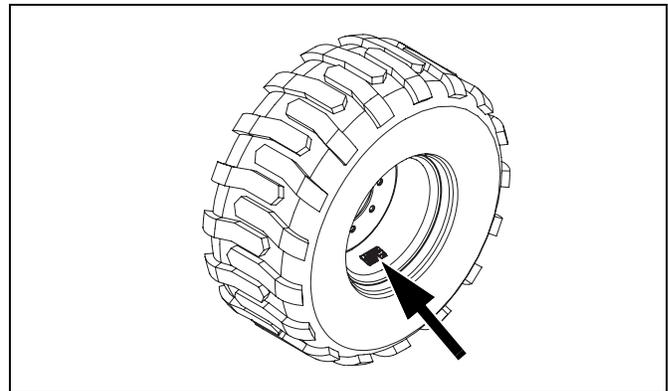
Caution: Tire Pressure and Torque

838-426C



Gauge wheel with 395/55B16.5 NHS skid steer tire;
Transport wheel with 395/55B16.5 NHS skid steer tire;

4 total



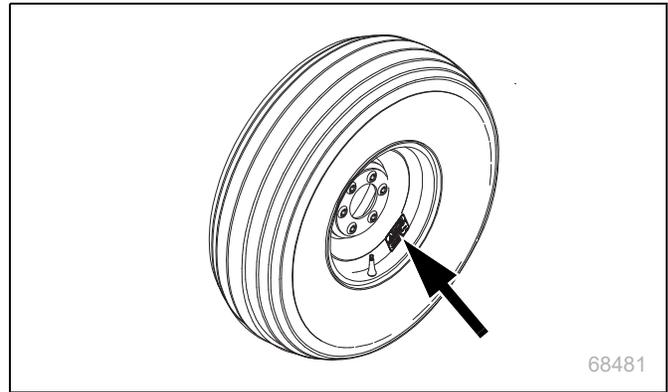
Caution: Tire Pressure and Torque

838-259C



Transport wheel with 12.5-15 20 ply ribbed tire;

4 total



Caution: Tire Pressure and Torque

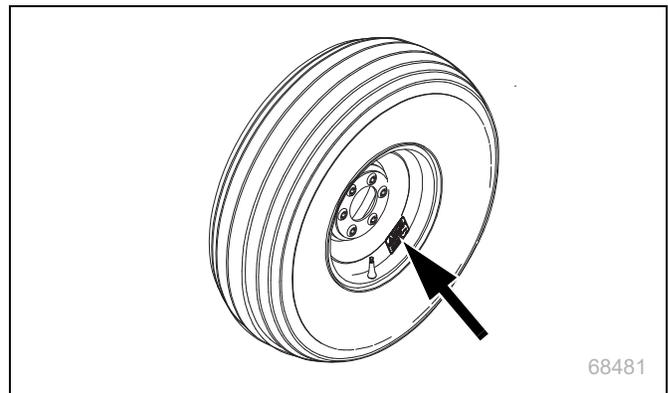
838-092C



Auxiliary

axle;

4 total



NOTICE: No Petroleum Products

858-679C

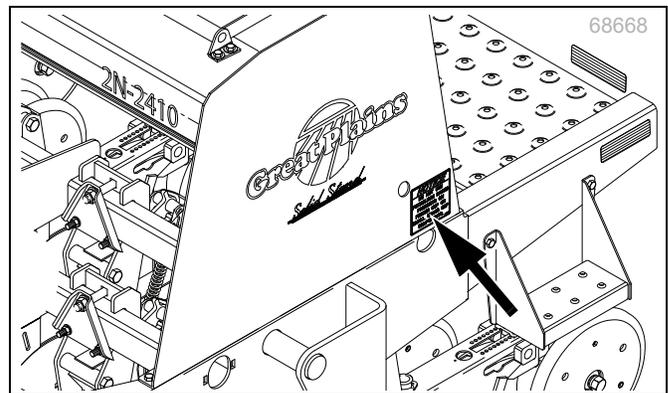


Small

seed

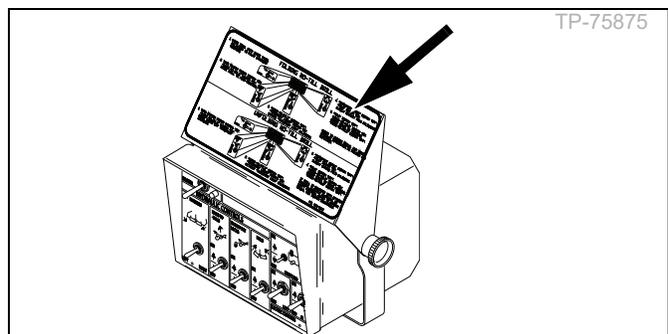
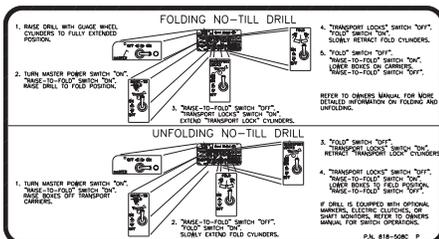
option;

2 to 4 total



Folding/Unfolding Drill

818-508C





INTRODUCTION

Great Plains welcomes you to its growing family of new product owners. This implement 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 the machine.

Description of Unit

The two-section folding no-till drill is a towed seeding implement for no- or minimum-till soil conditions. The drill is equipped with two hydraulic circuits. One is used to raise and lower the drill for field operations. A separate electro-hydraulic circuit lifts, locks and folds the implement for transport. An in-cab control console allows the operator to switch between functions on the electro-hydraulic circuit. The drill is outfitted with coulters and double-disk openers. The openers are mounted on parallel arms. Press wheels follow the opener disks to firm the seedbed and control seeding depth.

Intended Usage

This machine is intended for use in minimum- or no-till applications.

Models Covered

- 2N-2410-281028 row, 10-inch spacing
- 2N-2410-360836 row, 8-inch spacing
- 2N-2410-387538 row, 7.5-inch spacing
- 2N-3010-361036 row, 10-inch spacing
- 2N-3010-440844 row, 8-inch spacing
- 2N-3010-487548 row, 7.5-inch spacing

Document Family

- 196-126M - 2N-2410 and 2N-3010 Operator Manual (this document)
- 196-126B - Seed Rate Chart
- 196-126P - Parts Manual



Parts Manual QRC

The QR Code to the left will take you to this machine's parts manual. Use your smart phone or tablet to scan and start viewing.

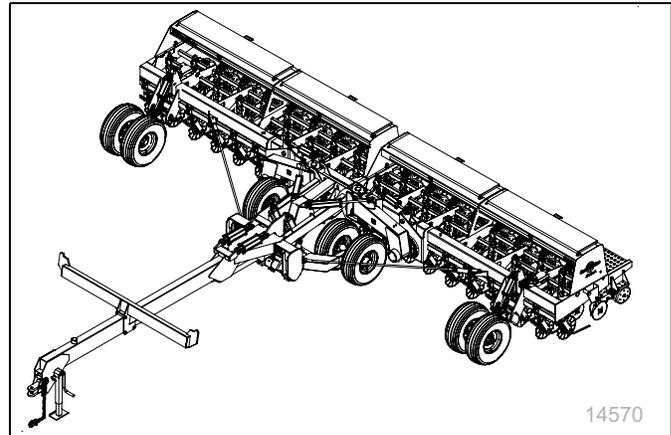


Figure 1
2N-2410 Drill

Using This Manual

This manual will familiarize you with safety, assembly, operation, adjustment, troubleshooting and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

This manual is current at printing. Some parts may change to assure top performance.

Definitions

Right and left as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated.

NOTICE

A crucial point of information related to the preceding topic. For safe and correct operation, read and follow the directions provided before continuing.

 **NOTE:** Useful information related to the preceding topic.



Product Manuals QRC

The QR Code to the left will take you to Great Plains' catalog of product manuals. Use your smart phone or tablet to scan and start viewing.

Owner Assistance

If customer service or repair parts are needed contact your Great Plains dealer. They have trained personnel, parts and service equipment specially designed for Great Plains products.

Your machine's parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial number plate is located on the outside end of the left drill box as shown in Figure 2.

Further Assistance

Great Plains Manufacturing, Inc. and your Great Plains dealer want you to be satisfied with your new product. If for any reason you do not understand any part of this manual or are otherwise dissatisfied, please take the following actions first:

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

If your dealer is unable to resolve the problem or the issue is parts related, please contact:

Great Plains Service Department
1525 E. North St.
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.

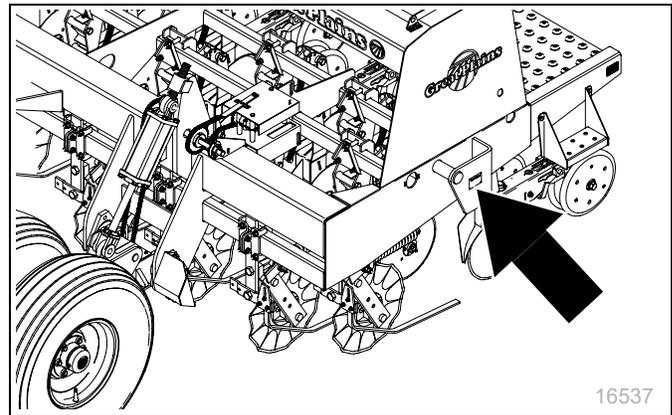


Figure 2
Serial Number Plate



Drill Preparation and Setup

This section will help you prepare your tractor and drill for use. The drill hitch must be adjusted to match drawbar height, and the drill control console must be installed in your tractor.

As the operator, you may need to perform these functions after drill repair. Before operating the drill, check that the hydraulic systems are free of air, the frame is level, and boxes are aligned.

Pre-start Checklist

1. Read and understand “**Important Safety Information**,” page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated. Refer to *Lubrication*, page 46.
4. Check that all safety labels and reflectors are correctly located and legible. Replace if damaged. See *Safety Decals*, page 5.
5. Inflate tires to pressure recommended and tighten wheel bolts as specified. See Tire Inflation Chart page 55.

Hitch Height Adjustment

Refer to Figure 3

For proper operation, the drill tongue must run parallel to the ground in field position. Follow these instructions to adjust the drill hitch to match your tractor drawbar height.

1. Check the distance from under the tongue to the ground as shown in Figure 3. Using the drill jack, adjust the tongue up or down until the distance is about 28 inches.
2. Back the tractor drawbar up to the drill hitch. Determine how much adjustment is needed for the drill to match drawbar height.
3. Unbolt the hitch from the tongue. Bolt the hitch so the drill matches drawbar height. Keeping in mind your drill size, refer to Figure 4 or Figure 5 for the different ways you can bolt the hitch and the resulting hitch heights.

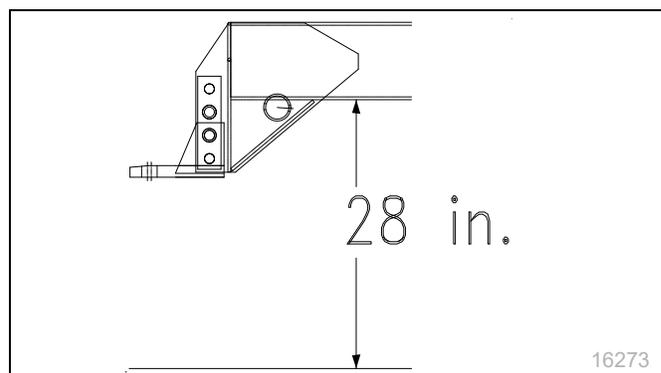
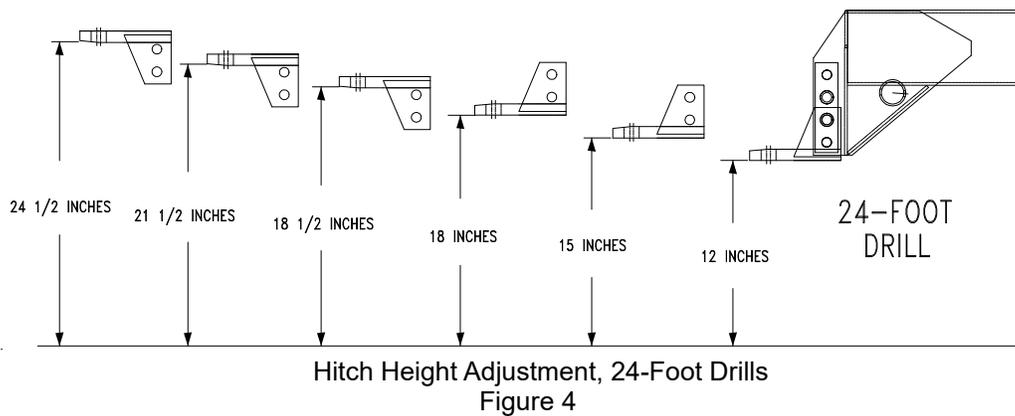
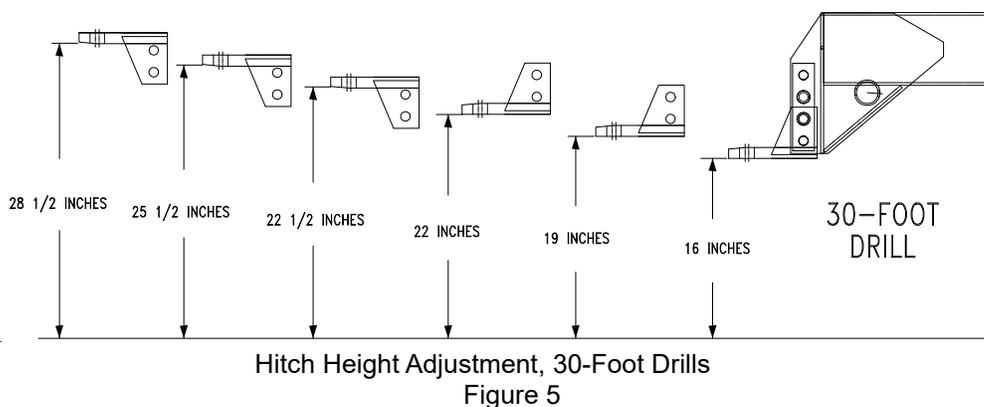


Figure 3
Tongue Height



16274



16532

4. Hitch the drill to the tractor using a hitch pin at least one inch in diameter. Install a retaining clip on the hitch pin to prevent it from working up.

 A clevis-style hitch, Great Plains part number 196-136H, is available through your Great Plains dealer.

NOTICE

When hitching the drill to a different tractor, check for differences in drawbar heights and re-adjust the drill hitch accordingly.

Installing Drill Control Consoles

1. Mount the control boxes at a convenient location in the tractor cab. Connect the 12-foot extension cable to the pin connector on the back of the control box. Route the cable to the tractor drawbar area. Secure the cable to avoid damage.
2. Connect the power cords to a 12-volt power source on the tractor. The polarity of the power supply is very important. The red wire must be connected to the positive (+) battery terminal. The white wire must be connected to the negative (-) battery terminal.

 To help with console and wire harness installation refer to diagram on page 55.

Frame Leveling Adjustment

Periodic frame leveling should not be necessary, but if you are having trouble maintaining equal coulter depth across the drill, check that the frame is level. When the drill is level, the box frames will be the same distance from the ground at both ends of the drill.

Complete the steps under *Bleed the Fold Hydraulics*, page 18, before proceeding.

Refer to Figure 6

1. Locate the threaded eye bolt at the base end of the gauge-wheel cylinders (1). The eye bolt is locked in place by a jam nuts. Observe the amount of thread exposed above the upper nut and below the lower nut. If the exposed threads are roughly equal, no initial adjustment is needed. Go to step 3.
 2. If the exposed threads above and below the nuts are not equal, loosen and adjust the jam nuts until the exposed threads are within 3/8 inch of each other. Repeat for other end of drill.
 3. Move the drill to a level area. With the drill unfolded, check that the tool-bar cylinders are completely extended. Raise the drill to its highest position with the field-lift cylinders. With the tractor idling, rephase the cylinders by holding the hydraulic lever on for an additional 30 seconds. Immediately lower the boxes until the coulters and openers are just ready to touch the ground.
 4. Move the gauge-wheel eye bolts (1) in or out until the frames are level. When the frames are level, the openers on the outside end of the drill will be the same height as the center openers.
-  Eye-bolt adjustments are easier if the drill is first lowered to the ground to remove some of the force on the cylinders.
5. Repeat the steps above until the drill is level end-to-end when drilling in actual seeding conditions.

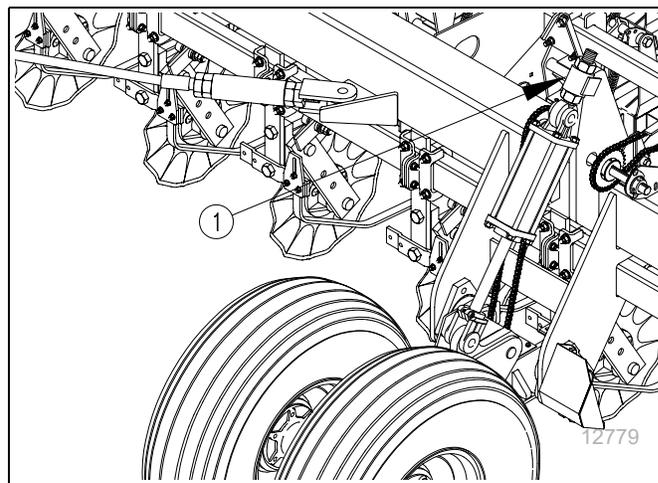


Figure 6
Wing Gauge Wheel Eye-Bolt Adjustment

Aligning Boxes

Refer to Figures 7 and 8

For proper alignment, the outside ends of the drill boxes must be 1 to 1-1/2 inches ahead of the inside ends. Follow these steps to check box alignment and adjust as necessary.

1. With the drill unfolded and lowered, pull forward a few feet with the openers in the ground.
2. Extend a string line to the outer ends of the wing boxes as shown in Figure 8. Measure from the string line to each box as shown. For each box, measurement A should be 1 to 1-1/2 inches greater than measurement B.
3. If adjustment is needed, write down how many inches the box should be moved to be within the 1- to 1 1/2-inch tolerance mentioned above. Also note the direction you need to move the outside end of the box—forward or back.
4. Make adjustments at the box end of each pull cable as shown in Figure 8. Loosen the jam nuts on the adjustment trunnion screw. Turn the screw in or out to move the box end forward or backward as required. Tighten the jam nuts.
5. Pull ahead slightly and check the box alignment. Re-adjust the pull cables if necessary.

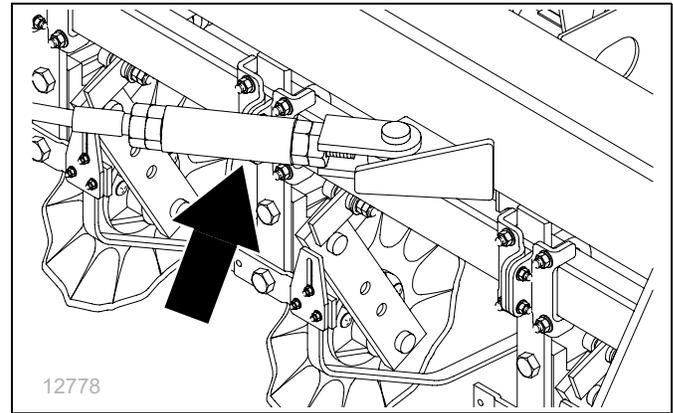


Figure 7
Box Alignment Adjustment

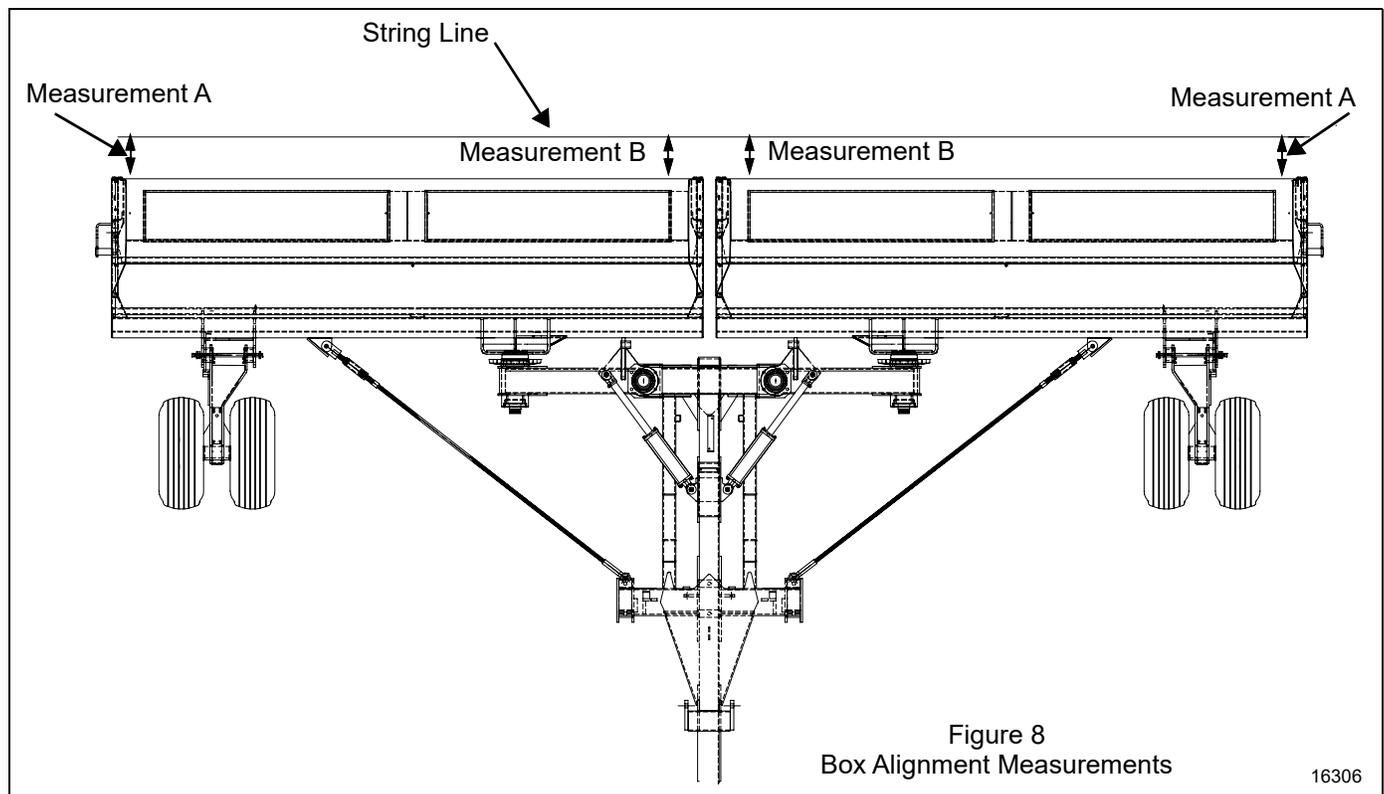


Figure 8
Box Alignment Measurements



Operating Instructions

This section will help you prepare the tractor and drill for use. It will also give you general operating procedures. Experience, machine familiarity and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

Pre-start Checklist

1. Carefully read “**Important Safety Information**,” page 1.
2. Lubricate the drill as indicated under *Lubrication*, page 46.
3. Check all tires for proper inflation as indicated on *Tire Inflation Chart*, page 55.
4. Check all bolts, pins and fasteners. Torque as specified on *Torque Values Chart*, page 55.
5. Check the drill for worn or damaged parts. Repair or replace them before going to the field.
6. Check hydraulic hoses, fittings and cylinders for leaks. Repair or replace them before going to the field.
7. Check disk scrapers for proper adjustment. Refer to *Disk Scraper Adjustment*, page 38.
8. Check that the drive-clutch linkage is operating properly. The clutch jaws should be fully engaged with the drill in seeding position. When the drill is fully raised the clutch jaws should be completely separated.
9. Rotate both gauge wheels to see that seed cups and drive are working and free from foreign material.

Tractor Requirements

Recommended Minimum Tractor Size

24-foot drill - 200 to 250 horsepower

30-foot drill - 250 to 300 horsepower

 **NOTE:** When determining tractor size, soil type, terrain and tillage practices must be considered.

WARNING

Towing the drill at high speeds or with a vehicle that is not heavy enough can lead to loss of vehicle control. Loss of vehicle control can lead to serious road accidents, injury and death. The reduce the hazard:

- *Do not exceed 20 mph.*

Hydraulics

Your tractor must have two remote outlets.

Safety Lights

- *Use a towing vehicle heavy enough to control the drill.*

Minimum Towing Vehicle Weight

16,000 pounds

Your tractor must be wired for the standard 7-pin electrical connector. If your tractor is not equipped with this connector, consult your dealer for installation.

Hitching Tractor to Drill

Refer to Figure 9

1. Use the drill jack to raise or lower the tongue as needed. Hitch the drill to the tractor using a hitch pin of adequate strength (at least one inch in diameter).
2. Install a retaining clip on the hitch pin to prevent it from working up. Securely attach drill safety chain to tractor drawbar.

WARNING

Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately.

3. Connect hydraulic hoses to tractor remotes. One pair of hoses is for the field-lift cylinders. The other pair is for raise-to-fold, transport-lock, fold and marker cylinders.
4. Plug the control-console cable to the drill harness. Plug the drill light cable to the tractor.
5. Crank the jack until tongue weight is resting on the tractor drawbar. Unpin the tongue jack from the hitching stub. Pin the jack to the stub on top of the tongue as shown in Figure 9.

Operating Control Console

Your drill is equipped with a control console that is mounted in the tractor cab. Refer to *Installing Drill Control Consoles*, page 16. The console is designed to control drill folding and optional markers, electric clutches and shaft monitors. The console has a master switch that must be on when operating any of these systems.

The raise-to-fold, transport locks and fold switches are operated independently. Turn only one of these switches on at one time. During field operations, turn all three switches off.

To operate markers, turn the marker switch to the left position during field operation. Turn this switch to the center position (off) when folding or in transport.

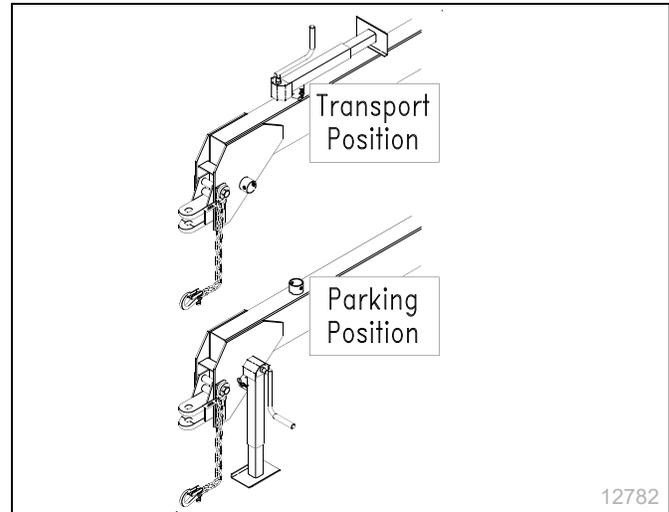


Figure 9
Jack Positions

Operating Electric Clutch Consoles

To operate electric clutches, turn either the left or right clutch switch to the off position to shut down the seeding from the corresponding box. Turn the electric clutch switches off when folding or in transport.

To operate shaft monitors, turn the shaft monitor switch on during field operation and off when folding or transporting.

Folding the Drill

Refer to Figure 10

CAUTION

To prevent serious injury or death:

- Always use transport locks when drill is folded.
- Fold only if hydraulics have smooth movements.
- Stay away from frame sections when they are being raised or lowered.
- Keep away and keep others away when folding or unfolding the drill.

Fold the drill on level ground with the tractor in neutral. If your drill has markers, be certain they are folded and their control switches are off before folding. If your drill has a harrow attachment, fold the attachment before folding the drill. Refer to *Folding Harrow Attachment*, page 22.

Red hydraulic hose grips are for the Lift circuit. Green hydraulic hose grips are the Fold, Markers, Transport Locks, and Raise to Fold circuit.

1. Raise drill with field-lift cylinders until cylinders are fully extended.
2. Turn on master power switch located on the control console. Turn on raise-to-fold switch.
3. Work tractor hydraulic lever to raise drill into fold position.
4. Turn off raise-to-fold switch. Turn the transport-locks switch on.
5. Work tractor hydraulic lever to extend lock cylinders. If lock cylinders will not extend, drill is not fully raised; repeat steps 1 through 3.

If your tractor is equipped with hydraulic flow controls, adjust flow-control valve for this circuit to the slowest position.

6. Turn off the transport-locks switch. Turn on the fold switch.

NOTICE

Never attempt to fold without first operating the raise-to-fold and transport-lock systems. Otherwise, serious equipment damage will occur.

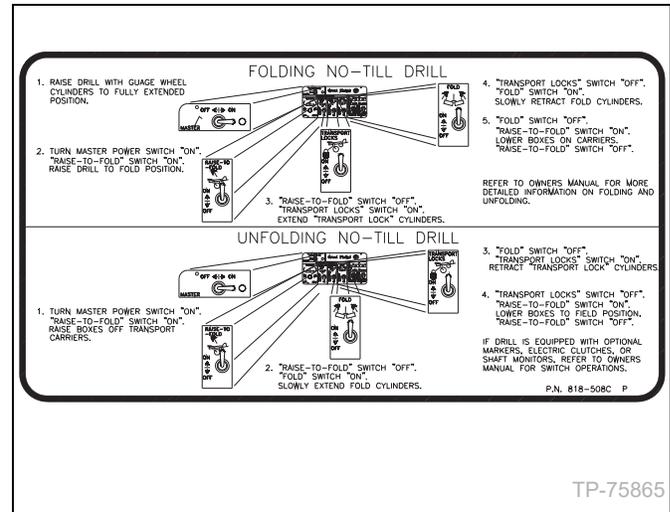


Figure 10
Fold Decal

7. Work tractor hydraulic lever to slowly retract fold cylinders.
8. Once drill is folded over transport carriers, turn off fold switch. Turn on raise-to-fold switch.
9. Work tractor hydraulic lever to lower boxes onto carriers.
10. Turn off raise-to-fold switch.

Folding Harrow Attachment

Before hydraulically folding drill, fold optional coil-tine harrow as explained below.

Fold right-hand harrow assembly up until locking pin engages into the first slot on harrow bracket.

Fold left-hand harrow assembly up until locking pin engages into the second slot on harrow bracket.

Unfolding the Drill

Refer to Figure 11

This drill has negative tongue weight when unfolded and raised. Be certain the drill is hitched securely to your tractor drawbar and the hitch safety chain is securely attached to the tractor before raising or unfolding the drill.



To prevent serious injury or death:

- Always use transport locks when drill is folded.
- Fold only if hydraulics have smooth movements.
- Stay away from frame sections when they are being raised or lowered.
- Keep away and keep others away when folding or unfolding the drill.

Unfold the drill on level ground with the tractor transmission in neutral.

Red hydraulic hose grips are for the Lift circuit. Green hydraulic hose grips are the Fold, Markers, Transport Locks and Raise to Fold circuit.

1. On control console, turn master power switch on, turn raise-to-fold switch on.
2. Work tractor hydraulic lever to raise boxes off transport carriers.
3. Turn off raise-to-fold switch. Turn on fold switch.
4. Work tractor hydraulic lever to slowly unfold drill boxes.
5. When drill is unfolded completely, turn fold switch off. Turn transport-lock switch on.
6. Work tractor hydraulic lever to retract transport-lock cylinders.

If transport-lock cylinders will not retract, drill is not raised fully. Make sure field-lift cylinders and transport-lift cylinders are extended fully.

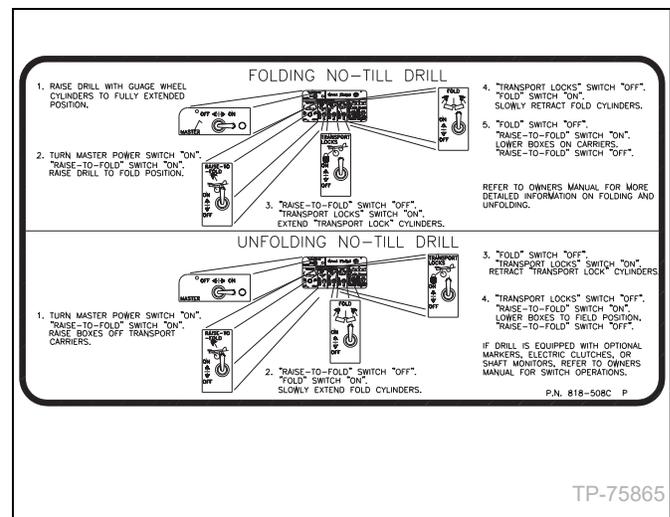


Figure 11
Unfold Decal

7. When transport-lock cylinders are retracted, turn off transport-lock switch. Turn on raise-to-fold switch.
8. Work tractor hydraulic lever to lower drill.
9. Turn off raise-to-fold switch.

Lifting the Drill in the Field

Your drill is raised for field operations with hydraulic cylinders in a master-slave configuration. Over a period of normal use the cylinders may get out of phase. This will cause one side of the drill to run higher. To rephase the cylinders:

1. Raise the drill completely with the field-lift cylinders. Hold the hydraulic lever on for several seconds until all cylinders are fully extended. This should be done every time the implement is raised out of the ground.
2. When all field-lift cylinders are fully extended, momentarily reverse the hydraulic lever to retract the system 1/2 inch. This will help maintain levelness.

 Air in the field-lift system will cause jerky and uneven cylinder movement.

Field Operations

For normal seeding operations:

1. Hitch drill to a tractor with sufficient weight and horsepower. Refer to *Tractor Requirements*, page 19, and *Hitching Tractor to Drill*, page 20.
2. Perform all checks listed on *Pre-start Checklist*, page 19.
3. Lower the drill into seeding position.
4. Observe the drill from the side. Check that the tongue is running level with the ground. If not, refer to *Hitch Height Adjustment*, page 15.
5. Set the seeding rate for both boxes. Refer to *Setting the Seeding Rate*, page 36. Make sure the seeding rate is the same across the drill.
6. Load boxes with clean seed.
7. Record the acremeter readout. The acremeter is mounted on the outside end of the left gauge-wheel shaft. Subtract this initial readout from later readings to calculate area drilled.
8. Pull forward, lower drill, and begin seeding.
9. Always lift the drill out of the ground when turning at row ends and for other short turns. Seeding will stop automatically as the drill is raised in the field.

 This drill is offered in three different row spacings. Some of the drill boxes do not have the same number of seed cups between each internal box divider. The section with the largest number of cups will empty sooner.

Opener Operation

Never back up with openers in ground. If you do, check all openers to be sure none are clogged or damaged.

For information on setting seed depth and opener adjustments, see *No-Till Seeding*, page 29, and *Leveling Adjustments*, page 38. For more information on troubleshooting opener problems, see “**Troubleshooting**,” page 42.

Marker Operation

Optional marker attachments are sold as single (left-hand) or dual units. The markers are operated on the same electro-hydraulic circuit as the raise-to-fold, transport-lock and folding functions.

To operate the markers, turn the control-console switch to the left marker position after the drill is unfolded. Activate the hydraulic lever to fold or unfold the marker.

The dual markers are equipped with a sequencing valve to ease marker operation. Starting with both markers folded, the sequence is:

1. Activate lever. Right unfolds; left marker stays folded.
2. Reverse lever. Right folds up; left stays folded.
3. Activate lever. Left unfolds; right stays folded.
4. Reverse lever. Left folds up; right stays folded.
5. Sequence repeats.

 Because of the sequencing valve, do not turn marker switch between the left and right positions on the control console. The left-marker position controls both markers. If you wish to operate the markers independently, contact your Great Plains dealer for additional parts to modify the marker hydraulics.

When marker operation is complete, return markers to the folded position and turn the marker switch to the center (off) position.

Shaft Monitor Operation

To operate the optional shaft monitors, turn the shaft-monitor switch on the control console to the on position. If either seed-cup shaft stops for 20 seconds, an alarm will sound. A light on the control console will designate the failed shaft.

The 20-second delay is to prevent nuisance alarms when turning at the end of the field. If the alarm sounds, remember you have traveled for 20 seconds without seeding.

Electric Clutch Operation

Electrical clutches on the upper jack shaft turn seeding off and on as the drill is raised and lowered in the field. The electric clutches allow you to turn seeding off while the drill is lowered. A clutch for each drive shaft allows you to control each drill box independently. The clutches are controlled through the in-cab control console.

For regular field operation, turn the electric-clutch switches on the control console to the on position. This will activate the magnet on each clutch and allow the clutch shafts to rotate.

To shut off seeding in one or both boxes while the drill is lowered, turn one or both switches to the off position.

Transporting



This implement should never be towed faster than 20 mph.

Before transporting, check and practice the following items.

Fold Drill. Transport the drill in folded position with transport-lock cylinders extended. Refer to *Folding the Drill*, page 21.

Loaded Boxes. This drill can be transported with boxes loaded with grain, but only with extreme caution. The additional weight reduces maneuverability and increases stopping distance.

Stopping Distance. Keep the weight of this drill in mind. Allow sufficient stopping distance at all times. Reduce speed prior to making any turns or other maneuvers. Increase stopping distance if transporting with loaded boxes.

Bystanders. Check that no one is in the way before moving. Do not allow anyone to ride on the drill.

Tractor Requirements. Check that the towing vehicle is large enough to control the drill on the road. Refer to *Tractor Requirements*, page 19.

Clearance. Know drill dimensions in transport position and follow a route that provides adequate clearance from all obstructions. Refer to *Specifications and Capacities*, page 54.

Tires. Check that all tires are properly inflated as listed on *Tire Inflation Chart*, page 55.

Road Rules. Comply with all federal, state and local laws when transporting on public roads.

Warning Lights. Always use warning lights when transporting the drill.

Watch Traffic. Be prepared for sudden maneuvers from following vehicles.

Markers. Always transport optional markers folded flat. Make sure the second marker section rests securely on the transport carrier.

Harrow Attachment. Fold the optional harrow attachment before hydraulically folding drill for transport. Refer to *Folding Harrow Attachment*, page 22.

Parking

Perform the following steps when parking the drill. Refer to *Shutdown and Storage*, page 3, for information on long-term storage preparation.

1. Raise, lock and fold the drill in the transport position. Refer to *Folding the Drill*, page 21.
2. Park the drill on a level, solid area.
3. Securely block the tires to prevent rolling.
4. Remove the jack from its storage stub. Pin the jack in parking position. See Figure 9, page 20. If the ground is soft, place a board or plate under the jack.
5. Extend the jack until tongue weight is off the drawbar.
6. Unplug the hydraulic lines from the tractor. Do not allow hose ends to rest on the ground.
7. Unplug the control-console cable from the tractor. Unplug the drill light cable from the tractor.
8. Remove hitch pin and safety chain from tractor drawbar.

Acremeter Operation

A battery-operated electronic acremeter is supplied with the drill. The display module for the system is normally on the front face of the main toolbar near the left gauge wheel.



Acremeter Console

80377

The acremeter calculates and displays the field acres and total acres accumulated.

The meter counts rotations of the main ground drive shaft before the clutch. The meter tallies all movements with the drill unfolded, whether planting or not.

There are three buttons on the face of the acremeter:



Select - Navigates to the next screen. If the current screen has any settings, pressing the Select button will also save the current screen's settings.

Pressing Select while the screen is inactive will activate display mode starting on screen A1.



Up Arrow - Increments current value. If the current screen only displays a reading, then arrow buttons can be used to reset current reading or for navigation.



Down Arrow - Decrements current value. If the current screen only displays a reading, then arrow buttons can be used to reset current reading or for navigation.

Operating Instructions

The electronic acremeter operates in two modes: sleep and entry. In sleep mode, the display is blank, and the counter is accumulating acres. Sleep mode will be entered if a button is not pressed for 20 seconds. In entry mode, the display is on, and the operator can enter values.

To access entry mode, press and hold the SELECT button, the acre counter will cycle through the functions that it can perform. The available screens, in order, are:

- Field Acre Count
- Total Acre Count
- Battery Life
- Password
- Pulses per 400ft
- Swath Width
- Calibration
- Units of Measurement
- Sensor Count
- Change Password

Acrometer Screens

Field Acre Count



Displays the number of acres covered since the field acre counter was last reset. If there is an additional acre counting sensor on the machine, an A2 screen will immediately follow the A1 and T1 screens.

Pressing Select navigates to screen T1 or T2.

Press and hold both arrow buttons to reset the current field acre counter.

Total Acre Count



Displays the total number of acres covered since the total acre counter was last reset. If there is an additional acre counting sensor on the machine, a T2 screen will immediately follow the T1 and A2 screens.

Pressing Select navigates to screen BAT or A2.

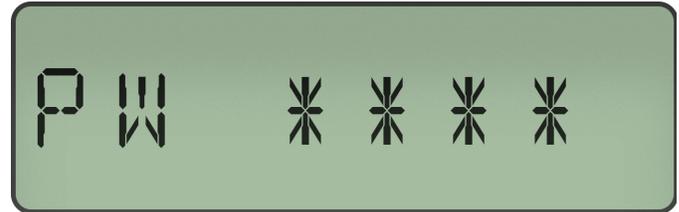
Battery Life



Displays the percentage of remaining battery life.

Pressing Select navigates to screen PW.

Password



Displays the password screen. Entering your system password enables access to configuration parameters.

Use the arrow buttons to enter your 4 digit password.

Pressing Select while password is salted - **** - will navigate to the A1 screen.

Pressing Select while the correct password value is entered will navigate to the P1 screen. If the password is incorrect, the PW screen is reset.

Pulses Per Distance



Displays the pulse scaling factor. This value affects the number of pulses emitted per 400ft traveled.

Use the arrow buttons to increase or decrease the scaling factor.

Pressing Select will save the configuration and navigate to the P2 or SW screen.

Swath Width



Displays the machine's swath width. To correctly calculate the number of acres planted, the acre meter needs the swath width of the drill.

Use the arrow buttons to increase or decrease the swath width.

Pressing Select will save the configuration and navigate to the CAL1 screen.

Calibration

Displays either the calibration request status or the current calibration value.

If displaying the request status - YES or NO - and status is YES, pressing Select begins sensor calibration.

If displaying the request status and status is NO, pressing Select does not begin sensor calibration and instead navigates to the UNITS or CAL2 screen.

When calibrating and calibration value is greater than the acremeter's minimum required value, pressing Select saves the calibration value and navigates to the UNITS or CAL2 screen.

Units of Measurement

Displays the units of measurement used by the acre meter.

Use the arrow buttons to change the units of measurement to either USA - Imperial - or METRIC.

Pressing Select saves the unit selection, converts the swath width value, and navigates to the SENSOR screen.

Sensor Count

Displays the number of active sensors in the system.

Use the arrow buttons to change the entry value.

Pressing Select saves the sensor count configuration and navigates to the CHPW screen.

Change Password

Displays either the password change status or the new password value.

If displaying the change status - YES or NO -, use the arrow buttons to switch the change status.

If displaying a new password value, use the arrow buttons to increase or decrease the new password value. Holding the arrow buttons will automatically increase or decrease the password value.

If displaying the change status - YES or NO - and the status is YES, pressing Select allows for a new password to be entered.

If displaying the status and status is NO, pressing Select navigates to the A1 screen.



Adjustments

No-Till Seeding

To get full performance from your no-till drill, you need a good understanding of coulter, opener and press wheel operation.

Coulters. A no-till coulters is mounted independently and directly ahead of each opener. The coulters cut through heavy trash and make a groove in the soil. The coulters are mounted directly on the box frame. Consequently, the cutting depth of all coulters changes as the drill is raised and lowered. The cutting depth of the coulters is controlled by an adjustable hydraulic depth stop. Coulters that run directly in tire tracks can be lowered individually. Refer to *Coulter Adjustments*, this page, for information on how to make these adjustments.

Openers. Each opener is mounted on the drill with parallel arms. This parallel-action mounting allows the opener to move up and down while staying in-line with a coulters. Opener double disks widen the coulters groove, making a seed bed. A seed tube mounted between the disks delivers seed to the trench. The down force needed to cut and widen the coulters groove is supplied by two springs nested in the parallel linkage. Adjusting these springs changes opener down-force. Refer to *Opener Down-Pressure Adjustment*, page 35, for information on how to make this adjustment.

Press Wheels. Attached to the rear of each opener is one of several press-wheel options. The press wheels provide two important functions.

First, the press wheels close the furrow, gently pressing the soil over the seed. To provide consistent seed firming, the press wheels are free to move downward from their normal operating position. This system maintains pressing action even if the opener arm is lifted when the disks encounter obstructions.

Second, the press wheels provide opener depth control. The higher the press wheels run relative to the double disks, the deeper seed will be placed. To maintain a consistent depth, upward press-wheel movement is restricted by an independently adjustable stop on each opener. Refer to *Press Wheel Adjustment*, page 35, for information on how to make this adjustment.

Coulter Adjustments

The drill is assembled so that when the coulters are at two inches deep, the seeding depth is about one inch. This is a good baseline setting for most seeding operations. As field conditions warrant, you can change settings on the entire drill or individual coulters.

Hydraulic Depth Control

Refer to Figure 12

The master field-lift cylinder on the left-hand transport wheel is equipped with a hydraulic valve that regulates coulters depth. Figure 12 shows the valve and knob used to adjust coulters depth.

Turn the knob clockwise **A** to lower the coulters and counter-clockwise **B** to raise the coulters. Each rotation will move the coulters approximately 3/32 inches. Make depth adjustments with the implement slightly raised. After adjusting the valve, raise and lower the implement several times and recheck coulters depth.

The depth stop regulates depth on all coulters. If the ends of either box run higher or lower than the center, the field-lift system may be out of phase or have air in it, or the frame sections may not be level. Refer to *Lifting the Drill in the Field*, page 23, *Bleed Field-Lift Hydraulics*, page 17, or *Leveling Adjustment*, page 38.

When performing maintenance operations, the cylinder lock channels **1** must be installed on the field-lift cylinder rods **2**. On the left-hand field-lift cylinder, remove bolt **3** from the lower depth stop assembly **4**. Rotate the lower depth stop assembly out of the way to prevent damage both the lower depth stop assembly and the lock channel. Refer to *Cylinder Lock Channels*, page 45.

The cylinder lock channels must be installed in the storage location on the mainframe during transport.

WARNING

The cylinder lock channel must not contact the lower depth stop assembly or damage will occur.

WARNING

The cylinder lock channels must not be installed on the field-lift cylinder rods during transport or damage can occur.

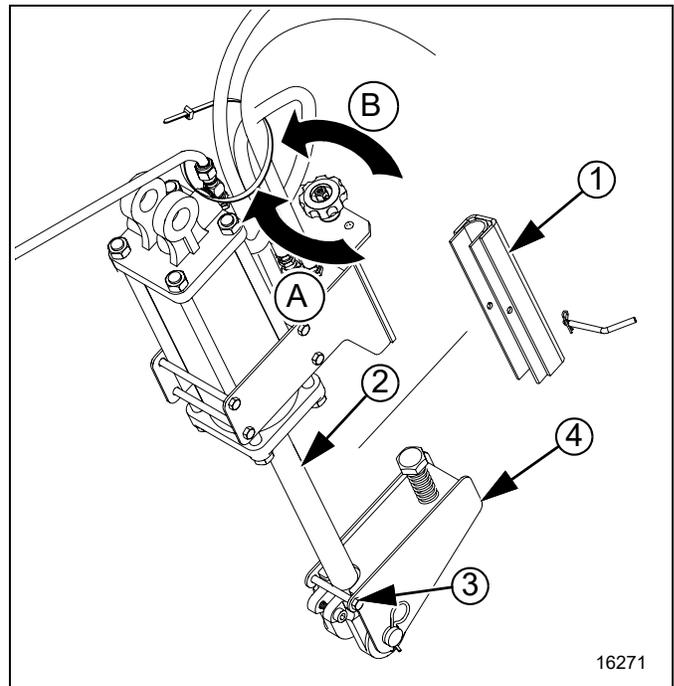


Figure 12
Left Transport-Wheel Cylinder with Depth-Control Stop

Electric Clutch Switch Adjustment

To adjust the height at which seed metering is turned off, follow these steps.

Refer to Figure 13

1. Locate the height switch at left-hand gauge wheel.
2. Lower the implement until it is at a height where seeding should start (usually just above the ground). Securely support frame at this height with jack stands or blocks.
3. Turn off the tractor and remove the key.

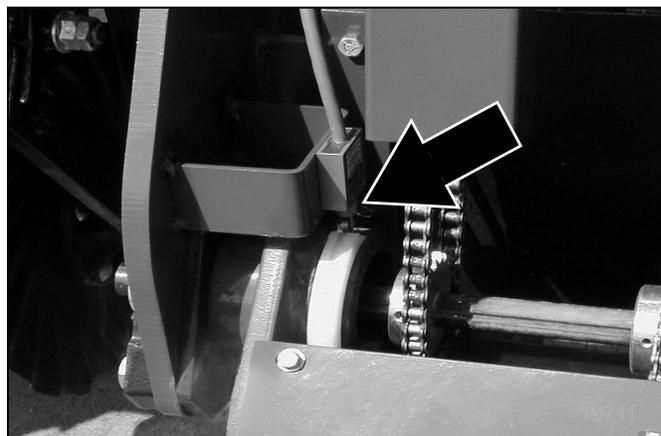


Figure 13
Electric Clutch Switch

Refer to Figure 14

4. Loosen the cam clamp (1) on the gauge wheel rockshaft and turn until the switch roller (2) is just starting to make contact with the ramp surface.

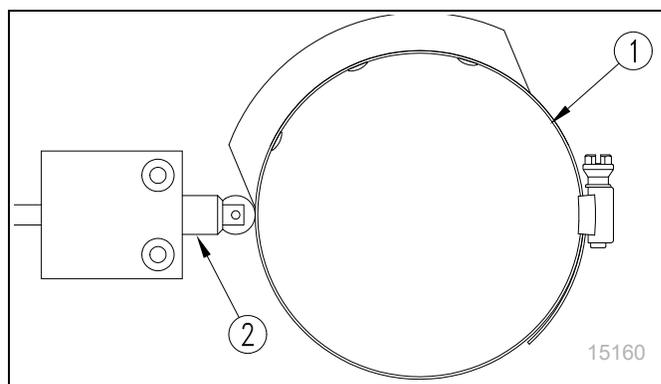


Figure 14

Refer to Figure 15

5. Raise the implement fully and check that the switch is compressed as shown.

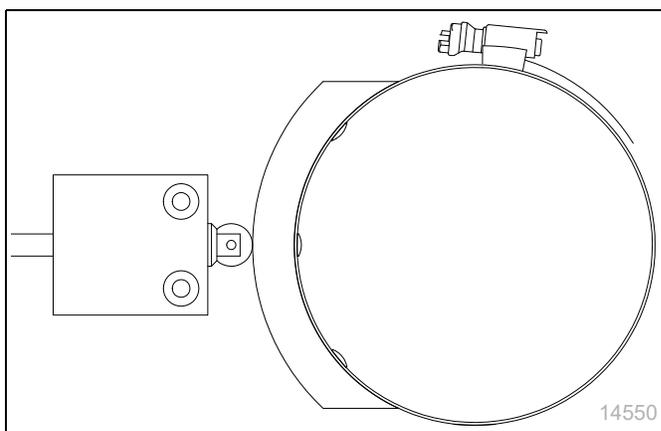


Figure 15

Pull Cable Adjustments

Refer to Figure 16

1. To adjust the pull cables, loosen the jam nut on the adjustment trunnion screw, and adjust the screw either in or out to move the box end forward or backwards as required. Once adjusted, re-tighten the jam nut.
2. Pull ahead slightly and re-check the box alignment. Readjust the pull cables if necessary.

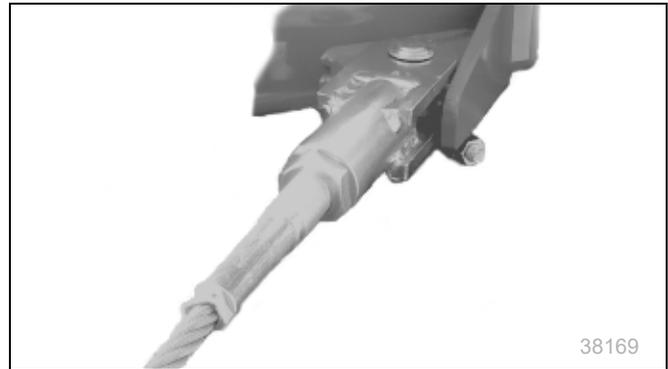


Figure 16
Pull Cable

Refer to Figure 17

3. The pull cables need to be twisted to allow for proper movement during folding and unfolding operations. To do this, face towards the left hand box frame and remove the pin from the adjustable clevis on the pull cable. Taking the adjustable clevis and pull cable as one, turn or twist this end of the cable one complete turn towards the center of the machine and re-pin the clevis.
4. Face towards the right hand box frame and remove the pin from the adjustable clevis on the pull cable. Take the adjustable clevis and pull cable as one, then turn or twist this end of the cable one complete turn towards the center of the machine and re-pin the clevis.
5. Once both pull cables have been properly twisted, carefully fold and unfold the drill.
6. Tighten all bolts as specified on the 'Torque Values Chart' on page 55.



Figure 17
Twist Direction

Weights

If more weight is required for coulters to penetrate the soil, weight bracket kits are available from your Great Plains dealer. Refer to *Weight Brackets*, page 50 for part numbers and ordering information.

Refer to the charts below for the results of adding weights to your drill. Always add an equal amount of weight to each box frame. Never add more than 500 pounds to each box frame.

Weight Chart, 24-Foot Drill

| | 7 1/2-in. Rows | 8-in. Rows | 10-in. Rows |
|---|-------------------|---------------|----------------|
| Empty Drill, Pounds | 17,400 | 17,100 | 16,000 |
| Pounds Per Coulters, No Weights | 305 | 320 | 390 |
| Pounds Per Coulters, Brackets and 1000 Pounds Added | 330 | 340 | 420 |

Weight Chart, 30-Foot Drill

| | 7 1/2-in. Rows | 8-in. Rows | 10-in. Rows |
|--|-------------------|---------------|----------------|
| Empty Drill, Pounds | 20,100 | 19,600 | 18,400 |
| Pounds Per Coulter, No Weights | 285 | 300 | 335 |
| Pounds Per Coulter, Brackets and 1000 Pounds Added | 305 | 325 | 385 |

 Optional markers, harrows and small-seed attachments add about 25 pounds per coulter. Completely loading the grain or small-seed boxes adds about 100 pounds per coulter.

Coulter Springs

The coulter spring length is preset at 10 inches, giving the coulter an initial operating force of 400 pounds. This setting is adequate for many difficult no-till conditions.

For lighter no-till conditions where rocks or other obstructions are a problem, you can lengthen the springs to protect the coulters from impact. In heavier conditions, shortening the spring will increase coulter force. Refer to the chart below for adjusting the coulter springs.

Coulter Down-Pressure Chart

| Spring Length | Coulter Force |
|---------------|---------------|
| 10-1/4 in. | 300 lb. |
| 10 in. | 400 lb. |
| 9-3/4 in. | 525 lb. |

 Any attempt to reset the coulter spring length shorter than 9 3/4 inches may contribute to premature failure of parts and warranty will be voided. If additional force is necessary, add weights to the implement.

Individual Coulters

Refer to Figure 18

When coulters follow in tire tracks and do not give satisfactory depth, individual coulters can be lowered by loosening the mounting clamps and adjusting the coulters to the desired setting.

To tighten clamps, snug the hex-head clamp bolts (1) just until the U-bolts are tight on each side of the spring bar. Tighten nuts on U-bolts (2), then finish tightening the hex-head clamp bolts.

NOTICE

Never lower any coulters more than 1 1/2 inches. Tire damage could result as the drill is folded. Also note that when the drill is in the raised position, ground clearance on lowered coulters is reduced.

 There may be as much as a 1/8-inch gap between the clamp plates even when the coulters are mounted securely.

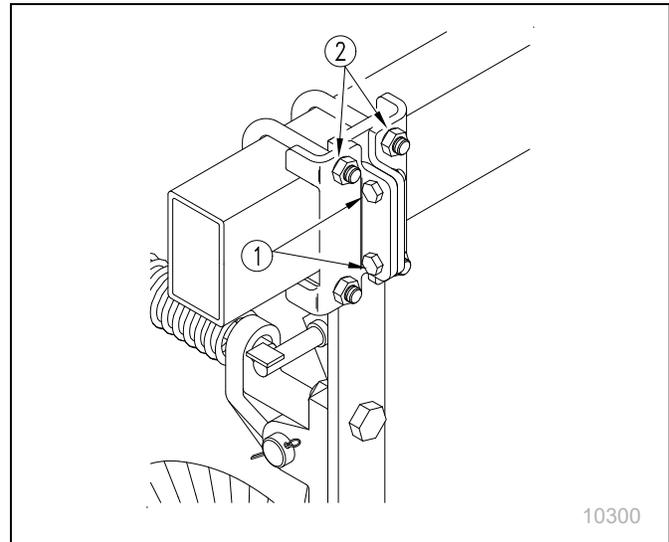


Figure 18
Individual Coulters Height Adjustment

Opener Down-Pressure Adjustment

You can adjust spring down pressure individually for each opener. This is useful for penetrating hard soil and planting in tire tracks.

Refer to Figure 19

To adjust down pressure, use the adjustment tool stored under the walkboard. Position the tool in the holes on the spring mounting plates and pull down on the adjuster as shown.

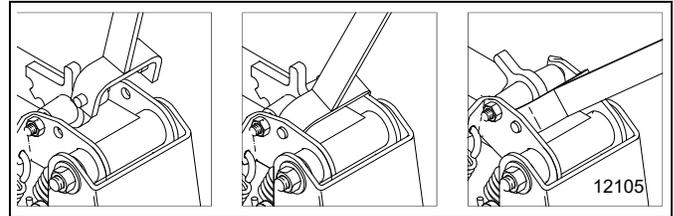


Figure 19
Opener-Spring Adjustment

Refer to Figure 20

Minimum and maximum settings are indicated by the position of spring adjuster.

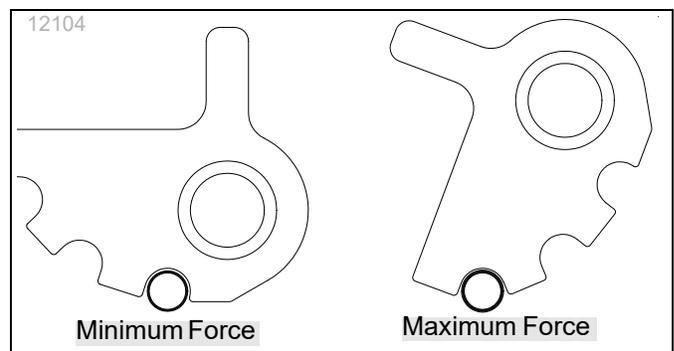


Figure 20
Spring Settings

Press Wheel Adjustment

Refer to Figure 21

Changing the height of the press wheel automatically changes seeding depth. To adjust, lift up on the T-handle and slide it forward or back.

- For shallower seeding, slide the handle toward the implement.
- For deeper seeding, slide the handle away from the implement.

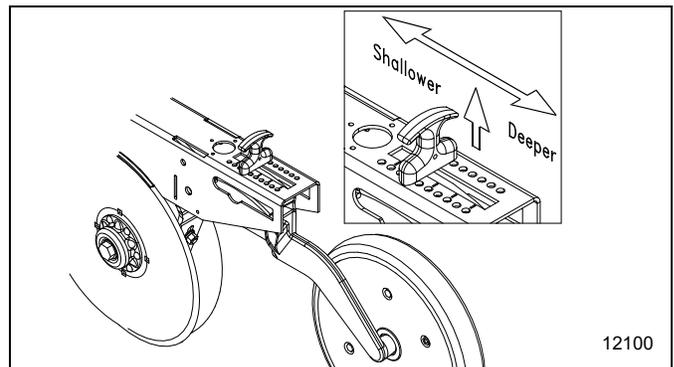


Figure 21
Press Wheel Adjustment

Setting the Seeding Rate

Calibrating the seeding rate requires four steps: shifting the speed-change gearbox, adjusting the seed-rate handle, setting the seed-cup doors, and checking the seeding rate.

Check the [Seed-Rate Charts](#) or in the drill boxes. These charts list the proper settings for the speed-change gearbox and seed-rate handle for various seeds and seeding rates.

The seed-rate charts are based on cleaned, untreated seed of average size and test weight. The rates are based on 11L x 15 8-ply rib implement tires and 265/70B16 skid steer tires. Many factors will affect seeding rates including foreign material, seed treatment, seed size, field conditions, tire pressure and test weight. Minor adjustments likely will be needed. Set and check the seeding rate using the procedures below, then re-adjust the rate as necessary.

Before setting the seeding rate, rotate both gauge wheels to see that the seed cups and drive are working properly and free from foreign material.

 Each drill box has its own metering mechanism. After adjusting and checking the rate on one box, set the same rate on the other box.

1. Shift Speed-Change Gearbox

Refer to Figure 22

The speed-change gearbox is designed to give you a variety of speeds for different seeds and seeding rates. You can shift between four different drive types.

| Gearbox Ratios: |
|--|
| Drive Type 2 is 2.06 Times Faster Than 1 |
| Drive Type 3 is 3.08 Times Faster Than 1 |
| Drive Type 4 is 5.03 Times Faster Than 1 |

Refer to the seed-rate charts for the correct drive type—1, 2, 3 or 4. Move the selector handle on the gearbox until the correct number appears in the handle window as shown in Figure 22. Rotate the tires a few turns to confirm the gearbox has engaged.

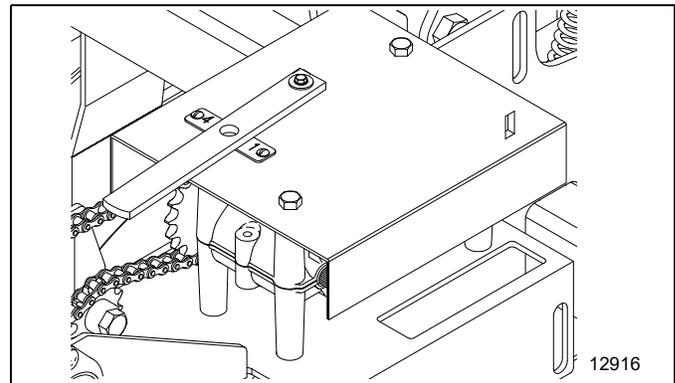


Figure 22
Speed-Change Gearbox

2. Adjust Seed-Rate Handle

Refer to Figure 23

Position the handle to the setting indicated on the seed-rate chart. To adjust, loosen the wing nut under the handle and slide until indicator lines up with desired setting. Tighten nut.

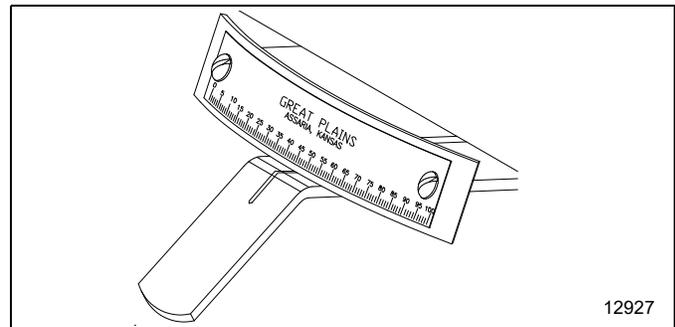


Figure 23
Seed-Rate Handle

3. Set Seed-Cup Doors

Refer to Figure 24

For wheat and other small seeds, move the seed-cup-door handles to the highest position. For soybeans and other large seeds, lower the handles to the second position. If excessive seed cracking occurs, lower the handles to the third position. For seed-cup clean out, move the handles to the fourth, wide-open position. Make sure all handles are in the same position before drilling.

4. Check Seeding Rate

- a. Place several pounds of seed over the three seed cups on the outside end of the drill box.
 - b. Disconnect the seed tubes from the three openers fed by the covered cups.
 - c. Raise the drill off the ground.
 - d. Record the empty weight of a container large enough to hold the seed metered for one acre.
 - e. Turn gauge wheels until seed drops to the ground from each cup.
 - f. Place a container under the three seed tubes to gather the seed as it is metered.
 - g. Rotate the gauge wheel until one acre has been tallied on the acremeter. This will be about 225 rotations on a 24-foot drill and about 181 rotations on a 30-foot drill. Check that the seed cups have plenty of seed coming into them.
 - h. Weigh the metered seed. Subtract the initial weight of the container. Divide by three. Multiply by the number of openers on your drill for the pounds-per-acre seeding rate. If this figure is different than desired, re-adjust the seed-rate handle and recheck the rate.
5. When satisfied with the seeding rate, repeat steps 1 through 3 for the other drill box, setting it to the same rate.

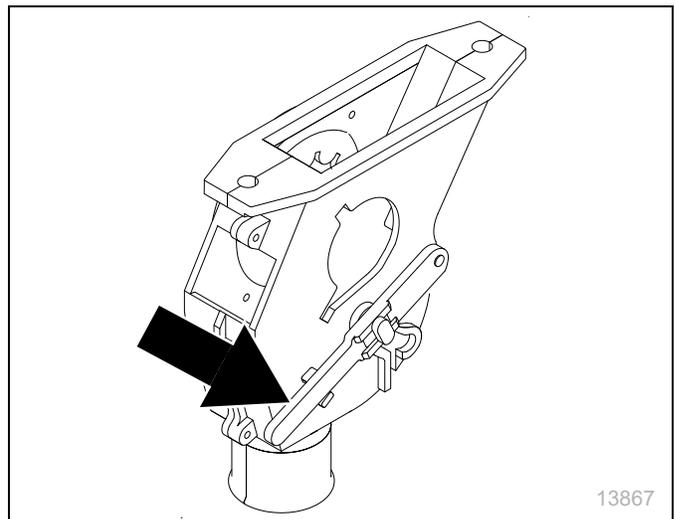


Figure 24
Seed-Cup Door Handle

Small Seeds Attachment

To set the seeding rate, refer to the [Seed-Rate Charts](#). Move the seed-rate handle on the attachment to the setting indicated on the chart.

To calibrate the attachment to your material, follow the steps listed under *Check Seeding Rate*, page 37.

Gauge-Wheel Drive Adjustment

Refer to Figure 25

Inside both gauge-wheel arms are two idler sprockets. Adjust these sprockets after the first 100 acres of drill use and at the beginning of each season.

To adjust, move the front idler sprocket on the top of the chain down by loosening the jam nut and screwing in the adjustment stud, located on top of the wheel arm. Do not over tighten chains, causing excessive wear. Tighten the jam nut to maintain the idler position.

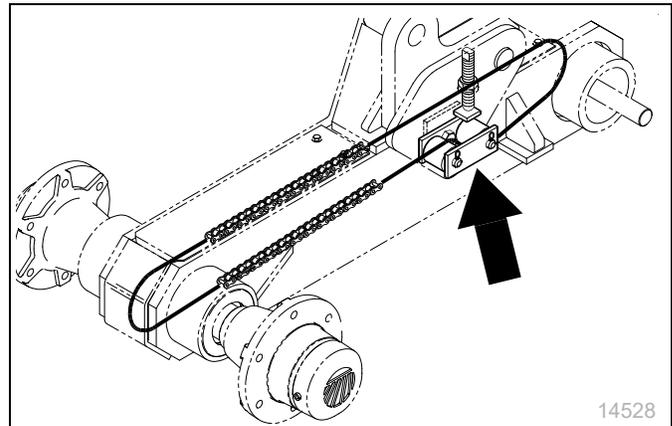


Figure 25
Gauge-Wheel Idler-Sprocket Adjustment

Disk Scraper Adjustment

Refer to Figure 26

To keep the double-disk openers turning freely, dirt scrapers are mounted between the disks to clean as the disks rotate. As field conditions vary, you may need to adjust the scrapers. In damp conditions, the scrapers may need to be lowered. If openers are not turning freely, the scrapers may need to be raised. To adjust scrapers, loosen the 3/8-inch bolt and move scraper as needed.

 The optional Air Design disk scrapers are self-adjusting.

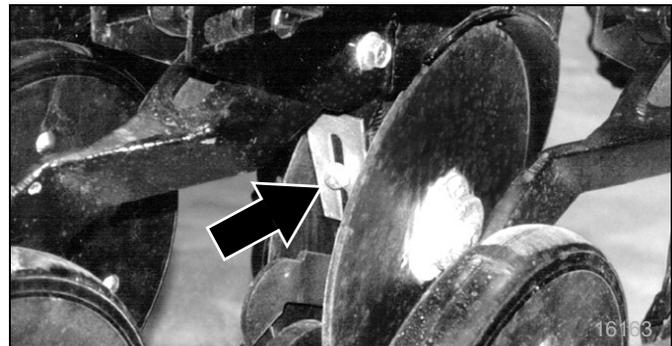


Figure 26
Disc-Scraper Adjustment

Leveling Adjustment

Equal coulter depth across the implement can only be maintained if all frame sections are level. Periodic frame leveling should not be necessary. If your drill appears to lift or plant unevenly, check the following before re-leveling the drill.

First, make sure the tongue is level to the ground while running in the field. Refer to *Hitch Height Adjustment*, page 15.

Second, check the field-lift cylinders. Be sure they do not have internal oil leaks.

If leveling is necessary, follow instructions under *Frame Leveling Adjustment*, page 17.

Marker Adjustments

Marker Chain

There are two marker chain adjustments—lifting slack and folding slack. These adjustments should be performed during initial marker assembly, but additional adjustment may be needed. The adjustments are interrelated and should be made in the following order:

Lifting Slack

1. Start with the marker in the unfolded position. Back the full-threaded adjustment bolt down until the head extends as little as possible. Slowly fold the marker, observing the motion of the disk. If the marker disk slides across the ground more than about one foot before the chain and linkage lifts it up, the chain is too slack. Tighten the chain by moving the clevis one or two links at the inside end of the chain. Recheck by repeating this process.
2. If the chain does not have enough slack when the marker is in the unfolded field position, the chain will prevent the end of the marker from dropping into field depressions. Correct this condition by moving the utility clevis one or two links, giving the chain more slack.

Folding Slack

Refer to Figure 27

After the adjustments in step one have been completed, fold the marker. The adjustment bolt is provided to take the slack out of the chain while the marker is in the folded position. Extend this bolt until the slack is out of the chain. Lock the bolt in this position by tightening the nuts on either side of the upright channel on the first marker section.

NOTICE

To prevent marker damage, the marker arm is attached to the marker body with a 7/16-inch, grade 5 shear bolt. See Figure 27. If it breaks, you must replace it with a grade 5 bolt. The bolt is Great Plains part number 802-234C.

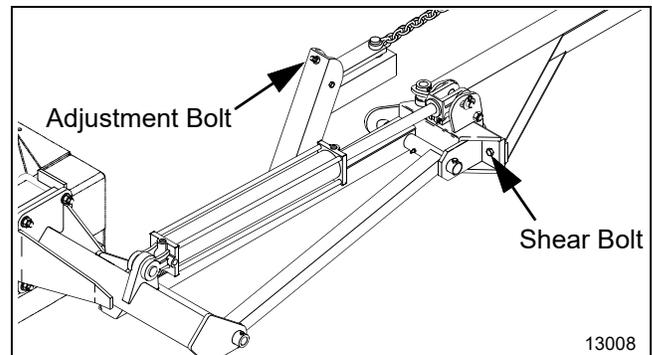


Figure 27
Full-Threaded Adjustment Bolt

Disk Adjustment

The aggressiveness and the mark left by the disk may be changed by two methods:

Angle of Cut

Refer to Figure 28

To change the angle of cut, loosen the two 1/2-inch bolts holding the disk assembly. Rotate the disk assembly as desired.

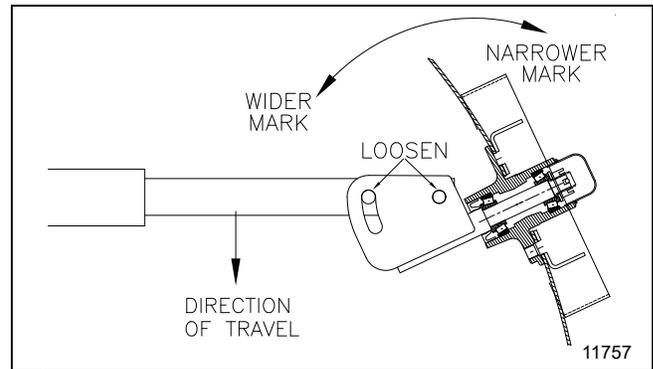


Figure 28
Disc Angle

Direction of Cut

Refer to Figure 29

The disk may be mounted to throw dirt in or out for different marks in different soil conditions. To change the direction of cut:

- Reverse the disk by removing the four lug bolts on the disk hub. Remount the depth band and lug bolts.
- Turn the entire disk assembly by removing the two 1/2-inch bolts and turning the assembly one-half turn. Reinstall the 1/2-inch bolts and set the disk angle as desired.

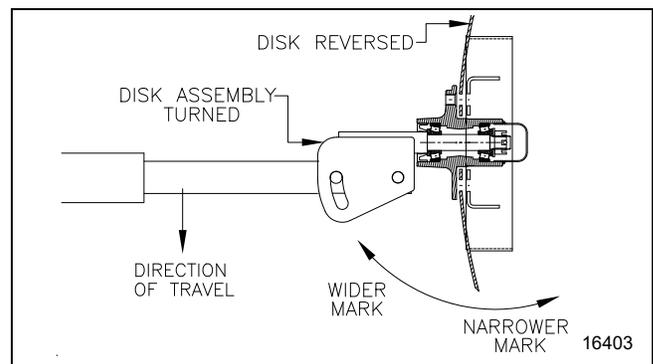


Figure 29
Direction of Cut Reversed

Coulter Tines

Optional coulter tines are available for the front-mounted coulters. In high-residue fields, the tines will help guide residue under the coulters and openers to prevent plugging. Under normal conditions these tines should not be needed. Remove or install the tines as field condition warrant.

Harrow Attachment Adjustment

Refer to Figure 30

Figure 31 shows a successful harrow position for no-till conditions. Because of different soil moisture, trash levels and trash types, you may need to reposition the tube frame or tines. Initially position the frame and tines as shown, then re-adjust as necessary.

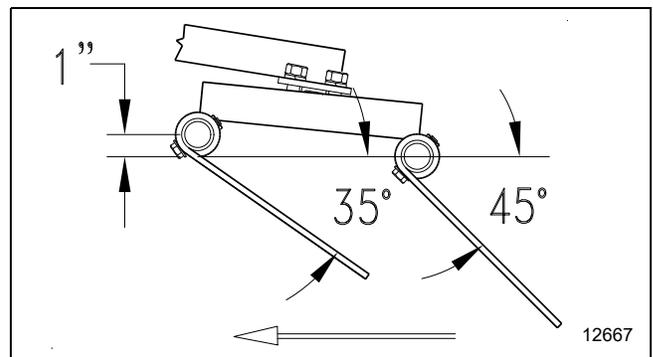


Figure 30
Tine Angle for No-Till Drilling

Refer to Figure 31

To adjust the frame, loosen the four hex nuts (1) on the u-bolts and rotate the frame tube (2) as necessary.

To adjust the tines, loosen the four 1/2-inch hex nuts (3) on the 1/2-inch U-bolts (4) on the support bar (5). Rotate tine tubes (6) so the tines (7) are against the stop bushings (8) and are angled back as necessary. Tighten hex nuts on U-bolts.

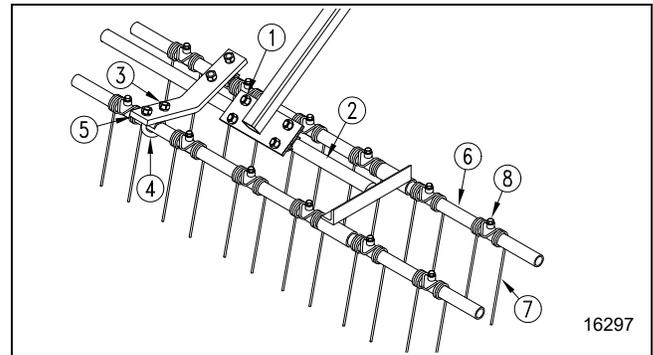


Figure 31
Harrow Adjustment

Seed-Lok

The optional Seed-Lok firming wheels provide additional seed-to-soil contact. The wheels are spring loaded and do not require adjusting. In some wet and sticky conditions the wheels may accumulate soil. Remove or install the wheels as field conditions warrant.

Troubleshooting

| Problem | Solution |
|---|--|
| Uneven seed spacing or stand | Check for plugging in seed cups. |
| | Check for plugging in seed tubes. |
| | Reduce ground speed. |
| | Check that opener disks turn freely. |
| | Shift speed-change gearbox to a faster drive-type and adjust the seed-rate handle to a lower number. |
| | Increase spring pressure so openers penetrate low spots. Refer to Opener Down-Pressure Adjustments, page 35. |
| | Check for trash or mud build-up on Seed-Lok wheels. |
| Opener disks not turning freely | Check for trash or mud build-up on disk scraper. Re-adjust scraper if necessary. Refer to Disk Scraper Adjustment, page 38. |
| | Check if disk scraper is restricting disk movement. Refer to Disk Scraper Adjustment, page 38. |
| | Check disk bearings. |
| | Check opener frame for possible damage. |
| | If opener disks turn freely by hand but not in field, reduce down pressure on opener. Refer to Opener Down-Pressure Adjustment, page 35. |
| | Check if press wheels are adjusted too high. Refer to Press Wheel Adjustment, page 35. |
| Actual seeding rate is different than desired | Check tire pressure. Proper inflation is listed on Tire Inflation Chart, page 55. |
| | Check gauge-wheel size. Proper size is 11L x 15 8-ply. |
| | Clean seed-treatment build up out of seed cups and shafts. |
| | Refer to Setting the Seeding Rate, page 36, for instructions on calculating seeding rate. |
| Excessive seed cracking | Use slower drive type on gearbox and adjust seed-rate handle to a higher number. |
| | Position seed-cup doors to a lower notch. Refer to Set Seed-Cup Doors, page 37. |
| Acrometer doesn't measure accurately | Check tire pressure. Proper inflation is listed on Tire Inflation Chart, page 55. |
| | Check gauge-wheel tire size. Proper size is 11L x 15 8-ply. |
| | Check seeding operation for excessive overlap or gaps between passes. |
| | Consider soil conditions; loose soil and slippage will cause variations in acres registered. |
| | Check that your acrometer is for your drill width. Refer to the parts manual. |
| Uneven seeding depth | Check if drill tongue is running level with ground. Refer to Hitch Height Adjustment, page 15. |
| | Check if drill frame is level. Refer to Leveling Adjustment, page 38. |
| Press wheel not compacting the soil as desired | Reset press-wheel depth. Refer to Press Wheel Adjustment, page 35. |
| | Re-adjust press wheel depth to match coulter depth. |
| | Increase down-pressure on disk openers. Refer to Opener Down-Pressure Adjustment, page 35. |
| Grain box not emptying evenly | Check that speed-change gearbox and seed-rate handles are set the same on each drill box. |
| | Certain models do not have the same number of seed cups between each divider of bulkhead. The section with more cups will empty sooner. |

| Problem | Solution |
|---|--|
| Press wheel or openers plugging | Check soil conditions—may be too damp. |
| | Decrease opener down pressure. See Opener Down-Pressure Adjustment, page 35. |
| | Do not back up with openers in the ground. |
| | Do not stop and allow drill to roll backward with openers in ground. |
| | Check optional Seed-Lok wheels. Remove if soil conditions are too wet. Refer to Seed-Lok, page 41. |
| Install coulter trash tines. Refer to Coulter Tines, page 40. | |
| Raising and lowering drill is rough or uneven | Lubricate wheel-arm pivot casting. Refer to Lubrication, page 46. |
| | Check hydraulic fittings for leaks. |
| | Rephase the field-lift cylinders. Refer to Lifting the Drill in the Field, page 23. |
| | Check that rephasing cylinders have been properly bleed. Refer to Field-Lift Hydraulics, page 17. |
| Seed-cup sprockets locked up or twisted seed-cup shaft | Check for foreign material lodged in one or more seed-cup sprockets. |
| | Inspect seed-cups for dried liquid insecticide. Remove build-up by disassembling each seed cup and scraping the foreign substance from the turning surfaces. |
| Coulters not going deep enough | Check weight charts on page 32 and add weight if necessary. |
| | Change depth stop to lower coulters. Refer to Coulter Adjustments, page 34. |
| Coulters and drill going too deep | Check weight charts on page 32 and remove weight if necessary. |
| | Set press wheels to a shallower depth. Refer to Press Wheel Adjustment, page 35. |
| | Change depth stop to raise coulters. Refer to Coulter Adjustments, page 29. |
| Openers and/or coulters plugging in adverse conditions | Drill at a slight angle to the rows. |
| | Install coulter trash tines. Refer Coulter Adjustments page 29. |
| Actual seeding rate is different than desired | Check tire pressure. Proper inflation is listed on Tire Inflation Chart, page 55. |
| | Check gauge wheel size. Proper size is 11L x 15" 8-ply. |
| | Seed treatment will affect seeding rate if the chemicals build up in seed cup. Unless cleaned regularly, this build-up can cause the seed-cup shaft to twist or break. |
| Hydraulic marker functioning improperly | Check all hose fittings and connections for air and oil leaks. |
| | Check that the chain on the folding marker is slack when the marker is both fully folded and unfolded. Add chain slack as necessary. Refer to Marker Adjustments, page 39. |
| | Check tractor hydraulic oil level. |
| | Check all bolts and fasteners. |
| | Check if needle valve is plugged; open valve, cycle markers, and reset the needle valve if necessary. |
| | Check that switches on control console are set properly. Refer to Field Operations, page 23. |
| Marker disk blade does not mark | Check if the marker folding linkage and chain have enough slack to allow the marker disk to drop in low spots. Maximum down float should be limited by the slots at the rod end of the marker cylinder—not by the chain. Add chain slack as necessary. Refer to Marker Chain, page 39. |
| | Reverse blade to pull dirt in or throw dirt out depending on soil conditions. Refer to Disc Scraper Adjustment, page 38. |
| | An optional smooth blade is available through your Great Plains dealer. |

General Maintenance

Proper servicing and adjustment is the key to long implement life. With careful and systematic inspection, you can avoid costly maintenance, downtime and repair. Always turn off and remove the tractor key before making any adjustments or performing maintenance.

1. After using your drill for several hours, check all bolts to be sure they are tight. Periodically check and secure all bolts, pins and fasteners. Tighten as specified on *Torque Values Chart*, page 55.
2. Clean or replace any fittings that will not take grease. Lubricate the drill as noted under *Lubrication*, page 46.
3. Clean nozzles on optional rear-mount boom with a low pressure (less than 30 psi) air hose. Periodically replace nozzles. Always wear rubber gloves when making repairs or adjustments.
4. Adjust idlers to remove excess slack from chains. Adjust gauge-wheel arm drive chain as explained under *Gauge-Wheel Drive Adjustment*, page 38. Clean and use chain lube on all roller chains as needed.
5. Always maintain correct tire pressure. Refer to *Tire Inflation Chart*, page 55.
6. Occasionally inspect hydraulic hoses for cuts, cracks and aging. Check fittings and cylinders for evidence of leaks.
7. Check disk scrapers for proper adjustment. Refer to *Disk-Scraper Adjustment*, page 38.
8. Replace any worn, damaged or illegible safety labels at once. Refer to *Safety Decals*, page 5, for correct label placement. Obtain new labels from your Great Plains dealer.

DANGER

Some chemicals will cause serious burns, lung damage and death. Avoid contact with skin or eyes. Wear proper protective equipment as required by chemical manufacturer. Avoid prolonged breathing of chemical fumes. Wear respirator as required by chemical manufacturer. Seek medical assistance immediately if accident occurs. Know what to do in case of an accident.

WARNING

You may be severely injured or killed by being crushed from a falling implement. Always have transport locks in place and frame sufficiently blocked up when working on implement.

WARNING

Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If injured, seek medical assistance from a doctor that is familiar with this type of injury.

Cylinder Lock Channels

The cylinder lock channels ① are 1 1/2 in wide channels. They are pinned to the bottom edges of the mainframe near the tongue, one on each side. When performing maintenance operations, the cylinder lock channels ① must be installed on the field-lift cylinder rods ②. During transport the cylinder lock channels must be installed in the storage location on the mainframe.

⚠ WARNING

The cylinder lock channel must not contact the lower depth stop assembly or damage will occur.

⚠ WARNING

The cylinder lock channels must not be installed on the field-lift cylinder rods during transport or damage can occur.

To install a cylinder lock channel on the left-hand transport cylinder, do the following:

1. Remove the bolt ③, lock washer, and nut from the lower depth stop assembly ④.
2. Rotate the lower depth stop assembly down.
3. Install the cylinder lock channel on the transport cylinder rod.
4. Install the clevis pin ⑤ and hair pin in the cylinder lock channel.

Storage

Store the drill where children do not play. If possible, store the drill inside for longer life.

1. If you store the drill in the unfolded position, unpin and fully retract the fold cylinders to prevent rust.
2. Clean the drill as necessary. Be sure that the seed boxes are cleaned completely before storing.
3. Disconnect seed hoses from openers. Premature hose damage will occur if drill is stored with hoses connected.
4. Adjust idlers to remove excess slack from chains. Adjust gauge-wheel-arm drive chain as explained under *Gauge-Wheel Drive Adjustment*, page 38. Clean and use chain lube on all roller chains as needed.
5. Lubricate the drill at all points indicated under *Lubrication*, this page. Be sure the seed-cup drive sprocket is oiled before the drill is stored.
6. Check all bolts, pins, fitting and hoses. Tighten, repair or replace parts as needed.
7. Check all moving and soil-contact parts for wear or damage. Make notes of any parts needing repair.
8. Use Great Plains touch-up paint to cover scratches, chips and worn areas to prevent rust.

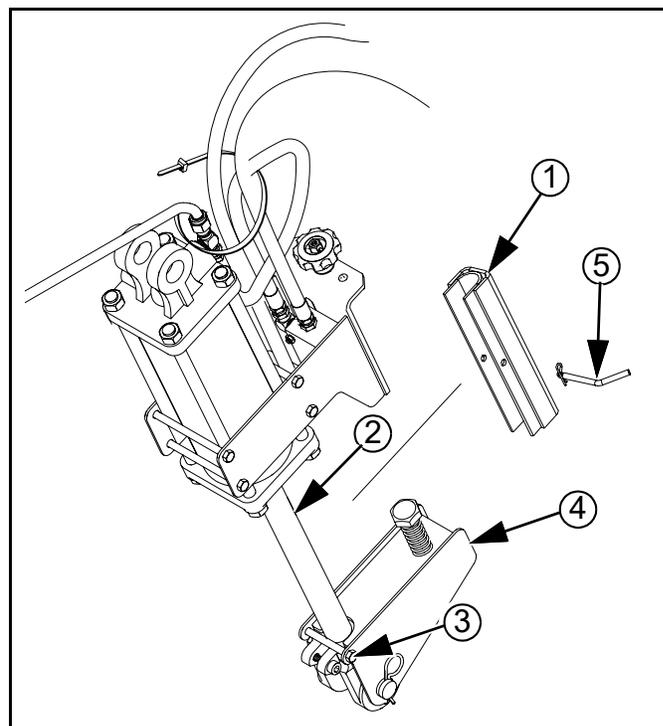


Figure 32
Pull Cable

Lubrication

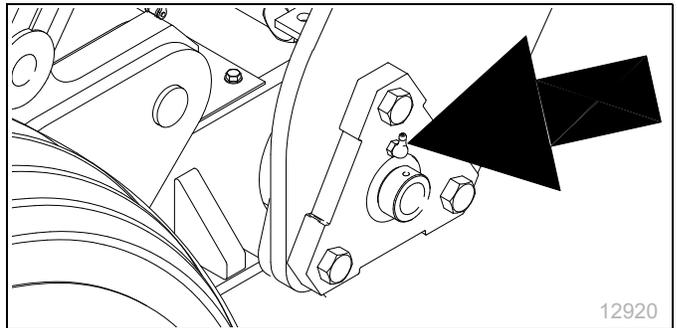
| | | | | |
|---|--|---|---|--|
|  Multi-purpose spray lubricant |  Multi-purpose grease lubricant |  Multi-purpose oil lubricant |  Inspection |  Intervals (operating hours) at which service is required |
|---|--|---|---|--|

Gauge-Wheel-Arm Pivot Castings

| | | |
|---|---|---|
|  |  | 8 |
|---|---|---|

The grease fittings are in the three-bolt cast bearings at the end of each wheel arm pivot tube.

Type of Lubrication: Grease

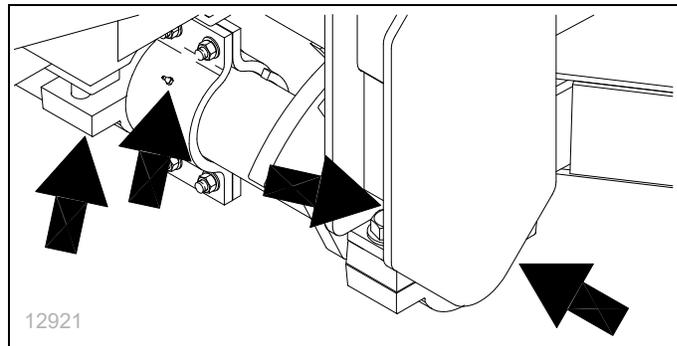


Transport-Axle Assembly

| | | |
|---|---|---|
|  |  | 8 |
|---|---|---|

Grease fittings on both sides of the three bearings shown on each end of rockshaft - 12 fittings total. (Rockshaft is inside and above the dual transport tires.)

Type of Lubrication: Grease

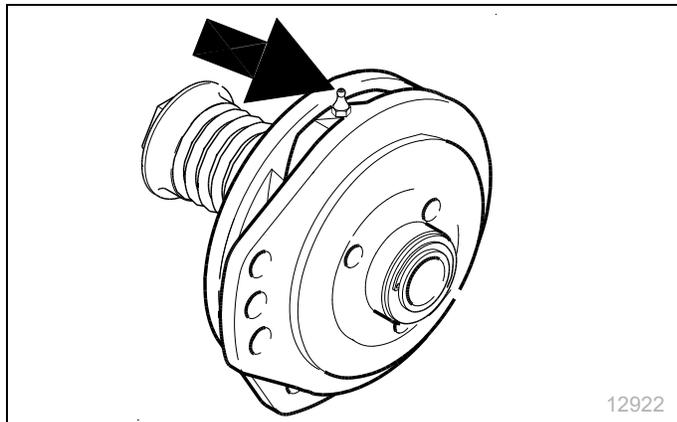


Clutches

| | | |
|---|---|---|
|  |  | 8 |
|---|---|---|

Two zerks on each clutch (on models prior to 2002).

Type of Lubrication: Grease

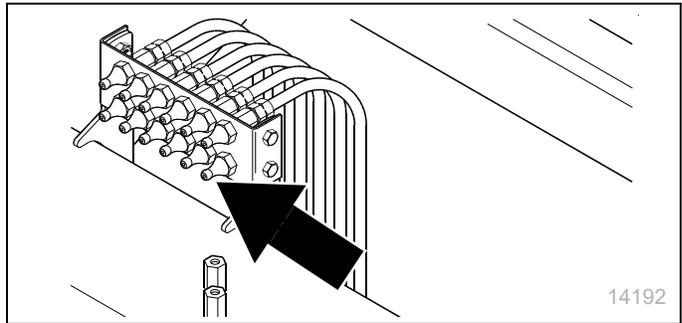


Coulter-Arm Pivots



Zerks are on central grease banks - two banks on each box.

Type of Lubrication: Grease

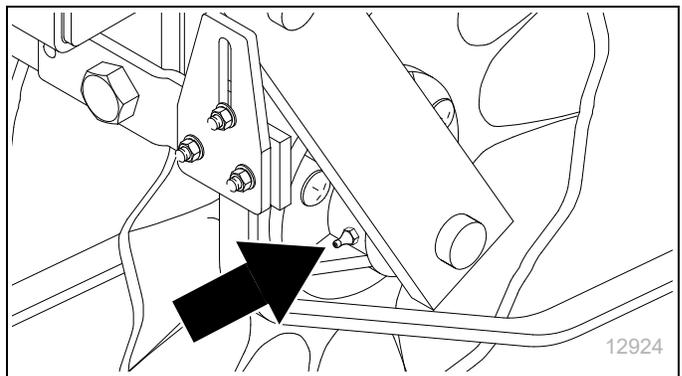


14192

Coulter Hub Bearings



Type of Lubrication: Grease



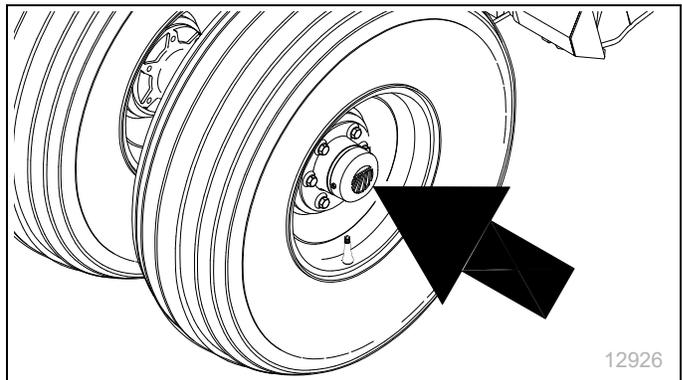
12924

Wheel Bearings



Repack and check seals on transport and gauge wheels.

Type of Lubrication: Grease



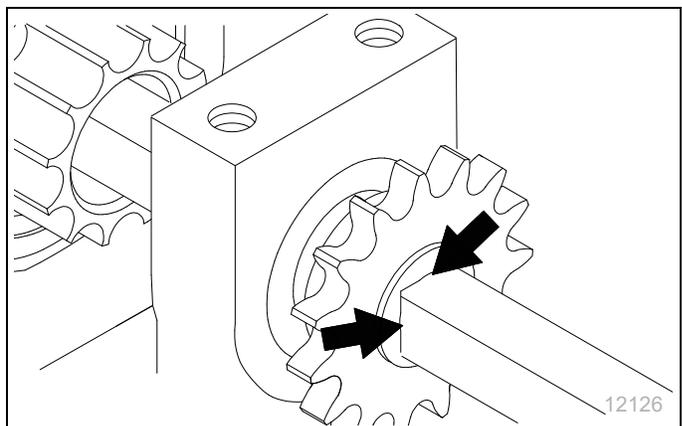
12926

Seed-Cup-Drive Sprocket



Oil sprocket hub in its square bore. Squirt oil on the square seed-cup shaft and move seed-rate handle back and forth to get oil back into the square.

Type of Lubrication: Oil



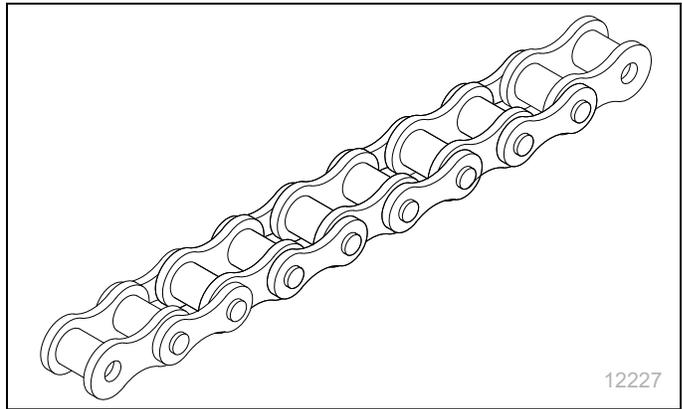
12126

Drive-Train Roller Chain

| | |
|---|--|
|  |  As Required |
|---|--|

Type of Lubrication: Chain Lube

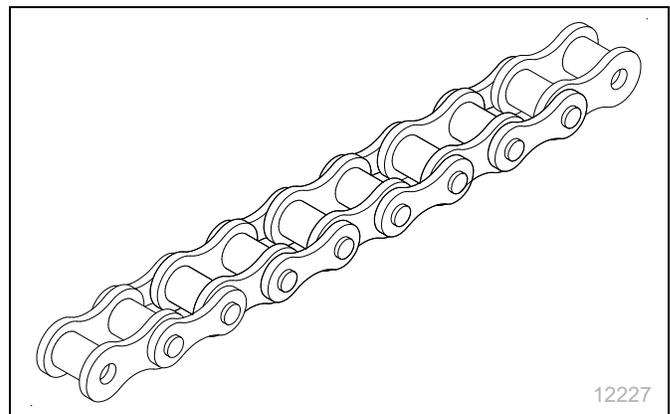
Optional Attachments Lubrication



Gauge-Wheel-to-Agitator Chains

| | |
|---|--|
|  |  As Required |
|---|--|

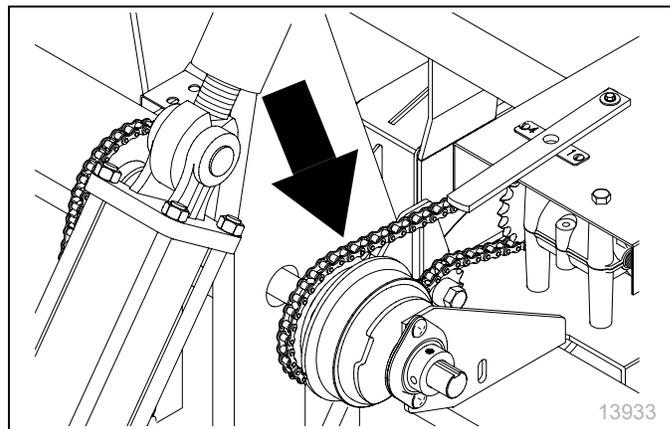
Type of Lubrication: Chain Lube



Electric Clutch-Drive Chain

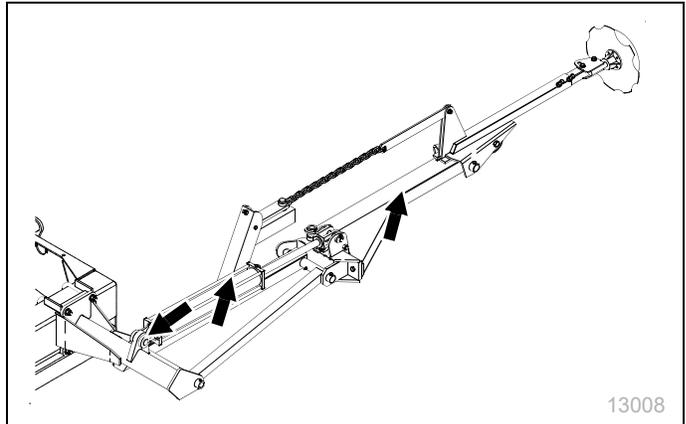
| | |
|---|---|
|  |  15 |
|---|---|

Type of Lubrication: Chain Lube



Marker Hinges

Type of Lubrication: Grease

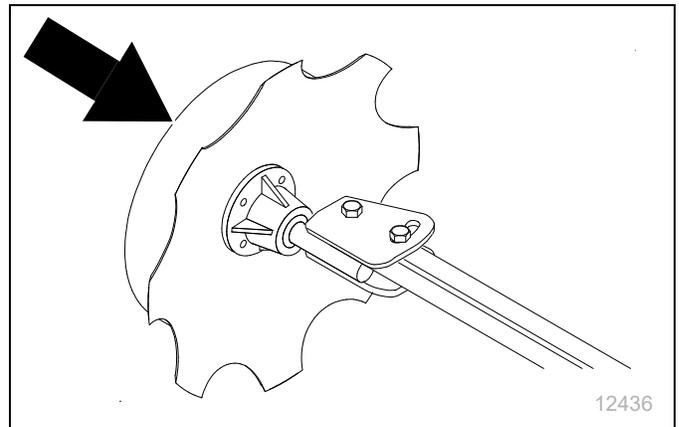


13008

Marker-Disc Bearings

If the grease seal cap is damaged or missing, disassemble and clean the hub. Repack with grease and install a new seal or grease cap.

Type of Lubrication: Grease



12436

Speed-Change Box

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

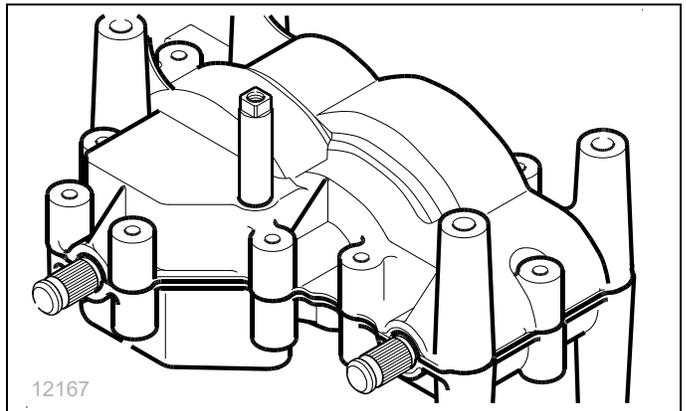
If you open the gearbox for repair, repack all gears and around the shaft bearings with least 7 ounces of lithium-based, wheel-bearing grease.

It is important to keep moisture and dirt out of the gearbox. Inspect the rubber seals on the gearbox drive and shifter shafts. Replace seals if necessary.

Before bolting them back together, spread a very thin coat of anaerobic sealant (such as Loctite 525) on the gearcase-mating surfaces. Grease fittings on both sides of the three bearings shown on each end of rockshaft - 12 fittings total. (Rockshaft is inside and above the dual transport tires.)

NOTICE

Use sealant sparingly! Excess sealant may squeeze off surface and lock bearings or gears.



12167

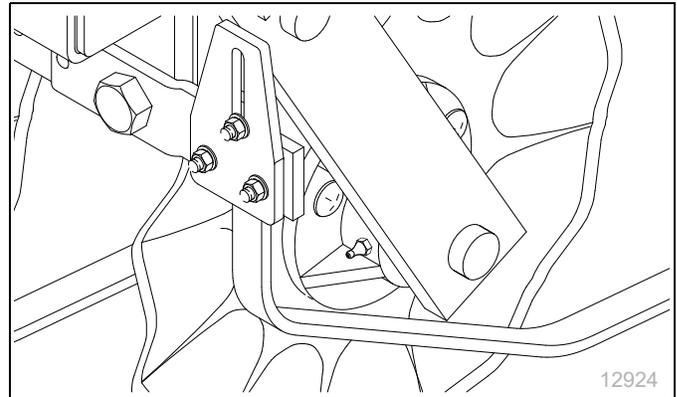
Options

Coulter Tines

The coulters on your implement can be equipped with optional trash tines. Under most conditions, these tines will not be needed. In high-residue fields, the tines will help guide the residue under the coulters and openers to prevent plugging.

To order tines, contact your Great Plains dealer. Refer to the table below for the correct tine package for your drill.

| Drill Size | Coulter Tine Part Number |
|------------------------|--------------------------|
| 24-ft., 7 1/2-in. Rows | 149-717A |
| 24-ft., 8-in. Rows | 149-718A |
| 24-ft., 10-in. Rows | 149-719A |
| 30-ft., 7 1/2-in. Rows | 149-714A |
| 30-ft., 8-in. Rows | 149-715A |
| 30-ft., 10-in. Rows | 149-716A |



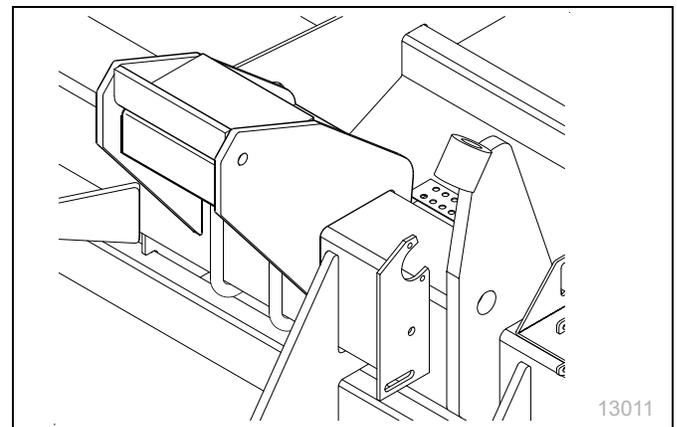
Weight Brackets

If soil conditions require more weight for coulters penetration, weight bracket kits are available. Each kit contains two weight brackets—one for each box frame. The weight brackets hold several styles of suitcase weights commonly available through tractor dealers, including John Deere, CASE, International Harvester and CASE-IH.

For information on how additional weights will affect seeding depth, refer to *Weights*, page 32.

To order weight brackets, contact your Great Plains dealer. Refer to the table below for the correct brackets for your drill.

| Drill Size | Weight Bracket Kit Part |
|---------------|-------------------------|
| 24-ft. Drills | 197-112A |
| 30-ft. Drills | 197-110A |



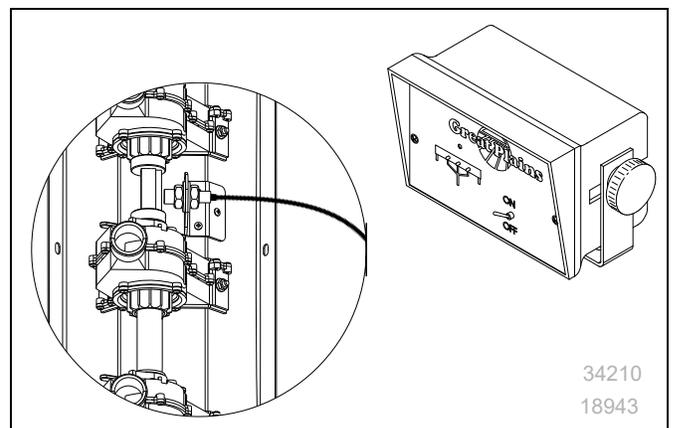
Shaft Monitors

The optional 2-channel shaft monitor is an electronic monitoring system to detect when seed-cup shafts stop turning. If a shaft stops for more than 20 seconds, an alarm sounds and a warning light designates the failed shaft.

For information on how to operate the shaft monitors, refer to *Shaft Monitor Operation*, page 25.

To order shaft monitors, contact your Great Plains dealer.

| Monitor Bundle | Part Number |
|-----------------------|-------------|
| Shaft Monitor Package | 116-282A |



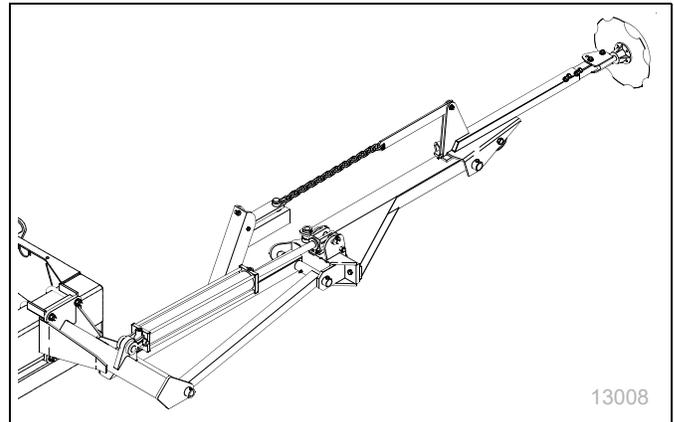
Markers

Hydraulically operated no-till markers are available. The units have a cast hub, tapered roller bearings and a bolt-on notched blade to cut through heavy residue, leaving a line for you to follow on the next field pass. Markers are sold as either a single or dual units. Dual markers are equipped with a sequence valve for easy operation.

For information on how to operate the markers, refer to *Marker Operation*, page 24. For information on how to adjust the markers, refer to *Marker Adjustment*, page 39.

To order markers, contact your Great Plains dealer. Refer to the table below for the correct marker package for your drill.

| Marker Package | Part Number |
|--|-------------|
| 24-ft. 2-Section No-Till Left-Hand Flat-Fold | 113-498A |
| 24-ft. 2-Section No-Till Dual Flat-Fold | 113-499A |
| 30-ft. 2-Section No-Till Left-Hand Flat-Fold | 113-500A |
| 30-ft. 2-Section No-Till Dual Flat-Fold | 113-501A |



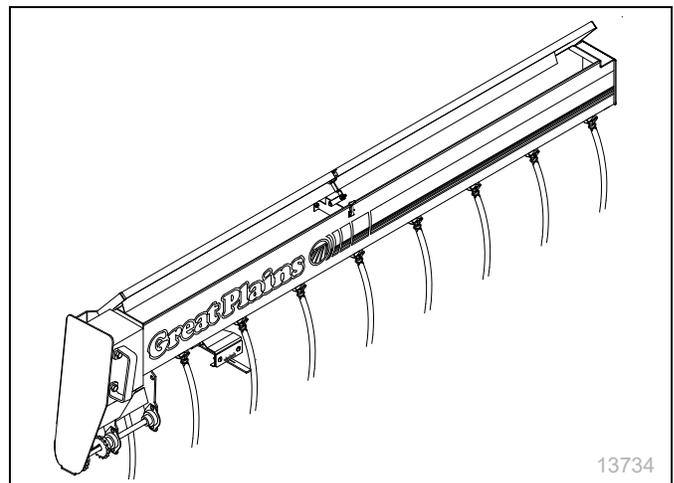
Small Seeds Attachment

The small-seeds attachment delivers the smallest seeds evenly and gently. With a Y-tube, small seeds are placed through the opener seed tube. Otherwise, seeds are placed directly in front of the press wheel. The attachment holds 0.24 bushels per foot.

For setting the seeding rate on the attachment, refer to *Check Seeding Rate* page 37.

To order the small seeds attachment, contact your Great Plains dealer. Refer to the table below for the correct part number for your drill.

| Drill Size | Attachment Package Part Number | |
|------------------------|--------------------------------|----------------|
| | With Y-Tube | Without Y-Tube |
| 24-ft., 7 1/2-in. Rows | 133-024A | 133-123A |
| 24-ft., 8-in. Rows | 133-026A | 133-025A |
| 24-ft., 10-in. Rows | 133-128A | 133-127A |
| 30-ft., 7 1/2-in. Rows | 133-017A | 133-018A |
| 30-ft., 8-in. Rows | 133-020A | 133-019A |
| 30-ft., 10-in. Rows | 133-022A | 133-021A |



Specification Drawing

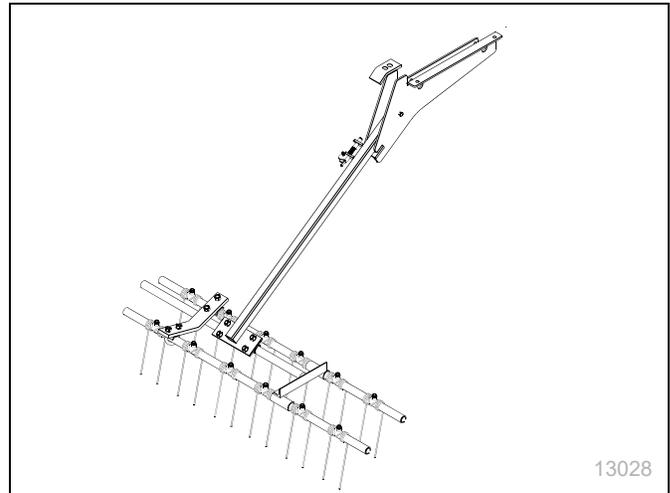
Harrow Attachment

The coil-tine harrow finishes no-till surfaces by leveling and distributing residue for enhanced seed emergence. The harrow attachment folds for transport.

For information on how to fold the harrow for transport, refer to *Folding Harrow Attachment*, page 22. For information on how to adjust the harrow, refer to *Harrow Attachment Adjustment*, page 40.

To order the harrow attachment, contact your Great Plains dealer. Refer to the table below for the correct harrow package for your drill.

| Harrow Package | Part Number |
|--------------------------------|-------------|
| 24-ft. No-Till Harrow Assembly | 116-138A |
| 30-ft. No-Till Harrow Assembly | 116-137A |



Rear Mount Boom

The drill boom mounts under the walkboard and allows you to apply liquid herbicides or pesticides behind the drill press wheels. The kit includes mounting hardware, boom plumbing and nozzle bodies for 20-inch spacing. Tractor tanks, pump, plumbing to the drill and nozzles are required.

To order the boom, contact your Great Plains dealer.

| Package | Part Number |
|----------|--|
| 116-195A | 24-Foot Two-Section No-Till Spray Boom |
| 116-194A | 30-Foot Two Section No-Till Spray Boom |



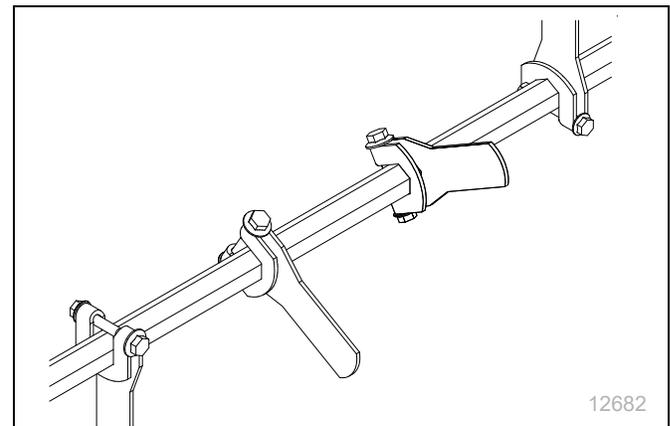
Seed Box Agitator

An optional agitator can be added to the main seed boxes. The agitator is designed to stir the seed directly above the metering cups. The agitator helps prevent bridging of light, fluffy seeds and separates soybeans that are sticky with inoculant.

If your drill is equipped with a small seeds or fertilizer attachment, the agitator is available without a drive.

To order the agitator, contact your Great Plains dealer. Refer to the table below for the correct part for your drill.

| Drill Size | Agitator Part Number | |
|------------------------|----------------------|---------------|
| | With Drive | Without Drive |
| 24-ft., 7 1/2-in. Rows | 118-459A | 118-465A |
| 24-ft., 8-in. Rows | 118-460A | 118-466A |
| 24-ft., 10-in. Rows | 118-461A | 118-467A |
| 30-ft., 7 1/2-in. Rows | 118-456A | 118-462A |
| 30-ft., 8-in. Rows | 118-457A | 118-463A |
| 30-ft., 10-in. Rows | 118-458A | 118-464A |

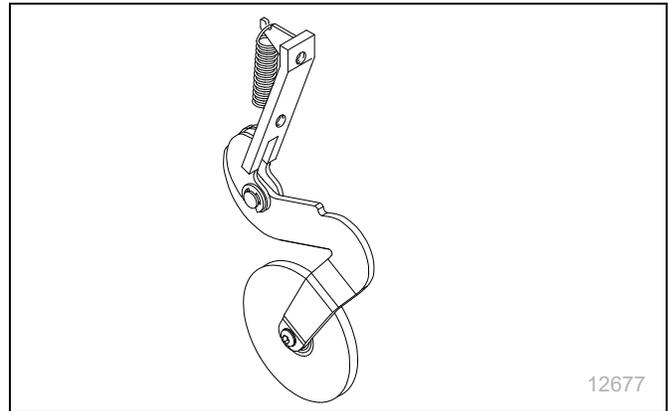


Seed-Lok Firming Wheels

The optional, spring-loaded Seed-Lok firming wheel presses the seed directly into the bottom of the seed bed. The Seed-Lok option provides more even seed emergence since seeds are planted and firmed at the same depth.

To order Seed-Lok firming wheels, contact your Great Plains dealer.

| Seed-Lok Bundles | Part Number |
|--------------------------------------|-------------|
| Solid Stand Removable 5-in. Seed-Lok | 122-193k |

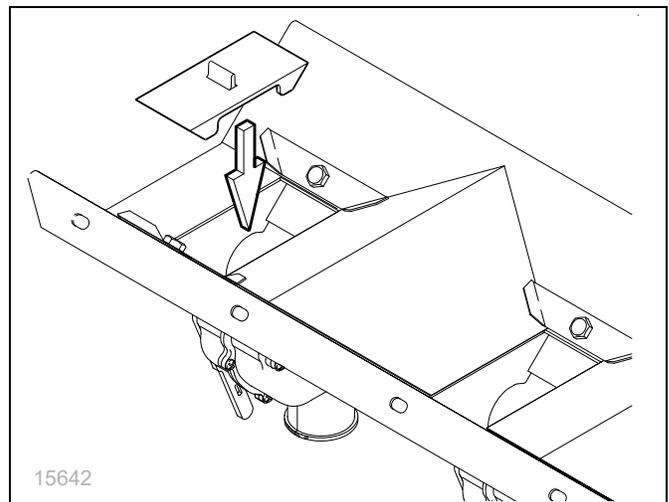


Seed-Cup Plugs

Seed-cup plugs are available to block off individual rows when you want wider row spacing. These plugs are installed by pushing them into the seed-cup openings on the desired rows.

To order seed-cup plugs, contact your Great Plains dealer.

| Seed Cup Plugs Package | Part Number |
|------------------------------|-------------|
| 1 3/4 in. Wide Seed-Cup Plug | 817-087C |



Hitch Options

To order a hitch, contact your Great Plains dealer.

| Description | Part Number |
|-----------------------------|-------------|
| Large Diameter Strap Hitch | 170-038A |
| Small Diameter Strap Hitch | 170-059A |
| Small Diameter Clevis Hitch | 170-039A |

Specifications and Capacities

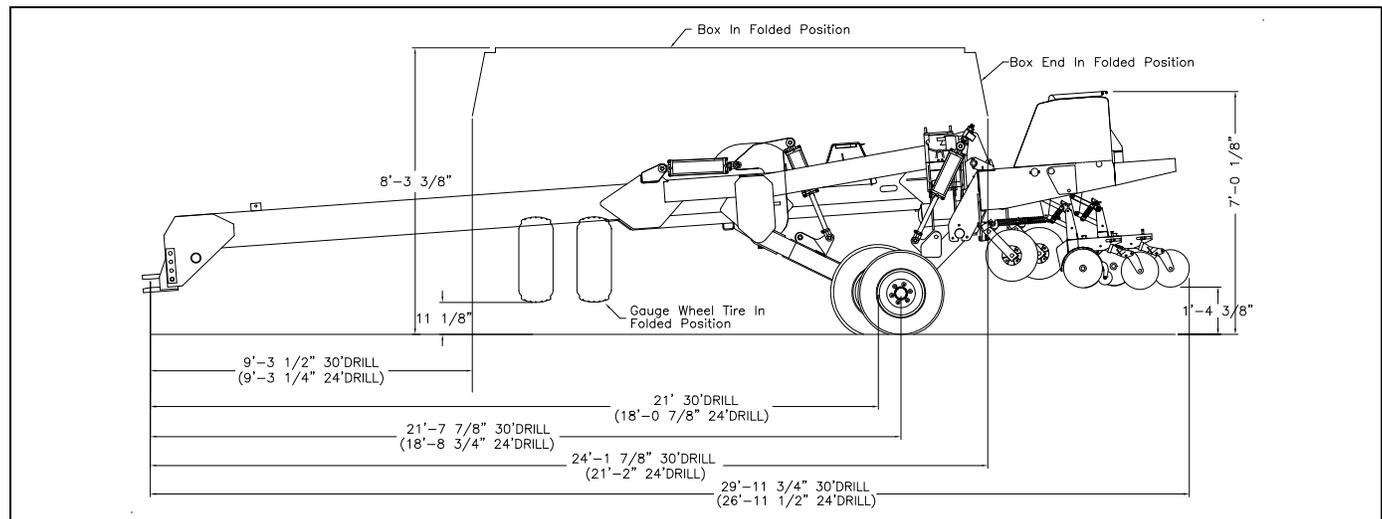
| | |
|------------------------------|--------------------------------|
| Transport Width | 17 feet, 1 inch |
| Working Width | 24 or 30 feet |
| Box Length | 12 or 15 feet |
| Dual Transport Tire Size | 12.5L x 15 20-Ply |
| Gauge Wheel Tire Size: | 11L x 15 8-Ply |
| Box Capacity: | 24-ft. Drill: 48 bushels |
| | 30 ft. Drill: 60.6 bushels |
| Negative Tongue Weight: | 24-ft. Drill, empty: 2650 lb. |
| | 24-ft. Drill, loaded: 3800 lb. |
| | 30-ft. Drill, empty: 2750 lb. |
| | 30-ft. Drill, loaded: 4000 lb. |
| Tractor Requirements 2N-2410 | 200-250 horsepower |
| | 2 Remote outlets |
| Tractor Requirements 2N-3010 | 250-300 horsepower |
| | 2 Remote outlets |

| | Drill | Row | Number | of | Drill Weight |
|--------|---------|-----|--------|----|--------------|
| 24 ft. | 7.5 in. | | 38 | | 17,400 lb. |
| | 8 in. | | 36 | | 17,100 lb. |
| | 10 in. | | 28 | | 16,000 lb. |
| 30 ft. | 7.5 in. | | 48 | | 20,100 lb. |
| | 8 in. | | 44 | | 19,600 lb. |
| | 10 in. | | 36 | | 18,400 lb. |

the brochures included with your Operator's and Parts Manuals or online at the manufacturer's websites. For service assistance or information, contact your nearest Authorized Farm Tire Retailer.

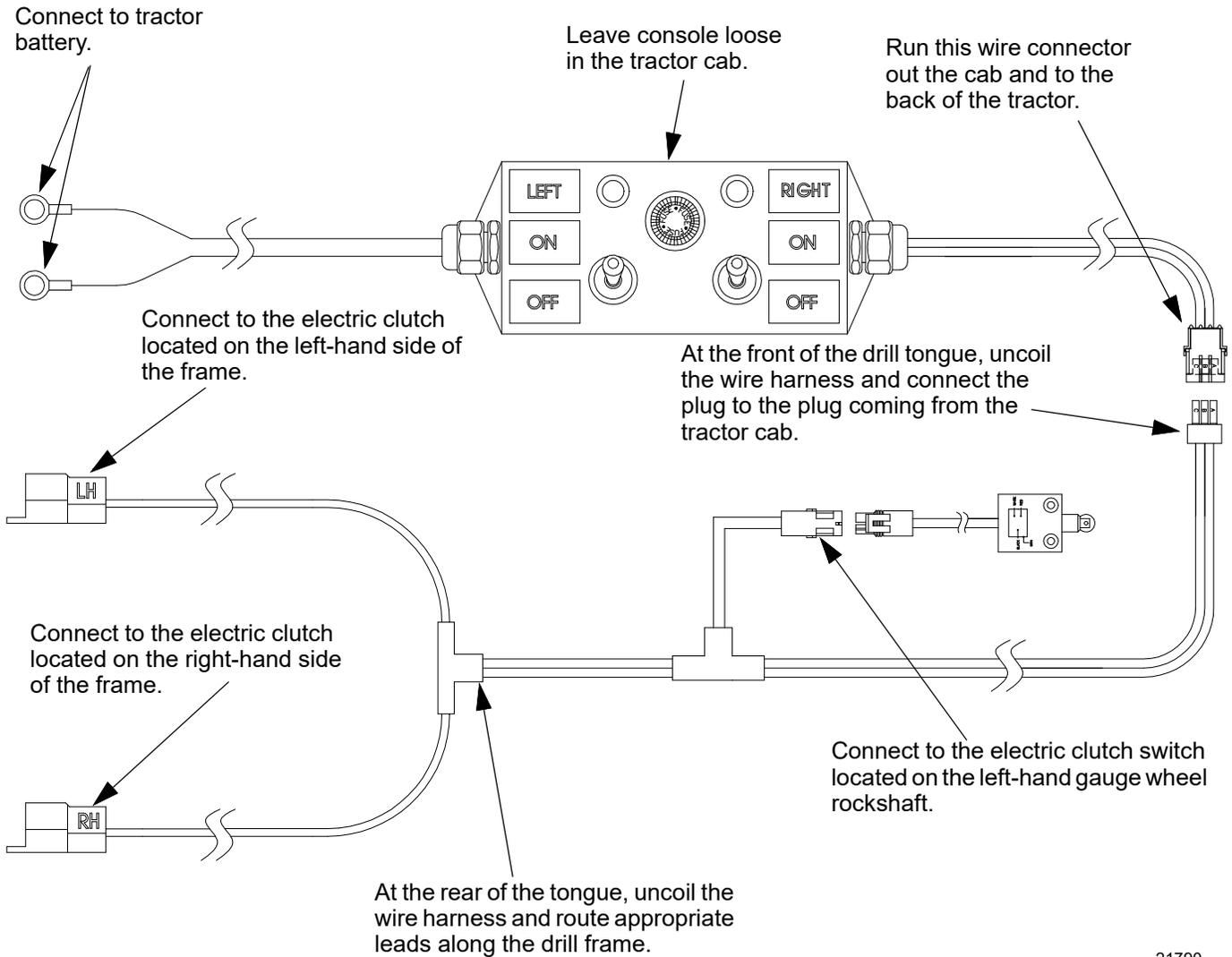
| Manufacturer | Website |
|---------------|--|
| Titan | www.titan-intl.com |
| Goodyear | www.goodyearag.com |
| Firestone | www.firestoneag.com |
| BKT Tires | www.bkt-tires.com |
| Gleason Wheel | www.gleasonwheel.com |

 All tires are warranted by the original manufacturer of the tire. Tire warranty information can be found in



Appendix

Electric Clutch Console and Wire Harness



21790



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 call 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.

Effective July 15, 2020

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| | |
|---------------------------------|----|
| A | |
| accident, hydraulic | 2 |
| acrometer operation | 26 |
| amber reflector | 7 |
| C | |
| CAUTION, defined | 1 |
| chain, safety | 3 |
| chemicals | 2 |
| children | 3 |
| clean-out | 2 |
| clothing | 2 |
| containers | 2 |
| D | |
| DANGER, defined | 1 |
| daytime reflector | 6 |
| decal replacement | 5 |
| decals | |
| caution | |
| general | 10 |
| lowering drill | 10 |
| no step | 10 |
| pressure and torque | 11 |
| danger | |
| chemical hazard | 8 |
| notice | |
| no petroleum products | 12 |
| warning | |
| negative tongue weight | 9 |
| pinching/crushing | 8 |
| speed | 9 |
| tongue weight | 9 |
| transport lock | 8 |
| decal, safety | 5 |
| disposal | 2 |
| F | |
| fire | 1 |
| fumes | 4 |
| H | |
| headphones | 2 |
| hearing | 2 |
| High Pressure Fluids | 2 |
| hitch options | 53 |
| L | |
| leaks | 2 |
| lights | 3 |
| M | |
| maintenance safety | 4 |
| P | |
| protective equipment | 2 |
| R | |
| red reflector | 6 |
| reflector | |
| amber | 7 |
| daytime | 6 |
| red | 6 |
| SMV | 5 |
| reflectors, safety | 5 |
| riders | 3 |
| S | |
| safety chain | 3 |
| safety decal | 5 |
| safety information | |
| decals | 5 |
| safety symbol | 1 |
| shutdown | 3 |
| Slow Moving Vehicle | 5 |
| smoke | 2 |
| SMV (Slow Moving Vehicle) | 5 |
| storage | 3 |
| symbol, safety | 1 |
| T | |
| tires | 4 |
| transport speed | 3 |
| U | |
| URLs, tires | 54 |
| W | |
| WARNING, defined | 1 |
| welding | 4 |



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