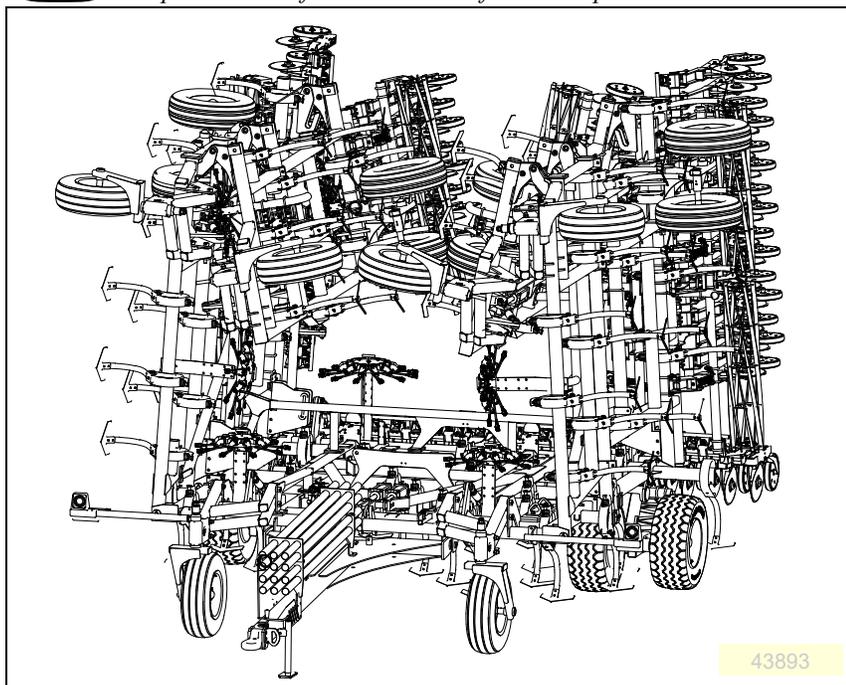


# Operator Manual

FCA4500-5410 & FCA4500-7275  
Field Cultivator Air Drill



*Read the operator's 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.

ORIGINAL INSTRUCTIONS



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Printed 4/21/21

560-594M

## 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.

<b>Model Number</b>	
<b>Serial Number</b>	
<b>Machine Height</b>	
<b>Machine Length</b>	
<b>Machine Width</b>	
<b>Machine Weight</b>	
<b>Year of Construction</b>	
<b>Delivery Date</b>	
<b>First Operation</b>	
<b>Accessories</b>	<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](http://www.P65Warnings.ca.gov)



# Table of Contents

<b>Important Safety Information</b> .....	<b>1</b>	<b>Maintenance and Lubrication</b> .....	<b>32</b>
Safety Decals .....	5	Maintenance .....	32
<b>Introduction</b> .....	<b>10</b>	Lubrication .....	32
Models Covered .....	10	<b>Appendix</b> .....	<b>34</b>
Description of Unit .....	10	FCA Specifications and Capacities .....	34
Document Family .....	10	Tire Inflation Chart.....	34
Using This Manual.....	10	Hydraulic Connectors and Torque.....	35
Definitions.....	10	Torque Values Chart .....	36
Owner Assistance.....	11		
Further Assistance .....	11		
<b>Preparation and Setup</b> .....	<b>12</b>		
Post-Delivery/Seasonal Setup .....	12		
Prior to Going to the Field Checklist.....	12		
Clevis Hitch .....	13		
Category III Hitch.....	13		
Hitching Tractor to Product.....	14		
Electrical Hookup .....	15		
Hydraulic Hose Hookup.....	15		
Hydraulic Hose Hookup.....	15		
Hose Handles.....	16		
First Time Field Adjustments .....	17		
Front to Rear Leveling .....	17		
<b>Operating Instructions</b> .....	<b>18</b>		
Pre-Start Checklist.....	18		
Raising / Lowering .....	19		
Unfolding .....	20		
Folding.....	20		
Transporting .....	21		
Check Tractor Capacity and Configuration .....	21		
Transport Steps.....	21		
Lift Cylinder (Transport) Locks .....	22		
General Operation and In-Field Adjustments .....	23		
Initial Frame Down-Pressure .....	24		
Implement Lift Switch Adjustment .....	25		
S/N D1003P- .....	25		
Adjustment .....	25		
Lift Switch Wiring.....	25		
S/N D1004P+ .....	25		
Frame Level.....	27		
Initial Seeding Depth .....	28		
Field Checklists .....	29		
Rear Attachment Settings.....	30		
Heavy Reel Adjustment.....	30		
Parking .....	31		
End of Season Storage .....	31		
Beginning of Season .....	31		

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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 indicates an imminently hazardous situation 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 indicates a potentially hazardous situation 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 indicates a potentially hazardous situation 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.

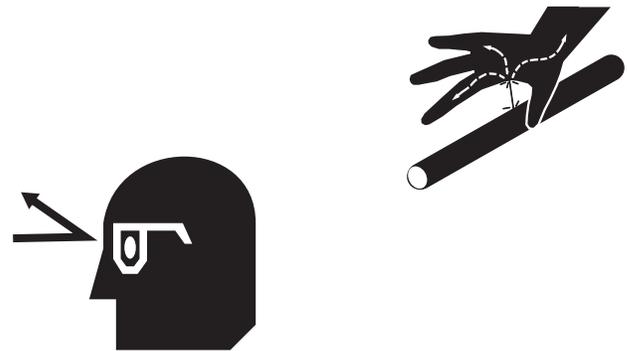
- ▲ *Read and follow chemical manufacturer's instructions.*
- ▲ *Wear protective clothing.*
- ▲ *Handle all chemicals with care.*
- ▲ *Avoid inhaling smoke from any type of chemical fire.*
- ▲ *Store or dispose of unused chemicals as specified by chemical manufacturer.*



## 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 assistance from a physician familiar with this type of injury.*



## 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



## Keep Riders Off Machinery

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

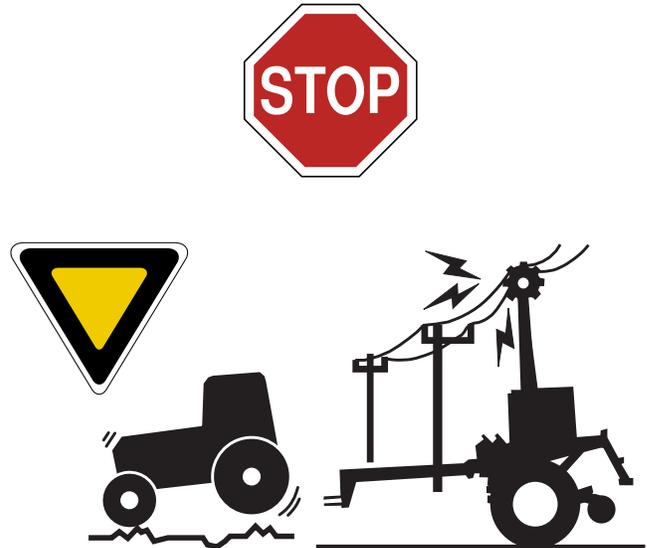
- ▲ *Never allow children to operate equipment.*
- ▲ *Keep all bystanders away from machine during operation.*



## Transport Machinery Safely

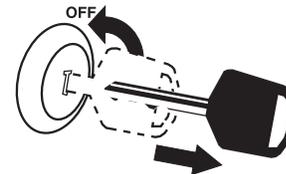
Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- ▲ *Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.*
- ▲ *Comply with state and local laws.*
- ▲ *Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.*
- ▲ *Carry reflectors or flags to mark product in case of breakdown on the road.*
- ▲ *Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “FCA Specifications and Capacities” on page 34.*
- ▲ *Do not fold or unfold the product while the tractor is moving*



## Shutdown and Storage

- ▲ *Lower product, put tractor in park, turn off engine, and remove the key.*
- ▲ *Secure product using blocks and supports provided.*
- ▲ *Detach and store machine in an area where children normally do not play.*



## Tire Safety

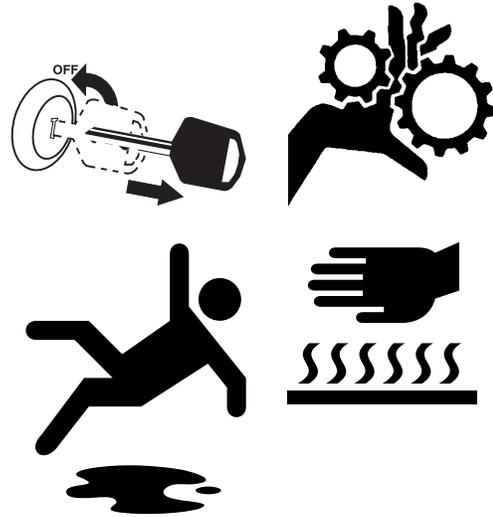
Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

- ▲ *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

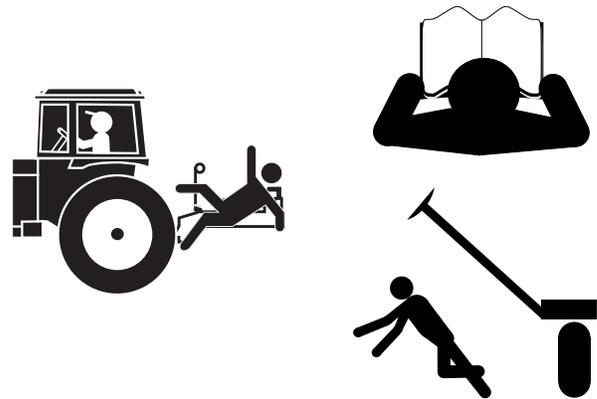
- ▲ *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.*
- ▲ *Work in a clean, dry area.*
- ▲ *Lower the machine, put tractor in park, turn off engine, and remove key before performing maintenance.*
- ▲ *Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on machine.*
- ▲ *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 machine 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 machine functions.*
- ▲ *Operate machinery from the driver's seat only.*
- ▲ *Do not leave product unattended with tractor engine running.*
- ▲ *Do not stand between the tractor and machine during hitching.*
- ▲ *Keep hands, feet and clothing away from power-driven parts.*
- ▲ *Wear snug-fitting clothing to avoid entanglement with moving parts.*
- ▲ *Watch out for wires, trees, etc., when folding and raising machine. 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.

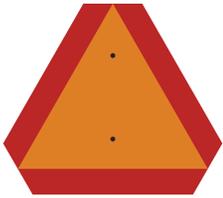
- ▲ *Read and follow decal directions.*
- ▲ *Keep lights in operating condition.*
- ▲ *Keep all safety decals clean and legible.*
- ▲ *Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for*

*proper decal placement.*

- ▲ *When ordering new parts or components, also request corresponding safety decals.*

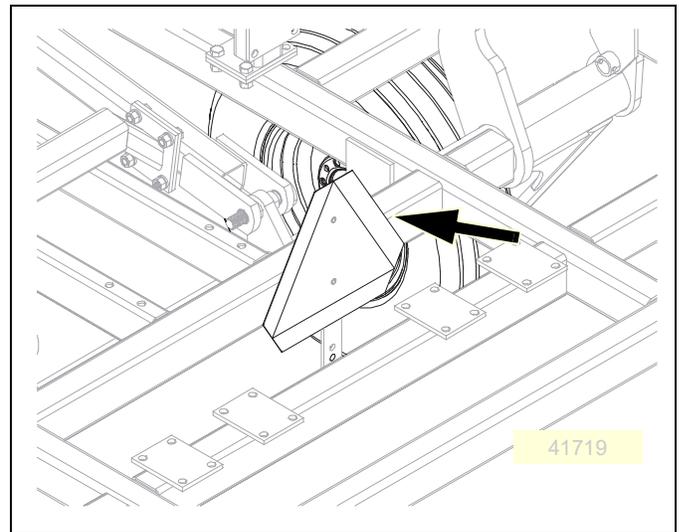
To install new decals:

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.



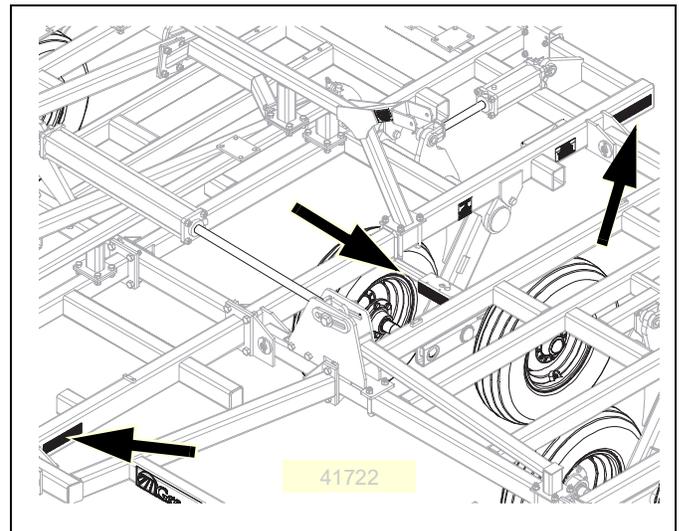
#### 818-055C Slow Moving Vehicle Reflector

On the back of the center wing stop.;  
1 total



#### 838-615C Amber Reflectors

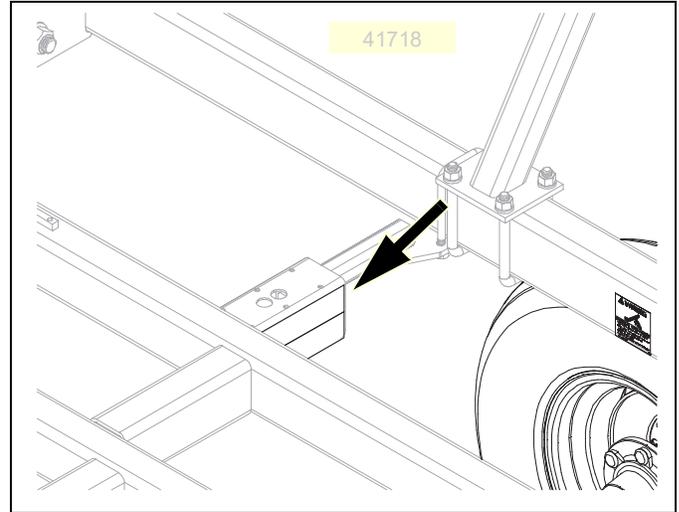
Two on light bracket and two on center brace bar. Two on center frame. Two on rear of finishing attachment (not shown), visible from side while folded for transport;  
8 total





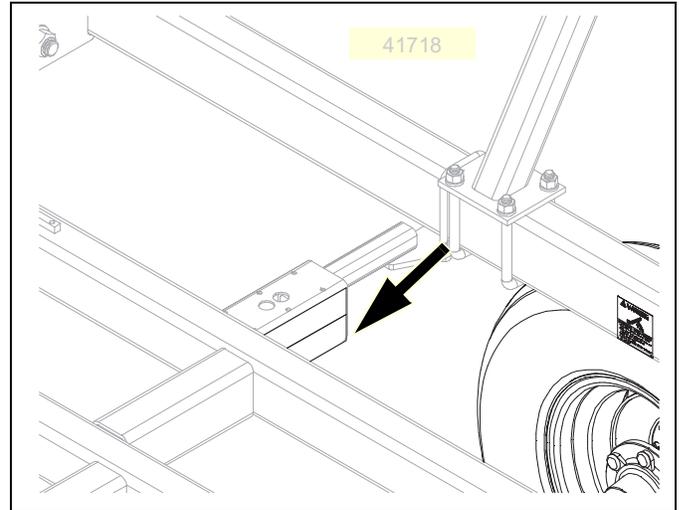
**838-614C  
Red Reflectors**

On rear of light brackets (top);  
2 total



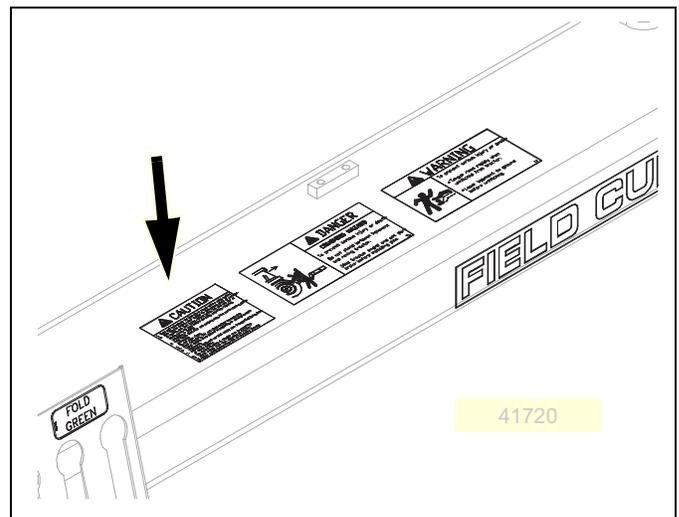
**838-603C  
Orange Reflectors**

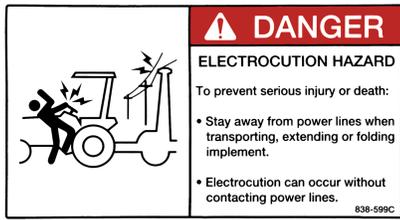
On rear of light brackets (bottom);  
2 total



**838-598C  
Caution: Read Operator's Manual**

On front of hitch;  
1 total

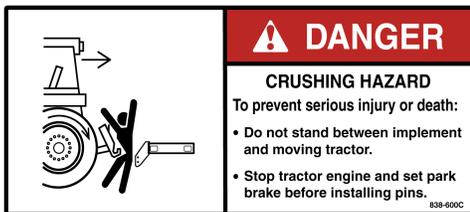
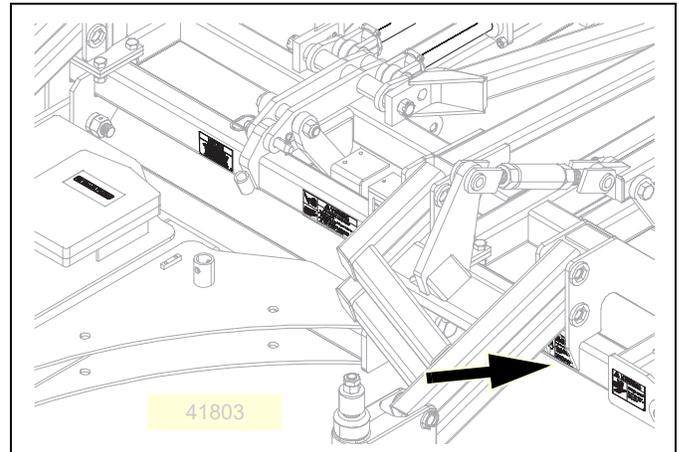




**838-599C**

**Danger: Electrocution Hazard**

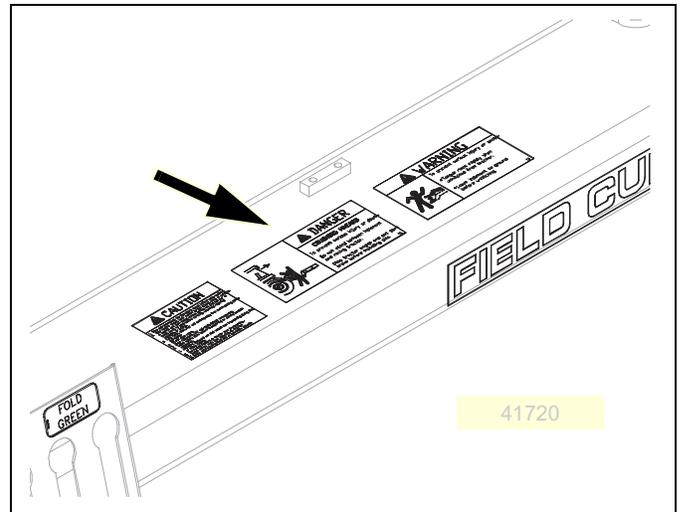
Front side of center wing brace (left side);  
1 total



**838-600C**

**Danger: Crushing Hazard**

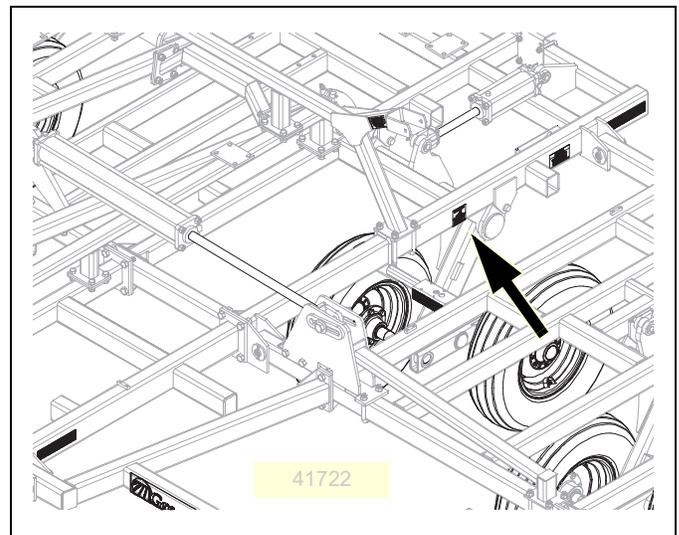
On front (middle) of hitch;  
1 total



**838-602C**

**Warning: Overhead Wing Hazard**

On outside center of center and wing frames (both sides);  
4 total 8323, 8328, 8332 & 8336  
6 total 5539, 8544, 8548, 8551, 8556 & 8560

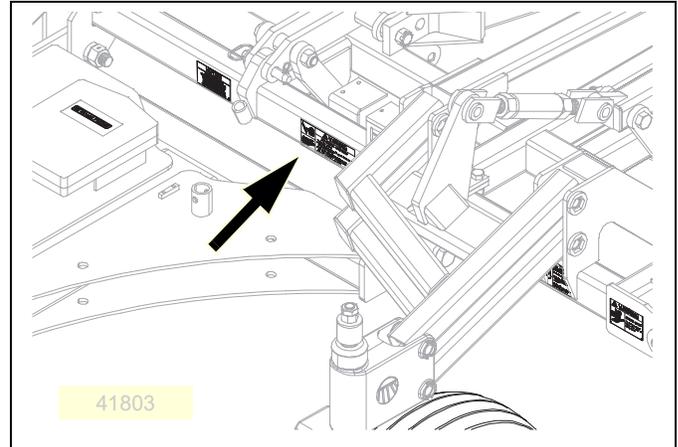




**838-094C**

**Warning: High Pressure Fluid**

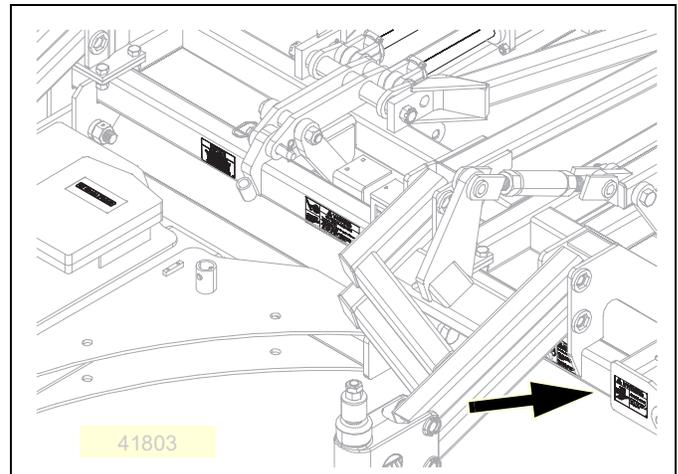
Front side of center wing brace (middle);  
1 total



**838-611C**

**Warning: Hand Crushing**

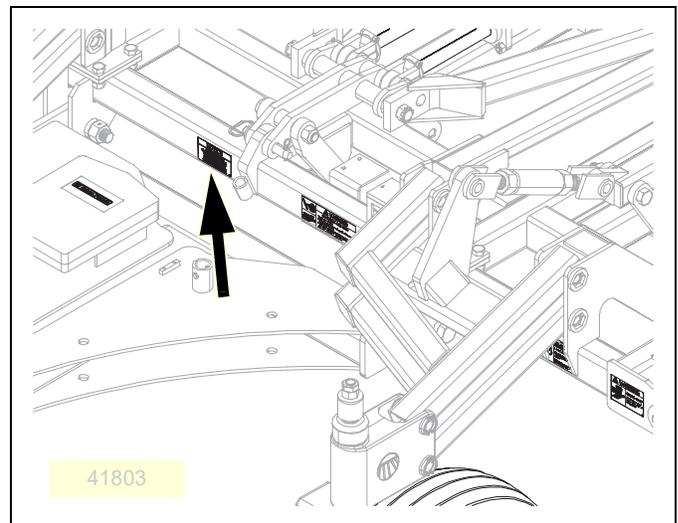
Front side of center wing brace (left & right side);  
2 total



**838-613C**

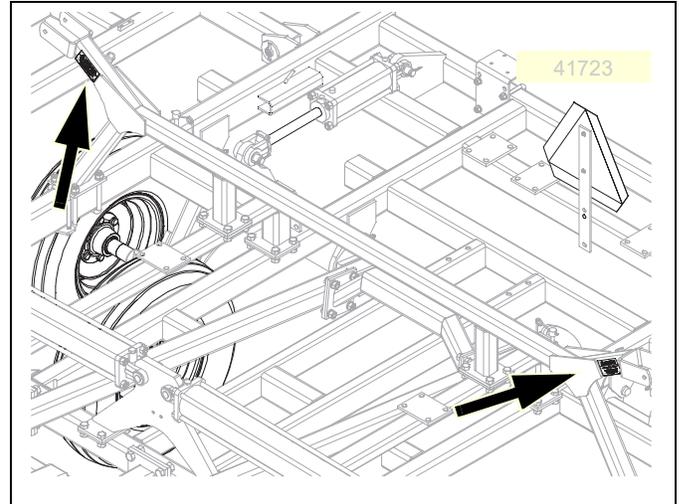
**Notice: Transport Lock**

On front middle of center frame;  
1 total



**838-612C****Warning: Wings Could Fall Suddenly**

On front of wing stop (both sides);  
2 total





# Introduction

Great Plains welcomes you to our growing family of new product owners. The Product have been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help you get years of satisfactory use from the machine.

## Models Covered

- FCA4500-5410     45-Foot 5-section 10” spacing
- FCA4500-7275     45-Foot 5-Section 7.5” spacing



Figure 1  
Product Air Seeder

43820

## Description of Unit

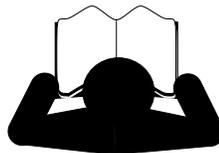
The Product is a five-section seedbed preparation and planting tool all in one. Working width is 45 feet. The implement is designed for secondary field operations to smooth, level, eliminate weeds and incorporate chemicals, apply fertilizer and drill seed.

## Document Family

- 560-594Q-ENG     Assembly Manual
- 560-594Q         Pre-Delivery Manual
- 560-594M         Operator Manual (this document)
- 560-594P         Parts Manual

## Using This Manual

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



The information in this manual is current at printing. Some parts may change to assure top performance.

## Definitions

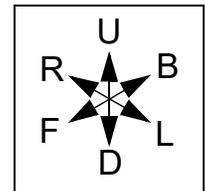
The following terms are used throughout this manual.

### NOTICE

*A crucial point of information related to the preceding topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.*

Useful information related to the preceding topic.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.



## Owner Assistance

If you need customer service or repair parts, contact a Great Plains dealer. They have trained personnel, repair parts and equipment specially designed for Great Plains products.

Refer to Figure 2

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 left end of the top front tool bar.

Record your FCA4500 product model and serial number here for quick reference:

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Your Great Plains dealer wants you to be satisfied with your new machine. If you do not understand any part of this manual or are not satisfied with the service received, please take the following actions.

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.

## Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new Full Product Name. If for any reason you do not understand any part of this manual or are otherwise dissatisfied with the product please contact:

**Great Plains Service Department**  
**1525 E. North St.**  
**PO Box 5060**  
**Salina, KS 67402-5060**

Or go to [www.greatplainsag.com](http://www.greatplainsag.com) and follow the contact information at the bottom of your screen for our service department.

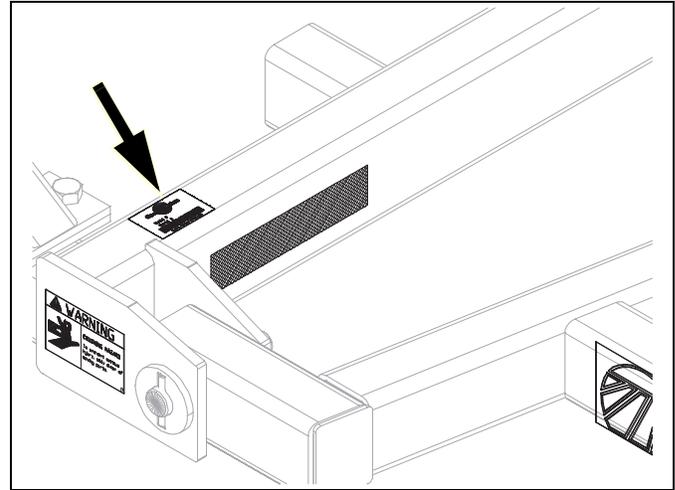


Figure 2  
Serial Number Plate

41724



## Preparation and Setup

This section helps you prepare your tractor and FCA4500 Product for use, and covers tasks that need to be done seasonally, or when the tractor/product configuration changes.

Before using the product in the field, you must hitch it to a suitable tractor, inspect systems and level the product. Before using the product for the first time, and periodically thereafter, certain adjustments and calibrations are required.

### Post-Delivery/Seasonal Setup

On initial delivery, use with a new tractor, and seasonally, check and as necessary, complete these items before continuing to the routine setup items:

- Bleed hydraulic fold system.
- Wing leveling and alignment (page 25).
- De-grease exposed cylinder rods if so protected at last storage.

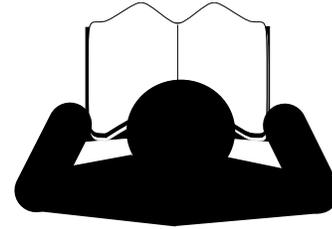
### Prior to Going to the Field Checklist

Complete this checklist before routine setup:

- Read and understand “**Important Safety Information**” on page 1.
- Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- Make sure your tractor horsepower matches the implement you are pulling. This is important so the implement can do the best possible job.
- Clean all hydraulic couplings and connect to tractor as shown on page 16.
- If machine is folded, remove the transport pins from wing stops. (DO NOT remove pins if the wing is leaning against the pins or putting pressure on the pins. Use the hydraulics to pull the wings in completely before unpinning them.) Once the pins are removed, slowly untold the unit. Make sure no one is under the wings during the unfolding process.
- Check again for hydraulic leaks and watch that hoses do not get pinched in hinges, wing stops, etc.
- After the machine is completely unfolded, raise and lower the Product several times to purge air from the hydraulic system. Again check for hydraulic leaks and tighten or replace if necessary.
- Check safety chain hookup. Make sure all warning lights are hooked up and functioning correctly.
- Check that all grease fittings are in place and lubricated. See “**Lubrication**” on page 32. The hubs will come pre-greased and will not need greased at this time.
- Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “**Safety Decals**” on page 5.
- Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**Tire Inflation Chart**” on page 34.
- Put transport locks in place and refold the machine slowly. Put wing stop pins in place. Always use the transport pins when moving from field to field. You are now ready to go to the field.

### NOTICE

*Tractor must have a powered center pin in the electrical hook up or the wing fold system and tower retract system will not function, damage to equipment will result.*



## Clevis Hitch

- The product is a pull-type implement equipped with a standard Category IV single tang hitch. It may be converted to a Category III or clevis hitch using supplied accessory parts,

Refer to Figure 3

The base hitch must be upright (with the recessed notch on the bottom) for this configuration. This places the tongue weight on the base hitch, and not the clevis.

- Select one each:  
 (82) 890-798C HITCH CLEVIS  
 (48) 802-487C HHCS 3/4-10X6 GR8  
 (62) 803-367C NUT HEX TOP LOCK 3/4-10 PLT
- With the square-shouldered end of the clevis (82) up, fully seat the clevis in the upright base hitch (83). Insert the Grade 8 bolt (48) from below. Secure with lock nut (62).

### **CAUTION**

#### **Hitch Failure Hazard:**

Install the hitch base and assemble the clevis parts as shown. Incorrect installation or assembly may result in failure of the clevis bolt, leading to hitch failure. This could result in a serious highway accident or severe machine damage.

## Category III Hitch

The base hitch must be inverted (with the recessed notch on the top) for this configuration. Set the V-block (87) to allow some vertical articulation of the draw bar pin. Always use at least one cushion (88).

- Select one each:  
 (89) PPI-302V TOP PLATE - CAT 3  
 (87) PPI-203VR V-BLOCK  
 (47) 802-383C HHCS 3/4-10X3 GR5  
 and two:  
 (88) PPI-205H CUSHION
- Set the cushions (88) inside the hitch recess, just forward of the vertical bolt hole. Position the V-block (87) forward of the cushions and check the size of the resulting pinning hole. Remove a cushion if needed.
- Add the top plate (89). Secure from below with Grade 5 bolt (47).

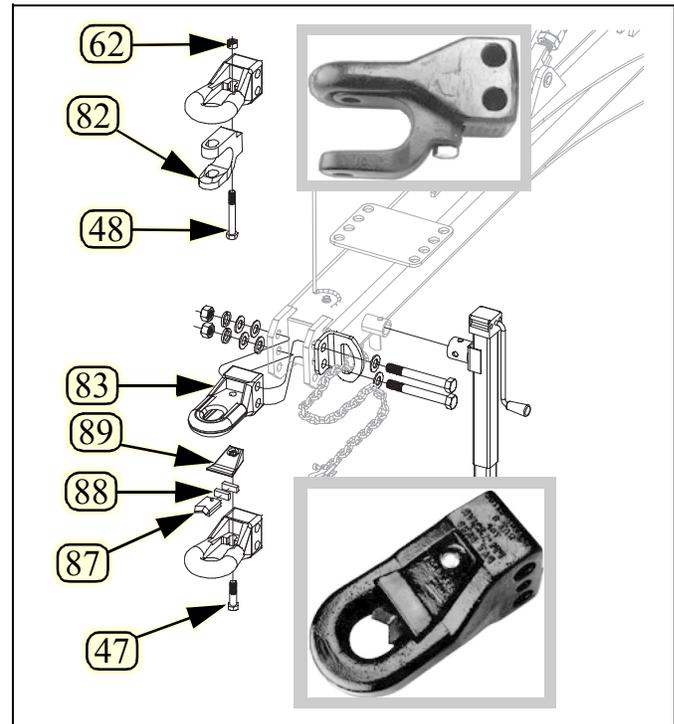


Figure 3  
Configure Hitch

31740  
42245  
31741

## Hitching Tractor to Product

### **⚠ DANGER**

#### **Crushing Hazard:**

Do not stand or place any body part between product and moving tractor. You may be severely injured or killed by being crushed between the tractor and product. Stop tractor engine and set parking brake before attaching cables and hoses.

Hitch to a tractor for highway transport or field operations. Do not transport behind another implement.

Before hitching, check the compatibility and capability of the towing tractor.

To prevent soil compaction on rows, set tractor wheels between rows. For hillsides and steep slopes, set tractor wheels as wide as possible for maximum stability.

1. Raise tractor three-point arms (if equipped) clear up to clear product.
2. For TWO-WHEEL DRIVE and MFWD tractors, pin drawbar in fixed center position for field and transport. For FOUR-WHEEL DRIVE and TRAC-DRIVE tractors, leave one hole clearance on each side of drawbar for field position, hitch damage may occur if pinned solid. Pin in center position for transport to maintain maximum steering control.
3. Hitch the tractor to the product using the block or yoke clevis determined by the tractor drawbar. Use the correct size pin for clevis or block.

#### **Load Sway Hazard:**

Lock drawbar swing to center position to minimize any side-to-side sway to assure proper tracking in the field, and safe road travel. See “**Transporting**” on page 21, for safe transporting

Refer to Figure 4

4. Use jack (1) to raise and lower product tongue.

Refer to Figure 5

5. After hitching tractor to product, store jack on storage tube (2) on side of product tongue.
6. Secure product safety chain to an anchor on the tractor capable of pulling the unit.

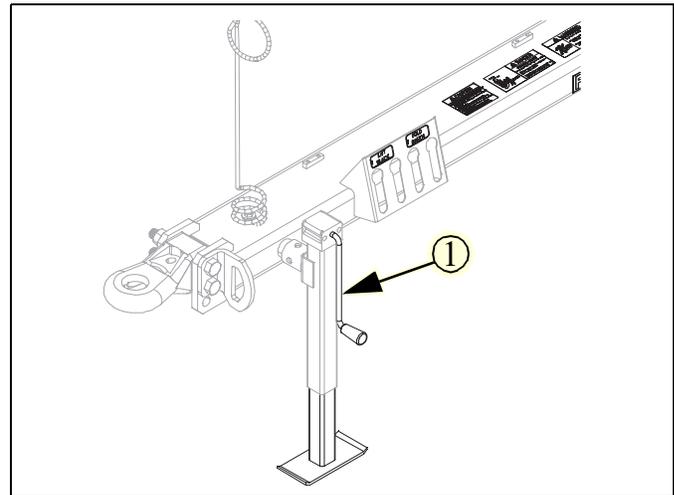
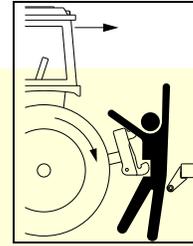


Figure 4  
Tongue on Jack

41727

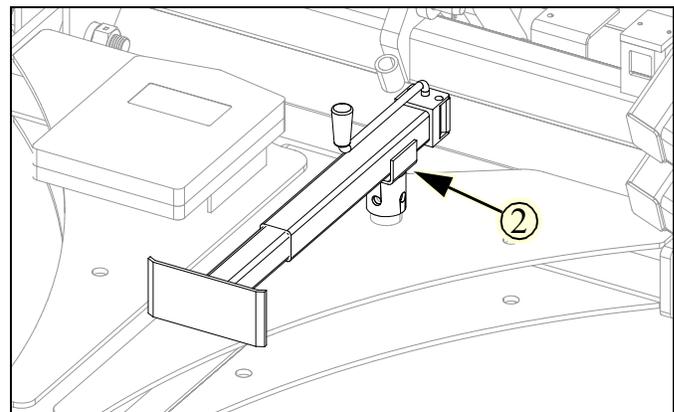


Figure 5  
Jack in Storage

41802

### Electrical Hookup

Plug product electrical lead in tractor seven-pin connector. If your tractor is not equipped with a seven-pin connector, contact your dealer for installation.

Plug in any optional connectors or after market connectors, such as an product-mounted GPS receiver. For future reference, note any optional connectors on this checklist.

- (1) Lighting connector (standard)
- \_\_\_\_\_
- \_\_\_\_\_

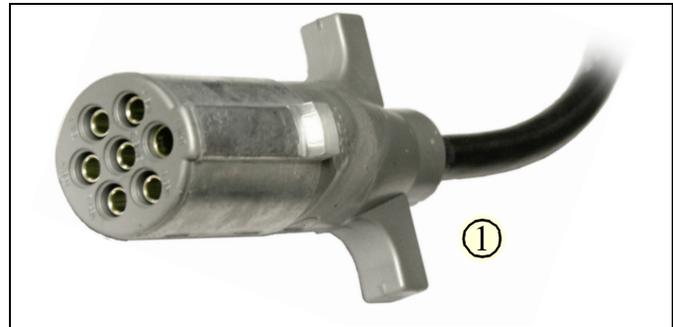


Figure 6  
Lighting Connector

36051

### Hydraulic Hose Hookup



**High Pressure Fluid Hazard:**

Relieve pressure before disconnecting hydraulic lines. Escaping fluid under pressure may have sufficient pressure to penetrate the skin causing serious injury. 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, seek immediate medical attention from a physician familiar with this type of injury.

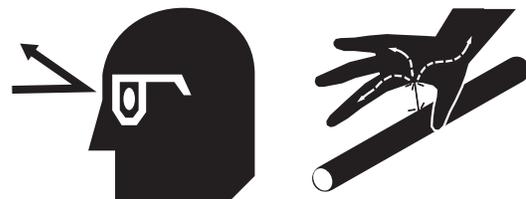
Refer to Figure 7

Great Plains hydraulic hoses have color coded handle grips to help you hookup hoses to your tractor outlets. Hoses that go to the same remote valve are marked with the same color.

### Hydraulic Hose Hookup

Great Plains hydraulic hoses are color coded to help you hookup hoses to your tractor outlets. Hoses that go to the same remote valve are marked with the same color.

Color	Hydraulic Function
Black	Lift (2 hoses)
Green	Fold (2 hoses)
Red	Openers (2 hoses)



**High Pressure Fluid Hazard:**

Relieve pressure before disconnecting hydraulic lines. Use paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury. Only trained personnel should work on system hydraulics.



Refer to Figure 7

### Hose Handles

To distinguish hoses on the same hydraulic circuit, refer to, “**Hydraulic Hose Hookup**” on page 15. The hose under an extended symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.

Clean all hydraulic couplings and hook hoses to tractor.

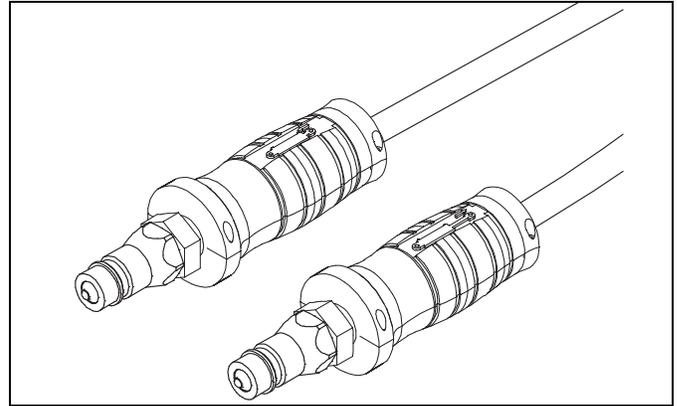


Figure 7  
Hose Handles

41552

## First Time Field Adjustments

### Pre-Leveling of Machine

#### Front to Rear Leveling

Refer to Figure 8

1. Pre-leveling of machine can be done on a concrete slab or level surface. Lower machine so sweeps are 1-2" off of ground on the center frame. Loosen jam nut and adjust turnbuckle at the front of machine to level it from front to back. (Shorten to bring front down, extend to bring front up). Level machine with the front row shanks just slightly deeper or lower than the back.
2. Re-tighten jam nut.
3. Repeat same procedure for other side of center frame and 5-Section machines, adjust inner wing gauge wheels the same.

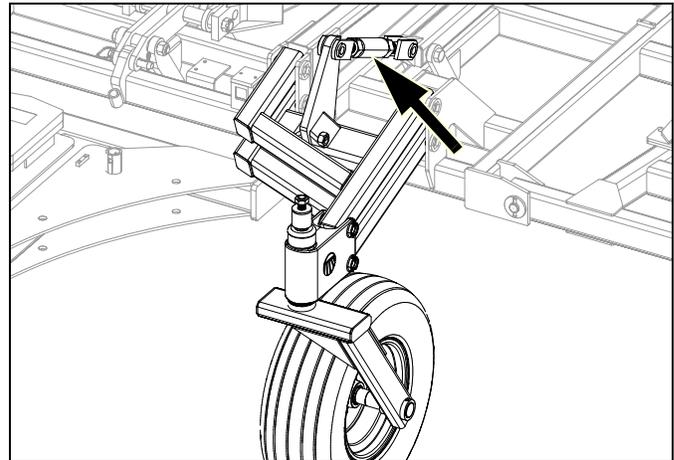


Figure 8  
Gauge Wheel Turnbuckle Adjustment

41801

### Wing Adjustment

Refer to Figure 9

4. Set the 3-section wings and 5-section inner wings to match the depth of the center. This is done by adjusting the wing pull bar assembly (1) on each wing. Start by loosening the jam nut (2), then adjust the adjustment rod (3). Lengthen the adjustment rod (3) (turn counter-clockwise), to run shallower, shorten the bolt (turn clock-wise) to run deeper.
  5. Tighten jam nut (2), back against clevis.
-  In some conditions the wings will need to be set slightly lower than the center, as the center may tend to run deeper behind the tractor tires.

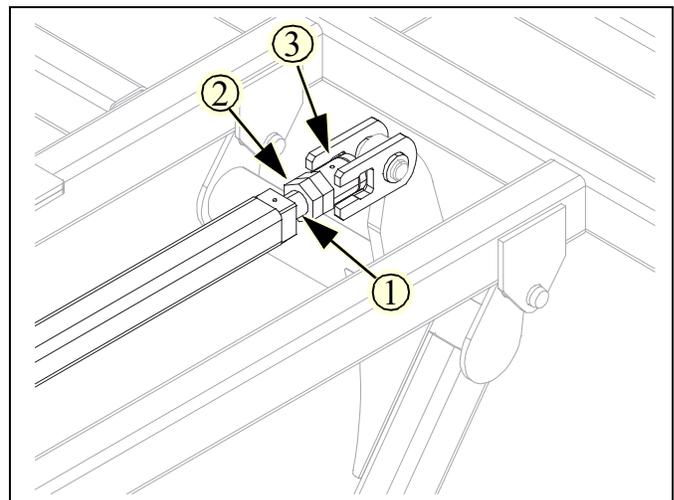


Figure 9  
Wing Adjustment

41805



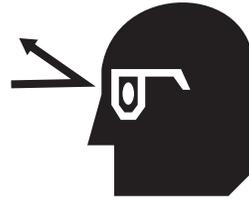
## Operating Instructions

This section covers 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

Perform the following steps before transporting the Product to the field.

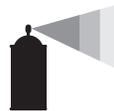
- Carefully read “**Important Safety Information**” on page 1.
- Your tractor must have a powered auxiliary pin for in the electrical hookup or the wing fold assist and the tower retract systems will not operate.
- Lubricate product as indicated under “**Lubrication**” on page 32.
- Check all tires for proper inflation. See “**Tire Inflation Chart**” on page 34.
- Check all bolts, pins, and fasteners. Torque as shown in “**Torque Values Chart**” on page 36.
- Check product for worn or damaged parts. Repair or replace parts before going to the field.
- Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.
- Perform all beginning-of-season and items under “**Maintenance and Lubrication**” on page 32.



### **WARNING**

#### **High Pressure Fluid Hazard:**

Relieve pressure and shut down tractor before connecting, disconnecting or checking 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. Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.



## Raising / Lowering

### Raising When Unfolded

No particular steps are required for raising while unfolded.

When raising in the field, hold at full lift for 2-to-3 seconds to re-phase the lift circuit.

At first field lift of the day, raise and lower several times to purge any air from the system.

### Raising When Folded

If folded, the implement may be raised at any time. Extend the lift circuit until the implement is fully raised. Hold the lever at Extend for an extra 2-to-3 seconds to re-phase the lift cylinders.

Set the lift circuit to Neutral to hold at lift, such as for removal of lock channels.

### Lowering When Unfolded

No particular steps are required for lowering while unfolded.

Retract the lift circuit until the depth control system arrests vertical motion. Set the circuit to Neutral.

### Lowering When Folded (with Locks)

Great Plains recommends lowering the implement onto the lock channels for transport and storage, rather than having it held above the locks by hydraulics.

These steps presume the lock channels are already in place (page 22).

1. Slowly Float the lift circuit to lower the implement onto the locks.
2. Set the circuit to Neutral.

### Fully Lowering When Folded

Great Plains does not recommend resting the folded implement on the center section chisel points. Fully lowering a

folded implement onto supports or stands might be necessary for maintenance.

For lowering, the transport lock channels need to be removed if in place.

1. If an optional hydraulic finishing attachment is installed, Retract that circuit to fully raise it. Set the circuit to Neutral to hold at raised.
2. If transport locks are installed, Extend the lift cylinder circuit to fully raise the implement. Set the circuit to Neutral to hold at lift. Turn off the tractor. Remove the key. Remove and store the transport lock channels (page 22).
3. Start the tractor. Slowly Retract the lift circuit until the frames rest on the support stands. Set the lift circuit to Float. Any optional hydraulic finishing attachment needs to be lowered on to support stands and that circuit placed in Float.

## Unfolding

Unfold the product for adjustments, field operations, maintenance, parking and storage.

1. Unless the product was folded, with the currently hitched tractor, only a short time ago, check for evidence of oil leaks. Check the ground at hitch connections, hose fittings and under cylinders.
2. Hitch tractor (page 14). Put tractor in Park with parking brake engaged.
3. Clear all persons from on or near the FCA4500.
4. Be aware of vertical and horizontal clearances needed to unfold the product.
5. If the implement was lowered, or was raised with transport lock channels installed, Extend the lift circuit to fully raise the implement. Set the circuit to Neutral to hold at lift.
6. Shut down the tractor and remove the key.
7. Remove Wing Pins & store on front Wing Stop.
8. Put tractor in Park with parking brake engaged.
9. Slowly Extend the fold circuit to unfold the wings. When wing wheel are in ground contact, set the fold circuit to active down pressure or Float.
10. Wait for both wings to reach the fully unfolded position. Set tractor remote to Neutral to lock at unfolded.

## Folding

Fold the product for movements on public roads and between fields with narrow clearances.

1. Hitch tractor (page 14).
2. Move to level ground. Be aware of vertical clearance needed to fold product.
3. Put tractor in Park with parking brake engaged.
4. Be aware of vertical clearance required for folding.
5. Clear all persons from or near the product.
6. Verify that the wing lock pins are out or in the storage holes.
7. Slowly move fold circuit lever to Retract. Observe the fold operation.
8. Wait for both wings to reach the fully folded position. Set tractor remote to Neutral to hold at folded.
9. Set the fold circuit to Neutral to hold at fold.
10. Shut down the tractor.
11. Install Wing Pins.

Start the tractor. Slowly Retract the lift circuit to settle the machine on the locks, then move circuit to Float to relieve any pressure, then Neutral.

### **WARNING**

#### **Overhead Sharp Object and Crushing Hazards:**

*Clear all persons from around the implement during unfold. A lowering wing could cause severe lacerations at chisel points, as well as crushing resulting in serious injury or death.*

### **WARNING**

#### **Crushing Hazard:**

*Bystanders could be crushed between the folding product wings and the product center frame, or caught in the folding mechanism. To avoid serious injury or death, keep all bystanders well away during product operation.*

### **DANGER**

#### **Electrocution Hazard:**

*Avoid overhead lines when folding and transporting. When folded and lifted, the Product requires clearance of at least 14 feet 6 inches (4.4m), which is high enough to contact low hanging lines. Touching the Product or tractor completes a circuit to ground, and can result in serious injury or death. At higher voltages, shock can occur without direct contact.*

### **WARNING**

#### **Crushing Hazard:**

*Bystanders could be crushed between the folding Product wings and the Product center frame, or caught in the folding mechanism. To avoid serious injury or death, keep all bystanders well away during Product operations.*

### **NOTICE**

#### **Equipment Damage Risk:**

*Do not fold on hillsides. Fold only on level ground. On a hillside, step 9 could allow the downhill wing to unfold, resulting in machine damage.*

## Transporting

See “Hitching Tractor to Product” on page 14 before transporting the product.

### Check Tractor Capacity and Configuration

- Add weights to tractor as required.

When determining the weight of your product, be sure to include the weight of any options.

### **⚠ DANGER**

#### **Loss of Control Hazard:**

Do not tow the product behind another implement on public roads. Tow the product to the field with a separate vehicle. The leading implement may not provide sufficient lateral control of a trailing implement at highway speeds. The total weight of the train can also exceed the steering and/or braking capability of the tractor. The resulting accident could cause serious injury or death.

### **⚠ DANGER**

#### **Loss of Control Hazard:**

Use an adequate towing vehicle. Never tow an implement that weighs more than 150% of the towing vehicle (transport vehicle must weigh at least 67% of implement). Ensure that the towing vehicle is adequate for the task. Using an inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death.

### **⚠ DANGER**

#### **Braking and Loss of Control Hazard:**

Do not exceed 20 mph (32 kph). Slow down on rough roads.

### Transport Steps

Know your implement weight. If tractor capabilities are marginal, check actual weight of implement at a scale.

1. Check that implement is securely hitched to a sufficient tractor (page 14).
  2. Always use a locking-style hitch pin sized to match holes in hitch and draw-bar, and rated for the load.
  3. Attach safety chain to tractor with enough slack to permit turning (page 14).
  4. Verify correct operation of lights.
  5. Be sure all transport locks are installed.
  6. Check that tires are properly inflated (page 34).
  7. Plan the route. Avoid steep hills. Keep clearances in mind.
  8. Always have flashing warning lights on whenever traveling on public roadways, except where such use is prohibited by law.
  9. Comply with all federal, state and local safety laws when traveling on public roads.
  10. Do not exceed 32 kph (20 mph). Comply with all national, regional and local laws when traveling on public roads.
- Remember that the product is wider than the tractor. Be sure towers are fully retracted when folding machine, if not damage will occur.

### **⚠ WARNING**

#### **Loss of Control Hazard:**

Use a tractor rated for the load. Add tractor ballast as needed. Do not exceed 20 mph. Towing the product with a vehicle that is not adequate, or at high speeds, could lead to loss of vehicle control. Loss of vehicle can result in a serious road accident, severe injury or death. Check that your tractor has enough to handle the weight of the product. Refer to your tractor's operator manual for capacities and ballast requirements.



## Lift Cylinder (Transport) Locks

Refer to Figure 10 and Figure 11

Two lock channels (1) can hold the implement at raised for transport, storage and maintenance.

 The lift cylinders are inconvenient to access when the Product is unfolded. Great Plains recommends performing lift cylinder lock steps with the implement folded and with wings locked.

### To Install Lift Lock Channels

1. Raise the Product and fold the wings (page 20). Leave the lift circuit at Neutral to hold at lift.
2. Secure the wings with lock pins.
3. Remove the lock channels (1) from their storage location.
4. With the pin (2) free, place each lock channel over a lift cylinder rod. Secure with pin.
5. Slowly move the remote lever to Float to settle the implement onto the channel.
6. Set the lift circuit to Neutral after settling on lock channels.

### To Remove Lift Lock Channels

A tractor or suitable hydraulic power source must be connected for these steps.

1. If the implement is unfolded and/or lowered, raise and fold it (page 19).
2. Secure the wings with lock pins.
3. Extend the lift circuit to raise the implement completely. Set the circuit to Neutral to hold at full lift.
4. Remove the pin (2) from each lock channel (1). Remove the channel.
5. Transfer to the storage tube weldment that is located on the top of the center frame. Secure with pin.



Figure 10  
Lift Lock Channel Installed

36513



Figure 11  
Transport Lock Storage

43880

## General Operation and In-Field Adjustments

1. Remove the transport pins and unfold machine. Make sure the fold cylinders are fully extended to allow the wings to fully flex in the field.
2. If possible have someone observe the machine during first time operation for levelness, front to rear and wings to center frame. Adjust each as needed. For front to rear, either extend or shorten the length of the turnbuckle on the gauge wheels. Never run the machine with the back lower (deeper) than the front. To adjust the machine from side to side, use the eyebolt on each wing, See “**First Time Field Adjustments**” on page 17.
3. The ideal working speed for the product is 5 to 7 mph. Working too slow may cause plugging, poor incorporation or mixing of crop residue and reduced weed kill. Running too fast may cause air system plugging.
4. The product is designed as a secondary tillage tool and is designed to leave a finished seedbed following some form of fall or spring tillage. For best results, if at all possible, run the machine at a slight angle of the rows. This will improve trash flow and help spread the residue more evenly throughout the field.
5. When you have the machine set to the desired working depth, set the depth stop assembly on the depth control bar. This is located at the front of the machine on the brace bar.  
 Screw the depth stop in to run shallower. Screw the depth stop out to run deeper. 1 turn = 1/4” working depth. This will maintain a constant depth each time after raising and lowering the machine.
6. If after setting the depth stop, the detent on the tractor kicks out before the stop contacts the button on the depth stop, slow the hydraulic flow speed down. If the problem persists, contact the factory service representative for the possible adjustments. Do not adjust the rebound valve without first contacting the factory service rep.
7. Adjust the drag to leave the desired results while maintaining the trash flow through the drag.

### NOTICE

*When in use be sure towers are fully raised or plugging issues will likely occur.*

## Initial Frame Down-Pressure

Refer to Figure 12

 Be sure to set the working depth on the field cultivator before setting the down pressure on the openers.

Set opener down pressure. There is one pressure-control valve for wing sections (1) and one for center section (2).

Initially set down pressure at 1400 psi, as indicated on the gauges (3), (4). Then adjust as field condition warrant.



Figure 12

43946

### Set Opener Down-Pressure

 Manual valve shown. Electric valve does not have knobs.

## Implement Lift Switch Adjustment

**S/N D1003P-**

### Adjustment

#### **DANGER**

*Do not place any part of body under implement while making adjustments.*

#### Refer to Figure 13

Lower the implement until at a height where seeding should stop (usually just above ground). Turn off the tractor and remove the key. Securely support implement frame at this height with jack stands or blocks. Loosen switch bracket bolts and slide switch up or down until the flexible toggle (whisker) is just past the point at which the switch is activated (flexible switch toggle not contacting anything).

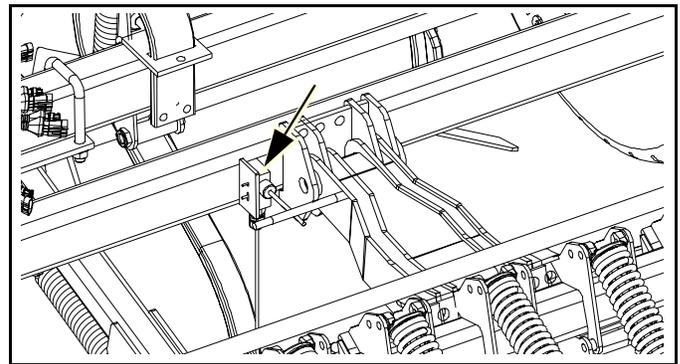


Figure 13  
FCA Lift Switch

68497

### Lift Switch Wiring

The implement lift switch has three wires (black, red and green). In order for the switch to work properly, the correct two leads must be connected to the lift switch extension cable.

The extension cable black lead always connects to the switch black wire.

The extension cable red lead must connect to the switch wire color indicated in the table below, for your implement.

Drill Model	Lift Switch Extension Cable Red Wire to...	Switch State Drill Raised
CTA4000/HD	Switch Wire: Red	Closed
CTA4500HD	N/A	N/A
FCA4500	N/A	N/A
NTA3010	Switch Wire: Green	Open
NTA3510	Switch Wire: Green	Open
3N-4010HDA	Switch Wire: Red	Closed

**S/N D1004P+**

Adjustment Refer to Figure 59

The implement lift switch (1) is a proximity type switch, mounted on the right-hand rear wheel assembly. The lift switch turns seed metering on and off as the implement is lowered and raised. The lift switch is actuated by the upper lift arm (2).

To adjust the height at which the seed metering is turned on, do the following.

**⚠ DANGER**

*Do not place any part of body under implement while making adjustments.*

1. Park the tractor, implement, and, if equipped, the seed cart on a solid, level surface.
  2. Unfold the drill.
  3. Lower the implement to the height where seeding should start (usually just above ground). Raise the openers and additional  $\frac{1}{2}$  in (12 mm). Set the lift circuit to neutral.
-  Do not set the lift switch to come on too low. The openers can ride up over irregular ground and an early switch can result in patches of no seeding.
4. Stop the tractor engine and apply the tractor parking brake. Turn the key to the ON position to provide power to the lift switch.

**⚠ DANGER**

*Have another person set in the tractor seat during the adjustment procedure. Have the person make sure the hydraulics are not engaged and the tractor is not started during the adjustment procedure.*

5. Locate the lift switch (1). Check the distance between the face (2) of the lift switch and the rod (3) that moves across the face. The distance must be  $\frac{5}{16}$  in (8 mm) or less. If the distance is not correct, adjust the nuts on the lift switch as necessary.
  6. Loosen the outer nut (4) on the lift switch just enough so the lift switch can move in the adjustment slot.
  7. Slide the lift switch up or down in the slot until the yellow lamp in lift switch goes from off to on.
  8. Tighten the outer nut on the lift switch without moving the lift switch.
  9. Start the tractor engine and lower the implement all the way.
  10. Stop the tractor engine. Remove the key and take the key with you.
-  **NOTE:** If adjustments are made to hydraulic coulters depth, check lift switch adjustment.

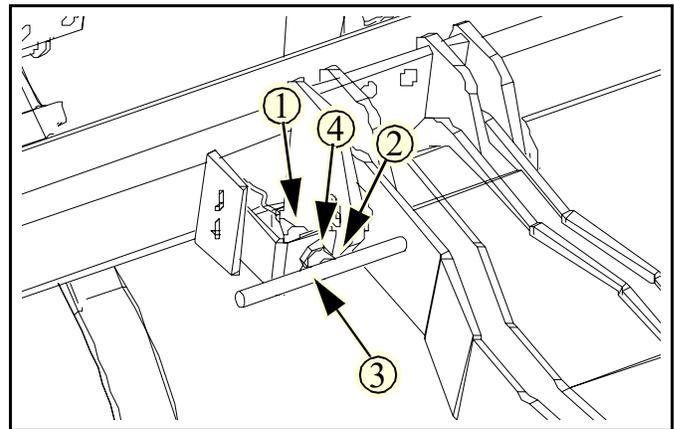


Figure 14  
FCA Lift Switch

685069

## Frame Level

Refer to Figure 15

The 00 and 00HD Series openers are designed to produce optimal results when the opener frames are level with the ground. Operating with drill frame level is also recommended, and this is set by hitch height (page 18).

- opener sub-frame adjustment: all gauge wheel trunnions in same frame pivot holes - see **“Opener-Subframe Adjustment”** on page 53,
- opener pivot height: all openers pivoting in same hole at their mounts

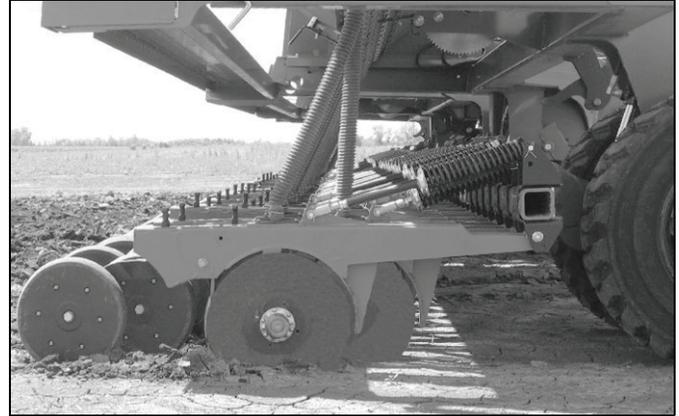


Figure 15  
Frame & Openers Level

29131

- opener press wheel height: all row units set the same - see page 59, and;
- opener spring down-force: all row units set the same (possibly excepting rows in tire tracks) - see page 56.

Refer to Figure 16

This photograph illustrates openers too high in front. Increase hydraulic pressure and/or lengthen opener springs.

Check sub-frame pivot in use at higher pressures.



Figure 16  
Openers Too High in Front

29132

Refer to Figure 17

This photograph illustrates openers too low in front, also known as “bulldozing”. Decrease hydraulic pressure and/or shorten opener springs.

Check sub-frame pivot if pressures have recently been reduced.



Figure 17  
Openers Too Low in Front

29133

## Initial Seeding Depth

Refer to Figure 18

11. Set opener seeding depth by adjusting press-wheel height (1). To adjust, first raise openers slightly, then lift and slide T handles (2) on top of openers. Adjust all press wheels to the same height. T handles adjust at  $\frac{1}{4}$  inch (6.4 mm) seeding depth change per minimum handle step. The range is approximately 0 to  $3\frac{1}{2}$  inch (0-8.9 cm) seeding depth.
  - For more shallow seeding, slide T handles forward (F) toward implement.
  - For deeper seeding, slide T handles backward (B) away from implement.
12. While seeding, remember:
  - Raise openers before turning. Never back up or turn sharply with openers in the ground. Doing so will plug openers and may damage equipment.
  - Be aware of the 5 to 10 foot (1.5 to 3 m) delay needed for seed to reach openers. If you stop in middle of field, lift product and back up 10 feet before proceeding.
  - Check periodically for plugged openers and hoses. With fan running and product raised, hand crank metering system. Look below each opener for seed or fertilizer.

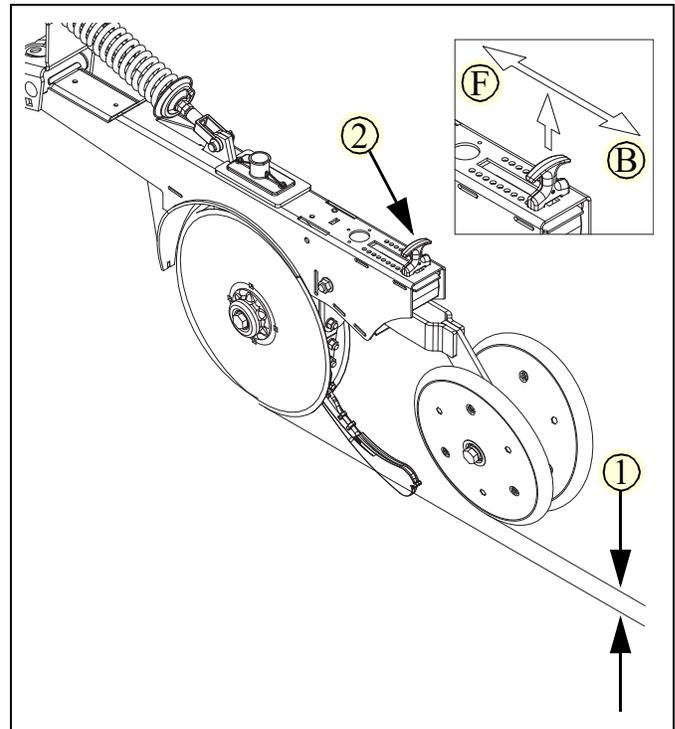


Figure 18  
Initial Opener Depth

26441

## Field Checklists

Use the following tables to develop a final checklist for your tractor/Product configuration. Additional or fewer steps may be necessary depending on tractor features, options and accessories.

Mechanical Checklist	Page
Product hitched with correct category hitch	12
Hitch pin locked	-
Safety chains secured to tractor or leading implement	14
Parking jack stowed	14
Check all tire pressures	32
Transport locks (fold and lift) remove and stowed.	20

Electrical Checklist	Page
Verify electrical hookup solid.	15

Hydraulic System Checklist	Page
Check tractor hydraulic reservoir within operating limits	-
Make hydraulic connections	15
Inspect connections for leaks	-
Unfold Implement	20
Raise the Product completely to re-phase the hydraulic circuit before starting field work	

First Pass Operation Checklist	Page
Implement unfolded and aligned for first pass.	20
Pull forward, lower Product.	24
Begin drilling for a short distance.	-
Stop. Assess:	
• working depth, seeding depth	-
• finishing attachment operation	
Make necessary adjustments	17

Sharp Field Turns Checklist	Page
1. Raise Product	-
2. Make turn	-
3. Lower Product	-
4. Resume drilling.	-

### NOTICE

#### **Equipment Damage Risk:**

*Do not make short radius turns with the implement in the ground.*

 If you stop in the middle of a pass, raise the implement and back up 10 feet (3 meters) before resumption of working.

Ending Tilling Checklist	Page
1. Suspend operations as above	-
2. Lift implement	-
3. Set tractor for fold	20
4. Fold wings	20
5. Place transport locks in transport position	22
6. Lower implement on to transport locks	-
7. Lights ON for transport	-
8. Travel with caution	-

## Rear Attachment Settings

### Heavy Reel Adjustment

Refer to Figure 19

9. The reel (1) down pressure may be adjusted by loosening or tightening the bolt (2) that is screwed into the front of the spring (3) underneath the reel arm (3) and then either increasing or decreasing the spring pressure. For more down pressure tighten the bolt. For less down pressure loosen the bolt. Note: It is recommended to run little or no down pressure in wet or sticky field conditions.

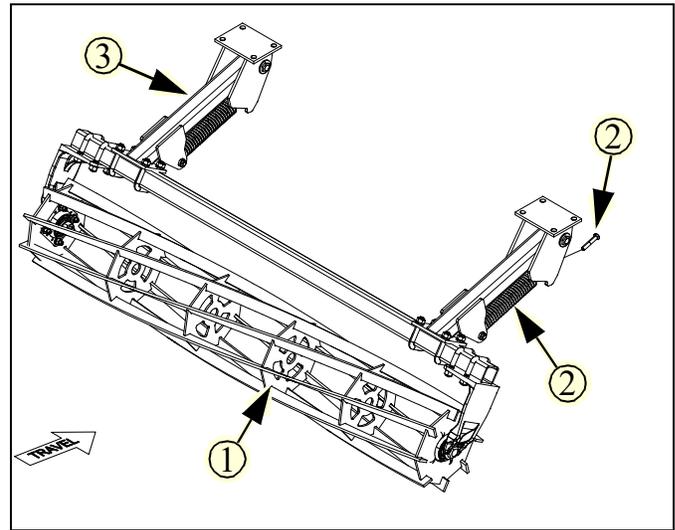


Figure 19  
Heavy Reel Adjustment

43887

Refer to Figure 20

10. The bars on the reels are angled forward (4) and should be installed as such on the machine. In some conditions in which a firming of the soil is more desirable than breaking up clods then these reels can be mounted in reverse (5). This does however increase the chance of causing damage to the bars in rocky soil.

**⚠ WARNING**

Be sure reels are installed with twisted bars oriented forward (4) as shown. Mounting in reverse (5) can damage reel in rocky soil.

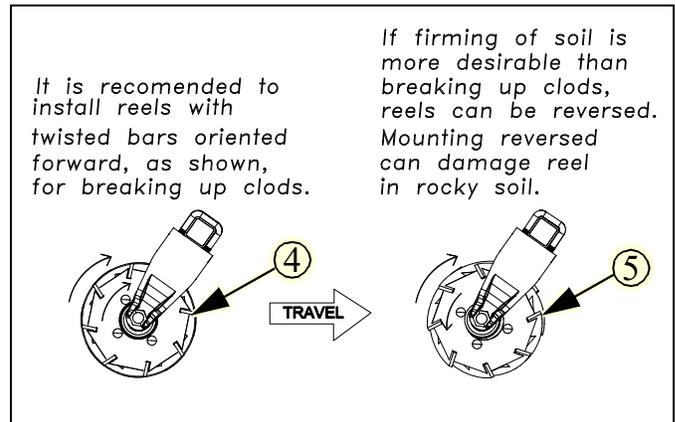


Figure 20  
Reel Direction

42284

## Parking

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

11. For long-term parking, see also “**End of Season Storage**” below.
12. Choose a parking location that is level, has firm soil and is unlikely to develop soft soil in rain. With the product still hitched, maneuver it to the parking location.
13. Lower the implement to just above ground. Shut off the tractor and remove the key.

## End of Season Storage

18. Park the implement at the storage location as per “**Parking**” above. Secure tires with blocks.
19. Clean machine as much as possible. Remove all dirt from rust prone parts like hinge points, turnbuckles and bolt threads.
20. Check all bolts for tightness. Tighten as needed.
21. Check over the machine for damaged or worn parts. Replace or rotate worn parts as needed—hinge bolts, clevis pins, bearings, etc. Make repairs and service during the off season.
22. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks.

## Beginning of Season

28. Hitch the tractor to the Product and connect the hydraulic hoses.

## DANGER

*Unfolding machine with air in cylinders may cause death or major machine damage. Pin cylinders to wings and slowly unfold machine.*

30. If Cylinders were stored with rods retracted, extend cylinders and reinstall clevis bolts.
31. Slowly raise the machine a couple of times to its full height and hold lever for 10 to 15 seconds to purge air from lift cylinders.
32. If machine was not serviced and greased at end of last season, perform steps 18 - 24 from “**End of Season Storage**” section.
33. Make sure all moving parts move freely and do not bind.

14. Unplug product hydraulic hoses and electrical lines from tractor.
15. Unhook the safety chain.
16. Remove the hitch pin.
17. Equipment must be stable when unhooked from tractor. Any implement that is not must have a rear supporting device to make stable.
23. The wheel bearings should be cleaned and repacked annually or every 2500 acres.
24. Use spray paint to cover scratches, chips and worn areas on the product to protect the metal.
25. Lubricate areas noted under “**Lubrication**” beginning on page 32. If stored outside, place a protective coating of grease or “plow paint” on all earth working parts and cylinder rods to prevent rusting.
26. If you are storing the Product unfolded, remove fold cylinder clevis bolts, block up cylinder and fully retract cylinder rods. This will extend the life of the cylinder seals and reduce internal leaks.
27. Cover with a tarp if stored outside.
29. Check fold and lift cylinders for leaks that could have caused air to enter cylinders. If leaks are noticed repair cylinders and fully purge air from cylinders by unpinning cylinder, block up and fully cycle cylinders back and forth several times.



# Maintenance and Lubrication

## Maintenance

1. Always use the transport lock when working on or doing maintenance to the product. If folded, be sure your wing stop pins are in place. Read and understand all safety decals on your equipment.
2. During the first season of operation, and periodically after that, check your bolts for tightness. Check shank pivot bolts for tightness. Check shank pivot bolts on the spring-loaded shank, these must remain tight to prevent excessive wear on the shank assembly.
3. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, sweeps, shanks, etc.
4. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks. It is important that there are no leaks on the equipment.
5. Grease wheel bearings and walking beams sparingly. Over greasing may cause damage to seals and reduce the life of the bearing. Grease hinge points periodically. Real Bearings are maintenance free & do not require greasing.
6. Check drag bolts for looseness or excessive wear. Replace broken or bent teeth. Your drag is an important part of the tillage operation.

7. If machine is stored outdoors over the winter months, it is a good idea to fold the machine then set it down on the ground so all the cylinders are retracted to protect the cylinder rods. This will extend the life of the cylinder seals and reduce internal and external leaks.

By following and maintaining a routine service and lubrication program, your tillage equipment will give you many years of service.

**For more information on operating, adjusting or maintaining your Great Plains Product, assistance is available. Contact:**

Great Plains Manufacturing, Inc. wants you to be satisfied with your new Full Product Name. If for any reason you do not understand any part of this manual or are otherwise dissatisfied with the product please contact:

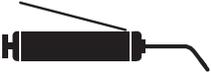
**Great Plains Service Department  
1525 E. North St.  
PO Box 5060  
Salina, KS 67402-5060**

Or go to [www.greatplainsag.com](http://www.greatplainsag.com) and follow the contact information at the bottom of your screen for our service department.

## Lubrication

 Multipurpose spray lube	 Multipurpose grease lube	 Multipurpose oil lube	 50	Intervals (service hours) at which lubrication is required
---	--	---	--	--

## Wheel Bearing Hub

	
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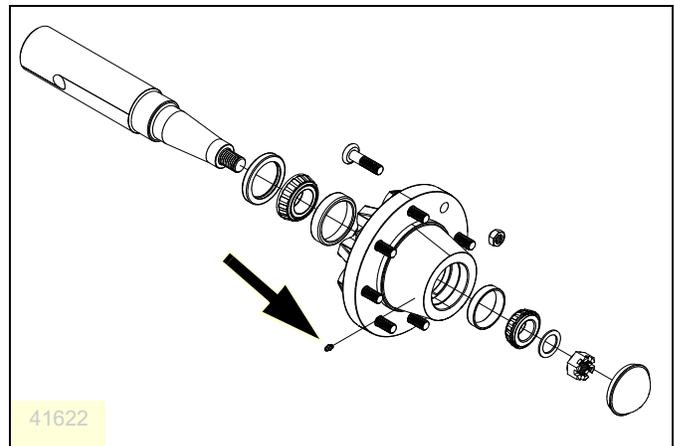
1 zerk on each hub;  
4 total

Type of Lubrication: Grease

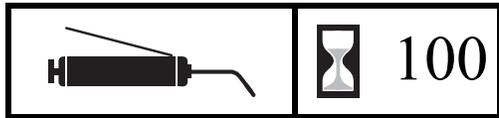
Quantity: Sparingly, Do Not Over Grease, may cause damage to seal.

Repack wheel bearings annually or every 2500 acres.

 Newer machine may have non-greaseable hubs but they will still need repacking every 2500 acres.



### Walking Beam Pivot Bearings

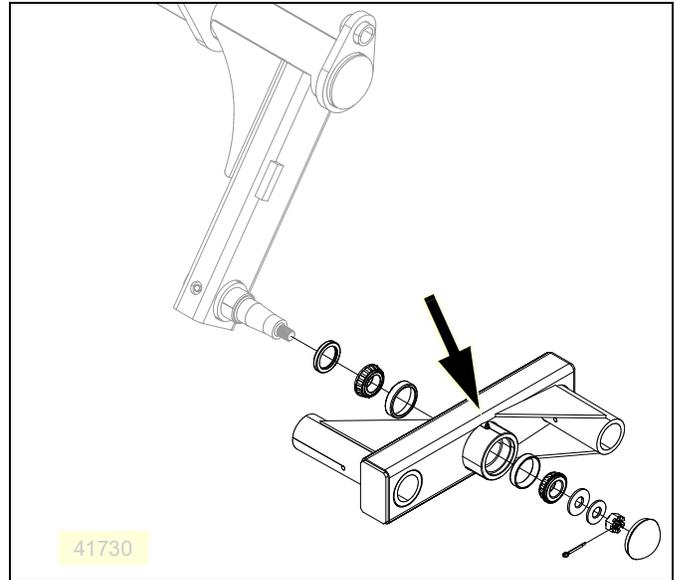


One on each walking beam

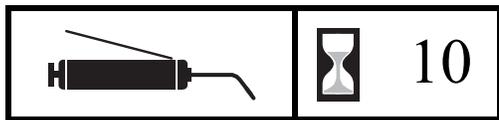
Type of Lubrication: Grease

Quantity: Sparingly and check for endplay

If there is a lot of end play take apart, check bearings and re-pack



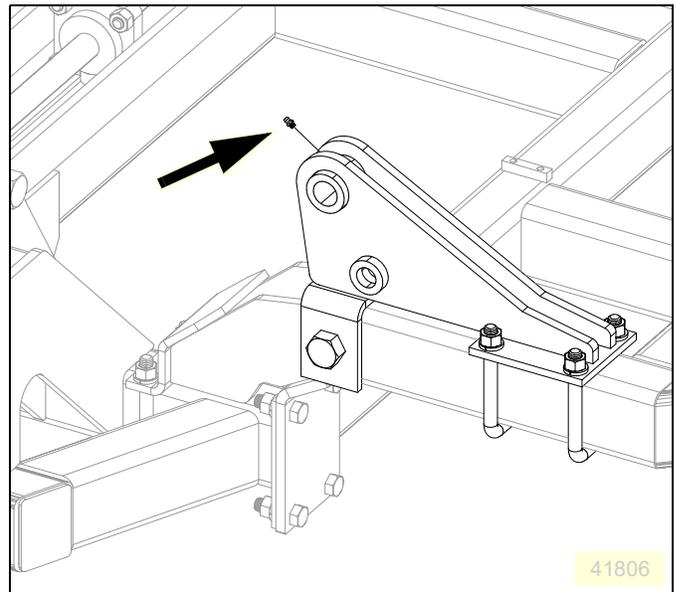
### Outside Wing Hinge



One on each outside wing (5-Section)

Type of Lubrication: Grease

Quantity: Sparingly or 2 pumps





## FCA Specifications and Capacities

<b>Model No.</b>	<b>FCA4500</b>
<b>Working Width</b>	45' ft (13.72 m)
<b>Number of Sweeps</b>	77
<b>Center Section</b>	12' (3.65m)
<b>1st Wing</b>	10' 9" (3.28 m)
<b>2nd Wing</b>	6' (1.8m)
<b>Transport Width</b>	16' 10" (5.13m)
<b>Transport Height</b>	14' 6" (4.42m)
<b>Overall Length</b>	30' 5" (9.27m)
<b>Tire Size Center</b>	9.5 LX15 8 PLY
<b>Tire Size Wing</b>	9.5 LX15 8 PLY
<b>Horsepower (PTO)</b>	350-400
<b>Kilowatt</b>	260-300
<b>Weight (base machine)</b>	28,000lbs. (12700kg)

## Tire Inflation Chart

Tire Inflation Chart		
Wheel	Tire Size	Inflation
Gauge Wheel	11Lx15" 12-Ply	52 psi 358 kPa
Transport/ Center	340/60R16.5 3/5offset	73 psi 358 kPa
Wings	9.5Lx15" 8-Ply	44 psi 503 kPa

Tire Warranty Information	
<p>All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator's and Parts Manuals or online at the manufacturer's web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.</p>	
<u>Manufacturer</u>	<u>Web site</u>
Firestone	<a href="http://www.firestoneag.com">www.firestoneag.com</a>
Gleason	<a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a>
Titan	<a href="http://www.titan-intl.com">www.titan-intl.com</a>
Galaxy	<a href="http://www.atgtire.com">www.atgtire.com</a>
BKT	<a href="http://www.bkt-tire.com">www.bkt-tire.com</a>

## Hydraulic Connectors and Torque

Refer to Figure 21 (a hypothetical fitting)

Leave any protective caps in place until immediately prior to making a connection.

- NPT** - National Pipe Thread  
Note tapered threads, no cone/flare, and no O-ring.
- 1 Apply liquid pipe sealant for hydraulic applications.  
Do not use tape sealant, which can clog a filter and/or plug an orifice.
- JIC** - Joint Industry Conference (SAE J514)  
Note straight threads (4) and the 37° cone (5) on “M” fittings (or 37° flare on “F” fittings).  
Use no sealants (tape or liquid) on JIC fittings.
- ORB** - O-Ring Boss (SAE J514)  
Note straight threads (5) and elastomer O-Ring (7).  
Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.
- 3 ORB fittings that need orientation, such as the ell depicted, also have a washer (8) and jam nut (9) (“adjustable thread port stud”).  
Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.

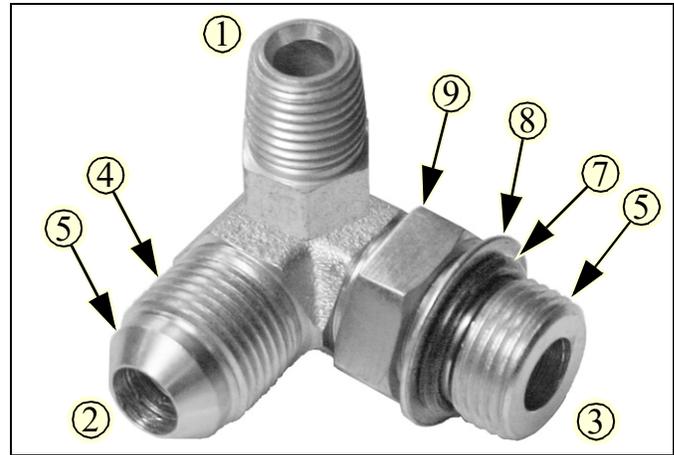


Figure 21  
Hydraulic Connector ID 31282

Fittings Torque Values			
Dash Size	Fitting	N-m	Ft-Lbs
-4	1/4-18 NPT	1.5-3.0 turns past finger tight	
-5	1/2-20 JIC	19-20	14-15
-5	1/2-20 ORB w/jam nut	12-16	9-12
-5	1/2-20 ORB straight	19-26	14-19
-6	5/16-18 JIC	24-27	18-20
-6	5/16-18 ORB w/jam nut	16-22	12-16
-6	5/16-18 ORB straight	24-33	18-24
-8	3/4-16 JIC	37-53	27-39
-8	3/4-16 ORB w/jam nut	27-41	20-30
-8	3/4-16 ORB straight	37-58	27-43

### Torque Values Chart

Bolt Size in-tpi <sup>a</sup>	Bolt Head Identification						Bolt Size mm x pitch <sup>c</sup>	Bolt Head Identification					
													
	Grade 2		Grade 5		Grade 8			Class 5.8		Class 8.8		Class 10.9	
	N-m <sup>b</sup>	ft-lb <sup>d</sup>	N-m	ft-lb	N-m	ft-lb		N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12	M 5 X 0.8	4	3	6	5	9	7
1/4-28	8.5	6	13	10	18	14	M 6 X 1	7	5	11	8	15	11
5/16-18	15	11	24	17	33	25	M 8 X 1.25	17	12	26	19	36	27
5/16-24	17	13	26	19	37	27	M 8 X 1	18	13	28	21	39	29
3/8-16	27	20	42	31	59	44	M 10 X 1.5	33	24	52	39	72	53
3/8-24	31	22	47	35	67	49	M 10 X 0.75	39	29	61	45	85	62
7/16-14	43	32	67	49	95	70	M 12 X 1.75	58	42	91	67	125	93
7/16-20	49	36	75	55	105	78	M 12 X 1.5	60	44	95	70	130	97
1/2-13	66	49	105	76	145	105	M 12 X 1	90	66	105	77	145	105
1/2-20	75	55	115	85	165	120	M 14 X 2	92	68	145	105	200	150
9/16-12	95	70	150	110	210	155	M 14 X 1.5	99	73	155	115	215	160
9/16-18	105	79	165	120	235	170	M 16 X 2	145	105	225	165	315	230
5/8-11	130	97	205	150	285	210	M 16 X 1.5	155	115	240	180	335	245
5/8-18	150	110	230	170	325	240	M 18 X 2.5	195	145	310	230	405	300
3/4-10	235	170	360	265	510	375	M 18 X 1.5	220	165	350	260	485	355
3/4-16	260	190	405	295	570	420	M 20 X 2.5	280	205	440	325	610	450
7/8-9	225	165	585	430	820	605	M 20 X 1.5	310	230	650	480	900	665
7/8-14	250	185	640	475	905	670	M 24 X 3	480	355	760	560	1050	780
1-8	340	250	875	645	1230	910	M 24 X 2	525	390	830	610	1150	845
1-12	370	275	955	705	1350	995	M 30 X 3.5	960	705	1510	1120	2100	1550
1 1/8-7	480	355	1080	795	1750	1290	M 30 X 2	1060	785	1680	1240	2320	1710
1 1/8-12	540	395	1210	890	1960	1440	M 36 X 3.5	1730	1270	2650	1950	3660	2700
1 1/4-7	680	500	1520	1120	2460	1820	M 36 X 2	1880	1380	2960	2190	4100	3220
1 1/4-12	750	555	1680	1240	2730	2010							
1 3/8-6	890	655	1990	1470	3230	2380							
1 3/8-12	1010	745	2270	1670	3680	2710							
1 1/2-6	1180	870	2640	1950	4290	3160							
1 1/2-12	1330	980	2970	2190	4820	3560							

- a. in-tpi = nominal thread diameter in inches-threads per inch
- b. N·m = newton-meters
- c. mm x pitch = nominal thread diameter in mm x thread pitch
- d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.

25199

Torque Values Chart	
Wheel Bolt Torque Values	1/2"-20 (75-85ft-lbs)
Wheel Bolt Torque Values	9/16"-18 (80-90ft-lbs)
Wheel Bolt Torque Values	5/8"-18 (85-100ft-lbs)



## WARRANTY

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

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

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

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

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

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

Effective July 15, 2020

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<b>A</b>			
address, Great Plains .....	11	32	
amber reflectors .....		5	
<b>B</b>			
bearings .....		32	
black, wire .....		25	
bolts .....		32	
bulldozing .....		27	
<b>C</b>			
Category III .....		13	
Caution			
Read Operator's Manual .....		6	
CAUTION, defined .....		1	
chain .....		14	
channel, lock .....		22	
check for leaks .....		15	
checklists			
electrical .....	15	29	
ending tilling .....		29	
field .....		29	
field turns .....		29	
first pass .....		29	
hydraulic system .....		29	
mechanical .....		29	
pre-setup .....		12	
pre-start .....		18	
chemicals .....		2	
children .....		2	
clearance, vertical .....		20	
clevis hitch .....		13	
clothing .....		1	
color code, hose .....		15	
color code, hose handle .....		15	
color code, lift switch .....		25	
connectors			
electrical .....		15	
contact Great Plains .....	11	32	
covered models .....		10	
cushion .....		13	
customer service .....		11	
<b>D</b>			
Danger			
Crushing Hazard .....		7	
DANGER, defined .....		1	
decals			
replacement .....		5	
decals			
caution			
read manual .....		6	
danger			
crushing .....		7	
electrocution .....		7	
notice			
transport lock .....		8	
speed			
30km per hr .....		8	
warning			
hand crushing .....		8	
high pressure fluid .....		8	
overhead wing .....		7	
wings could fall .....		9	
decal, safety .....		5	
definitions .....		10	
delay, seeding .....		28	
depth, seeding .....		28	
directions .....		10	
disconnecting hydraulic lines .....		15	
drag bolts .....		32	
<b>E</b>			
electrocution .....		20	
<b>F</b>			
fire .....		1	
folding .....		20	
frame level .....		27	
<b>G</b>			
green, wire .....		25	
<b>H</b>			
headphones .....		1	
hearing .....		1	
high pressure fluids .....		2	
hills .....	14	21	
hitch pin .....		21	
Hitch Turnbuckle Adjustment .....		17	
hitching .....		14	
hose color code .....		15	
hose handles .....		16	
hoses, hydraulic .....		15	
hydraulic connectors .....		35	
hydraulic hookup .....		15	
hydraulic safety .....		2	
<b>I</b>			
inflation .....		34	
<b>J</b>			
JIC .....		35	
Joint Industry Conference .....		35	
J514 .....		35	
<b>K</b>			
kPa .....		34	
<b>L</b>			
leak checks .....		15	
leaks .....	2	32	
left-hand, defined .....		10	
level, openers .....		27	
lift .....		19	
lift cylinder lock .....		22	
lighting .....		15	
lights .....		2	
lock			
lift cylinder .....		22	
lower .....		19	
lubrication .....		32	
<b>M</b>			
Maintenance .....		32	
maintenance safety .....		4	
medical assistance .....	2	15	18
model number .....		11	
<b>N</b>			
National Pipe Thread .....		35	
Note, defined .....		10	
Notice, defined .....		10	
NPT .....		35	
<b>O</b>			
opener level .....		27	
orange reflector .....		6	
ORB .....		35	
orientation rose .....		10	
O-Ring Boss .....		35	
outside wing hinge .....		33	
owner assistance .....		11	
<b>P</b>			
parts .....		32	
pin, hitch .....		21	
PPI-203VR, block .....		13	
PPI-205H, cushion .....		13	
PPI-302V, plate .....		13	
Pre-leveling of machine .....		17	
pressure-control valve .....		24	
protective equipment .....		1	
psi .....		34	
<b>R</b>			
raise .....		19	
red reflectors .....		6	
red, wire .....		25	
reel .....		30	
reflectors			
amber .....		5	
orange .....		6	
red .....		6	
SMV .....		5	
reflectors, safety .....		5	
repair parts .....		11	
riders .....		2	
right-hand, defined .....		10	
rose, orientation .....		10	
<b>S</b>			
SAE J514 .....		35	
safety chain .....		14	
safety decal .....		5	
safety information .....		1	
safety symbol .....		1	
scale .....		21	
seeding depth .....		28	

serial number .....	11	32 kph .....	3
setup .....	12	560-594M, manual .....	10
shutdown .....	3	560-594P, manual .....	10
slopes .....	14	560-594Q-ENG, manual .....	10
SMV (Slow Moving Vehicle) .....	5	560-594Q, manual .....	10
Spanish .....	6. 7	802-383C, bolt .....	13
Specifications and Capacities .....	34	802-487C, bolt .....	13
speed .....	7	803-367C, nut .....	13
speed limit		818-055C, reflector .....	5
forward .....	21	838-094C, decal .....	8
transport .....	21	838-598C, decal .....	6
stops .....	29	838-599C, decal .....	7
storage .....	3	838-600C, decal .....	7
storing machine .....	32	838-602C, decal .....	7
switch, lift .....	26	838-603C, reflector .....	6
symbol, safety .....	1	838-611C, decal .....	8
<b>T</b>		838-612C, decal .....	9
T handle .....	28	838-613C, decal .....	8
tables		838-614C, reflector .....	6
document family .....	10	838-615C, reflector .....	5
fittings torque .....	35	890-798C, clevis .....	13
hose color code .....	15		
models covered .....	10		
torque values .....	36		
tilling, ending .....	29		
tire inflation .....	34		
tires .....	3		
towing .....	21		
towing vehicle capability .....	21		
transport .....	21		
transport lock .....	32		
transport lock, storage .....	22		
transport speed .....	3		
transporting .....	18		
<b>U</b>			
unfolding .....	20		
URLs, tires .....	34		
<b>V</b>			
V-block .....	13		
vertical clearance .....	20		
<b>W</b>			
walking beam pivot .....	33		
WARNING, defined .....	1		
warranty .....	34		
weight .....	21		
weight, implement .....	21		
welding .....	4		
Wheel Bearing Hub .....	32		
wing adjustment .....	17		
Wing Depth Adjustment .....	17		
www .....	34		
<b>Numerics</b>			
00HD Series .....	27		
13 mph .....	3		
1400 psi .....	24		
20 mph .....	3. 21		
22 kph .....	3		





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