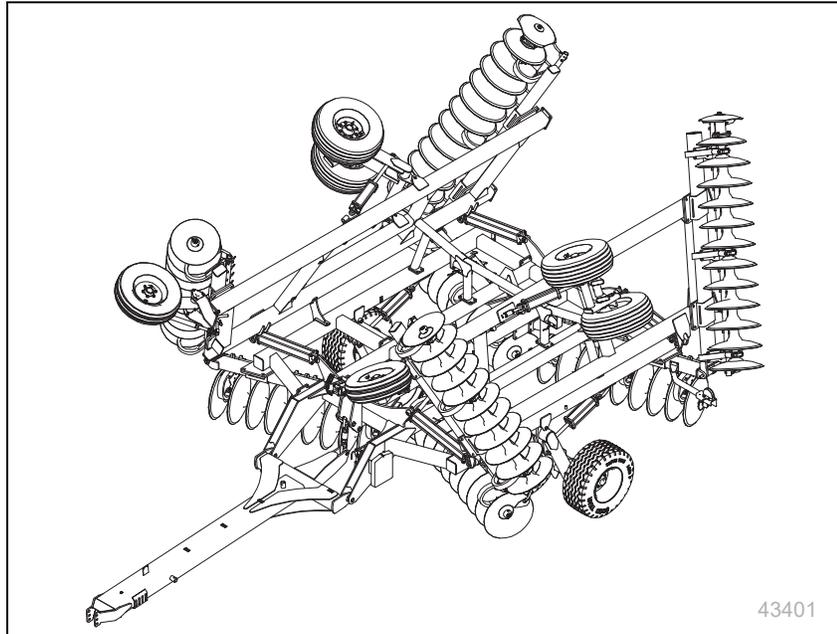


# Operator Manual

HS2100-23, HS2100-26, HS2100-29, HS2100-30  
HS2100-33 & HS2100-36  
Velocity



*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 alternate spacings and/or optional equipment not supplied with standard unit.

ORIGINAL INSTRUCTIONS



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Printed 2025-02-06

556-428M

## 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.

<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.:** \_\_\_\_\_

California Proposition 65
 <b>WARNING:</b> Handling passenger or off-highway motor vehicle parts can expose you to chemicals such as phthalates and lead, which can cause cancer and reproductive harm. To minimize exposure, service the vehicle in a well-ventilated area, wear gloves, and wash your hands. For more information see <a href="http://www.P65Warnings.ca.gov/motor-vehicle-parts">www.P65Warnings.ca.gov/motor-vehicle-parts</a> .



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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 4, thoroughly.*
- ▲ *Read all instructions noted on the decals.*
- ▲ *Keep decals clean. Replace damaged, faded and illegible decals.*



### Wear Protective Equipment

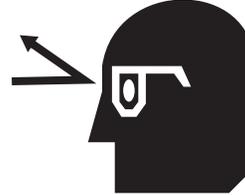
- ▲ *Wear clothing and equipment appropriate for the job.*
- ▲ *Prolonged exposure to loud noise can cause hearing impairment or loss. Wear suitable hearing protection such as earmuffs or earplugs.*
- ▲ *Avoid wearing entertainment headphones while operating machinery. Operating equipment safely requires the full attention of the operator.*



## 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.

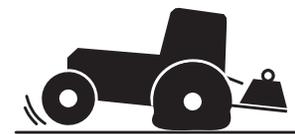
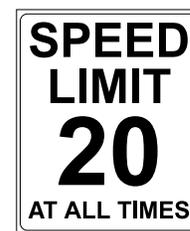
- ▲ *Never allow children to operate equipment.*
- ▲ *Keep all bystanders away from machine during operation.*



## Transport Machinery Safely

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

- ▲ *Do not exceed 20 mph (32 km/h). 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 a Velocity unless the towing vehicle is rated for, and ballasted for, the weight of the Velocity.*
- ▲ *Carry reflectors or flags to mark Velocity in case of breakdown on the road.*
- ▲ *Do not fold or unfold the Velocity while the tractor is moving.*



## Check for Overhead Lines

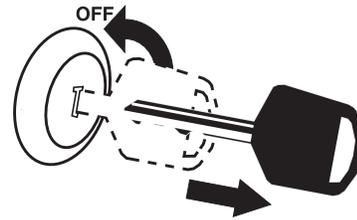
The Velocity requires at least 12 feet (3.7m) for Models 23 & 26, 14 feet (4.3 m) for Models 29 & 33 and 15 feet (4.6m) for Models 36 of vertical clearance in transport. Contacting overhead electrical lines can introduce lethal voltage levels on Velocity and tractor frames. A person touching almost any metal part can complete the circuit to ground, resulting in serious injury or death. At higher voltages, electrocution can occur without direct line or body contact.

- ▲ *Avoid overhead lines during folding, unfolding, transport and parking.*



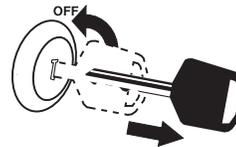
## Shutdown and Storage

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



## Practice Safe Maintenance

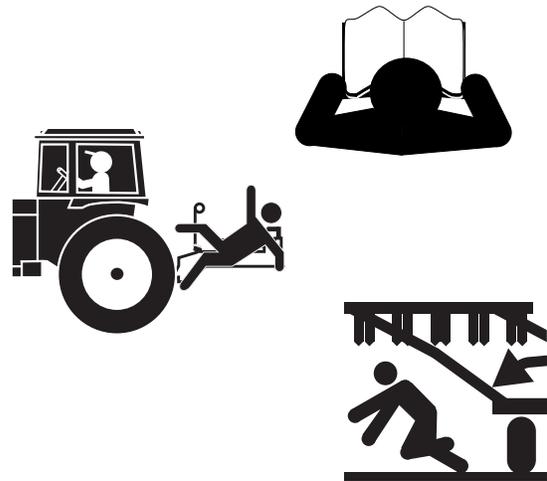
- ▲ *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.*
- ▲ *Work in a clean, dry area.*
- ▲ *Lower the Velocity, put tractor in park, turn off engine, and remove key before performing maintenance.*
- ▲ *Make sure all system pressure is relieved.*
- ▲ *Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on Velocity.*
- ▲ *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 Velocity 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 Velocity functions.*
- ▲ *Operate machinery from the driver's seat only.*
- ▲ *Do not leave Velocity unattended with tractor engine running.*
- ▲ *Do not dismount a moving tractor. Dismounting a moving tractor could cause serious injury or death.*
- ▲ *Do not stand between the tractor and Velocity during hitching.*
- ▲ *Keep hands, feet and clothing away from moving parts.*
- ▲ *Watch out for wires, trees, etc., when folding and raising Velocity. Make sure all persons are clear of working area.*



## Safety Decals

### Safety Reflectors and Decals

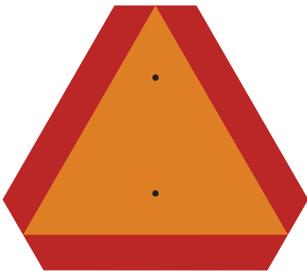
Your implement comes equipped with all lights, safety reflectors and decals in place. They were designed to help you safely operate your implement.

- ▲ *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:

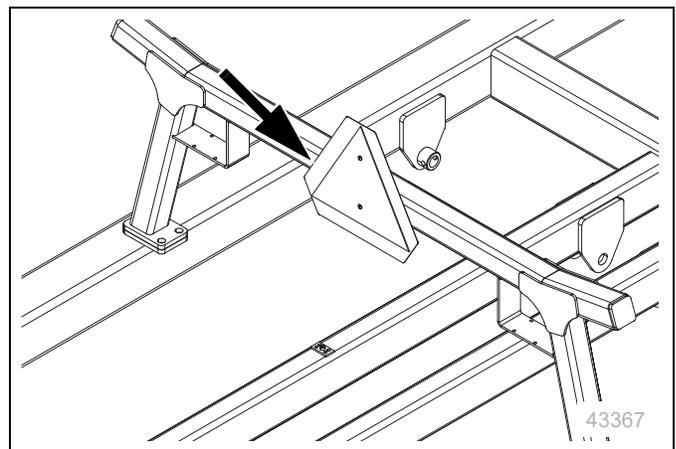
1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

### 818-055C



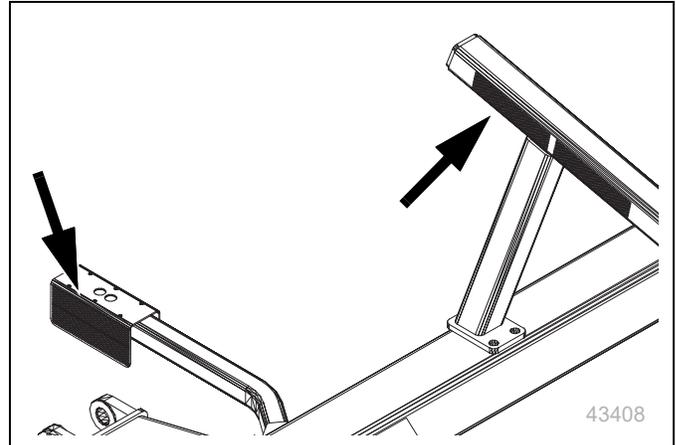
### Slow Moving Vehicle Reflector

On rear of wing stop;  
1 total

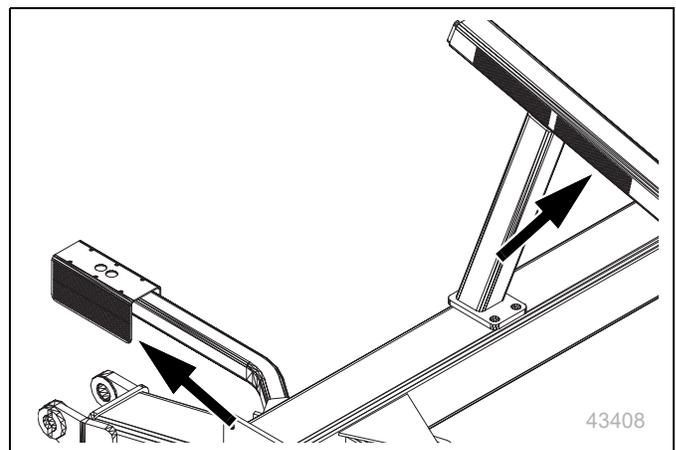


**838-614C****Red Reflectors**

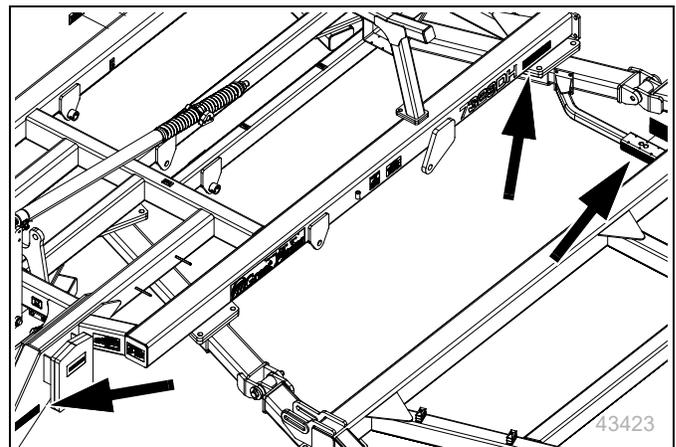
On rear face of light bracket mount tube (top); and Rear of Wing Stop on Models 30, 33, & 36 (outside)  
 2 total - Models 23-29  
 4 total - Models 30-36

**838-603C****Daytime Reflectors**

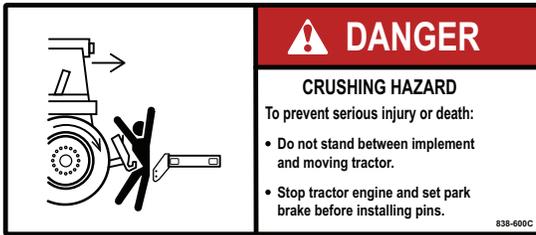
On rear face of light bracket mount tube (bottom); and Rear of Wing Stop on Models 30, 33, & 36 (inside);  
 2 total - Models 23-29  
 4 total - Models 30-36

**838-615C****Amber Reflectors**

On front of light brackets. On front, outside of center frame, on outside, rear of center frame, side of finishing attachment (not shown), visible from side while folded for transport;  
 6 total

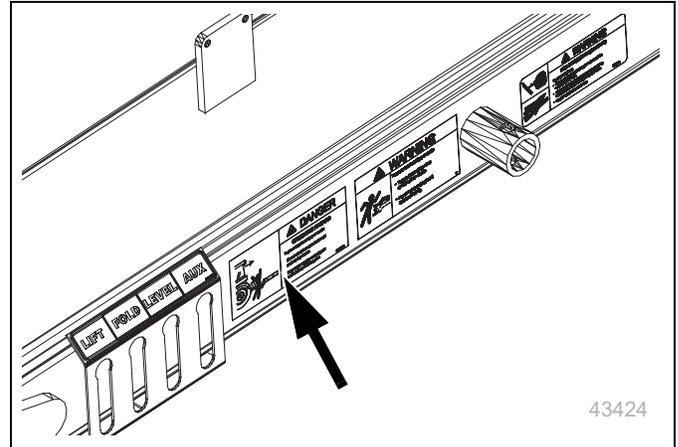


**838-600C**



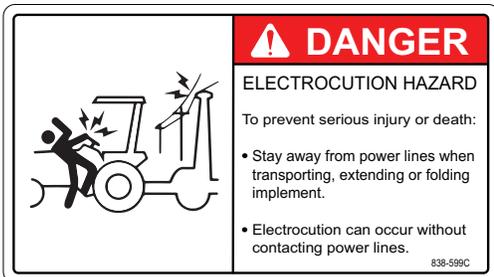
**Danger: Crushing Hazard**

On front of hitch tube (left, front);  
1 total



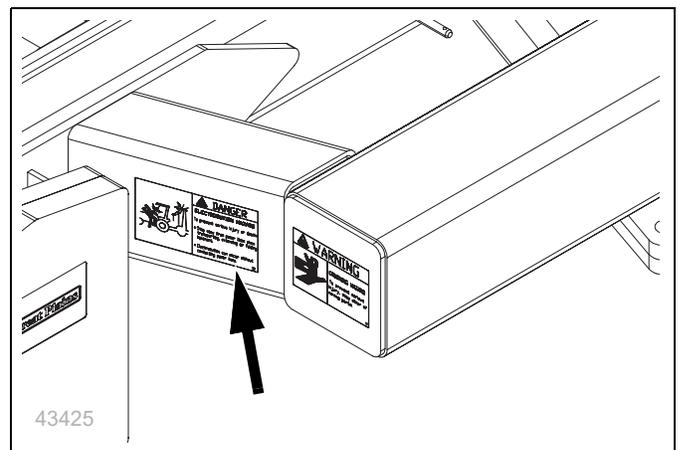
43424

**838-599C**



**Danger: Electrocution**

On front side of center frame, (left side);  
1 total



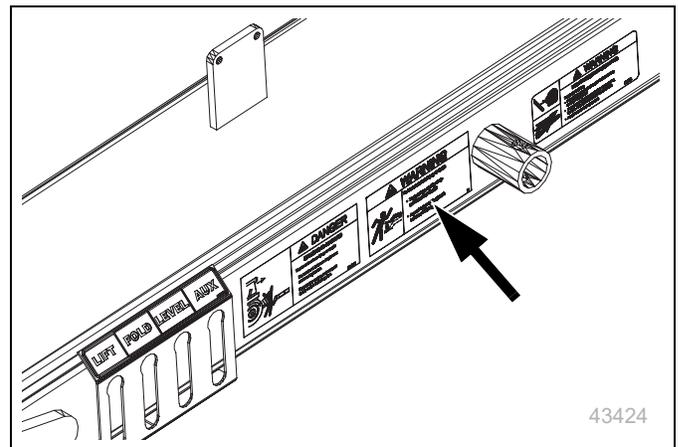
43425

**838-606C**



**Warning: Tongue Rising**

Front of hitch (left, front);  
1 total



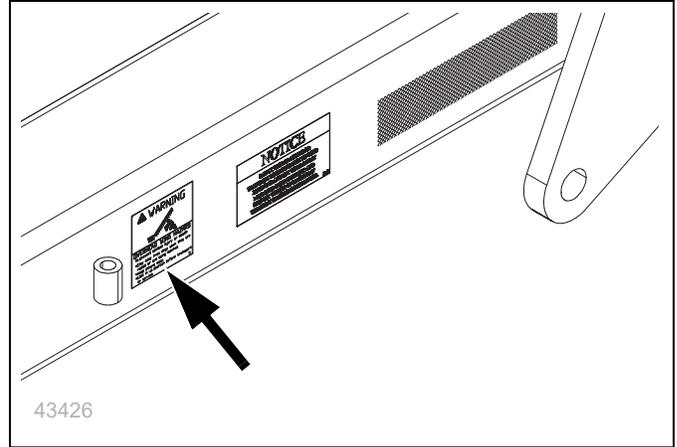
43424

**838-602C**



**Warning: Overhead Wing**

Outside, center of center frame and wing frames (both sides);  
4 total

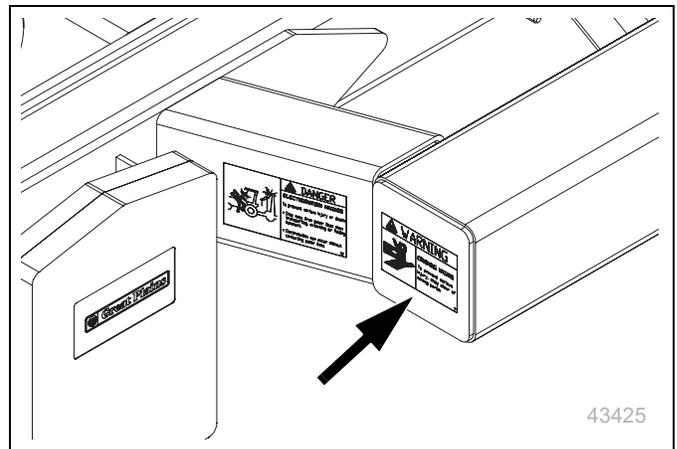


**838-611C**



**Warning: Hand Crushing**

On front side of center frame (both sides);  
2 total

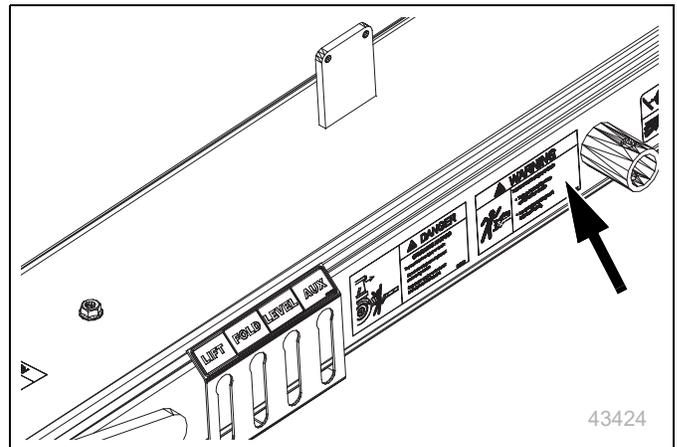


**838-094C**



**Warning: High Pressure Fluid Hazard**

On front of hitch tube, left rear;  
1 total



**838-598C**

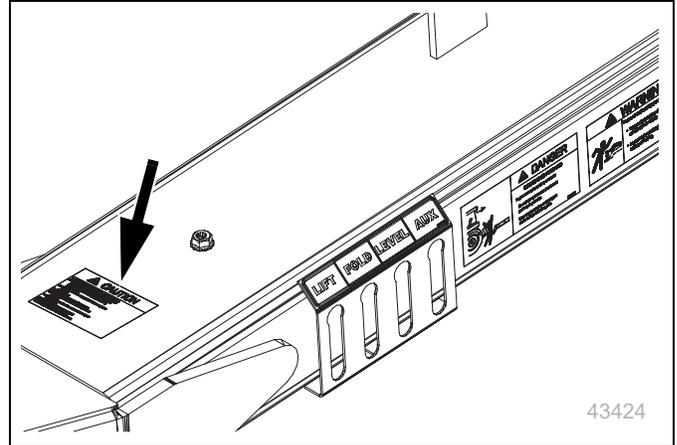
**CAUTION**

1. Read and Understand the Operator's Manual before using machine.
2. Stop tractor engine, lower machine to the ground, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing, unplugging or fitting.
3. Keep hands, feet, hair and clothing away from earth-working points and blades.
4. Do not allow riders.
5. Clean reflectors, SMV and lights before transporting.
6. Install safety locks before transporting or working beneath components.
7. Add extra lights and use pilot vehicle when transporting during times of limited visibility.
8. Use hazard flashers in tractor when transporting.
9. Install safety chain when attaching to tractor.
10. Review safety instructions with all operators annually.

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

**Caution: General Instructions**

On front face of hitch tube (top);  
1 total



**858-774C**

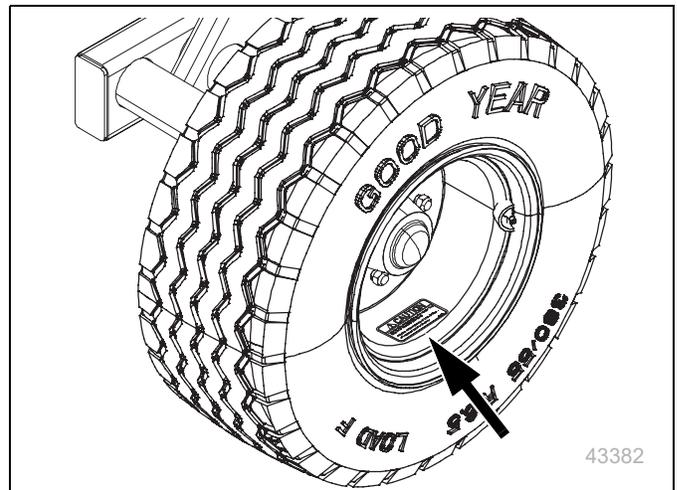
**CAUTION**

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:

- Maximum inflation pressure of tires is 52 psi.
- Torque wheel bolts to 90-105 lb-ft.

**Caution: General Instructions**

On each wheel  
8 total models 23-29  
On wing wheels  
4 total on Models 30-36



**858-773C**

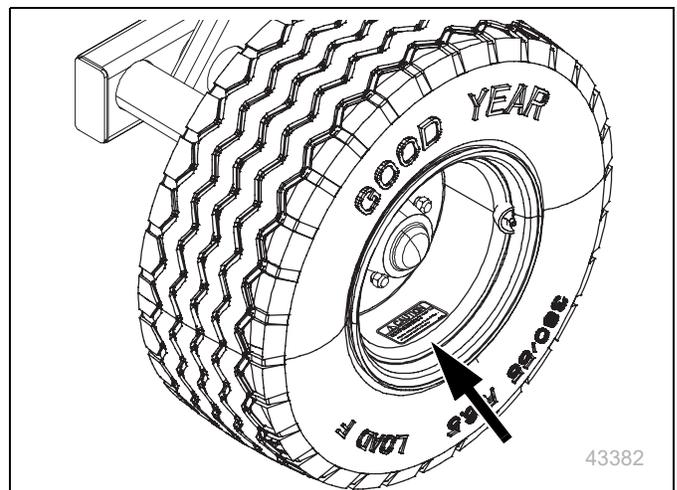
**CAUTION**

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:

- Maximum inflation pressure of tires is 73 psi.
- Torque wheel bolts to 170 lb-ft.

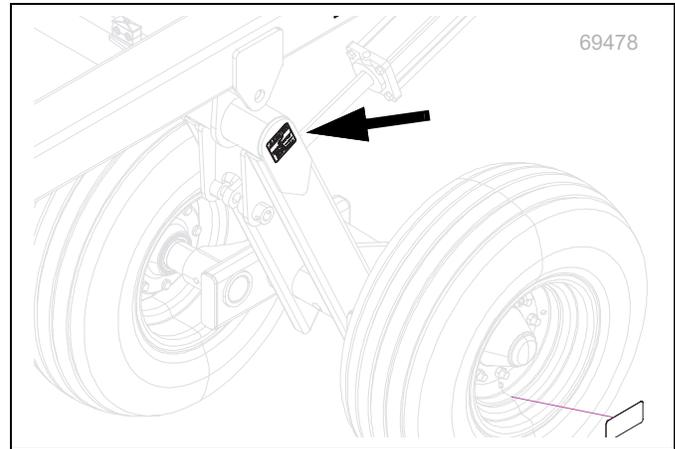
**Caution: General Instructions**

On each center wheel  
4 total models 30-36

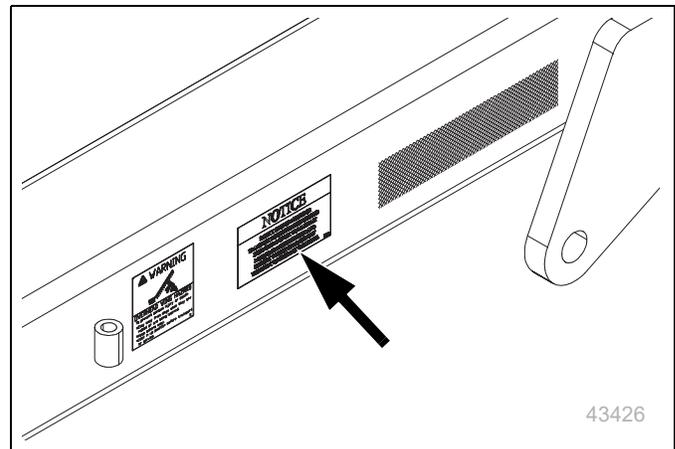


**818-398C****Notice: Transport Lock**

Outside of center Torque tube (both sides)  
 Outside of Wing Torque tube (both sides);  
 4 total

**838-613C****Notice: Transport Lock**

Outside of center frame (both sides);  
 2 total





## Introduction

Great Plains welcomes you to its growing family of new product owners. The Velocity HS2100-23 - HS2100-36 has 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.

### Description of Unit

The Velocity HS2100-23 - HS2100-36 is a three section primary and secondary tillage tool. Working width ranges from 23 to 36 feet. The implement is designed to cut out and bury roots and crop residue. Kill weeds and dry out the soil, level ridges and ruts and for seedbed preparation. A heavy finishing reel breaks clods and smooths the surface for an excellent finish.

### Intended Usage

Use the Velocity to eliminate weeds, leveling rutted fields, and incorporating crop residue. Do not modify the Velocity for use with attachments other than Great Plains options and accessories specified for use with the Velocity.

### Models Covered

HS2100-23	23-Foot, 3-Section
HS2100-26	26-Foot, 3-Section
HS2100-29	29-Foot, 3-Section
HS2100-30	30-Foot, 3-Section
HS2100-33	33-Foot, 3-Section
HS2100-36	36-Foot, 3 Section

### Document Family

556-428Q	Pre-Delivery Manual
556-428M	Owner's Manual (this document)
556-428P	Parts Manual

### Using This Manual

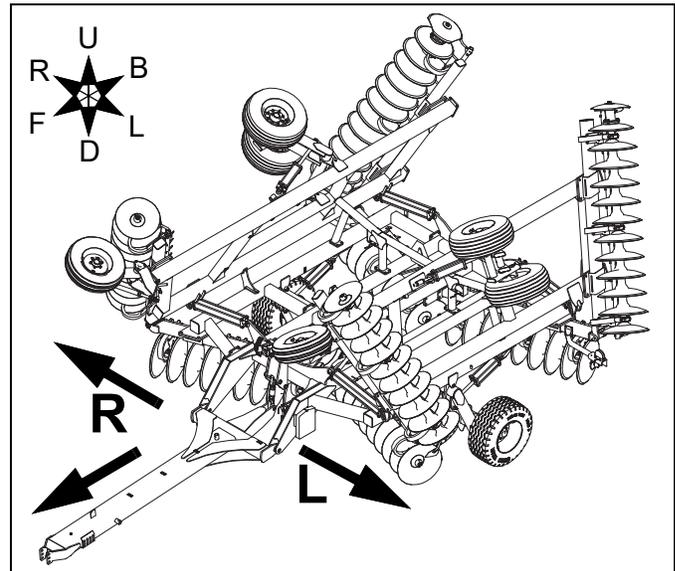
This manual will familiarize you with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

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



#### Parts Manual QRC

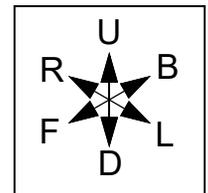
The QR Code to the left will take you to this machine's parts manual. Use your smart phone or tablet to scan and start viewing.



### Definitions

The following terms are used throughout this manual.

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.



### NOTICE

*A crucial point of information related to the current 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.



#### 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 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.

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 front face of the main tool bar truss.

Record your Velocity 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.

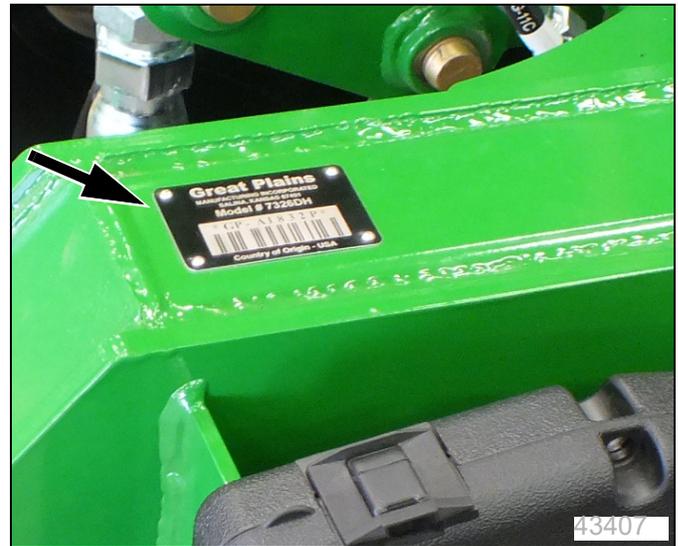
1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

## Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new Velocity. 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.





## Preparation and Setup

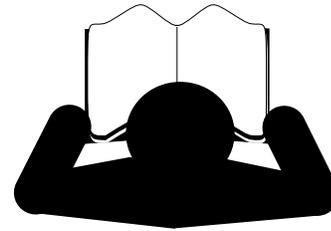
This section helps you prepare your tractor and Velocity for use, and covers tasks that need to be done seasonally, or when the tractor/Velocity configuration changes.

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

### 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 14.
- If machine is folded, make sure the fold stop valve located on the front of the machine at the bulkhead bracket is open. Make sure no one is under the wings and slowly unfold the unit.
- 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 Velocity 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 31. 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 4.
- Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**Tire Inflation & Warranty**” on page 34.
- Refold the machine slowly. Turn the fold stop valve to the shut position to lock the fold hydraulics. Put transport locks in place. Always use the transport locks when moving from field to field and while in storage.
- You are now ready to go to the field.



## Hitching Velocity to Tractor

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

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

- The Velocity HS2100-23 - HS2100-36 is a pull-type implement equipped with a standard clevis single tang hitch. It may be converted to a Category III, IV or V hitch using optional accessory parts.

 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 Velocity.
2. For TWO-WHEEL DRIVE and MFWD tractors, pin draw bar in fixed center position for field and transport. Pin in center position for transport to maintain maximum steering control.
3. Use jack (1) to raise and lower Velocity tongue.
4. Back tractor draw bar into alignment with hitch.
5. Secure with a locking hitch pin.

### CAUTION

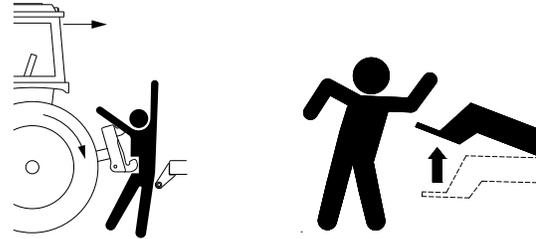
#### Negative Tongue Weight Hazard:

Make certain the Velocity is securely hitched to the tractor or leading implement before unfolding. An unhitched Velocity can tip over backwards during folding and unfolding if the tongue is not secured.

6. Secure safety chain to an anchor on the tractor.
7. Retract jack foot. Re-orient jack to storage position.
8. After hitching tractor to Velocity store jack on storage stop (2) on tongue.

#### Load Sway Hazard:

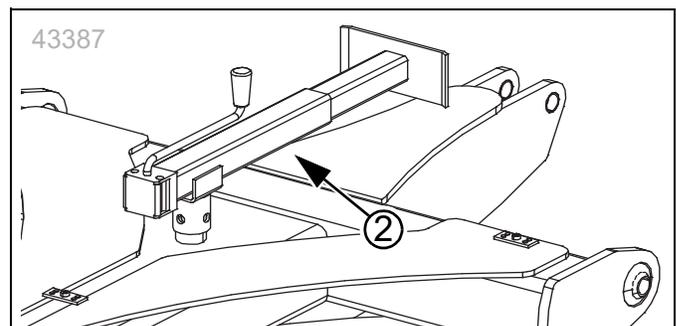
9. Lock draw bar swing to center position to minimize any side-to-side sway to assure proper tracking in the field and safe travel. See "Transporting the Velocity" on page 21, for safe transporting.



### DANGER

#### Crushing Hazard:

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



## Electrical Hookup

Plug Velocity electrical lead in tractor seven-pin connector. If your tractor is not equipped with a seven-pin connector, contact your dealer for installation. Test the lights and signaling prior to highway movement.



## Hydraulic Hose Hookup

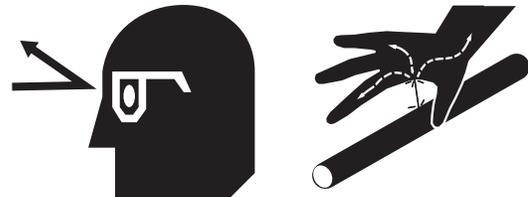
### **⚠ WARNING**

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

*Shut down tractor before making hydraulic connections. Only trained personnel should work with system hydraulics.*

*Escaping fluid under pressure can 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.*



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.

### Color Coded Hose Handles

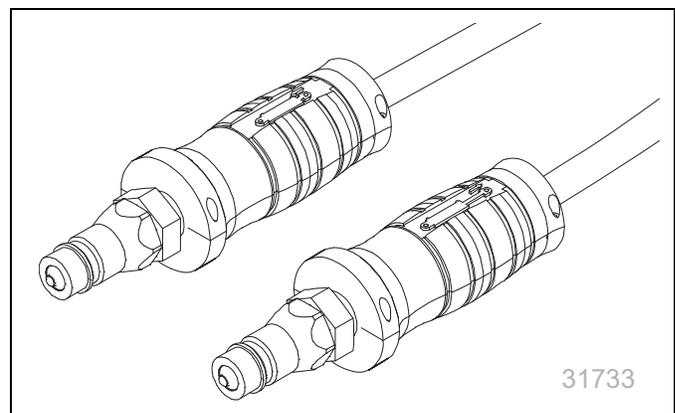
Color	Hydraulic Function
Black	Lift (2 hoses)
Green	Fold (2 hoses)
Red	Machine Level (2 hoses)
Yellow	Accessory (2 hoses optional)

To distinguish hoses on the same hydraulic circuit, refer to the symbol molded into the handle grip.

- Hoses with an extended-cylinder symbol feed cylinder base ends.
- Hoses with a retracted-cylinder symbol feed cylinder rod ends.

Secure hoses and cables so that they have sufficient slack for hitch movements, but cannot get caught between moving parts of tractor, Velocity or hitch. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.

Clean all hydraulic couplings and hook to tractor.



## Clevis Hitch

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. (13).

10. Select one each:
  - (13) 890-798C HITCH CLEVIS
  - (11) 802-487C HHCS 3/4-10X6 GR8
  - (12) 803-367C NUT HEX TOP LOCK 3/4-10PLT
11. With the square-shouldered end of the clevis (13) up, fully seat the clevis in the upright base hitch (18). Insert the Grade 8 bolt (11) from below. Secure with lock nut (12).

### **CAUTION**

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

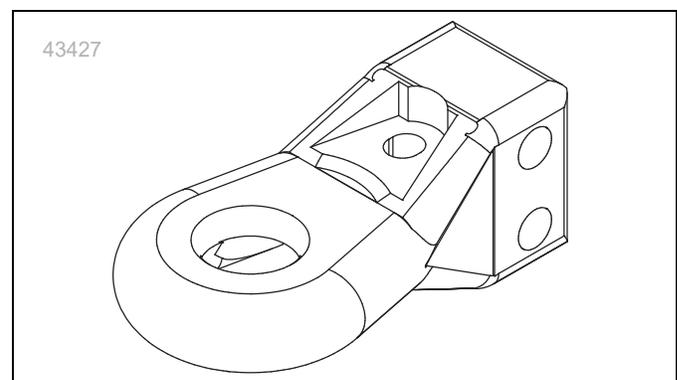
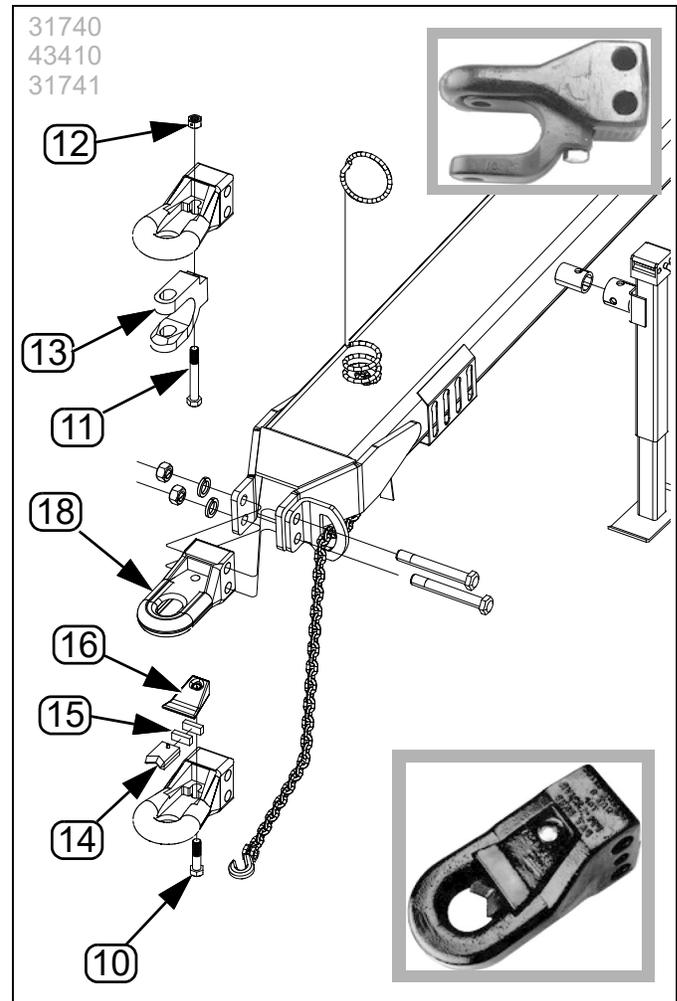
Install the hitch base and assemble the clevis parts as shown. Incorrect installation or assembly may result in failure of the clevis bolt, leading to hitch failure. This could result in a serious highway accident or severe machine damage.

## Category III Hitch

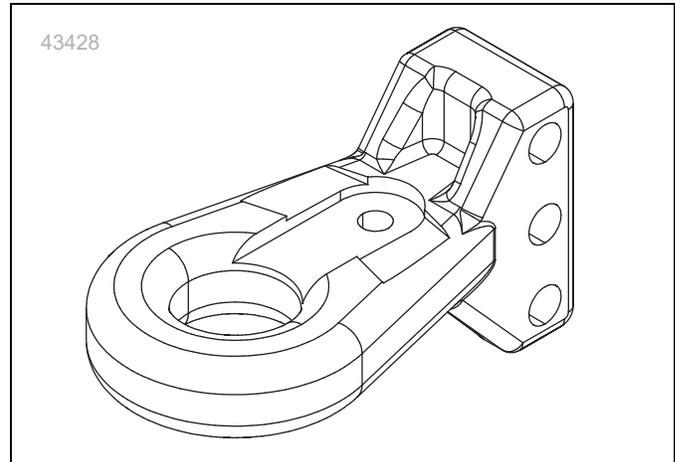
The base hitch (18) must be inverted (with the recessed notch on the top) for this configuration. Set the V-block (14) to allow some vertical articulation of the draw bar pin. Always use at least one cushion (15).

12. Select one of each
  - (16) PPI-302V TOP PLATE - CAT 3
  - (14) PPI-203VR V-BLOCK
  - (10) 802-383C HHCS 3/4-10X3 GR5
 and two:
  - (15) PPI-205H CUSHION
13. Set the cushions inside the hitch recess, just forward of the vertical bolt hole. Position the V-block (14) forward of the cushions and check the size of the resulting pinning hole. Remove a cushion (15) if needed.
14. Add the top plate (16). Secure from below with Grade 5 bolt (10).

## Category IV Hitch

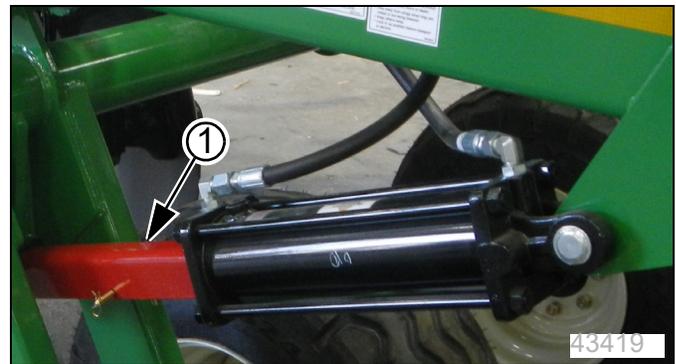


## Category V Hitch



## Transport Locks

15. Once the cylinders are connected, raised the unit completely. If the transport locks (1) are in place, remove them at this time.



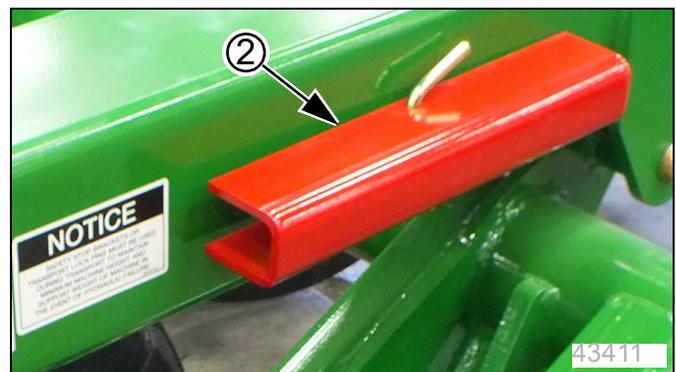
16. Store the transport locks on the main frame as shown (2).

17. Once the locks are removed, unfold the wings.

 *Make sure no one is under the wings during the unfolding process. Watch for leaks and make sure hoses do not get pinched during the initial unfolding process.*

18. Once the machine is unfolded, raised and lower the machine several times to purge air from the lift system. Again, watch for any leaks and tighten if necessary.

19. Check the tire pressure for proper inflation and check the tightness of lug bolts.



## First time Field Adjustments

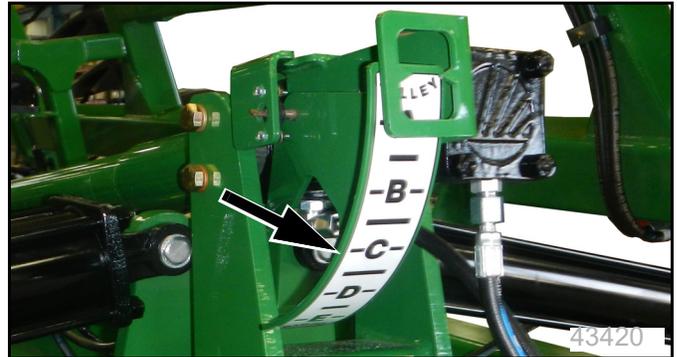
### Pre-Leveling of Machine

 *Pre-leveling of machine should be done on a good level surface (preferably concrete). Machine must be unfolded before leveling. Insure all tire pressure is set to recommended pressure. Raise machine and hold lever to insure that the air has been purged from the lines.*

1. With the hydraulic fore and aft adjustment bar set to C, lower machine till blades are just off the ground, adjust the hitch turnbuckle until the front and rear blades are equal distance to the ground.
2. Adjust Wing Wheels so the blades are the same distance off the ground as the center blades.
3. Now adjust the gauge wheels so they are  $\frac{1}{2}$ " above the ground.

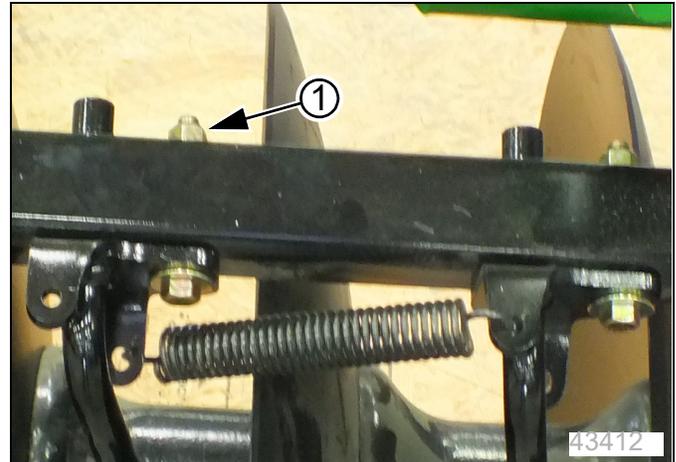
### Wing Eye Bolts

4. Begin with adjusting the wing cylinder eye bolts so that there is approximately  $1\frac{3}{4}$ " of threads behind the rear jam nut. This can be adjusted more if needed while leveling the machine.



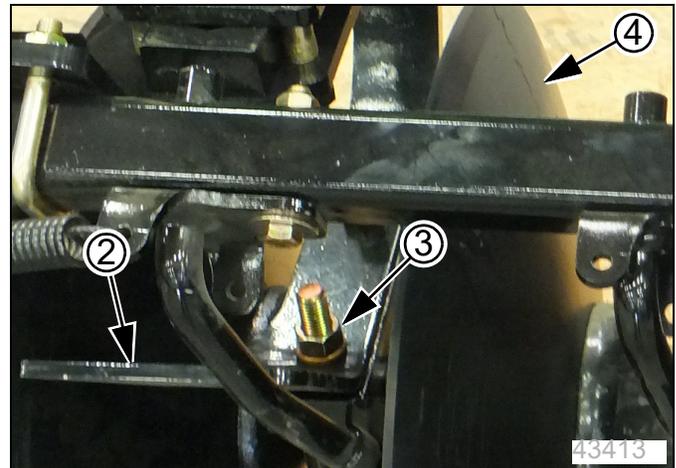
## Scraper Adjustment

5. For self-adjusting operation of spring scrapers, loosen  $\frac{1}{2}$ " lock nut (1) several turns. This will allow the spring tension to hold scraper against disc blade.



 The mounting holes in the dual scraper brackets (2) are slotted. This will allow the scraper to be adjusted close to the disc blade.

6. Adjust the scraper by loosening the  $\frac{3}{4}$  x  $7\frac{1}{2}$  hex bolts (3) on lower part of c-flex and slide bracket until it is about  $\frac{1}{8}$ " from the disc blade (4).





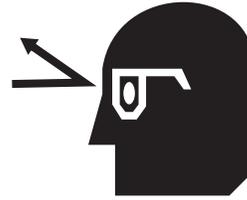
# Operating Instructions

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 Velocity Velocity to the field.

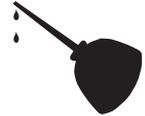
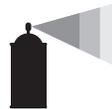
- Carefully read “**Important Safety Information**” on page 1.
- Lubricate Velocity as indicated under “**Lubrication**” on page 31.
- Check all tires for proper inflation. See “**Tire Inflation & Warranty**” on page 33.
- Check all bolts, pins, and fasteners. Torque as shown in “**Tire Inflation & Warranty**” on page 34.
- Check Velocity 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 daily service items under “**Maintenance**” on page 30.



### **WARNING**

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

Relieve 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. 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.



## Unfolding

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

1. Unless the Velocity 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.

### **WARNING**

#### **Crushing Hazard:**

*Bystanders could be crushed under the wings or caught in the wing fold mechanisms. To avoid serious injury or death, keep all persons well away during Velocity unfold.*

2. Be aware of vertical and horizontal clearances needed to unfold the Velocity.
3. Put tractor in Park with parking brake engaged.
4. Clear all persons from on or near the Velocity.
5. Slowly move fold circuit lever to Extend. Observe the unfold operation.
6. Wait for both wings to reach the fully unfolded position. Set tractor remote to Neutral to lock at unfolded.

## Folding

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

### **DANGER**

#### **Electrocution Hazard:**

*Avoid overhead lines when folding and transporting. When folded and lifted, the Velocity requires clearance of at least 14ft (4.3m) for Models HS2100-29 & HS2100-33 and 15ft (4.6m) for Models HS2100-36, which is high enough to contact low-hanging lines. Touching the Velocity or tractor completes a circuit to ground, and can result in serious injury or death. At higher voltages, shock can occur without direct contact.*

1. Hitch tractor (page 13).
2. Move to level ground. Be aware of vertical clearance needed to fold Velocity.
3. Put tractor in Park with parking brake engaged.
4. Clear all persons from on or near the Velocity
5. Slowly move fold circuit lever to Retract. Observe the fold operation.
6. Wait for both wings to reach the fully folded position. Set tractor remote to Neutral to hold at folded.

### **WARNING**

#### **Crushing Hazard:**

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



## Transporting the Velocity

### **⚠ DANGER**

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

Do not tow the Velocity behind another implement on public roads. Tow the Velocity 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 weight 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.

📖 See tables on “**Specifications and Capacities**” on page 33 for Velocity transport weights.

### **⚠ CAUTION**

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

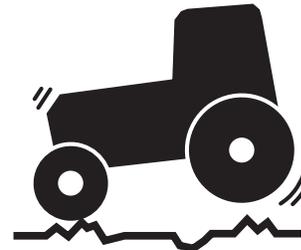
Do not exceed 25/30 mph (40/48 km/h) when driving straight. Slow down on rough roads. Do not exceed 13 mph (21 km/h) in turns. The weight of the Velocity can cause under-steer, and the height of the Velocity is a tipping hazard.

### Transport Checklist

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

Before transporting the Velocity check the following items.

1. Check that implement is securely hitched to a sufficient tractor (page 13).
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 13).
4. Verify correct operation of lights.
5. Check that tires are properly inflated (page 34).
6. Plan the route. Avoid steep hills.
7. Always have lights on for highway operation.
8. Do not exceed 20 mph (32 kph). Comply with all national, regional and local laws when traveling on public roads.
9. Remember that the implement may be wider than the towing vehicle. Allow safe clearance.



## Field Operations

### NOTICE

*Equipment Damage Risk:*

*Lift for tight turns and reverse moves. Tight turns can result in a section moving backward. Never back up with the Velocity on the ground.*

### Field Set-Up Checklists

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

Mechanical Checklist (Tractor Hitching)	Page
<input type="checkbox"/> Velocity hitched	13
<input type="checkbox"/> Hitch pin locked	-
<input type="checkbox"/> Safety chain secured to tractor or leading implement	13
<input type="checkbox"/> Parking jack stowed	13
Electrical Checklist	Page
<input type="checkbox"/> Verify electrical hookups solid, or connector securely stowed if not using lights in field.	14
Hydraulic System Checklist	Page
<input type="checkbox"/> Check tractor hydraulic reservoir full	-
<input type="checkbox"/> Make hydraulic connections	14
<input type="checkbox"/> Inspect connections for leaks	-
<input type="checkbox"/> Unfold Implement	-

## Operations Checklists

### Hitching

- Match hitch Category to tractor (page 13).
- Hookup hydraulic hoses (page 14).
- Hookup electrical connections (page 14).

### Transport

- If the towing vehicle has not been previously used with this Velocity, check its rated list and towing capacity vs. the Velocity weight (page 21). Ballast as required.
- If Velocity is unfolded:
- Fold Velocity (page 20).
- Raise rear jack stand if equipped (page 15).
- Check the lights are working.
- Fully raise Velocity and install transport locks.
- Travel with caution (page 21).

### General Operation and In-Field Adjustments

1. Raise the unit completely and unfold the machine. Make sure the fold cylinders are fully extended to allow the wings to fully flex in the field. Proceed into the field and lower the machine to the desired operating depth.
2. If satisfied, set the depth and then proceed through the field, observing the Velocity for levelness, side to side and fore to aft. Although the unit was preset, See **"First time Field Adjustments"** on page 17, to level machine. Certain field conditions can cause the Velocity to vary from center to wings and front to rear when being pulled through the ground. A final adjustment may need to be made to the Velocity.
3. If the center is running deeper because of it following the tractor in soft soil, the wings may need to be set in slightly deeper (with the eyebolts) and then the entire machine set slightly shallower (with depth stop).

### Field Start

- Remove transport locks and store in position on frame (page 16).
- Unfold the Velocity (page 20).

### Field Turns

- Lift Velocity.
- Make turn.
- Lower and pull forward.

### End Field Work

- Lift Velocity.
- Fold Velocity.
- Remove transport locks from storage position and install on cylinders
- Travel with caution (page 21).

## Transport Locks

- The manual u-shaped locks will only lock the lift (not wings) and should be used for machine maintenance, transport and long term storage.

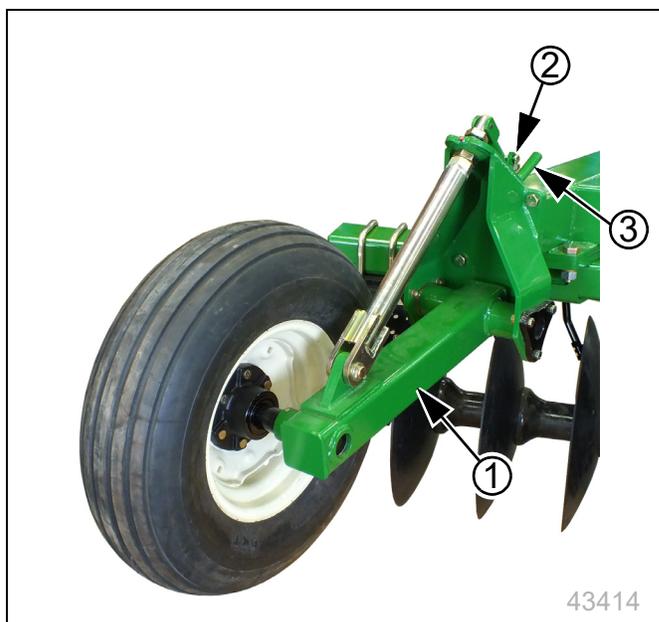
## Manual Gauge Wheel Adjustment

To change the gauge wheel (1) setting, remove the wire retaining pin (1) and fold gauge wheel crank (3) up to adjust.

 *Manual Gauge wheel is NOT load bearing, its purpose is only to keep the blades from gouging the ground.*

- Lower or raise the gauge wheel by turning the gauge wheel crank (3). Raise the gauge wheels up until the Velocity is adjusted in the fore-and-aft, side-to-side and to the desired working depth you desire.
- Fold the gauge wheel crank (3) back down in the field position and reinstall the wire retaining pin (2).
- As you are running the disk through the field, stop the tractor leaving the disk in the ground. Now adjust the gauge wheels (1)  $\frac{1}{2}$ " above the ground.
- The gauge wheel adjustment is designed to correspond with the depth stop. Example: If the depth gauge of the Velocity is increased by 2 revolutions of the depth stop, then the gauge wheel needs to be raised by 2 revolutions of their adjustment crank.
- This position should be maintained to prevent excessive wear to gauge wheel parts.

 *Tractor Speed: The ideal working speed for the Velocity is 5 to 6 mph. Working too slow may cause plugging, poor incorporation or mixing of crop residue and reduced weed kill. Running too fast may cause streaks in chemical incorporation and ridging.*

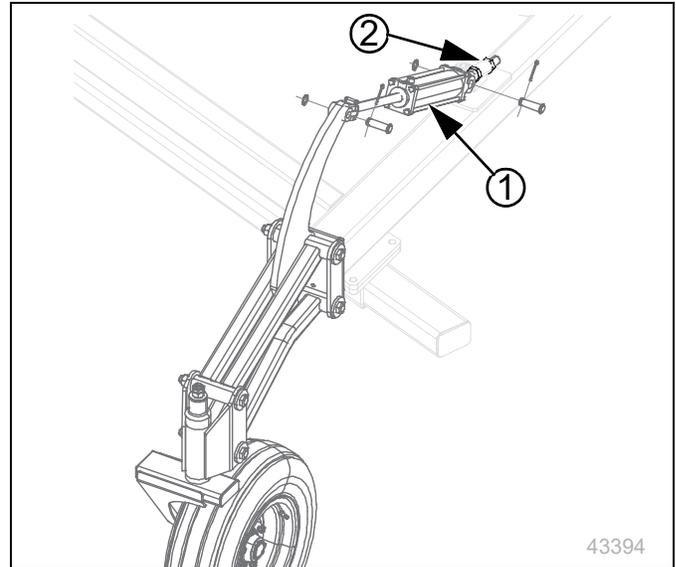


## Hydraulic Gauge Wheel Adjustment

 *Hydraulic Gauge Wheels are load bearing.*

Lower the machine so the blades are about  $\frac{1}{2}$ " from the ground. Level the center frame first and then move to the front and adjust the eyebolts to lower/level the front of the machine.

The hydraulic gauge wheel is controlled by a re-phasing cylinder (1) that is plumbed into the hydraulic lift circuit. After the adjustment eyebolts (2) are set no additional adjustments need to be made when making changes to the depth stop.



## Thread Protectors

10. Make sure thread protector bolts (3) are in place and tight. Gang bolt thread damage may occur at hinge point when gangs flex without protector caps. Lost caps with no bolt may allow gang nut to become loose.

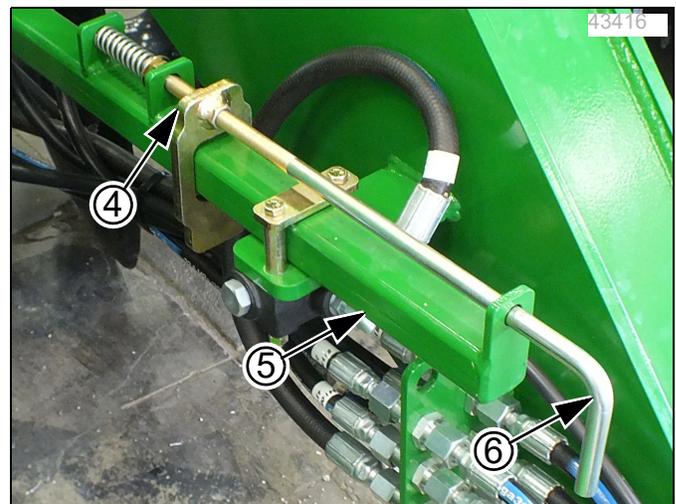


## Adjusting and Using Tractor Hydraulics Depth Control

11. When you have machine level and set to the desired working depth, set the depth stop (4) on the depth stop tube (5). This is located at the front of the machine. This will maintain a constant depth each time after raising and lowering machine. One full turn of the handle (6) will change the depth approximately  $\frac{1}{4}$ ". Turning the crank clockwise 1 turn is a  $\frac{1}{4}$ " shallower working depth. Turn 2 turns counter clockwise is  $\frac{1}{2}$ " deeper working depth.

### NOTICE

*Tires must remain on the ground at all times. Wheels off the ground will induce high loads on level linkage and hitch, causing premature wear and possible frame failure.*

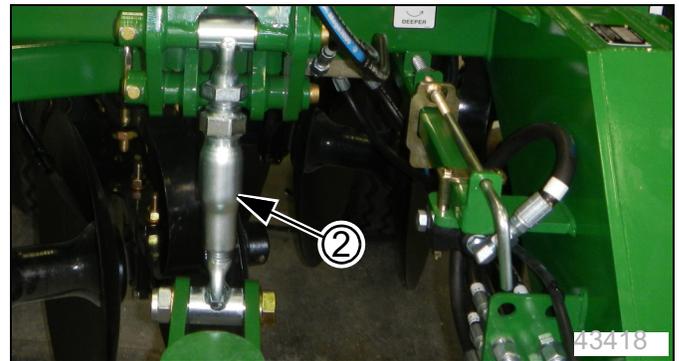
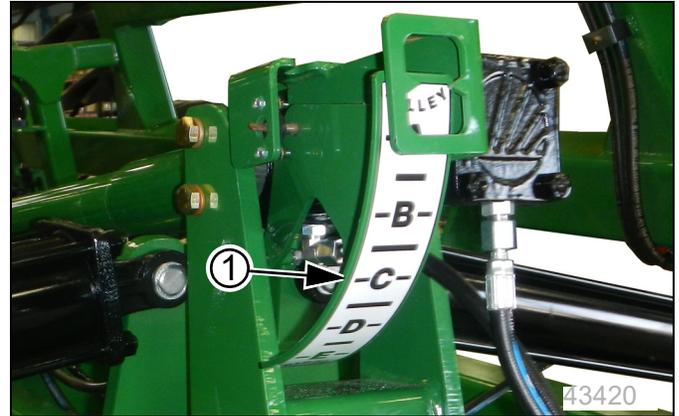


## Tractor Detents

12. After the depth stop on the tractor is set, in order to preserve the life of the cylinders, it is important to properly set the detent on the tractor. The Velocity is equipped with re-phasing lift cylinders. These cylinders have a re-phasing port at the top of the cylinder (end stroke). If the tractor flow rates and detents are not set properly, extreme oil flow through these ports can destroy cylinder seals causing internal leakage.
13. Tractors with timed detents (electric over hydraulic): The flow on the tractor should be set so the Velocity will raise from field position to full lift in approximately 3 to 5 seconds which is about 10 gpm. Not 10 on the tractor indicator. More important is the detent. Once the flow has been set, set the timed detent so that it is  $\frac{1}{2}$  to 1 second longer than it takes to fully lift the unit. If you set it less than this it will not properly re-phase the cylinders. If you set it more than this, you may be causing damage to the seals.
14. Tractors with Pressure Detents: Set the flow control so the machine raises completely in approximately 3 to 5 seconds. Detent should kick out automatically at the end of stroke. If detent kicks out prematurely, slow the flow on the tractor. If the flow has to be slowed to the point that the unit does raise in an acceptable time frame, the detent pressure on the tractor may need to be increased. Contact your dealer for information on how to do this. If this problem still persists, contact the factory service representative for other possible adjustments. Do not try to adjust the valves on the Velocity without first contacting the factory service rep. Tractors with pressure detents do not allow the system to "automatically" re-phase at the top of the lift cycle. This must be done manually. It is recommended that after every couple of trips back and forth across the field that the raise lever be pulled back and held there 1-2 seconds after the machine is fully raised. This will purge any air that has been ingested into the system.
15. Fold Cylinders: Fold cylinders are to extended fully in field position. Running the fold cylinders retracted may cause excessive cylinder seal damage due to constant loading from the flexing action of the wings.

## Leveling

16. With the hydraulic fore and aft adjustment bar (1) set to C, lower machine till blades are just off the ground, adjust the hitch turnbuckle (2) until the front and rear blades are equal distance to the ground.
17. Adjust Wing Wheels so the blades are the same distance off the ground as the center blades.
18. Now adjust the gauge wheels so they are  $\frac{1}{2}$ " above the ground.



## Rear Attachment Settings

### Rolling Basket (Option)

The seedbed conditioner basket (1) is designed to firm/consolidate the soil profile. It is not recommended for working in wet conditions, as the baskets can fill with muddy clods.

The mounts are controlled by hydraulic cylinders (2), and can be raised and lowered from the tractor.

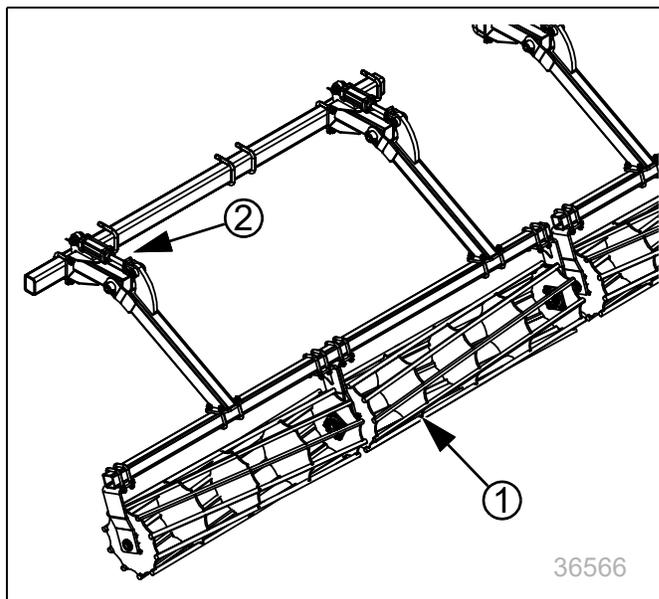
If wheel tracks or power hopping occur, apply more downs pressure to the reel baskets.

19. If the baskets are holding the rear of the machine too high, reduce the downs pressure.

 *Down Pressure valve will need to be adjusted, before going to the field, normal down pressure is between 300 and 500 lbs and is not to exceed 900lbs.*

### NOTICE

*The hydraulics on this attachment have been designed to be attached to a tractor with a case drain. If your tractor does not have a case drain it must be run in Float or have constant down pressure.*



### NOTICE

#### **Machine Damage Risk:**

*Do not fold with any basket linkage pins in either of the two upper holes. Baskets pinned high can come into contact with each other during fold, resulting in machine damage.*

## Hydraulic Down Pressure

 This setup procedure is for tractors with closed-center or pressure compensated flow hydraulic systems. Do Not Use with open-center hydraulics.

20. On tractor, adjust flow-control valve to low side of flow rate.

 The faster the flow of oil through the system the greater potential for oil heating, premature wear or tractor damage.

### NOTICE

The hydraulics on this attachment have been designed to be attached to a tractor with a case drain. If your tractor does not have a case drain it must be run in Float or have constant down pressure.

21. Set your tractor hydraulic lever to down pressure with flow set to continuous ( $\infty$ ).

22. Adjust bypass/pressure reducing valve knob (1) on implement so the pressure gauge reads 300-500 psi. Never exceed 900 psi.

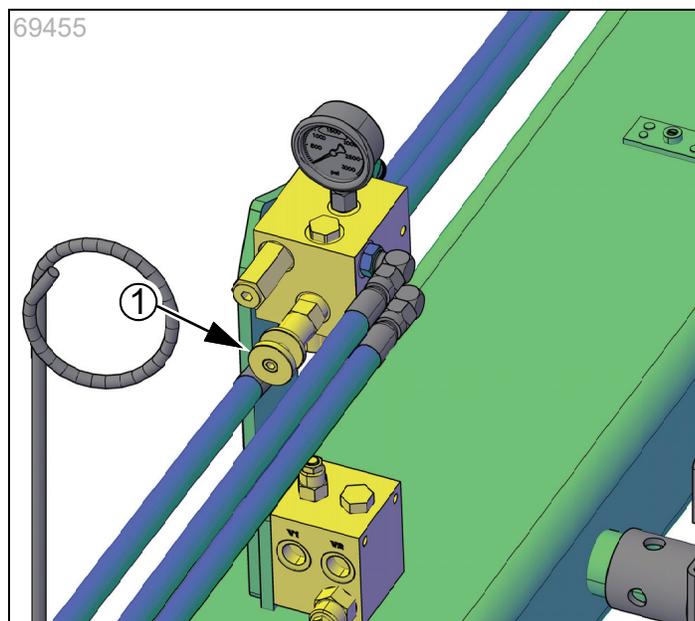
 Consult your tractor manual to understand how to set the hydraulics to continuous flow or to float positions.

23. If no down pressure is needed, move tractor hydraulic lever to the float position. Pressure gauge should drop to zero.

24. During field operation hydraulics must be set to continuous ( $\infty$ ) or float ( $\sim$ ).

### CAUTION

Never leave hydraulic lever centered while in field mode. Machine damage may occur. Use continuous down pressure or float.





# Maintenance and Lubrication

## Maintenance

Proper servicing and maintenance 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 any maintenance.

### **WARNING**

#### **Crushing Hazard:**

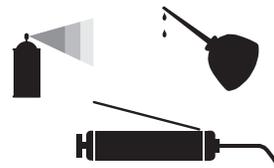
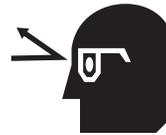
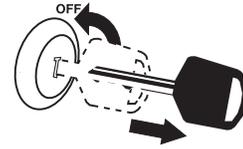
Always have transport locks in place and frame sufficiently blocked up when working on implement. You may be severely injured or killed by being crushed under the falling implement.

### **WARNING**

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

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. Escaping fluid under pressure can have sufficient pressure to penetrate the skin. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

1. After using your Velocity for several hours, check all bolts to be sure they are tight.
2. Keep disk scrapers properly adjusted.
3. Clean Velocity on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
4. Lubricate areas listed under “**Lubrication**” on page 31.
5. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.
6. Always use the manual u-channel transport locks when working on or doing maintenance to the Velocity. Read and understand all safety decals on your equipment.
7. During the first season of operation, and periodically after that, check your bolts for tightness. Check disk gang bolts for loose blades. Tighten as needed.
8. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, blades, etc. Some Boron disc blades cannot be rolled to sharpen, they must be ground. Cracks and breakage will occur if rolled. The heavy blade option is rollable.
9. Check and tighten any hydraulic leaks. Check hoses for any leaks replace any leaking hoses. It is important that there are no leaks on the equipment.



10. Check drag bolts for looseness or excessive wear. Replace broken or bent teeth. Your drag is an important part of the tillage operation.

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

## Lubrication

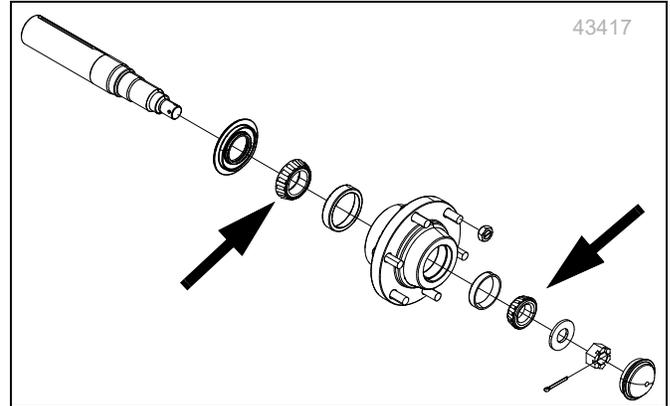
 Multi-purpose spray lubricant	 Multi-purpose grease lubricant	 Multi-purpose oil lubricant	 Inspection	 50 Intervals (operating hours) at which service is required
---	--	---	---	---

### Wheel Bearing Hubs

	 <b>Seasonally</b>
---	---

Inspect bearings for end play Annually. If excessive end play exists it is recommended to disassemble, clean and repack the wheel bearings.

For machines stored outdoors or operating in extreme conditions bearings should be checked more often.

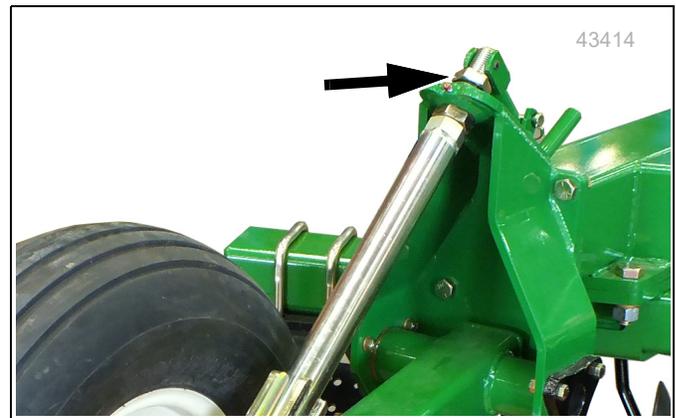


### Manual Gauge Wheels

	 <b>50</b>
---	---

One each wing;  
2 total

Type of Lubrication: Multipurpose Lubricant  
Quantity: Coat thoroughly



### All Turnbuckles and Threaded Adjustments

	 <b>Seasonally</b>
---	---

Overall Machine Maintenance;

Type of Lubrication: Multipurpose Lubricant  
Quantity: Coat thoroughly.

## End of Season

11. Clean machine as much as possible. Remove all dirt from rust prone parts like disc blades and bolt threads.
12. Check over the machine for damaged or worn parts. Replace or rotate worn parts as needed--hinge bolts, clevis pins, bearings, blades, etc.
13. Check all bolts for tightness. Tighten as needed.
14. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks.
15. The wheel bearings should be cleaned and repacked annually or every 2500 acres.
16. Remove the gang bolt thread protector caps and check gang nut torque (900 to 1100 ft-lbs). Clean out any dirt on castle nut and threads. Use Anti-Seize on the gang bolt threads before tightening castle nut.
17. Grease the Velocity in all locations shown in the lubricating section.
18. If stored outside, place a protective coating of grease or "plow paint" on all earth working parts to prevent rusting.
19. If storing outside, unfold Velocity to prevent water entry into wing gang bearings.
20. If you are storing Velocity 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.
21. Place boards under the disk gangs and lower the Velocity to the ground retracting the lift cylinders. If Velocity is folded, remove transport locks before lowering disk.

## Beginning of Season

22. Hitch the tractor to the Velocity and connect the hydraulic hoses.
23. 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.

## DANGER

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

24. 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.
25. If machine was not serviced and greased at end of last season, perform steps 9 thru 14 from End of Season section.
26. Make sure all moving parts move freely and do not bind.
27. Take the time to read the operators manual and refresh yourself with the safety information and operating instructions.
28. It is the owner's responsibility to see that all operators of the Velocity know the safety and operating information found in this manual.



## Appendix A - Reference Information

### Specifications and Capacities

Model No.	HS2100-23DH	HS2100-26DH	HS2100-29DH
Tillage Width (7 1/2" Spacing)	22' 11" (6.98m)	25' 4" (7.75m)	27' 8" (8.43m)
Center Section	9' 6" (2.90m)	9' 6" (2.90m)	9' 6" (2.90m)
Wing	6' (1.83m)	7' 6" (2.29m)	9' (2.74m)
Number of Blades (F/R) 7 1/2" Spacing	78	86	98
Gang Angle (degrees)	20 front/18 rear	20 front/18 rear	20 front/18 rear
Gang Shaft	13/4" Round	13/4" Round	13/4" Round
Bearing Standards	Spring C-Shank	Spring C-Shank	Spring C-Shank
Bearings	Maintenance Free	Maintenance Free	Maintenance Free
Spools	Ductile cast	Ductile cast	Ductile cast
Weight (Approximately)	14,200	15,900	17,600
Weight per Ft of Cut	615 lbs	612 lbs	606 lbs
Transport Width	14'	14'	14'
Transport Height	11' 6"	12' 10"	14' 2"
Wing Flex (degrees)	14 up 9 down	14 up 9 down	14 up 9 down
Tire - Transport	340/60R16.5	340/60R16.5	340/60R16.5
Tire - Wing	12.5L x 15	12.5L x 15	12.5L x 15
Tire - Gauge Wheel	9.5L x 15	9.5L x 15	11L x 15
Horsepower (PTO Req/Min)	160-230	182-260	203-290
Kilowatt	119-171	136-194	151-216
Model No.	HS2100-30DH	HS2100-33DH	HS2100-36DH
Tillage Width (7 1/2" Spacing)	30' 2" (9.20m)	32' 7" (9.93m)	36' 2" (11.03m)
Center Section	13' 6" (4.11m)	13' 6" (4.11m)	13' 6" (4.11m)
Wing	7' 6" (2.29m)	8' 11" (2.72m)	10' 4" (3.14m)
Number of Blades (F/R) 7 1/2" Spacing	102	110	122
Gang Angle (degrees)	20 front/18 rear	20 front/18 rear	20 front/18 rear
Gang Shaft	13/4" Round	13/4" Round	13/4" Round
Bearing Standards	Spring C-Shank	Spring C-Shank	Spring C-Shank
Bearings	Maintenance Free	Maintenance Free	Maintenance Free
Spools	Ductile cast	Ductile cast	Ductile cast
Weight (Approximately)	18,000	19,900	21,350
Weight per Ft of Cut	597 lbs	601 lbs	594 lbs
Transport Width	18' 2"	18' 2"	18' 2"
Transport Height	12' 8"	14'	15' 3"
Wing Flex (degrees)	14 up 9 down	14 up 9 down	14 up 9 down
Tire - Transport	380/55R16.5	380/55R16.5	380/55R16.5
Tire - Wing	12.5L x 15	12.5L x 15	12.5L x 15
Tire - Gauge Wheel	11L x 15	11L x 15	11L x 15
Horsepower (PTO Req/Min)	210-300	231-330	252-360
Kilowatt	156-224	172-246	187-268

## Tire Inflation & Warranty

Tire Inflation Chart		
Wheel	Tire Size	Inflation
Wing	12.5L x 15 12-Ply RI	52 psi (358 kPa)
Transport	340/60 R 16.5	73 psi (503 kPa)
Transport	380/55 R 16.5	73 psi (503 kPa)
Hydraulic Gauge Wheel	11L x 15 12-Ply RI	52 psi (358 kPa)
Manual Gauge Wheel	9.5 x 15 8-Ply	44 psi (303 kPa)

## Tire Warranty Information

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.

Manufacturer	Web site
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

(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

- (2) "M" fittings (or 37° flare on "F" fittings).

Use no sealants (tape or liquid) on JIC fittings.

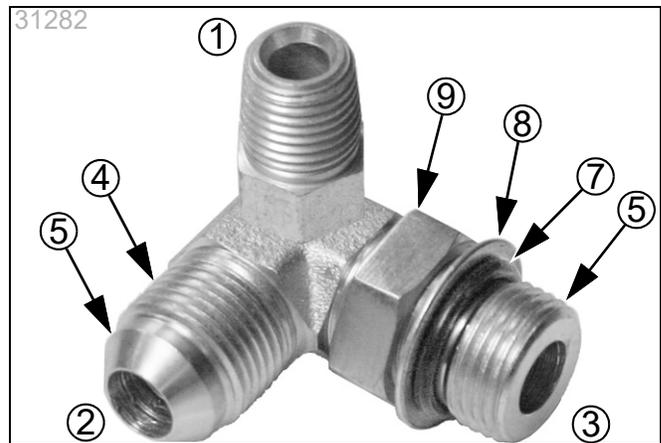
**ORB** - O-Ring Boss (SAE J514)

Note straight threads (5) and elastomer O-Ring (7).

Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.

Use no sealants (tape or liquid) on ORB fittings.

- (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.



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	9/16 -18 JIC	24-27	18-20
-6	9/16 -18 ORB w/jam nut	16-22	12-16
-6	9/16 -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					
						
	Grade 2		Grade 5		Grade 8	
	N-m <sup>b</sup>	ft-lb <sup>d</sup>	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12
1/4-28	8.5	6	13	10	18	14
5/16-18	15	11	24	17	33	25
5/16-24	17	13	26	19	37	27
3/8-16	27	20	42	31	59	44
3/8-24	31	22	47	35	67	49
7/16-14	43	32	67	49	95	70
7/16-20	49	36	75	55	105	78
1/2-13	66	49	105	76	145	105
1/2-20	75	55	115	85	165	120
9/16-12	95	70	150	110	210	155
9/16-18	105	79	165	120	235	170
5/8-11	130	97	205	150	285	210
5/8-18	150	110	230	170	325	240
3/4-10	235	170	360	265	510	375
3/4-16	260	190	405	295	570	420
7/8-9	225	165	585	430	820	605
7/8-14	250	185	640	475	905	670
1-8	340	250	875	645	1230	910
1-12	370	275	955	705	1350	995
1 1/8-7	480	355	1080	795	1750	1290
1 1/8-12	540	395	1210	890	1960	1440
1 1/4-7	680	500	1520	1120	2460	1820
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

Bolt Size mm x pitch <sup>c</sup>	Bolt Head Identification					
						
	Class 5.8		Class 8.8		Class 10.9	
	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	39	72	53
M10 X 0.75	39	29	61	45	85	62
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

- 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	
Disk Gang Torque 1 3/4"-5	900-1100 ft-lbs (170 lbs on 6' Cheater)
Wheel Bolt Torque Values	1/2"-20 (75-85ft-lbs)
Wheel Bolt Torque Values	9/16"-18 (80-90 ft-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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www ..... 34

Numerics

11L x 15 12-Ply ..... 34

12.5Lx15 SL ..... 34

20 mph ..... 2

32 kph ..... 2

340/60 R 16.5 ..... 34

380/55 R 16.5 ..... 34

556-428M, manual ..... 10

556-428P, manual ..... 10

556-428Q, manual ..... 10

802-383C, bolt ..... 15

802-487C, bolt ..... 15

803-367C, nut ..... 15

818-055C, reflector ..... 4

818-398C, decal ..... 9

838-094C, decal ..... 7

838-598C, decal ..... 8

838-599C, decal ..... 6

838-600C, decal ..... 6

838-602C, decal ..... 7

838-603C, reflector ..... 5

838-606C, decal ..... 6

838-611C, decal ..... 7

838-613C, decal ..... 9

838-614C, reflector ..... 5

838-615C, reflector ..... 5

858-773C, decal ..... 8

858-774C, decal ..... 8

890-798C, clevis ..... 15

9.5 x 15 8-Ply ..... 34





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