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

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Serial Number</th>
<th>Machine Height</th>
<th>Machine Length</th>
<th>Machine Width</th>
<th>Machine Weight</th>
<th>Year of Construction</th>
<th>Delivery Date</th>
<th>First Operation</th>
<th>Accessories</th>
</tr>
</thead>
</table>

Dealer Contact Information

Name: ____________________________
Street: __________________________
City/State: ______________________
Telephone: _______________________
Email: __________________________
Dealer's Customer No.: ____________

⚠️ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important Safety Information</td>
<td>1</td>
</tr>
<tr>
<td>Safety Decals</td>
<td>5</td>
</tr>
<tr>
<td>Introduction</td>
<td>11</td>
</tr>
<tr>
<td>Description of Unit</td>
<td>11</td>
</tr>
<tr>
<td>Intended Usage</td>
<td>11</td>
</tr>
<tr>
<td>Models Covered</td>
<td>11</td>
</tr>
<tr>
<td>Document Family</td>
<td>11</td>
</tr>
<tr>
<td>Definitions</td>
<td>11</td>
</tr>
<tr>
<td>Using This Manual</td>
<td>11</td>
</tr>
<tr>
<td>Owner Assistance</td>
<td>12</td>
</tr>
<tr>
<td>Further Assistance</td>
<td>12</td>
</tr>
<tr>
<td>Preparation and Setup</td>
<td>13</td>
</tr>
<tr>
<td>Pre-Hitching Setup</td>
<td>13</td>
</tr>
<tr>
<td>Hitch Setup</td>
<td>14</td>
</tr>
<tr>
<td>Hitching Short Disk™ to Tractor</td>
<td>15</td>
</tr>
<tr>
<td>Electrical Hookup</td>
<td>16</td>
</tr>
<tr>
<td>Hydraulic Hose Hookup</td>
<td>16</td>
</tr>
<tr>
<td>Transport/Storage Locks</td>
<td>17</td>
</tr>
<tr>
<td>Wing Fold Lock Pins</td>
<td>17</td>
</tr>
<tr>
<td>Wing Fold Lock Valve</td>
<td>18</td>
</tr>
<tr>
<td>Lift Cylinder (Transport) Locks</td>
<td>19</td>
</tr>
<tr>
<td>Pre-Leveling of Machine</td>
<td>20</td>
</tr>
<tr>
<td>Hydraulic Level Bar Pre-Level</td>
<td>20</td>
</tr>
<tr>
<td>Gauge Wheel Pre-Level</td>
<td>20</td>
</tr>
<tr>
<td>Hydraulic Roller Pre-Level</td>
<td>20</td>
</tr>
<tr>
<td>Front to Rear Leveling</td>
<td>21</td>
</tr>
<tr>
<td>Side to Side Level</td>
<td>21</td>
</tr>
<tr>
<td>Operating Instructions</td>
<td>22</td>
</tr>
<tr>
<td>Pre-Start Checklist</td>
<td>22</td>
</tr>
<tr>
<td>Raising / Lowering</td>
<td>22</td>
</tr>
<tr>
<td>Folding the Wings</td>
<td>24</td>
</tr>
<tr>
<td>Unfolding the Wings</td>
<td>25</td>
</tr>
<tr>
<td>Transporting the Short Disk™</td>
<td>26</td>
</tr>
<tr>
<td>Transport Checklist</td>
<td>26</td>
</tr>
<tr>
<td>Hydraulic Depth Control</td>
<td>27</td>
</tr>
<tr>
<td>Wing Hydraulic Down Pressure</td>
<td>28</td>
</tr>
<tr>
<td>Wing Float Operation</td>
<td>29</td>
</tr>
<tr>
<td>Wing Depth Adjustment in Float</td>
<td>29</td>
</tr>
<tr>
<td>Tractor Detents (Lift Circuit)</td>
<td>30</td>
</tr>
<tr>
<td>Field Operation</td>
<td>31</td>
</tr>
<tr>
<td>Tractor Speed</td>
<td>31</td>
</tr>
<tr>
<td>Working Depth</td>
<td>31</td>
</tr>
<tr>
<td>Pass Alignment</td>
<td>31</td>
</tr>
<tr>
<td>Field Checklists</td>
<td>32</td>
</tr>
<tr>
<td>Adjustments</td>
<td>33</td>
</tr>
<tr>
<td>Working Depth</td>
<td>33</td>
</tr>
<tr>
<td>Hydraulic Leveling</td>
<td>34</td>
</tr>
<tr>
<td>Hitch Turnbuckle</td>
<td>34</td>
</tr>
<tr>
<td>Wing Lift Cylinder Eyebolts</td>
<td>35</td>
</tr>
<tr>
<td>Attachment Adjustments</td>
<td>35</td>
</tr>
<tr>
<td>Attachment Bar (Option)</td>
<td>35</td>
</tr>
<tr>
<td>Disk Scrapers</td>
<td>36</td>
</tr>
<tr>
<td>Adjusting Reversible Disk Scrapers</td>
<td>36</td>
</tr>
<tr>
<td>Adjusting Disk Scrapers</td>
<td>36</td>
</tr>
<tr>
<td>Cast Rollers (Option)</td>
<td>37</td>
</tr>
<tr>
<td>Rolling Basket (Option)</td>
<td>38</td>
</tr>
<tr>
<td>Single Spike Tine (Option)</td>
<td>38</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>39</td>
</tr>
<tr>
<td>Maintenance and Lubrication</td>
<td>43</td>
</tr>
<tr>
<td>Maintenance</td>
<td>43</td>
</tr>
<tr>
<td>Beginning of Season</td>
<td>44</td>
</tr>
<tr>
<td>End of Season</td>
<td>44</td>
</tr>
<tr>
<td>Level Bar Spring Setting</td>
<td>45</td>
</tr>
<tr>
<td>Wing Fold Proximity Sensor</td>
<td>45</td>
</tr>
<tr>
<td>Proximity Sensor Adjustment</td>
<td>45</td>
</tr>
<tr>
<td>Lubrication</td>
<td>46</td>
</tr>
<tr>
<td>Options</td>
<td>47</td>
</tr>
<tr>
<td>Finishing Options</td>
<td>50</td>
</tr>
<tr>
<td>Appendix A - Reference Information</td>
<td>51</td>
</tr>
<tr>
<td>Specifications and Capacities</td>
<td>51</td>
</tr>
<tr>
<td>Tire Inflation</td>
<td>52</td>
</tr>
<tr>
<td>Hydraulic Connectors and Torque</td>
<td>52</td>
</tr>
<tr>
<td>Torque Values Chart</td>
<td>53</td>
</tr>
<tr>
<td>Hydraulic Diagrams</td>
<td>54</td>
</tr>
<tr>
<td>Appendix C: Option Installation</td>
<td>59</td>
</tr>
<tr>
<td>Weight Package Installation</td>
<td>59</td>
</tr>
</tbody>
</table>

## Index

61
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 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.

Use Safety Chains

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

Tire Safety

Tire changing can be dangerous. Employ 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.
Transport Machinery Safely

Maximum transport speed for the Short Disk™ is 20 mph (32 km/h). 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 Short Disk™ unless the towing vehicle is rated for, and ballasted for, the weight of the Short Disk™.
▲ Carry reflectors or flags to mark Short Disk™ in case of breakdown on the road.
▲ Do not fold or unfold the Short Disk™ while the tractor is moving.

Check for Overhead Lines

The Short Disk™ requires at least 14 feet (4.3 m) for SD2600 Models and 15 feet (4.6 m) for SD3000 and SD3300 Models of vertical clearance in transport. Contacting overhead electrical lines can introduce lethal voltage levels on Short Disk™ 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 Short Disk™, put tractor in park, turn off engine, and remove the key.
▲ Secure Short Disk™ using blocks and supports provided.
▲ Detach and store Short Disk™ 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 Short Disk™ onto support stands, 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 Short Disk™.
▲ 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 Short Disk™ 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 Short Disk™ functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave Short Disk™ 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 Short Disk™ during hitching.
▲ Keep hands, feet and clothing away from moving parts.
▲ Watch out for wires, trees, etc., when folding and raising Short Disk™. 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.

Installing new decals

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

Transport Decals

Slow Moving Vehicle Reflector

818-055C

On center of mainframe; 1 total

Red Reflectors

838-614C

On rear face of light bracket mount tube (top); 2 total
Daytime Reflectors
Orange Reflectors
838-603C
On rear face of light bracket mount tube (bottom);
2 total

Amber Reflectors
838-615C
On front face of light bracket light tube;
On center frame side face (front and rear) both right and
left frame tubes;
6 total
Danger Decals

**Danger: Overhead Crushing Hazard**

818-046C

On lift hydraulic cylinder (right and left side); 2 total

**Danger: Electrocution**

838-599C

On top face of tongue (at the middle); 1 total

**Danger: Crushing Hazard**

838-600C

On top face of tongue (front); 1 total
Warning Decals

Warning: Pinch Point or Crushing Hazard
818-045C

**WARNING**

PINCH POINT OR CRUSHING HAZARD
To prevent serious injury or death
from pinching or crushing:
Brand clear from implement while:
• Folding
• Raising
• Unfolding
• Lowering

On each left and right side wing rests, facing forward on front rests and backward on rear rests; 4 total

On outside face right and left wing wheel axles and center axle; 4 total

---

Warning: Excessive Speed Hazard
818-188C

**WARNING**

EXCESSIVE SPEED HAZARD
To Prevent Serious Injury or Death:
• Do Not exceed 20 mph maximum transport speed. Loss of vehicle control and/or machine can result.

On front of tongue left face; 1 total
Warning: High Pressure Fluid Hazard
838-094C

On top face of tongue frame (left rear); 1 total

Warning: Negative Tongue Weight
838-606C

On top face, front of tongue; 1 total

Caution Decals
Caution: Tires Not A Step
818-398

One on each transport axle leg of wing wheels and transport wheels; 4 total
Caution: General Instructions
838-598C

On top face of tongue frame (at middle); 1 total

General Safety Decals
Notice: Transport Lock
838-613C

Outside of center frame rear (both sides); 2 total
Introduction

Great Plains welcomes you to its growing family of new product owners. The 26-, 30-, and 33-Foot Short Disk™ 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 Short Disk™ is a three section primary and secondary tillage tool. Working width ranges from 26 to 33 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. Various finishing attachments are also available to further smooth, redistribute residue, kill weeds, break clods, and consolidate the soil.

Intended Usage

Use the Short Disk™ for primary and secondary tillage. Do not modify the Short Disk™ for use with attachments other than Great Plains options and accessories specified for use with the SD2600, SD3000 and SD3300 implement.

Models Covered

SD2600  26-Foot, 3-Section
SD3000  30-Foot, 3-Section
SD3300  33-Foot, 3-Section

Document Family

559-576M  Owner’s Manual (this document)
559-576P  Parts Manual

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 proceeding topic.

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.
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 front face of the main tool bar truss.

Record your Short Disk™ model and serial number here for quick reference:

Model Number: ____________________________
Serial Number: ____________________________

Further Assistance

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

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

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

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

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

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

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

Pre-Hitching Setup

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 to ensure desired field results and avoid damage due to excess tractor power. See “Specifications and Capacities” on page 51.
- Check that all grease fittings are in place and lubricated. Disk hubs are permanently lubricated. Wheel hubs are factory-lubricated and need attention at intervals specified in “Lubrication” on page 46.
- 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. See “Tire Inflation” on page 52.
Hitch Setup

The Short Disk™ is ordered with one of two hitch options (Refer to page 47), a configurable Category III or IV hitch, or a Category V hitch.

Category III Clevis Hitch

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. (3).

3. Select one each:
   - 890-798C HITCH CLEVIS
   - 802-487C HHCS 3/4-10X6 GR8
   - 803-367C NUT HEX TOP LOCK 3/4-10PLT

4. With the square-shouldered end of the clevis (3) 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).

5. Select one of each
   - PPI-302V TOP PLATE - CAT 3
   - PPI-203VR V-BLOCK
   - 802-383C HHCS 3/4-10X3 GR5
   - and two:
     - PPI-205H CUSHION

6. Set the cushions (15) 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.

7. Add the top plate (18). Secure from below with Grade 5 bolt (10).

Category IV Hitch

Use only the base hitch casting. See "Hitch Setup" on page 14.

Category V Hitch

This option includes a specific Category V casting and three Grade 8 bolts.
Hitching Short Disk™ 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 Short Disk™ is a pull-type implement. Hitch choices include Category III, IV or V 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) to maximum height in order to clear the Short Disk™.
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.

Refer to Figure 4

3. Use the parking stand jack to raise and lower Short Disk™ tongue.
4. Back the tractor draw bar into alignment with hitch.
5. Secure with a locking hitch pin.

Negative Tongue Weight Hazard:
Make certain the Short Disk™ is securely hitched to the tractor or leading implement before unfolding. An unhitched Short Disk™ can tip over backwards during folding and unfolding if the tongue is not secured.

6. Secure safety chains to suitable anchor points on the tractor.

Refer to Figure 5

7. Retract the jack foot.
8. Remove the jack from the tongue side stob and secure it on the storage stob at the tope rear of the tongue.

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

Load Sway Hazard:
Lock draw bar swing to center position to minimize any side-to-side sway to assure proper tracking in the field and safe travel. Refer to “Transporting the Short Disk™” on page 26, for safe transporting.
Electrical Hookup

Refer to Figure 6

Plug Short Disk™ electrical lead into tractor seven-pin receptacle. If your tractor is not equipped with a seven-pin connector, contact your dealer for installation. Test the lights and signalling prior to highway movement.

The electrical harness must be connected for field operations, but light do not need to be on. Power provided by the lighting connector is also used for solenoid valves.

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.

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. Refer to the table at right for the color code.

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, Short Disk™ or hitch. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.

1. Set tractor remote circuit levers to Float for all remotes in use.
2. Clean all hydraulic couplings.
3. Plug hoses into assigned remote ports.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Lift (2 hoses)</td>
</tr>
<tr>
<td>Green</td>
<td>Fold (2 hoses)</td>
</tr>
<tr>
<td>Red</td>
<td>Machine Level (2 hoses, Option)</td>
</tr>
<tr>
<td>Blue</td>
<td>Roller (2 hoses, Option)</td>
</tr>
</tbody>
</table>
Transport/Storage Locks

Refer to Figure 8 (depicting a folded implement, from left)

There are three locking systems used for safety on the Short Disk™ for transport or raised and folded storage. These locks are removed or disabled for field operations.

1. two wing lock pins;
2. one wing fold lock valve; and,
3. two lift cylinder lock channels.

The following two pages describe lock operation. For exact lock operating sequences for fold/unfold, see “Pre-Leveling of Machine” on page 20 and “Unfolding the Wings” on page 25.

The lift cylinder lock channels are inconvenient to reach when the Short Disk™ is unfolded. These lock channels need to be removed prior to unfolding and installed after folding and engaging fold locks.

Wing Fold Lock Pins

These pins secure the folded wings in cradles. They are the primary means of preventing wing motion in transport or folded storage. Do not rely exclusively on hydraulic lock-up.

Refer to Figure 9 (depicting right wing, from front)

Prior to Folding
A. Verify that each pin 1 is not in a lock hole 3.
   It may be removed or in a storage hole 5.
B. After folding, verify that the wing is fully resting in the cradle, and move each pin to its lock hole. The pin should insert easily if the wing is correctly folded.

Prior to Unfolding
A. Verify that fold lock valve is closed (page 18).
B. Check that each lock pin 1 is loose.
   If one or both pins cannot move, due to a resting or pushing wing, refer to steps a-z at right.

CAUTION

Pinch/Crush Sharp Object Hazards:
Do not remove resistant pins. First eliminate the source of the binding. If a pin is under shear tension, the wing will move suddenly if the pin is forcibly removed. This could result in pinching or crushing near the cradle, or lacerations from moving disks.

C. If both pins are loose, remove each and secure it in the storage hole 5.

Binding Wing Lock Pin

a. Leave both wings pinned until the stuck pin is free.
b. Open the wing fold lock valve (page 18).
c. Retract fold circuit to fold wings fully.
d. Close the lock valve and continue at step C at left.
e. Carefully Extend or Retract the tractor circuit for fold until the pin is loose. Once loose, close the lock valve and continue at step C at left.
Wing Fold Lock Valve

Refer to Figure 10 (showing the valve closed)

The wing fold lock valve is located on the left hand truss close to the depth control valve. It helps prevent wing movement during transport and maintenance. Always also use wing lock pins (page 17) to secure wings in fold.

**CAUTION**

**Pinch/Crush and Overhead Crushing Hazards:**
Do not rely exclusively on the lock valves to prevent wing motion. Always use lock pins. The lock valve cannot prevent motion if hoses or cylinders contain air, are damaged or fittings are loose or disconnected. With a hydraulic system problem, an unpinned wing can unfold from partial fold, or from full fold on a hillside. A falling wing can result in serious crushing injury or death. A nearly folded wing can fully fold, resulting in severe pinching or crushing at the cradles.

To Hydraulically Unlock the Wings
1. If the tractor is not shut off, set the tractor remote for fold to Neutral to hold the current position.
2. If the Short Disk™ is folded, clear everyone from under the wings.
3. Move the valve handle from the 90° position to in-line with the valve body.

To Hydraulically Lock the Wings
1. If folding, verify that the wings are fully folded.
2. Move the lock valve handle from in-line to the 90° position.
3. Set the remote circuit for Fold to Neutral.

**NOTICE**

**Equipment Damage Risk:**
Do not close (lock) the fold lock valve when the wings are in any position other than fully folded. In particular, field operations with the wings hydraulically locked at wings-level can result in severe machine damage.
Lift Cylinder (Transport) Locks

Refer to Figure 11 and Figure 12

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

The lift cylinders are inconvenient to access when the Short Disk™ 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 Short Disk™ and fold the wings (page 20). Leave the lift circuit at Neutral to hold at lift.
2. Secure the wings with lock pins (page 17) and the lock valve (page 18).
3. Remove the lock channels from their storage locations.
4. With the pin 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 20).
2. Secure the wings with lock pins (page 17) and lock valve (page 18).
3. Extend the lift circuit to raise the implement completely. Set the circuit to Neutral to hold at full lift.
4. Remove the pin from each lock channel. Remove the channel.
5. Transfer to the storage tube weldment just behind the axle arm. Secure with pin.
Pre-Leveling of Machine

Prior to first use, and then seasonally (or if leveling problems are suspected), check the factory settings for:

- level bar spring (page 45), and
- lift cylinder eyebolts (page 35).

Pre-leveling of machine should be done on a solid level surface (preferably concrete). Machine must be unfolded before leveling. Insure all tires are inflated to recommended pressure. Raise machine and hold lever to insure that the air has been purged from the lift system.

Hydraulic Level Bar Pre-Level

If your machine was equipped with gauge wheels it will now be updated to hydraulic gauge wheels, and plumbed into the lift system. All machines will not be equipped with the hydraulic level bar.

Refer to Figure 13

1. Install lift transport locks (page 19). Check the tire pressures for proper inflation and check the tightness of lug bolts.
2. Raise machine fully. Set lift circuit to Neutral to hold at lift. Remove lift lock channels.
3. To adjust the hydraulic level bar, set the hydraulic fore and aft adjustment bar to "D". Lower machine until the blades are just off the ground.

Gauge Wheel Pre-Level

Gauge wheels need to be temporarily raised to avoid interference with wing leveling. If the implement is not equipped with optional gauge wheels, continue at "Hydraulic Level Bar Pre-Level" below.

Refer to Figure 14

Use the hydraulic cylinders to adjust the wheels so they are $1/2$ inch above the desired working depth from the ground. Refer to page 29.

Hydraulic Roller Pre-Level

If the implement is not equipped with an optional hydraulic roller, continue at "Front to Rear Leveling" on page 21.

Set the circuit to fully Retracted (raises) and Neutral to eliminate leveling interference from the rollers.
Front to Rear Leveling
Refer to Figure 16
Factory preset length for hitch turnbuckle is:
16.25 inches (413 mm)
center-to-center at the eyebolts. It may be adjusted as required to obtain desired leveling.

1. Lower the machine so disks are 1-to-2 inches above ground. Loosen jam nut ① with the turnbuckle wrench (not shown, stored on rear pegs of hitch). Adjust the turnbuckle ② at the front of machine to level it front to back. (Shorten to bring front down, extend to bring front up).

2. When the front disks are the same distance off ground as rear disks, tighten jam nut.

Side to Side Level
Refer to Figure 17 (shown without a tire for clarity)

1. At a side tube, measure the height of the center frame to the ground.

2. At the outside tube of each wing, measure the height ③ to the ground.

3. If adjustment is needed to match wing height to center section height, loosen the rear eyebolt nut ④. Use the front eyebolt nut ⑤ to adjust the wing height. Secure the eyebolt with the rear nut.

4. In field conditions, with gauge wheels (if present) still elevated, lower the unfolded implement, set wing down pressure (if used) to field pressure, pull forward and assess wing level.
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 Short Disk™ to the field.

- Carefully read “Important Safety Information” on page 1.
- Lubricate Short Disk™ per “Lubrication” on page 46.
- Check all tires for proper inflation. See “Tire Inflation” on page 52.
- Check all bolts, pins, and fasteners. Torque as specified at “Torque Values Chart” on page 53.
- Check Short Disk™ 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 43.

Raising / Lowering

Raising When Unfolded

No particular steps are required for raising while unfolded.

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.
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 19).

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 disk blades. 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 19).
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.
**Folding the Wings**

Fold the Short Disk™ for movements on public roads and between fields with narrow clearances. These steps presume that the Short Disk™ is unfolded and lowered on flat ground, such as at the end of field operations.

2. Be aware of vertical clearance required for folding.
3. Set wing fold circuit to Neutral.
4. If the optional hydraulic level system is installed, set the circuit to Neutral to prevent unexpected movement.
5. If an optional hydraulic finishing attachment is installed, Retract that circuit to raise the attachment. Set the circuit to Neutral to hold at lift.
6. Verify that the wing lock pins are out or in the storage holes (page 17).
7. Verify or set the wing lock valve to Open (page 18).
8. Clear all persons from around the implement.
9. Extend the tractor lift circuit to fully raise the implement. Set the circuit to Neutral to hold at lift.
10. Slowly move fold circuit lever to Retract. Observe the fold operation.
11. Wait for both wings to reach the fully folded position. Set tractor remote to Neutral to hold at folded.
12. Set the fold circuit to Neutral to hold at fold.
13. Shut down the tractor.
14. Close the wing fold lock valve (page 18).
15. Install the wing lock pins (page 17).
16. Install the lift cylinder lock channels (page 19).
17. 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.

---

**Electrocution Hazard:**
Avoid overhead lines when folding and transporting. When folded and lifted, the Short Disk™ requires clearance of at least 14 feet (4.3m) for SD2600 and 15 feet (4.6m) for SD3000 and SD3300, which is high enough to contact low hanging lines. Touching the Short Disk™ 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 Short Disk™ wings and the Short Disk™ center frame, or caught in the folding mechanism. To avoid serious injury or death, keep all bystanders well away during Short Disk™ operations.

**NOTICE**

**Equipment Damage Risk:**
Do not fold on hillsides. Fold only on level ground. On a hillside, step 12 could allow the downhill wing to unfold, resulting in machine damage.
Unfolding the Wings

Unfold the Short Disk™ for adjustments, field operations, maintenance, parking and storage. These steps presume that the Short Disk™ is folded and locked at fold, with the tractor hitched. The implement may be raised or lowered.

1. Unless the Short Disk™ 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.
3. Clear all persons from on or near the Short Disk™.
4. Since the unit has been updated and the hydraulic level is installed, Retract the cylinders and set that circuit to Neutral to prevent motion during unfold.
5. If an optional hydraulic soil conditioner is installed, set that circuit to Neutral to prevent motion during unfold.
6. Be aware of vertical and horizontal clearances needed to unfold the Short Disk™.
7. 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.
8. Shut down the tractor and remove the key.
9. Verify that wing fold lock pins are installed, and the lock valve closed. Move the transport (lift) lock channels to storage if installed (page 19).
10. Remove the wing lock pins (page 17). Secure in storage holes.
11. Set the wing fold lock valve handle to open (page 18).
12. Clear all persons from around the implement.
13. Slowly Extend the fold circuit to unfold the wings. When wing wheels are in contact with the ground, set the fold circuit to active down pressure or Float.

Watch for leaks and make sure hoses do not get pinched during the initial unfolding process.

14. Once the machine is unfolded, raise and lower the machine several times to purge air from the lift.

WARNING

Overhead Sharp Object and Crushing Hazards:
Clear all persons from around the implement during unfold. A lowering wing could cause severe lacerations at disk edges, as well as crushing resulting in serious injury or death.
Transporting the Short Disk™

Transport Checklist

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

**Short Disk™ Weight Range**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600, Minimum</td>
<td>15,700 pounds (7100 kg)</td>
</tr>
<tr>
<td>SD 2600, Maximum</td>
<td>23,800 pounds (10,800 kg)</td>
</tr>
<tr>
<td>SD3000, Minimum</td>
<td>16,100 pounds (7300 kg)</td>
</tr>
<tr>
<td>SD3000, Maximum</td>
<td>24,400 pounds (11,100 kg)</td>
</tr>
<tr>
<td>SD3300, Minimum</td>
<td>19,600 pounds (8900 kg)</td>
</tr>
<tr>
<td>SD3300, Maximum</td>
<td>28,300 pounds (12,900 kg)</td>
</tr>
</tbody>
</table>

Before transporting the Short Disk™ check the following items.

1. Match hitch category to tractor (page 14).
2. Check that implement is securely hitched to a sufficient tractor (page 15).
3. Always use a locking-style hitch pin sized to match holes in hitch and draw-bar, and rated for the load.
4. Attach safety chain to tractor with enough slack to permit turning (page 15).
5. Verify correct operation of lights.
6. Check that tires are properly inflated (page 52).
7. If Short Disk™ is unfolded, fold (see “Folding the Wings” on page 24).
8. Fully raise Short Disk™.
9. Check that all transport locks are engaged.
10. Lower unit on lift transport locks.
11. Plan the route. Avoid steep hills.
12. Always have lights on for highway operation.
13. Do not exceed 20 mph (32 km/h). Comply with all national, regional and local laws when traveling on public roads.
14. Remember that the implement may be wider than the towing vehicle. Allow safe clearance.

---

**DANGER**

*Loss of Control Hazard:*
Do not tow the Short Disk™ behind another implement on public roads. Tow the Short Disk™ to the field with a separate vehicle. The leading implement may not provide sufficient lateral control of a trailing implement at transport 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.

**CAUTION**

*Braking and Loss of Control Hazard:*
Do not exceed 20 mph (32 km/h) when driving straight. Slow down on rough roads.
Do not exceed 13 mph (21 km/h) in turns. The weight of the Short Disk™ can cause under-steer, and the height of the Short Disk™ is a tipping hazard.
Hydraulic Depth Control

Disk operating depth machine-wide is controlled primarily by the hydraulic depth control system, which limits the retraction of the lift cylinders.

Refer to Figure 18

During Retract of the lift cylinders (lowering the implement), a mechanical linkage ① operates a poppet valve ② shutting off oil flow at the lift cylinders. The point at which the valve is activated is controlled by an adjustable handle ③.

1. Perform this adjustment in field conditions. The adjustment may be made with the implement folded or unfolded.
2. Fully lower the implement and pull forward a short distance. Shut off the tractor. Remove the key.
3. Assess the operating depth of the disks. Determine the change in depth required to operate at your desired depth.
4. Rotate the depth stop handle to change the depth. The change in depth is approximately 1/4 inch (6.4 mm) per full turn of the handle. For example, two turns would change the depth by 1/2 inch (13 mm).

Rotate the handle clockwise to decrease working depth.

Rotate the handle counter-clockwise to increase working depth.

Slight tire to ground pressure should be maintained to prevent cylinder pin and clevis wear. If after setting the depth stop, the detent on the tractor kicks out before the stop contacts the button on the poppet valve, slow the hydraulic flow speed down. If this problem exists, contact the factory service representative for other possible adjustments. On tractors with a timed detent setting, set the detent so when you raise the machine, the pump will run for one-half to one full second after full raise. If it runs longer than this, damage to the seals of the lift cylinders may result.

NOTICE

Equipment Damage Risks:
Do not set a depth that lifts tires off the ground. Tires out of ground contact causes uneven tillage and may over-stress machine components. Add one or two weight kits to improve penetration.

NOTICE

Equipment Damage Risks:
Avoid operations deeper than 6 inches. Excessive depth causes excess wear and stress on ground engaging components, and excess stress on frame components.
Wing Hydraulic Down Pressure

Wings may be operated with active hydraulic down-pressure, which transfers mainframe weight to the wings, or the wings may be operated in Float (page 29).

**WARNING**

**Pinch/Crush and High Pressure Fluid Hazards:**
Wear protective equipment including goggles and gloves. Clear all non-essential persons from the area for this adjustment. Set the tractor parking brake and put the transmission in Park. This adjustment must be made with live hydraulics, and wings may be expected to move slightly.

Refer to Figure 19

- This setup procedure is for tractors with Closed Center™ hydraulic systems.
- The steps for setting down-pressure are also listed on a machine decal, located on front of left truss.

1. Engage the hydraulics (continuous flow) down. Set tractor throttle above idle, or settings will not be accurate.
2. From cab, adjust flow so needle on the bypass gauge is in the green zone 1000 to 1500 PSI.
3. At the valve, release the lock disk, and adjust the knob to set your initial down pressure (usually 200-to-300 PSI). Do not exceed 800 PSI.
4. If the wings run high during operation, increase pressure. If the center runs high, decrease pressure. If no pressure is needed, move tractor remote for fold to “Float” position.

**NOTICE**

**Certain Machine Damage:**
When not operating with live down pressure the fold system must be in “FLOAT” position. Failure to operate in either Float or active down pressure will damage the fold system. Refer to your tractor operator’s manual to set system to “FLOAT” position if necessary.

**NOTICE**

**Certain Machine Damage:**
This machine is designed for continuous hydraulic flow to the wing fold cylinders during field operations. It is for use on tractors having CLOSED CENTER hydraulics only.

---

a. LS (load sensing) or PC (pressure compensated) closed center systems only.
Wing Float Operation

In certain conditions, or with an Open Center tractor, active wing down-pressure is not used. In these cases, the wing fold circuit must be set to Float.

**NOTICE**

*Equipment Damage Risk:*
The wing fold circuit must be operated in active down-pressure or Float. Operating in Neutral will result in damage to the hydraulic system.

Wing Depth Adjustment in Float

*Refer to Figure 20*

1. In field conditions, set the operating depth for the center section. See "Hydraulic Depth Control" on page 27.
2. Assess the depth of the wing disks, and how much they need to be raised or lowered.
3. If wings are running to high, shorten the distance between eyebolt on the wing lift cylinder. If the wings are running too low, lengthen the distance to the eyebolt on the wing lift cylinder.

   ![Be sure optional gauge wheels are not contacting the ground and biasing the wing out of the ground while trying to level the wings side to side.]

4. Verify the wing operating depth at intended field speed.

**NOTICE**

*Equipment Damage Risk:*
Do not conduct field operations with any wheels out of ground contact, including the gauge wheels. Operating with tires off the ground causes inconsistent results and can cause excess loads on implement components, leading to premature wear or failures.
Tractor Detents (Lift Circuit)

After the hydraulic depth stop is set, in order to preserve the life of the cylinders, it is important to properly set the detent on the tractor. The Short Disk™ is equipped with re-phasing lift cylinders. These cylinders have a re-phasing port at the rod end 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.

Tractors with timed detents (electric over hydraulic)

1. Set the flow on the tractor so the Short Disk™ raises from field position to full lift in approximately 3 to 5 seconds which is about 10 gallons per minute (not 10 on the tractor indicator).
2. 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.

**NOTICE**

Field Results and Machine Damage Risks:
If the timed detent is set it shorter than $\frac{1}{2}$-1 extra seconds, lifting does not properly rephase the cylinders. The implement can get out of level from side to side, and produce inconsistent field results. If set longer than $\frac{1}{2}$-1 extra seconds, cylinder seal damage may results.

Tractors with Pressure Detents

1. 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$^a$ on the tractor may need to be increased.

   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 few passes, pull the raise lever back and hold there 1 to 2 seconds after the machine is fully raised. This purges any air that has been ingested into the system.

   $^a$ 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 Short Disk™ without first contacting a factory service representative.
Field Operation

These steps presume that the Short Disk™ is:

- adjusted for desired operating depth (page 27),
- wing depth is adjusted (page 28), and
- attachments are adjusted.

1. Line up the tractor and implement for the first pass.
2. Raise the Short Disk™ completely (page 22). Set all remotes to Neutral. Shut off the tractor. Remove the key.
3. Remove and store the transport locks (page 19), wing locks (page 17), and open the wing fold lock valve (page 18).
4. Restart the tractor. Unfold the wings to level with the mainframe. Set fold circuit to active down pressure or Float.
5. Retract the lift circuit to lower the implement until the depth stop system engages to lock the lift system. Set the circuit to Neutral.
6. Set any hydraulically operated finishing attachment to recommended or developed position.
7. Pull forward at intended field speed for a short distance. Assess machine level, operating depth and field results.

Certain field conditions can cause the Short Disk™ 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 Short Disk™.

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 wing down pressure) and then the entire machine set slightly shallower (with the depth stop).

This implement is designed to be pulled in the lowered field position (including wide turns). Lifting for short distances to clear residue clogs is acceptable. Lifting for tight turns or reverse moves is required.

Roller Check (Option)

If optional cast rollers are installed, check the angle indicator periodically. The system includes a relief valve. Any ground conditions that cause a back-pressure spike may trip the valve. Re-phase the cylinders and reset to the desired indication.

Tractor Speed

The ideal working speed for the Short Disk™ is 6 to 7 mph (9.6 to 11.2 km/h).

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, ridging and power hopping.

Working Depth

The ideal primary working depth for the Short Disk™ is 3 to 5 inches (80 to 130 mm).

Working too shallow in a primary pass may not achieve complete cut out and mixing of residue. Working too deep in a primary pass may cause plugging and unnecessarily increased fuel consumption per acre. The ideal working depth is just deep enough to cut out root balls and incorporate residue.

NOTICE

Equipment Damage Risk:
The wing fold circuit must be operated in active down-pressure or Float. Operating in Neutral will result in damage to the hydraulic system.

Pass Alignment

For primary passes, Great Plains recommends operating at a slight angle to the rows. For secondary passes, operate at a slight angle to the previous passes. These techniques improve trash flow and provide more consistent level.

NOTICE

Equipment Damage Risk:
Lift for tight turns and reverse moves. Tight turns can result in a section moving backward. Never back up with disks in the ground. If the inside tire stops or rolls backward, the turn is tight and requires lift.
### Field Checklists

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

#### Mechanical Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Disk™ hitched with correct category hitch</td>
<td>15</td>
</tr>
<tr>
<td>Hitch pin locked</td>
<td>-</td>
</tr>
<tr>
<td>Safety chains secured to tractor or leading implement</td>
<td>15</td>
</tr>
<tr>
<td>Parking jack stowed</td>
<td>15</td>
</tr>
<tr>
<td>Check all tire pressures</td>
<td>52</td>
</tr>
<tr>
<td>Transport locks (fold and lift) remove and stowed</td>
<td>17</td>
</tr>
<tr>
<td>Wing fold lock valve open</td>
<td>18</td>
</tr>
</tbody>
</table>

#### Electrical Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify electrical hookup solid.</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Hydraulic System Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check tractor hydraulic reservoir within operating limits</td>
<td>-</td>
</tr>
<tr>
<td>Make hydraulic connections</td>
<td>16</td>
</tr>
<tr>
<td>Inspect connections for leaks</td>
<td>-</td>
</tr>
<tr>
<td>Unfold Implement</td>
<td>25</td>
</tr>
</tbody>
</table>

#### First Pass Operation Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement unfolded and aligned for first pass</td>
<td>31</td>
</tr>
<tr>
<td>Pull forward, lower Short Disk™</td>
<td>22</td>
</tr>
<tr>
<td>Set fold circuit to active down-pressure or Float.</td>
<td>28</td>
</tr>
<tr>
<td>Begin tilling for a short distance.</td>
<td>-</td>
</tr>
<tr>
<td>Stop. Assess:</td>
<td>-</td>
</tr>
<tr>
<td>• disk depth</td>
<td>-</td>
</tr>
<tr>
<td>• finishing attachment operation</td>
<td>-</td>
</tr>
<tr>
<td>Make necessary adjustments</td>
<td>33</td>
</tr>
</tbody>
</table>

#### Sharp Field Turns Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Raise Short Disk™</td>
<td>-</td>
</tr>
<tr>
<td>2. Make turn</td>
<td>-</td>
</tr>
<tr>
<td>3. Lower Short Disk™</td>
<td>-</td>
</tr>
<tr>
<td>4. Resume tilling</td>
<td>-</td>
</tr>
</tbody>
</table>

### 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 tilling.

#### Ending Tilling Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Suspend operations as above</td>
<td>-</td>
</tr>
<tr>
<td>2. Lift implement</td>
<td>-</td>
</tr>
<tr>
<td>3. Set tractor for fold</td>
<td>24</td>
</tr>
<tr>
<td>4. Fold wings</td>
<td>17</td>
</tr>
<tr>
<td>5. Place locking valves in transport position</td>
<td>17</td>
</tr>
<tr>
<td>6. Place transport locks in transport position</td>
<td>17</td>
</tr>
<tr>
<td>7. Lower implement on to transport locks</td>
<td>-</td>
</tr>
<tr>
<td>8. Lights ON for transport</td>
<td>-</td>
</tr>
<tr>
<td>9. Travel with caution</td>
<td>26</td>
</tr>
</tbody>
</table>
Adjustments

To get full performance from your Short Disk™, you need an understanding of all component operations, and many provide adjustments for optimal field results. The table below provides a summary of all available adjustments, including some that are not routine.

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Page</th>
<th>The Adjustment Affects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Depth Control</td>
<td>27</td>
<td>Primary control for disk operating depth</td>
</tr>
<tr>
<td>Tractor Detents</td>
<td>30</td>
<td>Sustain side-to-side level via automatic re-phasing</td>
</tr>
<tr>
<td>Hydraulic Down Pressure</td>
<td>28</td>
<td>Maintain level wings and consistent wing depth</td>
</tr>
<tr>
<td>Hitch Turnbuckle</td>
<td>34</td>
<td>Front-to-back level</td>
</tr>
<tr>
<td>Hydraulic Level Bar</td>
<td>34</td>
<td>Adjust front-to-back level for varying field conditions</td>
</tr>
<tr>
<td>Level Bar Spring</td>
<td>45</td>
<td>Restore factory setting for front-to-back level</td>
</tr>
<tr>
<td>Wing Eyebolt</td>
<td>35</td>
<td>Wings level in Float and pre-level of wings prior to active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>down-pressure</td>
</tr>
<tr>
<td>Gauge Wheel Turnbuckle</td>
<td>29</td>
<td>Set/adjust wing level in wing Float operations - set/adjust to reduce power hop and increase flotation.</td>
</tr>
<tr>
<td>Wing Fold Proximity Sensor</td>
<td>45</td>
<td>During unfold, activates a bypass valve to avoid the flow restrictions of the down-pressure setting</td>
</tr>
</tbody>
</table>
Hydraulic Leveling

Fore/aft leveling in the field should be done with the hydraulic level, if installed. Otherwise use the hitch turnbuckle.

Refer to Figure 21

With hitch turnbuckle set, the fore and aft can be adjusted hydraulically to correct operation in differing field conditions.

- If a mound is left in the center of the machine pass, then the rear gangs are running too deep. Move the fore/aft gauge toward “A” until mound goes away.
- If a valley is left in the center of the machine pass, then the front gangs are running too deep. Move the fore/aft gauge toward “G” until the valley goes away.
- If fore/aft hydraulic cylinder limits out and mound or valley is still present, hitch turnbuckle is not adjusted correctly, see “Hitch Turnbuckle” on page 34 for correctly adjusting.

Reduce the hydraulic flow for ease of adjustment.

Hitch Turnbuckle

If possible have someone observe the machine during the initial operation for levelness, both front to rear and center to wings. Adjust each as needed.

Refer to Figure 22

10. If equipped with hydraulic leveling, initially set fore/aft gauge to aspect “D”.

For front to rear level, either extend or shorten the tongue turnbuckle.

11. Loosen the jam nut 1 with the provided turnbuckle wrench (stored on rear pegs of hitch). Adjust turnbuckle at either adjust nut 2 until level front to back. Tighten jam nut after machine is level.

Looking at the worked ground, if a mound is left in the center of the machine, then the machine is running too deep in the rear. The hitch turnbuckle needs shortened to raise the rear gangs.

If a valley is left in the center of the machine, then the machine is running too deep in the front. The turnbuckle needs to be lengthened to raise the front gang.
Wing Lift Cylinder Eyebolts

If not using hydraulic down pressure, and optional wing gauge wheels are not installed, wing lift cylinder eyebolts are the main method of assuring wings-level (once center section operating depth is set).

Refer to Figure 23

The factory preset for wing lift cylinder eyebolts is:

4 5/8 inches (177.5 mm)

measure from the eyebolt center-line to the front face of the frame tube. These adjustments should be checked periodically. Overall operating depth is set with the hydraulic depth stop (page 27).

To adjust eyebolt reveal (lower tire):

1. Raise and unfold the implement, setting the fold circuit to Float, and the lift circuit to Neutral to hold at raised.
2. Loosen the rear jam nut several turns.
3. Use the front nut to drive the eyebolt forward to the required setting.
4. Tighten the rear jam nut.

To reduce eyebolt reveal:

1. Raise, unfold, and lower the implement in field conditions.
2. Loosen the front jam nut several turns.
3. Use the rear nut to drive the eyebolt rearward to the required setting.

Attachment Adjustments

Attachment Bar (Option)

Refer to Figure 24

The optional attachment bars are offered for attaching finishing tools other than those provide by Great Plains. The standard bars have no adjustments.

When selected equipment to connect to attachment bars, note that the bars are:

4 x 3 inch (102 x 76 mm),

and the weight of the attached equipment must not exceed:

2900 pounds (1314 kg).

See Parts Manual for all Options
Disk Scrapers
Prior to first implement use, and periodically thereafter, inspect disk scrapers for proper gap. Adjust to specification as needed.

Adjusting Reversible Disk Scrapers
(S/N C1016T-)

Refer to Figure 25
Adjust the reversible disk scraper ① by loosening the nuts on the carriage bolts ②. Slide and rotate the reversible disk scraper as required. Tighten nuts to Grade 5 torque. Rotate the disk 360° to make sure the reversible disk scraper does not drag. Periodically inspect the gap.
Replace when adjustment to specification is no longer possible on either side.
① If the gap is not correct, the blade will plug.

Adjusting Disk Scrapers
(S/N C1064T+)
② Disk scrapers for S/N C1017T thru C10663T can look different than those shown in the illustration. The adjustment procedure is the same.

Refer to Figure 26
Loosen the nuts on the carriage bolts ①. Slide and rotate the disk scraper ① to get the correct adjustment. Tighten nuts to Grade 5 torque. Rotate the disk 360° to make sure the disk scraper does not drag. Periodically inspect the gap.
Replace when adjustment to specification is no longer possible.
② If the gap is not correct, the blade will plug.
Cast Rollers (Option)

Refer to Figure 27

The roller attachment is designed to size clods and consolidate the soil profile. It can be hydraulically adjusted. A reference gauge is located on the left wing. Extending the roller cylinder lowers the rollers. Retracting the roller cylinders raises the rollers.

For transport, fully raise the roller (retract roller cylinders). Set the circuit to Neutral to hold at raised. Do not have roller in Float while folding.

For Field

Make all other leveling and depth adjustments first. When initially setting the machine level and depths, set the roller circuit to Float. The roller can limit fore/aft adjustment if not in Float.

Once the rest of the machine is adjusted to run correctly, set roller height as desired for conditions.

Setting the Roller

1. Reduce the flow to the roller hydraulic circuit to allow for ease of adjustment.
2. Rephase roller cylinders. Fully raise and hold at raised for a 2 to 3 seconds.
3. Lower the roller (extend the roller cylinders) past the rephase port.

Setting Roller Ground Pressure

4. Set circuit to Float. Take note of the roller reference gauge reading.
5. While making a tillage pass, set roller circuit to neutral, locking the position of the roller.
6. The Float reference is the baseline. Moving the gauge toward “E” reduces pressure between roller and soil. Moving the gauge toward “A” increases pressure between roller and soil.
7. If wheel tracks or power hopping occur, increase the roller pressure.

The roller is capable of lifting the rear gang out of the soil and disturbing the fore/aft setting. When increasing roller pressure from baseline watch the machine to be sure not to raise the rear of the machine.

8. Slightly increase roller ground pressure desired without raising rear of machine.
9. Note the reference gauge setting.

The roller circuit has a relief valve in the system. If the hydraulic system relieves pressure, adjust roller gauge back to desired reference.
Rolling Basket (Option)

Refer to Figure 28

The seedbed conditioner basket 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 spring-loaded to transfer some machine weight to the baskets. The spring may be adjusted.

1. Initially set the spring lengths to factory settings:
   - SD2600: 14.88 inches (378 mm)
   - SD3000: 14.75 inches (375 mm)
   - SD3300: 14.56 inches (370 mm)
   measured from the rear face of the forward plate to the rear edge of the rear tube pocket (not including the pocket base plate).

2. Loosen the jam nuts. Turn the adjust nuts to change the spring length. The spring rate (per spring) is:
   - 160 pounds per inch (2.86 kg/mm)
   The safe range of spring adjustment is:
   - 13.0 to 16.0 inches (330 to 406 mm)
   Do not set the spring length to less than 13 inches.

If wheel tracks or power hopping occur, reduce spring length to transfer more weight to the basket.

If the baskets are holding the rear of the machine too high, increase the spring length to reduce weight transferred.

Weight can also be removed from the baskets by moving the upper linkage pin to a higher hole. Restore the pins to bottom holes before folding.

Single Spike Tine (Option)

The single-spike tine is included with one of the rolling basket Options. It is designed to size clods for the basket.

Tine Adjustment

Refer to Figure 29

There are two adjustments that affect tine height and tine angle:

- Spring:
  - Lengthening the spring is more aggressive.
  - Shortening the spring is less aggressive.

- Angle levers:
  - Moving the lever up is less aggressive, and allows more residue to flow through the tines. Moving the lever down is more aggressive.

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.
## Troubleshooting

### Field Operations Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear leaving groove/valley in machine center</td>
<td>Front gangs running deeper than rear</td>
<td>Raise front gangs with fore/aft leveling (page 34).</td>
</tr>
<tr>
<td></td>
<td>Rear finishing attachment biasing rear out of ground</td>
<td>Reduce rear attachment loading, basket attachment increase spring length, cast roller move reference gauge toward indicator aspect “E”.</td>
</tr>
<tr>
<td>Rear leaving mound/hill</td>
<td>Rear gang running deeper than front</td>
<td>Raise rear gang with fore/aft leveling (page 34).</td>
</tr>
<tr>
<td></td>
<td>Front gauge wheels set to deep</td>
<td>Retract hydraulic cylinders to raise gauge wheels up (page 34)</td>
</tr>
<tr>
<td>Leaving ridges on outside</td>
<td>Wings not level</td>
<td>Adjust wing down pressure (page 28). If not running down pressure, adjust eyebolt at rear of wing cylinders to level wings (page 35).</td>
</tr>
<tr>
<td></td>
<td>Lift cylinders out of phase</td>
<td>Rephase lift cylinders</td>
</tr>
<tr>
<td></td>
<td>Leaking wing lift cylinder</td>
<td>Repair or replace leaky cylinder.</td>
</tr>
<tr>
<td></td>
<td>Operating machine too fast</td>
<td>Slow down 6 to 8 mph (10 to 13 km/h).</td>
</tr>
<tr>
<td>Wings not Penetrating</td>
<td>Wings not level</td>
<td>Adjust wing down pressure (page 28). Increase pressure to transfer weight to the wings. If not running down pressure, adjust eyebolt at rear of wing cylinders to level wings (page 35).</td>
</tr>
<tr>
<td>One wing running deeper than the other</td>
<td>Wings not level</td>
<td>Adjust wing down pressure (page 28). Increase pressure to transfer weight to the wings. If not running down pressure, adjust eyebolt at rear of wing cylinders to level wings (page 35).</td>
</tr>
<tr>
<td></td>
<td>Leaking Wing lift cylinder</td>
<td>Repair or replace leaky cylinder.</td>
</tr>
<tr>
<td></td>
<td>Wing cylinder out of phase</td>
<td>Rephase lift cylinders.</td>
</tr>
<tr>
<td></td>
<td>Improper tire pressure</td>
<td>Set tire pressure (page 52).</td>
</tr>
<tr>
<td>Both wings running deeper than center</td>
<td>Wings not level</td>
<td>Adjust wing down pressure (page 28). Decrease pressure to transfer weight to the center. If not running down pressure, adjust eyebolt at rear of wing cylinders to level wings (page 35).</td>
</tr>
<tr>
<td></td>
<td>Improper tire pressure</td>
<td>Set tire pressure (page 52).</td>
</tr>
<tr>
<td>Whole Machine runs deeper with time</td>
<td>Leaking depth stop cartridge</td>
<td>Replace cartridge.</td>
</tr>
<tr>
<td></td>
<td>Leaking master lift cylinder</td>
<td>Repair or replace leaky cylinder.</td>
</tr>
<tr>
<td></td>
<td>Too much machine weight</td>
<td>Remove weights (page 59).</td>
</tr>
<tr>
<td></td>
<td>Lift system hoses crossed</td>
<td>Check lift system for correct hose routing.</td>
</tr>
<tr>
<td>Center and one wing run deeper</td>
<td>Leaking master lift cylinder</td>
<td>Repair or replace leaky cylinder.</td>
</tr>
<tr>
<td>Overheating Hydraulic System</td>
<td>Lift, fore/aft level, or roller system set to continuous flow</td>
<td>Disengage continuous flow.</td>
</tr>
<tr>
<td></td>
<td>Wing weight transfer system flow set to high</td>
<td>Re-adjust wing down-pressure (page 28).</td>
</tr>
</tbody>
</table>
### Field Operations Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven working depth</td>
<td>Lift cylinders out of phase</td>
<td>Rephase lift cylinders.</td>
</tr>
<tr>
<td></td>
<td>Timed detent not set correctly</td>
<td>Set flow for 0.5 seconds after machine raised (page 30).</td>
</tr>
<tr>
<td></td>
<td>Timed detent not allowing depth stop valve to engage</td>
<td>Adjust detent timer to allow for depth stop to engage (page 30).</td>
</tr>
<tr>
<td></td>
<td>Gauge wheels not set correctly or not set the same</td>
<td>Check and adjust gauge wheel height (page 29).</td>
</tr>
<tr>
<td>Machine bouncing</td>
<td>Operating speed too fast</td>
<td>Slow down 6 to 8 mph (10 to 13 km/h)</td>
</tr>
<tr>
<td></td>
<td>Not enough weight transferred to finishing attachment</td>
<td>Increase rear attachment loading, basket attachment decrease spring length, cast roller move reference gauge toward “A” without raising rear gang out of ground</td>
</tr>
<tr>
<td></td>
<td>Fore/aft leveling spring cushion set incorrectly</td>
<td>Restore factory setting (page 45).</td>
</tr>
<tr>
<td></td>
<td>Increase contact pressure on gauge wheels</td>
<td>Increase gauge wheel turnbuckle to equal lengths (page 29).</td>
</tr>
<tr>
<td>Machine plugging</td>
<td>Too much residue in the rows</td>
<td>Run at a slight angle to the rows</td>
</tr>
<tr>
<td></td>
<td>Disk not cutting residue</td>
<td>Check for sharpness.</td>
</tr>
<tr>
<td></td>
<td>Running too slow</td>
<td>Speed up 6 to 8 mph (10 to 13 km/h).</td>
</tr>
<tr>
<td></td>
<td>Improper scraper adjustment</td>
<td>See “Disk Scrapers” on page 36.</td>
</tr>
<tr>
<td></td>
<td>Running too deep for conditions</td>
<td>Reduce working depth to reduce plugging.</td>
</tr>
<tr>
<td></td>
<td>Ground too wet</td>
<td>Wait for drier conditions.</td>
</tr>
<tr>
<td>Machine will not penetrate</td>
<td>Blades dull</td>
<td>Sharpen or replace blades.</td>
</tr>
<tr>
<td></td>
<td>Not enough weight per blade</td>
<td>Add accessory weights (page 59).</td>
</tr>
<tr>
<td>Wings do not flex</td>
<td>Fold remote in neutral</td>
<td>Set remote to constant flow or float.</td>
</tr>
<tr>
<td></td>
<td>Detent timer set</td>
<td>Set detent to constant/infinite time.</td>
</tr>
<tr>
<td></td>
<td>Transport lock valve closed</td>
<td>Open transport lock valve (page 18).</td>
</tr>
<tr>
<td>Twisted disk spring</td>
<td>Turning with machine in ground</td>
<td>Raise machine out of ground while turning.</td>
</tr>
<tr>
<td></td>
<td>Backing up with machine in ground</td>
<td>Raise machine out of the ground while backing up.</td>
</tr>
</tbody>
</table>
## Transport Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wings fail to unfold</strong></td>
<td>Wing fold lock valve closed</td>
<td>Open valve (page 18).</td>
</tr>
<tr>
<td></td>
<td>Wing lock pins installed</td>
<td>Move pins to storage (page 17).</td>
</tr>
<tr>
<td></td>
<td>Hydraulic hose disconnected</td>
<td>Connect hydraulic hose to remote.</td>
</tr>
<tr>
<td></td>
<td>Failed hydraulic hose tip</td>
<td>Replace tip.</td>
</tr>
<tr>
<td></td>
<td>7 pin connector not plugged into tractor</td>
<td>Plug in 7 pin connector to tractor to provide power to solenoid valves.</td>
</tr>
<tr>
<td></td>
<td>Proximity sensor not working</td>
<td>Check proximity adjustment (page 45). Check wiring. Replace sensor.</td>
</tr>
<tr>
<td></td>
<td>Bypass valve failed</td>
<td>Check wiring, replace bypass valve. Wings can be unfolded without bypass valve active. Increase wing down pressure to unfold wings. Once the wings are unfolded reduce wing down pressure to desired pressure for working condition.</td>
</tr>
<tr>
<td><strong>Wings fail to fold</strong></td>
<td>Wing fold lock valve closed</td>
<td>Open valve (page 18).</td>
</tr>
<tr>
<td></td>
<td>Wing lock pins installed</td>
<td>Move pins to storage (page 17).</td>
</tr>
<tr>
<td></td>
<td>Hydraulic hose disconnected</td>
<td>Connect hydraulic hose to remote.</td>
</tr>
<tr>
<td></td>
<td>Failed hydraulic hose tip</td>
<td>Replace tip.</td>
</tr>
<tr>
<td></td>
<td>Low hydraulic pressure</td>
<td>Increase pressure to above 1500 psi.</td>
</tr>
<tr>
<td><strong>Wing folds/unfolds too slow</strong></td>
<td>Failed hydraulic hose tip</td>
<td>Replace tip.</td>
</tr>
<tr>
<td><strong>Wing folds/unfolds too fast</strong></td>
<td>Cylinder orifices removed</td>
<td>Replace orifices in cylinder ports.</td>
</tr>
<tr>
<td><strong>Lift circuit immobilized</strong></td>
<td>Rebound valve locked</td>
<td>Consult your Great Plains dealer.</td>
</tr>
<tr>
<td><strong>Lift will not go down</strong></td>
<td>Transport lock channels installed</td>
<td>Move locks to storage (page 19).</td>
</tr>
<tr>
<td></td>
<td>Depth stop engaging</td>
<td>Readjust depth stop (page 27).</td>
</tr>
<tr>
<td></td>
<td>Failed poppet valve in depth stop</td>
<td>Replace poppet valve in depth stop valve.</td>
</tr>
<tr>
<td></td>
<td>Depth stop failing due to hose routing</td>
<td>Check routing with hydraulic layout.</td>
</tr>
<tr>
<td><strong>Lift will not go up</strong></td>
<td>Lift system hose routing crossed</td>
<td>Check routing with hydraulic layout.</td>
</tr>
<tr>
<td><strong>Machine bouncing during transport</strong></td>
<td>Excessive transport speed</td>
<td>Slow down. Maximum speed is 20 mph (32 km/h).</td>
</tr>
</tbody>
</table>
## Attachments Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rollers uneven across machine</td>
<td>Roller hydraulic cylinders out of phase</td>
<td>Re-phase roller hydraulic cylinders by retracting cylinders and holding for a few seconds.</td>
</tr>
<tr>
<td>Roller gangs bouncing in relation to the machine</td>
<td>Roller hydraulic circuit has air in the system</td>
<td>Re-phase roller hydraulic cylinders by retracting cylinders and holding for a few seconds. Cycle the cylinders until air is removed from the system.</td>
</tr>
<tr>
<td>Roller gauge no long set at preferred reference</td>
<td>Pressure relief valve tripped</td>
<td>Adjust roller back to desired reference on gauge.</td>
</tr>
<tr>
<td>Roller moves to fast</td>
<td>Cylinder orifices removed</td>
<td>Replace orifices in cylinder ports.</td>
</tr>
<tr>
<td>Roller moves to slow</td>
<td>Failed hydraulic hose tip</td>
<td>Replace tip.</td>
</tr>
<tr>
<td>Basket plugging with mud</td>
<td>Working conditions too wet</td>
<td>Wait for drier conditions.</td>
</tr>
<tr>
<td>Coil tine plugging</td>
<td>Coil tine set too aggressive</td>
<td>Reduce angle of coil tine to allow high residue flow (page 38).</td>
</tr>
</tbody>
</table>
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.

1. After using your Short Disk™ for several hours, check all bolts to be sure they are tight.
2. Keep disk scrapers properly adjusted, see “Disk Scrapers” on page 36.
3. Clean Short Disk™ 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 46.
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 Short Disk™. 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 hub bolts for loose blades/hubs. Tighten as needed.
8. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, blades, etc. Some Boron disk blades cannot be rolled to sharpen, they must be ground. Cracks and breakage will occur if rolled.
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 attachment bolts for looseness or excessive wear. Your attachment 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.

**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.
**Beginning of Season**

1. Hitch the tractor to the Short Disk™ and connect the hydraulic hoses.

2. 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**

*Crushing Hazard: Unfolding machine with air in cylinders may cause death or major machine damage.*

3. 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.

4. If machine was not serviced and greased at end of last season, perform step 1 through step 8 from “End of Season” section.

5. Make sure all moving parts move freely and do not bind.

6. Take the time to read the operators manual and refresh yourself with the safety information and operating instructions.

7. It is the owner’s responsibility to see that all operators of the Short Disk™ know the safety and operating information found in this manual.

**End of Season**

1. Clean machine as much as possible. Remove all dirt from rust prone parts like disk blades and bolt threads.

2. Check over the machine for damaged or worn parts. Replace or rotate worn parts as needed: hinge pins, clevis pins, bearings, blades, etc.

3. Check all bolts for tightness. Tighten as needed.

4. Check for hydraulic leaks. Tighten connections or replaced worn/damaged fittings or hoses.

5. The wheel bearings should be cleaned and repacked annually or every 2500 acres.

6. Check disk hub nut torque (600 ft-lbs). Clean out any dirt on flange nut, threads and mounting surfaces of hub and spring.

7. Use Anti-Seize on the roller bolt threads before tightening castle nut.

8. Grease the Short Disk™ in all locations shown in the lubricating section.

9. If stored outside, place a protective coating of grease or “plow paint” on all earth working parts to prevent rusting.

10. If storing outside, unfold Short Disk™ to prevent water pooling on wing blade assemblies.

11. If you are storing Short Disk™ unfolded, remove fold cylinder clevis pins, block up cylinder and fully retract cylinder rods. This will extend the life of the cylinder seals and reduce internal leaks.

12. Place boards under the disk gangs and lower the Short Disk™ to the ground retracting the lift cylinders. Check to remove transport locks before lowering Short Disk™.
Level Bar Spring Setting
Refer to Figure 30
With the implement raised, the factory preset for the level bar spring assembly ① is:
26 inches (660 mm) between the backside of spring guide ② and front side of level bar spring rod plate ⑤. This setting should be checked periodically, and restored to the factory setting as required.
1. To adjust the level bar spring assembly to the preset position of 26 inches, loosen the 1 1/2 inch jam nut ④ with the turnbuckle wrench (stored on rear pegs of hitch).
2. Adjust the 1 1/2 inch nut ④ until the 26 inch dimension is reached
3. Tighten the 1 1/2 inch jam nut ④ to secure.

Wing Fold Proximity Sensor
A proximity sensor ① on each wing enables faster wing unfold by operating a solenoid valve to bypass the down-force valve. Oil flow is not reduced (restricted by the down-pressure valve) until the wings are nearly level. Wing fold is always at full oil flow.

Wings need to be folded up when adjusting the proximity sensor, to correctly measure the gap, and to prevent damage to sensor and bracket. Be sure and adjust proximity sensors before unfolding. Be sure wing safety lock pins are installed and fold lock valve is locked.

Proximity Sensor Adjustment
Refer to Figure 31
1. Check the gap ② between the face of the sensor ① and the wing tube. The correct gaps is:
1/8 inch to 1/4 inch (3.2 to 6.4 mm)
2. To adjust the gap, loosen nuts ② (one on each side of the sensor bracket). Rotate nuts to achieve correct gap.
3. Tighten nuts to secure proximity sensor.
Lubrication

Wheel Bearing Hubs

8 or 10 wheels per implement, 2 bearings per wheel; 16 or 20 bearing total
Type of lubrication: Wheel grease
Quantity: repack
Inspect bearings for end play Annually. If excessive endplay exists, Great Plains recommends disassembly, cleaning and repacking of the wheel bearings.
For machines stored outdoors or operating in extreme conditions bearings should be checked more often.

Turnbuckles

1 per implement
Type of Lubrication: Multipurpose Spray Lubricant
Quantity: Coat thoroughly.
Options

Hitch Options

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category III/IV</td>
<td>71</td>
<td>589-432A</td>
</tr>
<tr>
<td>Category V</td>
<td>72</td>
<td>589-433A</td>
</tr>
</tbody>
</table>

See “Hitch Setup” on page 14 for setup and operation.

Frame Options

Weight Kits

Center section machine weight may be increased by 3000 pounds (1350 kg) by adding one to four stacks of 750 pound weights. Each kit contains two weights.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Kit</td>
<td>-</td>
<td>589-047A</td>
</tr>
</tbody>
</table>
Wing Gauge Wheels
Wing gauge wheels are recommended in all conditions. They increase flotation, decrease wing scalping, and help reduce machine harmonics.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Gauge Wheels</td>
<td>62</td>
<td>559-392A</td>
</tr>
</tbody>
</table>

See “Wing Depth Adjustment in Float” on page 29 for adjustment.

Rear Light Bracket
This kit provides rear transport lights, and is required when no finishing option or no Attachment Bar is specified. It is no-charge when originally ordered with the implement.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600 Light Bracket</td>
<td>42</td>
<td>559-203A</td>
</tr>
<tr>
<td>SD3000 Light Bracket</td>
<td>42</td>
<td>559-203A</td>
</tr>
<tr>
<td>SD3300 Light Brackets</td>
<td>42</td>
<td>559-203A</td>
</tr>
</tbody>
</table>

Disk Scraper Option
Disk Scrapers
(S/N C1017T thru C1063T)
Put the disk scraper on the mounting bracket. The curved side must be toward the concave side of the disk. Install the two 1/2-13x1 carriage bolts. Install the flat washers, lock washers, and nuts. See “Adjusting Disk Scrapers” on page 36 to adjust a disk scraper.
**Disk Scrapers**  
(S/N C1064T+)

Put the left-hand ① or right-hand ② disk scraper on the mounting bracket ③. The foot ④ on the disk scrapers must be toward the center of the disk. The curved side ⑤ must be toward the concave side of the disk ⑥.

Install the two 1/2-13x1 carriage bolts. Install the flat washers, lock washers, and nuts. See “Adjusting Disk Scrapers” on page 36 and adjust the disk scraper.

<table>
<thead>
<tr>
<th>Description</th>
<th>Model</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk Scraper</td>
<td>SD2600</td>
<td>559-279A</td>
</tr>
<tr>
<td>Disk Scraper</td>
<td>SD3000</td>
<td>559-280A</td>
</tr>
<tr>
<td>Disk Scraper</td>
<td>SD3300</td>
<td>559-281A</td>
</tr>
</tbody>
</table>
Finishing Options

Rolling Basket with Single Spike
Order no more than one finishing option.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600 Crumbler/Coiltine</td>
<td>41</td>
<td>559-451A</td>
</tr>
<tr>
<td>SD3000 Crumbler/Coiltine</td>
<td>41</td>
<td>559-452A</td>
</tr>
<tr>
<td>SD3300 Crumbler/Coiltine</td>
<td>41</td>
<td>599-453A</td>
</tr>
</tbody>
</table>

See "Rolling Basket (Option)" on page 38 and "Single Spike Tine (Option)" on page 38 adjustment.

Rolling Basket only
Order no more than one finishing option.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600 Crumbler</td>
<td>45</td>
<td>559-A</td>
</tr>
<tr>
<td>SD3000 Crumbler</td>
<td>45</td>
<td>559-123A</td>
</tr>
<tr>
<td>SD3300 Crumbler</td>
<td>45</td>
<td>559-219A</td>
</tr>
</tbody>
</table>

See "Rolling Basket (Option)" on page 38 for adjustment.

Cast Rollers
Order no more than one finishing option.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600 Cast Roller</td>
<td>47</td>
<td>559-195A</td>
</tr>
<tr>
<td>SD3000 Cast Roller</td>
<td>47</td>
<td>559-115A</td>
</tr>
<tr>
<td>SD3300 Cast Roller</td>
<td>47</td>
<td>559-225A</td>
</tr>
</tbody>
</table>

"Cast Rollers (Option)" on page 37 for adjustment.

Attachment Bar
This bar is for mounting finishing equipment other than supplied by Great Plains. Order no other finishing option with an Attachment Bar.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD2600 Attachment Bar</td>
<td>48</td>
<td>559-204A</td>
</tr>
<tr>
<td>SD3000 Attachment Bar</td>
<td>48</td>
<td>559-198A</td>
</tr>
<tr>
<td>SD3300 Attachment Bar</td>
<td>48</td>
<td>559-213A</td>
</tr>
</tbody>
</table>

See "Cast Rollers (Option)" on page 37 for further information.
# Appendix A - Reference Information

## Specifications and Capacities

<table>
<thead>
<tr>
<th>Model</th>
<th>SD2600</th>
<th>SD3000</th>
<th>SD3300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tillage Width (Swath)</td>
<td>26 feet 5 inches (8.1 m)</td>
<td>29 feet 6 inches (9.0m)</td>
<td>33 feet 3 inches (10.1 m)</td>
</tr>
<tr>
<td>Blade Count</td>
<td>66</td>
<td>74</td>
<td>82</td>
</tr>
<tr>
<td>Blade Spacing</td>
<td>10 inches (25.4 cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gang Tubes</td>
<td>3 x 6 x 3/8 inch (76 x 152 x 9.5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gang Spacing</td>
<td>88 inches (2.24 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gang Toe Angle</td>
<td>18° Front, 16° Rear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk Specification</td>
<td>20 inch diameter x 1/4 inch thick (508 x 6.4 mm) Concave Boron Steel</td>
<td>22 inch diameter x 1/4 inch thick (559 x 6.4 mm) Concave Boron Steel</td>
<td>24 inch diameter x 1/4 inch thick (610 x 6.4 mm) Concave Boron Steel</td>
</tr>
<tr>
<td>Disk Operating Depth</td>
<td>0 to 7 inches (0 to 178 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wing Flex</td>
<td>12° Down, Unlimited Up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Weight per Disk</td>
<td>235 lb/disk (110 kg/disk)</td>
<td>220 lb/disk(100 kg/disk)</td>
<td>240 lb/disk (110 kg/disk)</td>
</tr>
<tr>
<td>Maximum Weight per Disk</td>
<td>360 lb/disk (165 kg/disk)</td>
<td>330 lb/disk (150 kg/disk)</td>
<td>345 lb/disk (160 kg/disk)</td>
</tr>
<tr>
<td>Min. Weight Across Swath</td>
<td>595 lb/ft (880 kg/m)</td>
<td>545 lb/ft (815 kg/m)</td>
<td>590 lb/ft (880 kg/m)</td>
</tr>
<tr>
<td>Max. Weight Across Swath</td>
<td>900 lb/ft (1335 kg/m)</td>
<td>830 lb/ft (1230 kg/m)</td>
<td>855 lb/ft (1270 kg/m)</td>
</tr>
<tr>
<td>Total Implement Weight</td>
<td>15,700 to 23,800 pounds (7100 to 10800kg)</td>
<td>16,100 to 24,400 pounds (7300 to 11100 kg)</td>
<td>19,600 to 28,300 pounds (8900 to 12900 kg)</td>
</tr>
<tr>
<td>Hitch</td>
<td>Pull-Type Category III/IV or V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tractor Requirements</td>
<td>300 to 400 hp (225 to 300 kW)</td>
<td>350 to 450 hp (260 to 335 kW)</td>
<td>400 to 500 hp (295 to 370 kW)</td>
</tr>
<tr>
<td>Hydraulic Circuits Required</td>
<td>Closed Center - 2, 3, or 4 Remotes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic Capability Required</td>
<td>2250 psi, 10 gal/min (155 bar, 38 liters/min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic System Capacity</td>
<td>9 to 11 gallons (34 to 42 liters)</td>
<td>11 to 13 gallons (42 to 50 liters)</td>
<td>11 to 13 gallons (42 to 50 liters)</td>
</tr>
<tr>
<td>Frame Width (Unfolded)</td>
<td>29 feet 8 inches (9.1 m)</td>
<td>32 feet 3 inches (9.8 m)</td>
<td>35 feet 11 inches (10.9 m)</td>
</tr>
<tr>
<td>Transport Width</td>
<td>15 feet 3 inches (4.6 m)</td>
<td>15 feet 3 inches (4.6 m)</td>
<td>18 feet 7 inches (5.7 m)</td>
</tr>
<tr>
<td>Length</td>
<td>21 feet to 26 feet (6.4 m to 7.9 m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Height, Maximum</td>
<td>7 feet 6 inches (229 cm)</td>
<td>8 feet 2 inches (249 cm)</td>
<td></td>
</tr>
<tr>
<td>Maximum Transport Height</td>
<td>12 feet 10 inches (3.9 m)</td>
<td>14 feet 3 inches (4.3 m)</td>
<td>14 feet 3 inches (4.3 m)</td>
</tr>
<tr>
<td>Clearance (Transport)</td>
<td>14 inches (36 cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport Tires</td>
<td>380/55R16.5 Load Rating F</td>
<td>380/55R16.5 Load Rating F</td>
<td>440/55 R18 Load Rating 159A/B</td>
</tr>
<tr>
<td>Wing Tires</td>
<td>380/55R16.5 Load Rating F</td>
<td>12.5L x 15 SL 12 Ply Straight Rib</td>
<td>12.5L x 15 SL 12 Ply Straight Rib</td>
</tr>
<tr>
<td>Gauge Wheel Tire (Option)</td>
<td>380/55R16.5 Load Rating F</td>
<td>12.5L x 15 SL 12 Ply Straight Rib</td>
<td></td>
</tr>
</tbody>
</table>

1) Rigid level, Category III/IV hitch, no weights, no finishing attachment, no gauge wheels
2) Hydraulic level, Category V hitch, two weight kits, cast rollers, gauge wheels
Tire Inflation

<table>
<thead>
<tr>
<th>Location</th>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD3000 Wing</td>
<td>12.5L x 15</td>
<td>52 psi</td>
</tr>
<tr>
<td>SD3300 Wing</td>
<td>12-Ply RI</td>
<td>52 psi (368 kPa)</td>
</tr>
<tr>
<td>Gauge Wheel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD3000 Center</td>
<td>380/55 R 16.5</td>
<td>73 psi (503 kPa)</td>
</tr>
<tr>
<td>SD2600 Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD3300 Center</td>
<td>440/55 R18</td>
<td>73 psi (503 kPa)</td>
</tr>
</tbody>
</table>

Hydraulic Connectors and Torque

Refer to Figure 32 (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.
  - 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 ① 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.
  - Use no sealants (tape or liquid) on ORB fittings.
  - 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

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

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Torque Values Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bolt Size</strong></td>
<td><strong>Bolt Head Identification</strong></td>
<td><strong>Grade 2</strong></td>
</tr>
<tr>
<td>in-tpi</td>
<td>N·m</td>
<td>ft-lb</td>
</tr>
<tr>
<td>1/4-20</td>
<td>7.4</td>
<td>5.6</td>
</tr>
<tr>
<td>1/4-28</td>
<td>8.5</td>
<td>6</td>
</tr>
<tr>
<td>5/16-18</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>5/16-24</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>3/8-16</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>3/8-24</td>
<td>31</td>
<td>22</td>
</tr>
<tr>
<td>7/16-14</td>
<td>43</td>
<td>32</td>
</tr>
<tr>
<td>7/16-20</td>
<td>49</td>
<td>36</td>
</tr>
<tr>
<td>1/2-13</td>
<td>66</td>
<td>49</td>
</tr>
<tr>
<td>1/2-20</td>
<td>75</td>
<td>55</td>
</tr>
<tr>
<td>9/16-12</td>
<td>95</td>
<td>70</td>
</tr>
<tr>
<td>9/16-18</td>
<td>105</td>
<td>79</td>
</tr>
<tr>
<td>5/8-11</td>
<td>130</td>
<td>97</td>
</tr>
<tr>
<td>5/8-18</td>
<td>150</td>
<td>110</td>
</tr>
<tr>
<td>3/4-10</td>
<td>235</td>
<td>170</td>
</tr>
<tr>
<td>3/4-16</td>
<td>260</td>
<td>190</td>
</tr>
<tr>
<td>7/8-9</td>
<td>225</td>
<td>165</td>
</tr>
<tr>
<td>7/8-14</td>
<td>250</td>
<td>185</td>
</tr>
<tr>
<td>1-8</td>
<td>340</td>
<td>250</td>
</tr>
<tr>
<td>1-12</td>
<td>370</td>
<td>275</td>
</tr>
<tr>
<td>11/16-7</td>
<td>480</td>
<td>355</td>
</tr>
<tr>
<td>11/16-12</td>
<td>540</td>
<td>395</td>
</tr>
<tr>
<td>13/16-7</td>
<td>680</td>
<td>500</td>
</tr>
<tr>
<td>13/16-12</td>
<td>750</td>
<td>555</td>
</tr>
<tr>
<td>15/16-6</td>
<td>890</td>
<td>655</td>
</tr>
<tr>
<td>15/16-12</td>
<td>1010</td>
<td>745</td>
</tr>
<tr>
<td>1-6</td>
<td>1180</td>
<td>870</td>
</tr>
<tr>
<td>1-12</td>
<td>1330</td>
<td>980</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Bolt Size</strong></th>
<th><strong>Bolt Head Identification</strong></th>
<th><strong>5.8</strong></th>
<th><strong>8.8</strong></th>
<th><strong>10.9</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>mm x pitch</td>
<td>N·m</td>
<td>ft-lb</td>
<td>N·m</td>
<td>ft-lb</td>
</tr>
<tr>
<td>M 5 X 0.8</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>M 6 X 1</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>M 8 X 1.25</td>
<td>17</td>
<td>12</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>M 8 X 1</td>
<td>18</td>
<td>13</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>M10 X 1.5</td>
<td>33</td>
<td>24</td>
<td>52</td>
<td>39</td>
</tr>
<tr>
<td>M10 X 0.75</td>
<td>39</td>
<td>29</td>
<td>61</td>
<td>45</td>
</tr>
<tr>
<td>M12 X 1.75</td>
<td>58</td>
<td>42</td>
<td>91</td>
<td>67</td>
</tr>
<tr>
<td>M12 X 1.5</td>
<td>60</td>
<td>44</td>
<td>95</td>
<td>70</td>
</tr>
<tr>
<td>M12 X 1</td>
<td>90</td>
<td>66</td>
<td>105</td>
<td>77</td>
</tr>
<tr>
<td>M14 X 2</td>
<td>92</td>
<td>68</td>
<td>145</td>
<td>105</td>
</tr>
<tr>
<td>M14 X 1.5</td>
<td>99</td>
<td>73</td>
<td>155</td>
<td>115</td>
</tr>
<tr>
<td>M16 X 2</td>
<td>145</td>
<td>105</td>
<td>225</td>
<td>165</td>
</tr>
<tr>
<td>M16 X 1.5</td>
<td>155</td>
<td>115</td>
<td>240</td>
<td>180</td>
</tr>
<tr>
<td>M18 X 2.5</td>
<td>195</td>
<td>145</td>
<td>310</td>
<td>230</td>
</tr>
<tr>
<td>M18 X 1.5</td>
<td>220</td>
<td>165</td>
<td>350</td>
<td>260</td>
</tr>
<tr>
<td>M20 X 2.5</td>
<td>280</td>
<td>205</td>
<td>440</td>
<td>325</td>
</tr>
<tr>
<td>M20 X 1.5</td>
<td>310</td>
<td>230</td>
<td>650</td>
<td>480</td>
</tr>
<tr>
<td>M24 X 3</td>
<td>480</td>
<td>355</td>
<td>760</td>
<td>560</td>
</tr>
<tr>
<td>M24 X 2</td>
<td>525</td>
<td>390</td>
<td>830</td>
<td>610</td>
</tr>
<tr>
<td>M30 X 3.5</td>
<td>960</td>
<td>705</td>
<td>1510</td>
<td>1120</td>
</tr>
<tr>
<td>M30 X 2</td>
<td>1060</td>
<td>785</td>
<td>1680</td>
<td>1240</td>
</tr>
<tr>
<td>M36 X 3.5</td>
<td>1730</td>
<td>1270</td>
<td>2650</td>
<td>1950</td>
</tr>
<tr>
<td>M36 X 2</td>
<td>1880</td>
<td>1380</td>
<td>2960</td>
<td>2190</td>
</tr>
</tbody>
</table>

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

---

**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**

25199
Hydraulic Diagrams
Lift Hydraulics

- Rod End to Base end of gauge wheel cylinder
- C2 to rear RH side of double tee to wing cylinder rod end
- Side of depth Stop Valve to front RH port of double block tee to master cylinder base end
- Hose extension to gauge wheel rod end
- C1 to rear Depth Stop Valve
- V1 to Retract
- V1 to Extend
SD2600 Fold Hydraulics

**WARNING**

Hose Rupture Safety Hazard:
Do not remove orifice plates ① at rod ends of fold cylinders. With plates absent wing weight could over-pressurize hoses, leading to hose rupture, rapidly falling wings and high pressure fluid hazards.
Hose Rupture Safety Hazard:
Do not remove orifice plates at rod ends of fold cylinders. With plates absent wing weight could over-pressurize hoses, leading to hose rupture, rapidly falling wings and high pressure fluid hazards.
Hydraulic Level

- Lock valve C ports to cylinder
- Extend and retract to V ports of lock valve
Roller Hydraulics (Option)

Port T on down pressure valve to T fitting and bottom hole of double block tee to cylinder rod end

Port R on down pressure valve to relief valve, to fittings to bottom of double block tee to master cylinder base end

Retract to front T port on down pressure valve

Extend to rear IN port on down pressure valve
Appendix C: Option Installation

Weight Package Installation

Optional weight sets increase the down force available to tools, and increase the weight available for transfer to wings. Each set weighs 1500 pounds (680 kg) and consists of two 750 pound (340 kg) stacks. Refer to page 47 for ordering information.

⚠️ WARNING

Heavy Overhead Object and Crushing Hazards:
A slipped, swinging or falling weight can cause serious injury or death.
Use a lifter rated for at least 750 pounds.
Use separate lines for each lift point.
DO NOT USE a single looped line.
Use anchor points rated for at least 750 pounds each.
Use lines rated for at least 750 pounds each.
Secure each line at a separate weight attachment point.
Use only the lifter to coarsely position the stacks.
Keep everyone clear while lifting and positioning.
Keep hands above stacks at all times.
Place weights from front to back.
Slide each into final position before lifting the next.

Refer to Figure 33

2. Adjust fore/aft to take pressure off leveling link. Once pressure is off leveling link proceed.
3. Remove the $\frac{1}{2}-13 \times 1\frac{3}{4}$ inch Grade 5 bolts from the level bar assembly.
4. Pivot the level bar up for clearance.
5. Securely attach two separate lines, each rated for at least 750 pounds (340 kg), to a similarly rated anchor point on the lifter, and to a stack lifting lug. Do not use a single looped line - it can slip or fail.
6. Carefully lower each weight assembly into center frame trusses.
7. Slide weights as far forward as possible and install weight box stops on inside of trusses as close to weights as possible, secure with $\frac{1}{2} \times 4\frac{1}{32} \times 5\frac{1}{4}$ U-bolt, $\frac{1}{2}$ inch lock washers and $\frac{1}{2}$ inch nuts.
8. Torque U-bolts to 85 foot-pounds.
9. Pivot level bar and the level bar spring assembly until holes in plates are aligned.
10. Install $\frac{1}{2}-13 \times 1\frac{3}{4}$ Grade 5 bolts, secure with $\frac{1}{2}$ inch lock washers and $\frac{1}{2}$ inch nuts.
11. Torque $\frac{1}{2}-13 \times 1\frac{3}{4}$ Grade 5 bolts to 76 foot-pounds (103 N-m) to be sure bolts do not work loose and cause damage to machine.

⚠️ CAUTION

Possible Transport Hazard:
Do not transport the updated Short Disk™ before verifying that the vehicle used for highway transport is still adequate for the new weight. If the towing vehicle was previously just over requirements, it may be inadequate now, increasing the risk of a serious highway accident. Your total implement weight has increased by as much as 19% (increased up to 3000 pounds or 1340 kg).
Warranty

Great Plains (a division of Great Plains Manufacturing, Inc.) warrants to the original purchaser that this Great Plains unit will be free from defects in material and workmanship for a period of one year from the first use date when used as intended and under normal service and conditions for personal use; ninety days for custom/commercial or rental use. This Warranty is limited to the replacement of any defective part by Great Plains and the installation by the dealer of any such replacement part. 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 abuse or misuse of the equipment, failures occurring as a result of accidental damage or acts of God, 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), repeat repair due to improper diagnosis or 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 is used in 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 express 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 the unit is registered with Great Plains within 10 days from the date of the original purchase.
Index

A
amber reflectors ...........................................6
ASABE ................................................................15
attachment bar .............................................35, 50
attachment bolts ...........................................43

B
basket .......................................................38, 50
binding, pin ..................................................17
bolts ................................................................43

C
capacities .......................................................51
cast roller .....................................................50
Category III ..................................................14
Category IV ..................................................14
Category V ....................................................14
CAUTION, defined ...........................................1
channel, lift lock ..............................................19
check for leaks ...............................................16
checklists
electrical .......................................................32
ending tilling ..................................................32
field .............................................................32
field turns .......................................................32
first pass ......................................................32
hydraulic system ..........................................32
mechanical ...................................................32
pre-hitching ..................................................13
pre-start .........................................................22
transport .......................................................26
children ........................................................2
clearance, vertical ..........................................24
closed center ................................................28
color code, hose handle ................................16
covered models ............................................11
crushing hazard .............................................8
customer service ..........................................12
cylinder symbols ...........................................16

D
DANGER, defined ..........................................1
daytime reflectors ..........................................6
decal replacement ...........................................5
decals
calution ..........................................................5
tires not a step .............................................9
danger .............................................................7
electrocution ...................................................7
hitch crush ....................................................7
overhead crushing .........................................7
notice
down pressure ...............................................28
transport lock ...............................................10
operating depth .............................................27

E
electrocuting ..................................................24
excessive speed .............................................8

F
fire ................................................................1
first pass ......................................................31
float, wing .....................................................29
fold ................................................................24
folding ..........................................................24

G
gap, proximity sensor .....................................45
gauge wheel ..................................................20, 48
gauge wheel adjustment ...................................29
gauge, bypass ...............................................28
gray, hose handle ..........................................16
green, gauge zone ..........................................28
handle, depth stop ..........................................27
headphones ....................................................1
high pressure fluid ..........................................2, 9
hills ................................................................26
hitch ................................................................47
hitch pin ........................................................26
hitch turbuckle ...............................................21, 34
hitch turbuckle adjustment ..............................21, 34
hydraulic connectors ......................................52
hydraulic depth control ...................................27
hydraulic down pressure ..................................28
hydraulic level ...............................................34
hydraulic level bar ..........................................20
hydraulic roller .............................................20
hydraulics fold
SD2600 ..........................................................55
SD3000 ..........................................................56

H
hydraulic roller ...............................................58
level ................................................................57
lift ................................................................54
roller ...........................................................58

I
inflation ..........................................................52
installation
weight kit .....................................................59
intended usage ..............................................11

J
ejack, parking ................................................15
JIC ...............................................................52
Joint Industry Conference ................................52
J514 ..............................................................52
J560b ............................................................16

K
km/h ..............................................................31

L
leak checks ....................................................16
leaks ................................................................2, 43
left-hand, defined ..........................................11
level bar spring ..............................................45
leveling
front to rear ...................................................21
hydraulic .......................................................34
level, center frame .........................................14
lift ..................................................................22
lift cylinder lock .............................................19
light bracket ..................................................48
lights ............................................................ 2
lock
lift cylinder ..................................................19
wing fold, pin ..................................................17
wing fold, valve .............................................18
locks .............................................................17
lower ................................................................22
LS closed center ............................................28
lubrication .....................................................46

M
maintenance ...................................................43
maintenance safety ..........................................4
medical assistance ..........................................2, 22, 43
MFWD ..........................................................15
model number ..............................................12
models covered ............................................11
mph ..............................................................31
National Pipe Thread ....................................52
negative tongue weight .................................9, 15
NOTICE, defined ...........................................11
NPT ..............................................................52

O
open center ....................................................28, 29
ORB .............................................................52

Great Plains | 559-576M | 2018-10-18
| SAE J514 | 52 |
| warranty | 52 |
| weight kit | 47, 59 |
| weight package | 59 |
| weight transfer | 28 |
| weight, transport | 26 |
| welding | 4 |
| wing float | 29 |
| wing fold lock | 17 |
| wing fold lock valve | 18 |
| wing fold pins | 17 |
| wing lock valve | 18 |
| wing turnbuckle | 29, 35 |
| working depth | 31 |
| working speed | 31 |
| WARNING, defined | 1 |
| 12.5Lx15 12-Ply RI | 52 |

Great Plains | 559-576M | 2018-10-18